

# **A CRITICAL APPRAISAL OF CURRENT FEEDBACK STRATEGIES EMPLOYED WITHIN PROFESSIONAL FOOTBALL**

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# Abstract

In professional football, coaches must provide their players with feedback to improve their technical, tactical, physical and psychological skills. Furthermore, many professional clubs employ performance staff to collect, analyse and feedback data. However, it is not currently well understood how feedback of this performance data is transferred between coaches, performance staff and players. Therefore, the aim of the present thesis was to explore current feedback practices, establish its perceived effectiveness and evaluate an integrated feedback intervention.

Within Chapter Three, a consecutive two-phase approach was adopted, an online survey ( $n = 139$ ) in Phase 1, which subsequently informed the development of a semi-structured interview guide within Phase 2 ( $n = 30$ ). Findings from Phase 1 indicated a high volume of feedback was delivered frequently and in a range of formats. In particular, a high proportion ( $>89\%$ ) of feedback was informal in nature through regular conversations between key stakeholders. Thematic analysis of interview data in Phase 2 indicated four interacting general dimensions were involved in the feedback process: *'communication in the professional football environment'*, *'purpose of feedback (**the why?**)'*, *'delivery of feedback (**the how?**)'*, and *'content of feedback (**the what?**)'*.

Having identified the frequency and nature of current feedback practices, Chapter Four employed a mixed methods study (surveys alongside interviews) to explore the perceived effectiveness of these practices ( $n = 15$ ). Survey data from all groups indicated that informal feedback was *effective* for influencing coaching practice or player behaviour. Additionally, four themes were constructed; understanding the individual ( $n = 15$ ), feedback climate ( $n = 14$ ), optimising feedback delivery ( $n = 15$ ) and areas for improvement ( $n = 14$ ). Effective feedback may rely on making sure an individualised approach is adopted and that careful consideration is given to the environment (culture/context) in which it occurs.

Key stakeholder recommendations from Chapter Four informed the design of a novel feedback intervention in Chapter Five. The intervention was implemented as a four-week pilot study to explore the acceptability and feasibility of an integrated feedback

intervention within a professional football club. A RM-ANOVA revealed significant improvements in some markers related to perceived effectiveness; informal chats, reports on a computer screen and attitudes towards feedback; constructive comments. Interview data revealed that the increased frequency of individualised feedback helped to improve clarity and satisfied the need for more visual feedback. As such, the delivery of integrated feedback interventions may be feasible within professional football. Future evaluations of the effectiveness of feedback interventions should use integrated metrics as objective markers of performance and/or behaviour change.

In summary, the work undertaken in this thesis has provided the first quantitative and qualitative analysis triangulating key stakeholder perceptions of current feedback practices, and its effectiveness. The findings suggest that a number of factors influence feedback delivery, such as the purpose of feedback, the environmental factors and the individual receiving the feedback. Taken together, these findings allow for the construction of a conceptual and practical model of feedback delivery which may be used to inform future practice of stakeholders involved with feedback delivery and reception. Future studies should look to address the link between feedback interventions and markers of performance and/or behaviour change.

## **Declaration**

I declare that the work in this thesis, which I now submit for assessment on the programme of study leading to the award of Doctor of Philosophy is entirely my own. Additionally, all attempts have been made to ensure that the work is original, does not, to the best of my knowledge, breach any copyright laws and has not been taken from the work of others, apart from the works that have been fully acknowledged within the text.

## Acknowledgements

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I would like to extend a huge thanks to Professor Zoe Knowles. Firstly, for teaching me qualitative research throughout the duration of the PhD. Considering when I started

this I had no idea about what it was and how to conduct it, your knowledge and patience have helped me to conduct and analyse over 50 interviews, something I never thought possible! Secondly, I must comment on how constantly amazed I am by the detail and speed of your feedback when returning work. This has not only helped to keep the project moving but taught me some valuable lessons about productivity. You truly are “a machine”!

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## **List of Abbreviations**

1RM – 1 Repetition Maximum

CPD – Continuous Professional Development

DXA – Dual Energy X-Ray Absorptiometry

EFL – English Football League

EPPP – Elite Player Performance Plan

FA – The Football Association

FIT – Feedback Intervention Theory

FP – Foundation Phase (U9-U11s players)

GPS – Global Positioning Satellite

KP – Knowledge of Performance

KPIs – Key Performance Indicators

KR – Knowledge of Results

MBI – Magnitude Based Inferences

MDT – Multi Disciplinary Team

PA – Performance Analysis

PDP – Professional Development Phase (U18-U23s players)

PI - Players

Performance Staff (PS) – Sports scientists, strength & conditioning coaches, doctors, physiotherapists, performance analysts, nutritionists, psychologists.

RPE – Rating of Perceived Exertion

RTP – Return To Play

S&C – Strength and Conditioning

SWC – Smallest Worthwhile Change

YDP – Youth Development Phase (U12-U16s players)

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## **CHAPTER 1 - GENERAL INTRODUCTION**

## 1.1. Biographical Positioning

Researcher positionality is integral to the process of research, that of research adopting a qualitative approach (Holmes, 2020). This is due to the fact that positionality may influence how research is carried out, the outcomes and the results obtained (Rowe, 2014). As such, it is deemed important that a short section at the outset of this thesis should set out my professional background when embarking upon this PhD project and acknowledge its influence on the subsequent research.

Before enrolling on the PhD, I had been an applied practitioner (sports scientist) within professional football for ten years in several different roles at my previous club. **Figure 1.1** provides an overview of my professional and academic experiences and highlights the different managers in charge of the football club during this time. I feel that this process of organisational change and high turnover of coaching, management and performance staff has been influential in shaping the practitioner I have become. The change I experienced throughout this period of my career is reflective of the highly volatile nature of professional football (Wagstaff, Gilmore & Thelwell, 2015) and is something that has continued into my time at my present club also. Indeed, I have experienced the four stages of organisational change described by Wagstaff et al. (2015); (1) anticipation & uncertainty, (2) upheaval & realisation, (3) integration & experimentation, and (4) normalisation & learning, eight times in my career at my previous club alone.

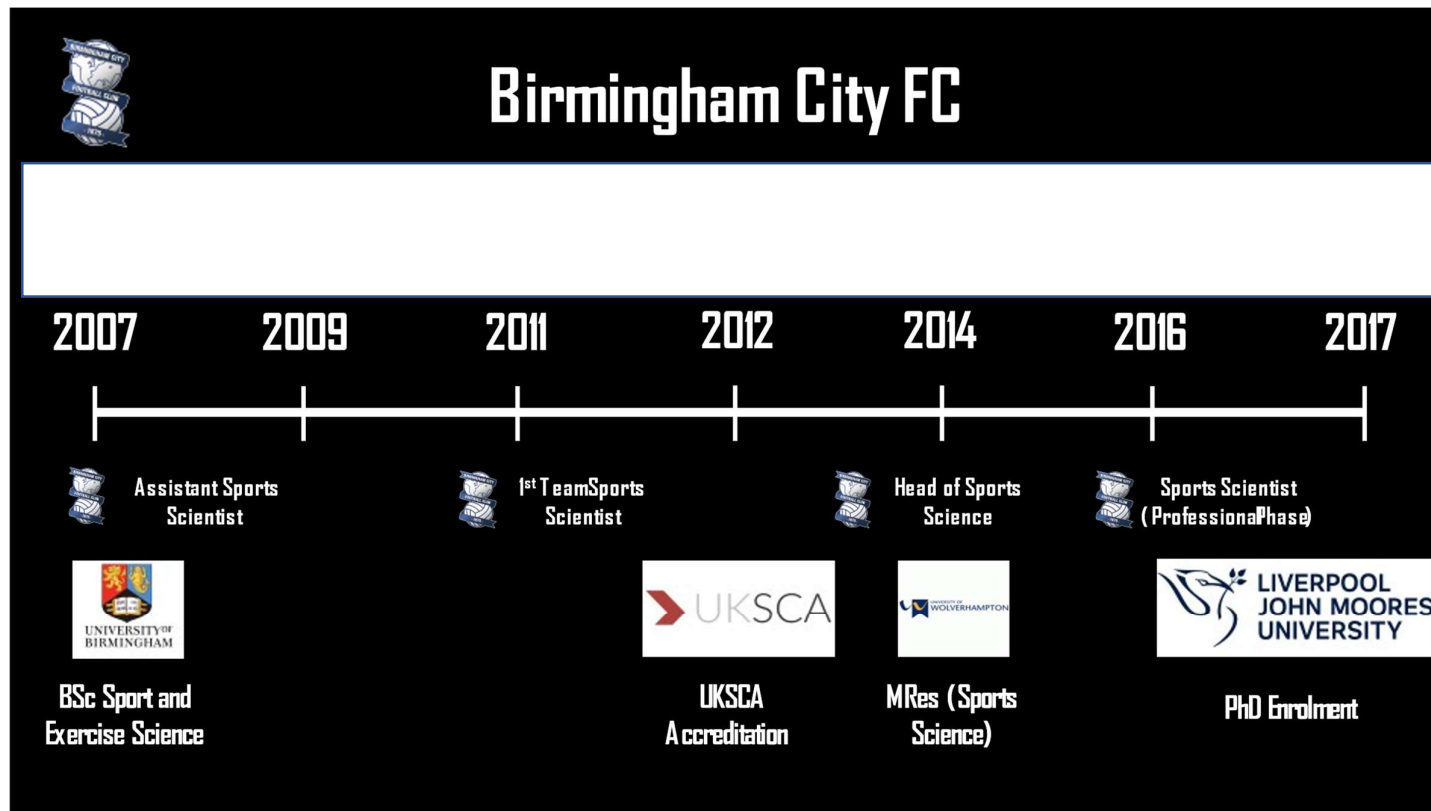
The reason I felt it important to highlight the number of different managers is since I feel that this has influenced my approach to the research conducted within the current thesis. For example, each of these managers

brought with them their own values, beliefs and experiences which shaped them into the coaches and managers they were. In addition, they brought management, coaching staff, and performance staff (e.g., sports scientists; medical staff) with them who also had a wide array of differing experiences and philosophies. The communication between manager, coaches, and performance staff (including sports scientists and medical staff) is seen to be important to maximise player performance, manage fitness and decrease injury risk (Ekstrand et al., 2018; Weston, 2018). The management and staff changes presented numerous challenges and opportunities, especially with regards to the feedback of performance related information to support and influence practice. One of the common themes evident against this backdrop of organisational change was the need to find specific ways of communicating increasingly complicated datasets to coaches and other departments to shape and influence practice. The increase in data communication was mainly due to the rapid increases and advancements in technology that were occurring throughout this time period. For example, between 2007-2011 the primary monitoring technology available was heart rate telemetry. From 2011 onwards, methods of monitoring internal training load such as heart rate were supported by ways of monitoring external training load data through the use of GPS units. The introduction of this technology drastically changed the landscape of sports science within professional football (Malone et al., 2017; Rago et al., 2020). The increase in use of GPS monitoring technologies is reflected within the exponential rise of publications using such technologies. Specifically, in professional football, only one publication was published in 2013, whereas ten publications were reported in 2018, which utilised GPS technology (Rago et

al., 2020). This increase in availability and use of technology resulted in challenges for practitioners such as me as to how to effectively communicate the high volume of complex data that was being generated.

Whilst the PhD project that I applied for and began had been conceptualised by a research team, I felt that the experiences I brought from my 10 years as an applied practitioner helped shape the project throughout. The approach, methodology and interpretation of the large volume of qualitative data throughout the thesis has been influenced by my values, beliefs, and experiences. In the same way, my values and beliefs have been challenged and influenced by the research process itself. In addition to how I will develop as a practitioner and researcher throughout the project, it is also important to recognise my impact on elements of the project. For example, the contacts I have generated, and relationships developed over the last ten years may be advantageous for aiding the recruitment process. However, it will be important to ensure that no coercion is present within recruitment and that potential participants who are approached do not feel pressured. Furthermore, it is envisaged that the relationships and rapport I will develop with staff and players through being an embedded PhD student will ultimately be beneficial

A brief section is included within the **Chapter Six** detailing my time at my present club, a timeline of the research process and details of my current role and how they provide a platform upon which to disseminate the research findings and generate impact from the findings presented within the thesis.



**Figure 1.1.** Timeline of professional and academic experiences before commencement of PhD.

## **1.2. Background**

Professional football is a highly complex and multidimensional sport which incorporates technical, tactical, physical, and psychological aspects of performance (Bradley et al., 2018; Williams, Ford & Drust, 2020). With improvements in physical preparation and training methods, the physical and technical demands of professional football have increased in recent years (Barnes et al., 2014; Morgans, 2014; Wallace & Norton, 2014). For example, Barnes et al. (2014) demonstrated how the high intensity and sprinting demands for players within the English Premier League increased by 30-50% between the 2007-2008 season and 2012-2013. These increases in high intensity physical actions were supplemented by increases in the technical demands of the game. Indeed, an increase in the number of passes and successful passes was also observed across the same time period (Barnes et al., 2013). In addition to the increase in acute match demands, professional football players are required to perform optimally throughout the duration of a 10-month season and often play in competitive matches multiple times per week (Anderson et al., 2016; Nedelec et al. 2012). Anderson et al. (2016) have shown it is not uncommon for elite teams to play 3 matches per week at times throughout a season accumulating weekly distances more than 35 kilometres. Due to the increasing technical and physical demands of professional football, large teams of multidisciplinary staff (coaches and performance staff) are employed to provide coordinated and integrated support to players (Duncan & Strudwick, 2016; Relvas et al., 2010). One of the ways in which they support this is by providing each other with feedback in the form of information to support decision making processes (Robertson, Bartlett & Gastin, 2017).

Recent developments in technology have allowed practitioners different methods to assess adaptation to training, monitor fatigue and attempt to minimize the risk of injury. Indeed, recent studies of the practices and technologies currently being utilised have demonstrated the widespread use of a variety of monitoring and testing techniques used, including global positioning satellite (GPS) technology, heart rate monitoring and subjective wellness questionnaires within elite sports, including professional football (Akenhead & Nassis, 2016; Bourdon et al., 2017). The provision of information to improve performance, assist decision making or enhance learning is known as feedback (Hattie & Timperley, 2007; Salmoni et al., 1984). These technologies are regularly used by performance staff to provide feedback to key stakeholders (i.e. players; coaches; other support staff), such as training load data (Nosek et al. 2021; Weston, 2018) fatigue status (Thorpe et al., 2016; Saw, Main & Gustin, 2016), body composition (Milsom et al., 2015) and match performance analysis (Bush et al., 2017; Bradley et al., 2013). Due to recent improvements in the technology available to monitor human performance the quantity and variety of data that is generated and fed back has vastly increased (Ward, Windt & Kempton, 2019).

Though there have been advancements in technology, there are a number of potential limitations of feeding back such data. For instance, it is currently unclear whether data that is measured, analysed, and fed back by performance staff to coaches, and players influences practice i.e., training prescription and key decisions such as player selection and return to train/play times. There are many potential issues for this plateau in influence which include translation, time, trust, equipment, and coach education (Eisenmann,

2017). The large volume of data being collected, stored, and analysed presents a challenge, in terms of how to provide effective feedback to key stakeholders to improve performance. Another potential issue associated with the plateau in influence of sports science feedback is how the feedback is delivered. When a player passes a ball during practice or competition as well as internal feedback (i.e., information from the sensory system such as proprioceptive information from the muscles and visual feedback from the eyes) they receive external feedback on their performance from their coach, teammates, and performance staff. Currently, the literature examining feedback surrounds the acquisition of motor skills which has consistently shown that feedback can positively influence the development of the player's skills through the timing (i.e., immediate vs delayed; Swinnen et al., 1990), frequency (i.e. High frequency vs. Reduced frequency; Salmoni et al., 1984) and attentional focus (i.e. Internal-focus vs. External-focus; Wulf et al., 2002) of feedback (for a thorough and comprehensive review see Hodges & Williams, 2012). This approach to feedback is frequently used by coaches in professional football settings. For example, through systematic observations of 70 sessions conducted by 25 highly skilled coaches, a high frequency (~30%) of verbal information provided by the coach was instruction, which included instructional feedback delivered after skill execution (Ford, Yates & Williams, 2010). The feedback strategies highlighted above are seemingly limited to the interactions between coach and player to improve an individual's technical and tactical performance. The provision of feedback is important to positively affect future outcomes, however the feedback literature has been limited to the skill acquisition, coaching and performance analysis literature.



Despite the amount of sport science related feedback that is provided within professional football daily (e.g., coaching observations; training load; fatigue status), there is currently very little information available on how this sport science feedback is provided to key stakeholders including players, coaches, and support staff (Nosek et al., 2021; Weston, 2018). To date, two studies have explored whether sports science feedback such as training load monitoring data affects the practices of coaches and players within professional football clubs. Weston (2018) demonstrated that monitoring and subsequent feedback is used by coaches and practitioners with the aims of enhancing performance, improving fitness, and reducing injury. Nosek et al. (2021) recently showed that coaches, players, and performance staff all regarded feedback of GPS data as at least somewhat important in guiding coaching practice and very important in improving player fitness, preventing injury, and assessing effort. The survey methods employed within these two studies goes some way to exploring the practices and underlying perceptions of feedback within professional football. Yet, the quantitative methods used limit an in-depth understanding of how this information is used and *how* and *why* its presentation to key stakeholders may influence important decisions or affect performance and behaviour.

There is currently limited research exploring multiple stakeholder's perceptions (coaches, performance staff, and players) of performance related feedback within professional football. In some cases, studies have attempted to simultaneously assess the perceptions of two groups of stakeholders i.e., coaches and players of video feedback (Middlemas & Harwood, 2018) in order to compare and contrast perceptions between the two groups. Additionally, as

described above, Nosek et al. (2021) examined the perceptions of three groups of stakeholders towards GPS feedback in professional football using quantitative survey methods. However, there appears to be no studies that have simultaneously studied the perceptions of three groups of stakeholders adopting both a quantitative (i.e., surveys) and qualitative (semi-structured interviews) methodology. Consequently, there is a lack of evidence that has examined current practice from the viewpoints of three groups of key stakeholders. Taking this into consideration, it is important to understand what the current beliefs and perceptions of multiple stakeholders within professional football are and how they influence their practices and decision-making (McCunn et al., 2018). An approach such as this may serve to enhance future practice by, improving the understanding and alignment between members of the multi-disciplinary team, developing integrated communication styles between key stakeholders, and informing novel interventions to improve translation of performance related feedback to enhancements in performance.

### **1.3. Aims & Objectives**

The overall aim of the thesis is to provide a critical appraisal and exploration of current feedback strategies within professional football. The completion of this thesis will allow a greater understanding of feedback in professional football and will inform future research designs which aim to assess the effectiveness of feedback. Below are the objectives of the thesis:

1. To examine current feedback delivery practices of key stakeholders (i.e., players, coaches and performance staff) in professional football.

2. To examine key stakeholder attitudes towards the perceived effectiveness of different types (i.e., verbal, visual, written), timings (i.e. immediate, delayed) and locations (i.e. pitch, gym, meetings) of feedback.
3. To use key stakeholder recommendations to design, deliver and evaluate a novel pilot study to determine the feasibility of an integrated feedback intervention within a professional football club.

## **CHAPTER 2 – LITERATURE REVIEW**

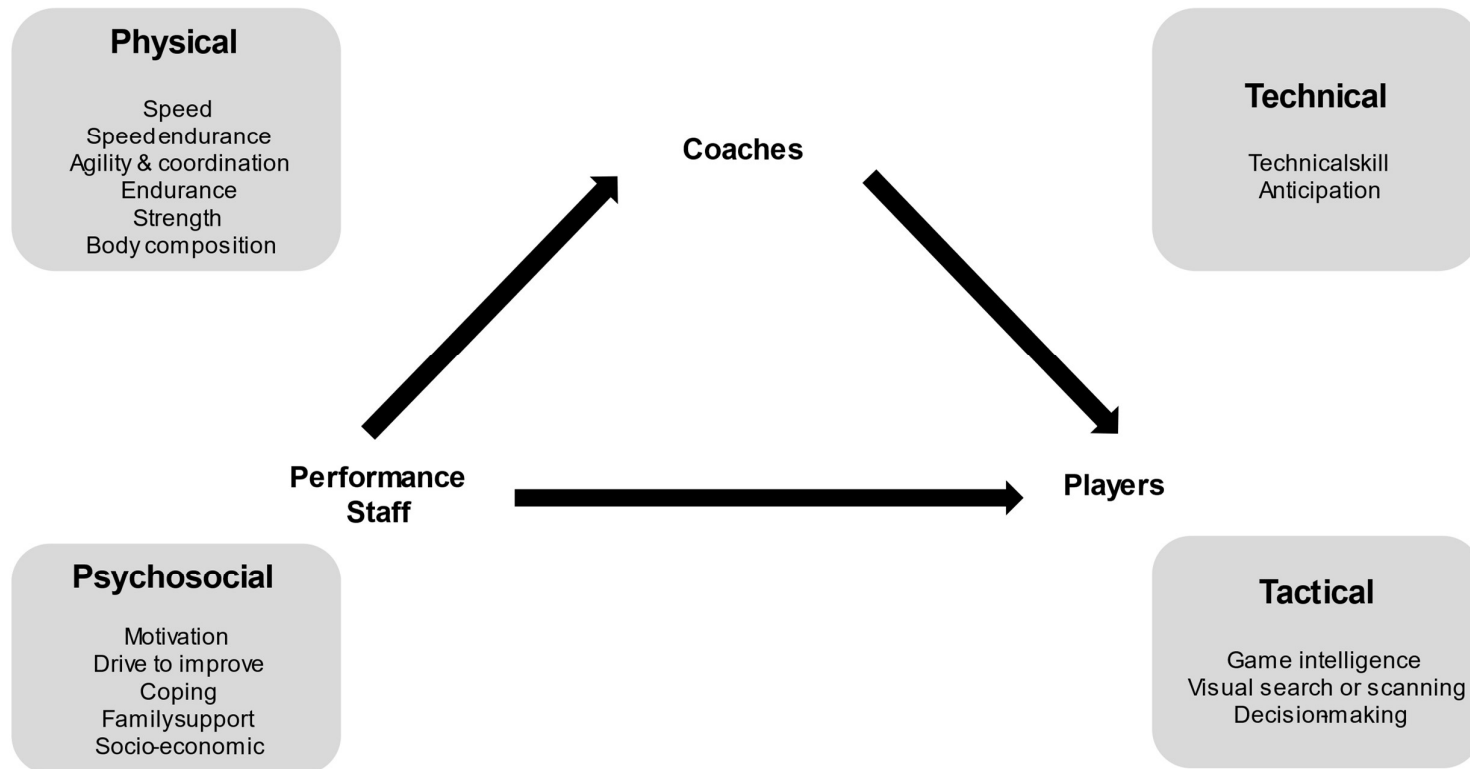
## **2.0. Aim of the Chapter**

The following chapter will provide an overview of the current literature focusing on feedback within professional football. The performance and developmental aims of professional football and the key stakeholders involved will be discussed. Subsequent sections aim to review what is currently known about the ways in which key stakeholders (i.e., coaches; performance staff; players) provide/receive feedback to enhance performance and development.

## **2.1. Introduction**

The primary goal of professional football clubs is to achieve high levels of performance to increase the chances of winning matches and trophies. Additionally, the main developmental goal for professional football club academies is to achieve the successful development of youth players to senior professionals (Ford et al., 2018). The coach is primarily responsible for the preparation of players by coordinating a series of activities designed to elicit optimal performance and/or development (Lyle, 2002). However, coaches are usually supported in this by teams of multi-disciplinary specialists. This has been especially evident in professional football over the past few decades (Drust, 2019; Duncan & Strudwick, 2016). As such, coaches and multi-disciplinary teams of performance staff are responsible for the technical, tactical, physical, and psychosocial aspects of development and performance (Williams & Reilly, 2000; Williams, Reilly & Drust, 2020).

Williams et al. (2020) provided an overview of the predictors and indicators of high performance in professional football. Technical and tactical skills which are executed with and without the ball, in relation to positional role, and team strategy, are arguably the most influential in determining high performance in professional football within both youth and senior players (Ford et al., 2018; Williams et al., 2020). In addition, the key physical characteristics influencing performance in professional football were identified as speed, speed endurance, agility, and coordination (amongst other factors such as endurance and strength). The perceived importance of the physical aspects of performance is evidenced by the fact that within the Williams et al. (2020) study, 25 of 27 studies reviewed, assessed the physical aspects of performance. The prevalence of research concerning physical performance may be due to the perceived importance of physical preparation for the increasing demands of the modern game (Barnes et al., 2014; **see section below**). Additionally, psychological, sociological, maturational, and environmental factors influencing performance have been identified, and multidisciplinary staff are employed within professional football to aid development and support in these areas also (Gledhill, Harwood & Forsdyke, 2017; Williams et al., 2020). The model presented below (**Figure 2.1**) is theoretical and combines the key predictors of high performance described by Williams et al. (2020). It is merged with the key stakeholders mentioned above who are involved in the provision of feedback to players to enhance performance and development in these areas. The following sections will examine how feedback is delivered and received by these stakeholders, with specific reference to professional football, where evidence is present.



**Figure 2.1.** Theoretical model of feedback delivery alongside potential predictors of high performance in professional football (adapted from Williams et al., 2020).

## **2.2. Demands of Football and Support Services**

Competitive football matches place physical, technical, tactical, and psychological demands on performers at all levels. Professional football has been extensively studied and has been shown to be characterised by high intensity intermittent bouts of anaerobic activity interspersed with lower intensity bouts of aerobic activity (Bangsbo, 1993; Bloomfield et al. 2007; Mohr et al. 2003; Reilly, 1997). Professional players tend to cover between 10-13 kilometres of total distance during a game which has been shown to be consistent across the English Leagues (Bradley et al., 2013) and European Leagues (Di Salvo et al., 2007). The evolution of the game in modern times has shifted towards a greater emphasis on distances being covered at higher intensities (Barnes et al. 2014), hence the importance of the physical attributes described by Williams et al. (2020) as necessary for high performance such as speed, speed endurance, agility, and coordination. In addition to the locomotive demands, players are executing a skill-based game with a multitude of technical skills and tactical objectives (Bradley et al., 2011; Bradley et al., 2013; Carling, Lawlor & Wells, 2018). Players execute numerous important technical actions within a game such as receiving and passing the ball, heading, blocking, and dribbling (Bradley et al., 2013). The dynamic interplay of the aforementioned physical and technical involvements is heavily influenced by the tactics and formations of the team players are playing both for and against (Bradley et al., 2011).

In addition to the demands of competitive match-play situations, professional football players prepare for competition by engaging in training activities in a planned and periodised manner (Morgans, 2014; Strudwick &



laia, 2018). A relatively small number of studies have attempted to quantify the training demands of professional English football across the course of a season (Anderson et al., 2016; Kelly et al., 2019; Malone et al., 2015). A recent study by Kelly et al. (2019) monitored a championship winning Premier League team throughout the duration of a season and showed daily fluctuations in training based around the fixture schedule and weekly fluctuations based on the time of the season. Professional football players are required to perform optimally throughout the duration of a 10-month season and often play in competitive matches multiple times per week (Anderson et al., 2016; Nedelec et al. 2012). Anderson and colleagues (2016) have shown it is not uncommon for professional teams to play 3 matches per week at times throughout a season accumulating weekly distances in excess of 35 kilometres and sometimes in excess of 60 matches per season. Therefore, the longitudinal and chronic demands of a football season and the obvious need for optimal performance indicate the importance of a coordinated and integrated approach to the preparation of professional performers (Lyle, 2002).

The previous section demonstrates that there is a need for the structured and organised preparation of a training and competition programme for professional football players. It has been shown that professional clubs throughout the UK and Europe support the development of their players through the provision of a number of multidisciplinary support services, including large technical coaching departments (Relvas et al., 2010). Lyle (2002) describes coaching as a series of activities and interventions designed to improve competition performance and provided a model for the coaching process. Although it could be argued that this model was relatively mechanistic

in nature (Bowes & Jones, 2006) it serves as a useful starting point to understand coaching as a cyclical process including elements of planning, implementing and reviewing (Carling, Lawlor & Wells, 2018; Groom, Cushion & Nelson, 2011). Moreover, Lyle (2002) stated that the planned, coordinated, and integrated series of activities is the responsibility of the coach, however in professional environments they are usually supported in this by teams of multidisciplinary specialists. Drust (2019) described the prevalence and growth of areas such as sports science and strength and conditioning and their influence on applied practice in professional football. However, evidence of the effectiveness of the practices they are implementing within these environments are limited and may be adopted with little scientific questioning or scrutiny.

Athletes and coaches in numerous sports have been utilising scientific techniques and principles as they attempt to enhance sporting performance, involving the study and application of areas such as physiology, nutrition, performance analysis, biomechanics, and psychology (Arnold et al., 2017; Dijkstra et al. 2014; Eisenmann, 2017; Reid, Stewart & Thorne, 2004). Reid et al. (2004) and Arnold et al. (2017) demonstrated how separate disciplines come together to form multidisciplinary teams, however both described how this was far from a straightforward process. The advent of the Premier League in 1992 resulted in greater investment in medical and scientific resources as teams sought a competitive advantage to achieve or maintain their top tier status (Carter, 2016). Furthermore, developments such as the Premier League's Professional Player Performance Plan (EPPP) which began in 2012 have meant improvements and increased resources in medical and sports

science provision across academies throughout England (Duncan & Strudwick, 2016). All the above factors have resulted in sports scientists and other key stakeholders (i.e., performance analysts; strength and conditioning coaches) now being accepted as an important part of the coaching, training, and planning process. However, there is currently limited evidence to demonstrate how multidisciplinary teams (also referred to as performance staff throughout the thesis) provide feedback to coaches, players and between departments and whether they positively guide and inform practice.

### **2.3. Feedback**

The previous section demonstrates that there are a multitude of support staff within professional sporting environments attempting to provide feedback for the preparation of athletes within both training and match scenarios. In order for this information to be utilised to improve future performances it is important that it is fed back between members of the multidisciplinary support team and to players. Whilst some attempts have been made to discuss the feedback of performance data within professional sporting contexts (Buchheit, 2017; Nosek et al., 2021; Thornton et al., 2019; Ward et al., 2019; Weston, 2018) feedback as a concept has been more broadly examined in a range of different fields (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; London & Smither, 2002 or Smither et al., 2005).

Feedback has been described as information given about performance of a task which is used as a basis for improvement (i.e., to provide knowledge or enhance skills) (Hattie & Timperley, 2007; Lee, Nyity & McGill, 1993). Feedback occurs when an individual (e.g., self), others (e.g. teacher or coach),

or equipment (e.g. heart rate monitor or mechanical tools) provide information about a given aspect of performance (Smith & Ward, 2006). This rather broad overview is reflective of the wide-ranging nature of the term feedback. Feedback is used to improve performance in nearly every strand of society ranging from business (Smither et al., 2005) to education (Hattie & Timperley, (2007), manufacturing (Shannon & Weaver, 1949) to numerous athletic populations (Liebermann et al., 2002).

The ways in which feedback can assist in improving both human and mechanical performance are potentially vast and numerous. Indeed, a landmark meta-analysis of various feedback interventions in wide and seemingly unrelated fields resulted in a unifying theory known as feedback intervention theory (FIT) put forward by Kluger and DeNisi (1996). The meta-analysis contained 607 effect sizes and 23,663 observations, which reported that feedback interventions improve performance ( $d = 0.41$ ). The central assumption of FIT is that information provided through feedback interventions alters attentional processes at three levels; task learning, task motivation and meta-tasks (i.e., self-related). Despite being one of the largest meta-analyses of its type in the field of feedback, the meta-analysis only contained one feedback intervention study relating to sporting performance (Anderson, Crowell, Doman & Howard, 1988). The lack of studies relating to sporting performance in such a wide-ranging meta-analysis demonstrates the need for further examination feedback interventions in professional sport.

The work by Kluger and DeNisi (1996) provides a backdrop for several models of feedback which have been used as frameworks to describe the use of feedback in both teaching scenarios and employee appraisal mechanisms

(Hattie & Timperley, 2007; Smither, London & Reilly, 2005). Smither et al. (2005) constructed a theoretical model for understanding whether behaviour is changed, and employee performance is improved following multisource feedback. They described eight broad factors which were thought to affect whether feedback was used positively to impact upon performance: (1) characteristics of the feedback; (2) initial reactions to feedback; (3) personality; (4) feedback orientation; (5) perceived need for change; (6) beliefs about change; (7) goal setting; (8) taking action. Hattie and Timperley (2007) provided a inclusive review of feedback in educational settings and proposed a theoretical feedback model. The model posed three main questions relating to progress towards goals; (1) "Where am I going?" (i.e., what are the goals?), (2) "How am I going?" (i.e., what progress is being made towards the goal?), and (3) "Where to next?" (i.e., what activities need to be undertaken to make better progress?). Feedback is then considered under four main areas; (1) task level; (2) process level; (3) self-regulation level; (4) self-level. Feedback was considered to be effective when it consisted of information about progress and/or how to proceed. It was concluded that feedback needs to be more fully researched by quantitatively and qualitatively investigating its effects on learning processes. Indeed, the methodological approach recommended within their work could theoretically be impactfully applied within professional football. It has already been established that there is a high volume of information (data) collected and analysed to support the coaching process (Akenhead & Nassis, 2015, Phillips et al., 2013) however, there is little empirical evidence related to *how* information is used to enhance the performance and development of individuals and teams. The majority of work

relating to feedback has examined areas such as motor learning, skill acquisition and coaching (Ford, Yates & Williams, 2010; Salmoni, Schmidt & Walter, 1984; Williams & Hodges, 2005).

#### **2.4. Theoretical Underpinnings of Feedback**

Feedback is information that is given to assist in reducing the gap between actual performance and a desired outcome or goal (Hattie & Timperley, 2007). The setting and pursuit of specific goals have been shown to be more effective than general goals due to the fact that they direct attention and feedback can therefore be more directed around the goal (Locke & Latham, 1984; Locke & Latham, 2002). Goal setting theorists such as Locke and Latham (2002) focused primarily on setting effective goals and motivation. It was suggested that goals have four functions; directing attention toward goal relevant activities, energising (high goals vs low goals), affecting persistence, and affecting action indirectly. It is argued that goal-setting theory is among the most valid and practical theories of employee motivation in organisational psychology (Locke & Latham, 2002). Feedback, goal setting and motivation are inherently linked with several other theories and approaches to performance and learning (Bandura, 1986; Bandura, 1997; Carver & Scheier, 1981; Frese & Zapf, 1994; Latham, Locke & Fassin, 2002).

Indeed, control theory describes the importance of goal setting and feedback for motivation (Carver & Scheier, 1981). Ultimately, the theory poses the idea that an organism is motionless or resting and utilises a negative feedback loop to drive action (much akin to that of a thermostat). Whilst providing an interesting and logical approach to the use of feedback to reduce

the discrepancy between actual performance and a desired outcome, the theory has received criticism for its assumptions which are based upon cybernetic and mechanical engineering examples (Kluger & DeNisi, 1996; Locke & Latham, 1990; Locke & Latham, 2002).

More practical, personal, and social theories exist which are probably more applicable to the professional football environment. For instance, the social-cognitive theory describes how several personal, behavioural, and environmental factors are present in determining and influencing an individual's behaviours, decisions, and self-efficacy (Bandura, 1986 & 1997). Self-efficacy is the extent to which a person believes that they can achieve a given task. This is linked with goal setting, in that individual's with higher self-efficacy tend to set higher goals and respond better to negative feedback when they are pursuing their goals. This is supported by the concept of the high-performance cycle, whereby high goals lead to high performance which in turn lead to higher rewards such as recognition and promotion (Latham et al., 2002). In relation to team sports such as professional football, which could be complex, dynamic, and rapidly moving (Drust, 2019), the delivery of feedback could be expected to be crucial in assisting decision making of coaches, players, and performance staff. Frese and Zapf's (1994) notion of action theory suggests that in dynamic situations, it is important to actively search for feedback and react quickly to it to attain the goal. The theoretical basis for goal setting and feedback is clear, however there is much to be uncovered regarding current feedback practices within professional football. Further understanding of what stakeholders perceive feedback to be and whether it is

perceived to be effective must be addressed to raise awareness of feedback in professional football.

#### ***2.4.1. Feedback and Learning/Skill Acquisition in Sport***

Although the literature examining feedback in football is sparse, much of the research regarding the acquisition of novel actions has consistently shown that feedback is essential for learning to take place (Hodges & Williams, 2012; Schmidt & Lee, 2005). Furthermore, it is well accepted that feedback can have a positive effect on motor learning, skill acquisition and performance (Bilodeau, 1966; Salmoni et al., 1984). When an individual performs a skill, such as passing a football, the person receives internal feedback from the sensory system such as proprioceptive and visual information about whether the skill has been performed successfully (Schmidt & Lee, 2011). Other internal or inherent feedback can be derived from sounds or smells and may provide further information as to execution of skills. However, in addition to this the performer receives augmented feedback from a number of external sources such as coaches, teammates, support staff or measuring equipment (Liebermann et al., 2002; Partington & Cushion, 2013; Phillips et al., 2013; Williams & Hodges, 2005). Many studies have investigated how augmented feedback (i.e., verbal feedback after execution of a skill) influences the learning of those skills. An example of how powerful this augmented feedback can be was provided by Ford, Williams & Hodges (2007). It was demonstrated that when erroneous feedback was given to highly skilled participants in a kicking task, they significantly altered their ball kicking trajectory based on the feedback given (as vision was occluded). It was concluded that football players



use the visual consequences of their actions to plan the subsequent execution of skills (Ford et al., 2007).

Consequently, the initial research in this area seemed to suggest that more information, given more regularly (i.e., increased frequency) would be beneficial for learning. However, subsequent research questioned the notion of the “more is better” view of feedback. In a comprehensive review of the KR and learning literature, Salmoni et al. (1984) concluded that feedback can provide important guidance, motivational and associational roles for enhancing performance provided that the absolute and relative frequency of feedback given are optimal. This research provided a backdrop for the ensuing areas of study within the field of motor learning, which may have implications for the provision of feedback to players and coaches in an attempt to enhance performance or aid development and learning. The following subsections will look at the characteristics of feedback that have been manipulated within the research such as timing (Immediate vs. Delayed; Swinnen et al., 1990), frequency (High frequency vs. Reduced frequency; Andrew et al., 2016) attentional focus (Internal-focus vs. External-focus; Wulf et al., 2002) and social-comparison (Negative vs. Positive; Lewthwaite & Wulf, 2010) in an attempt to better understand the link between feedback and motor learning/skill acquisition.

#### **2.4.2. *Timing***

The developments in technology have facilitated the collection, analysis, and feedback of technical and physical performance data. It is now common for large quantities of data to be made available to coaches and players either in real-time or following a short delay (i.e., turnaround time).

Within the skill acquisition research, whilst far removed from the professional football environment, factors such as the timing of feedback have been studied in controlled laboratory conditions (Swinnen et al., 1990). Swinnen et al. (1990) examined the effects of immediate vs. delayed frequency on the performance, learning and retention of a novel task performed in a laboratory setting. It was demonstrated that delaying knowledge-of-results (KR) produced superior learning of the task than immediate KR and was reflected in improved performance in both short term (2-day) and long term (4-month) retention tests. The explanation for this may be rooted within the Guidance Hypothesis, which suggests that KR has a strong informational component for the receiver which guides performance when it is present. However, when KR is not present then negative side-effects that interfere with learning and performance may ensue (Salmoni, Schmidt & Walter, 1984). The criticism of these lab-based approaches would be their lack of relevance or transferability to a complex and chaotic sport such as football. However, the provision of frequent and immediate augmented feedback from coaches has been argued against when coaching professional youth football players (Williams & Hodges, 2005). Despite the contrasting conditions under which much of the skill acquisition literature has been developed, it is clear that timing may be considered as an important principle in the delivery of feedback. Whilst numerous efforts have been made to assess the effects of the provision of immediate feedback in performance related settings (Weakley et al., 2019), there is much still to be discovered regarding concurrent and terminal feedback and the delayed nature of this feedback. Football coaches use high levels of verbal instruction pre, during and post session (Cushion & Jones, 2001; Partington & Cushion,

2013). Therefore, it is expected that this is not an area given much consideration in the practice of coaches, performance staff or players within professional football. As such, the present thesis will look to build upon the work conducted within skill acquisition and coaching research to better understand feedback delivery practices.

#### **2.4.3. Type/Content**

In addition to intrinsic feedback, the provision of augmented (extrinsic) feedback, either knowledge of results (KR) or knowledge of performance (KP) is essential to improve learning and performance (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Salmoni et al., 1984). Intrinsic feedback that the performer “feels” for themselves is often supplemented with feedback from an external agent. This augmented feedback can be verbal from a coach or teacher (Hattie & Timperley, 2007; Partington & Cushion, 2013), visual feedback from a piece of monitoring or testing technology (Phillips et al., 2013; Weakley et al., 2018) or via the use of video feedback provided following performance of skills in training or matches (Groom et al., 2011). The majority of augmented feedback provided is verbal in nature, or able to be verbalised (Salmoni et al., 1984). Indeed, KR has been defined as verbal, terminal, augmented feedback (Schmidt, 1982).

Provision of verbal forms of feedback are frequently used by coaches in professional football. For example, through systematic observations of 70 sessions conducted by 25 highly skilled coaches, 25% of verbal information provided by the coach was associated with feedback on player's performance such as praise, hustle, and scold (Ford et al., 2010, Partington & Cushion,

2013). Additionally, a survey of forty-six coaches from a range of sports (including football and rugby union) showed that 82-86% of coaches use video feedback with individuals or teams as part of the analysis and feedback process (Wright, Atkins & Jones, 2012). These practical examples display how verbal and visual feedback are delivered with the aim of enhancing skilled performances in applied settings. Despite the fact that verbal and visual forms of feedback are clearly used within skill acquisition to enhance learning, little is currently known about how different types of feedback are delivered in professional football to influence decision making and practice of coaches, performance staff and players. A more comprehensive understanding of the types of feedback used and their perceived effectiveness may serve to enhance how practitioners such as sports scientists and coaches deliver feedback to achieve performance, developmental, departmental, and organisational aims.

#### **2.4.4. Frequency**

The relative and absolute frequency of feedback are key considerations in the delivery of feedback to improve the learning and retention of skilled performances (Salmoni et al., 1984). Absolute frequency refers to the total number of times KR is provided to learners during practice conditions i.e., if 200 trials are performed and 100 trials are fed back on, then the absolute frequency of feedback is 100. Relative frequency refers to the percentage of trials which are fed back on, which is expressed as a percentage, in this case 50%. Thorndike's (1927) Law of Effect suggested that "any variation in feedback that makes the information more immediate, more precise, more frequent, more informationally rich or generally more useful would be

beneficial for learning." This would suggest that if more instances of KR are delivered then more learning and increased performance will take place. In support of the work conducted by Thorndike (1914; 1927), it was also suggested that the relative frequency of feedback is not important for learning (Bilodeau, 1966). However, this approach of "more frequent feedback leads to more learning and better performance" has been disproved in the ensuing literature especially regarding the relative frequency of feedback. Winstein and Schmidt (1990) showed how 50% relative frequency of feedback resulted in greater retention of a limb patterning task than 100% feedback which challenged Thorndike's law of effect and the conclusions drawn in research by Bilodeau (1956, 1966). However, the guidance hypothesis laid out by Salmoni et al. (1984) does suggest that short term performance of skills appears to be enhanced through an increased frequency of feedback. However, learning and retention is enhanced when the relative frequency of feedback is reduced. It appears that there is a lack of translation of these findings to football coaching, as coaches tend to provide high volumes of feedback, believing that like early feedback theorists more is better (Williams & Hodges, 2005).

Another approach which reduces the relative frequency of feedback is bandwidth feedback. Bandwidth feedback generally reduces the relative frequency of feedback delivered and is based on a pre-set level of acceptability of performance (Sherwood, 1988). For example, Sherwood (1988) used a movement timing task with subjects randomly assigned to one of three experimental groups. One group received feedback if their movement was 5% outside the goal time, another group received feedback if their movement was 10% outside of the time, and a control group who received feedback on all

trials. The 10% group received the least feedback, however, they showed less variability on the task than the 5% and control group. Therefore, Sherwood concluded that providing feedback about a relatively large bandwidth may enhance movement consistency. However, it has also been emphasised that learners must be informed ahead of the task to interpret no feedback to mean that the performance was correct and within the acceptable level of error (Lee & Carnahan, 1990). Indeed, the bandwidth feedback method of providing feedback may fall directly in line with estimates of smallest worthwhile change (SWC) and feedback to coaches in performance settings such as professional football (Buchheit, 2017). Smallest worthwhile change is a statistical approach based on effect sizes and magnitude-based inferences (MBI) described by Hopkins (2002). This notion of a reduced relative frequency of feedback clearly has implications for the delivery of feedback within skill acquisition, however a gap still exists within the literature examining the current practices of key stakeholders in football relating to the perceived frequency of feedback. Outcomes from the research within this thesis may shed new light on feedback practices of coaches, performance staff and players. Exploration of these practices may lead to the development of future interventions aimed at enhancing the frequency of feedback delivered by practitioners.

## **2.5. Feedback from Coaches**

Preparation for professional football is underpinned by coordination of a series of activities designed to elicit optimal performance and/or development. As has been previously discussed, this is an activity that is central to sports performance known as sports coaching. Sports coaching has

been described in several different ways, for example it has been described as a cycle that consists of planning, preparation, performance, observation, analysis and interpretation (Carling, 2007; Carling, Lawlor & Wells, 2018; Wright, 2015) (**Figure 2.2**). Other more complex “models” of coaching exist that attempt to provide an overview of the whole concept of coaching (Lyle, 2002), yet this process can be further simplified to incorporate three main elements including: planning; doing; reviewing. This approach to coaching has been proposed in a study examining perceptions of national football team coaches (Groom, Cushion & Nelson, 2011) and is used as a framework for coaching by the English Football Association (TheFA.COM, 2019). Additionally, a similar model of planning, delivering, and reflecting (abbreviated to P-D-R) has been proposed within the recent strength and conditioning literature (Till et al., 2019). The following section will use a combination of these models/frameworks as a starting point to understand the nature of the coaching process and how it is often implemented within professional football.

Success is determined based on the coaching context, for example performance environments are assessed by a series of “one off” performances, whereas development environments are more concerned with learning based outcomes. Regardless of the coaching context, coaching staff (including managers) are typically under pressure to produce results on the pitch or produce players for the first team. Therefore, they attempt to plan training and prepare for competitive games accordingly in order to meet these developmental and performance objectives (Carling, Lawlor & Wells, 2018; Lyle, 2002; Relvas et al., 2010; Williams & Hodges, 2005). The structure and

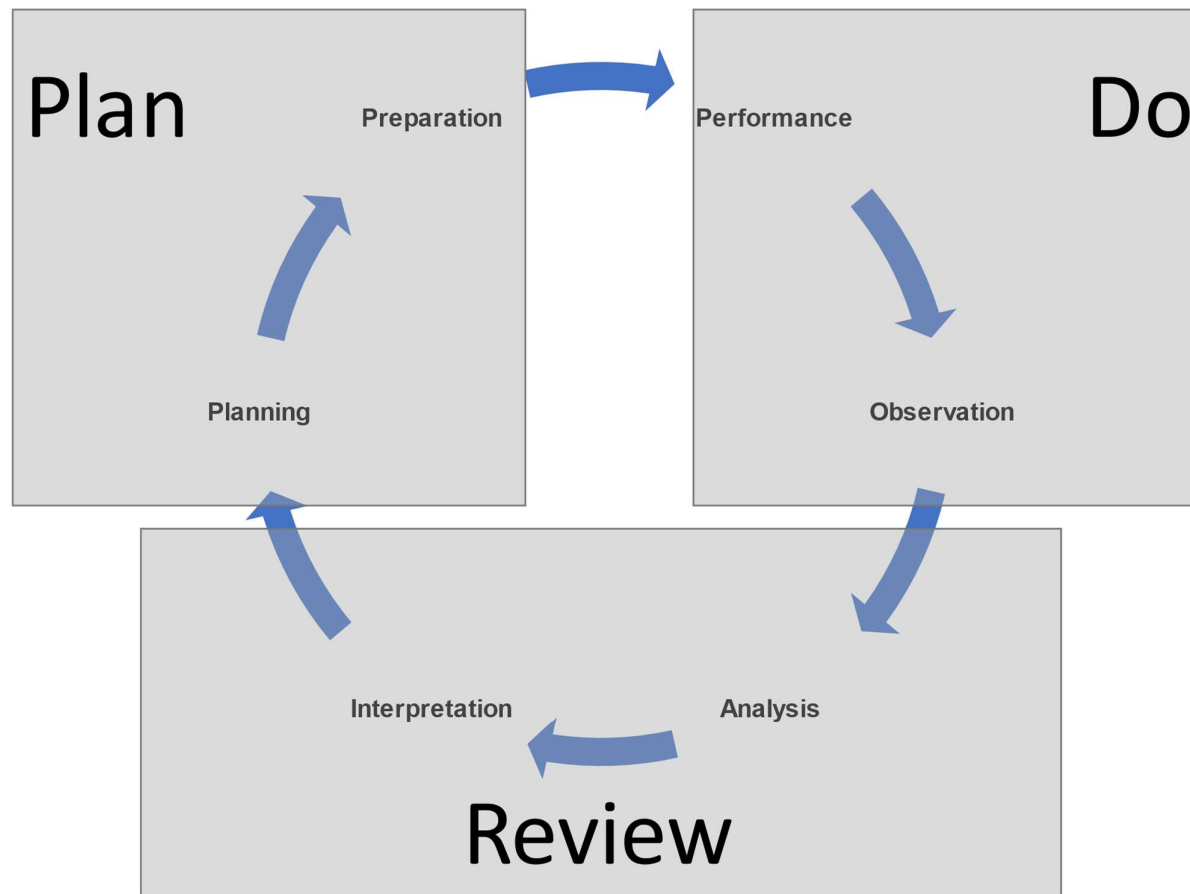
coordination of training is usually underpinned by a coaches' philosophy, vision or mental model of what professional or optimal performance looks like (Jones, Armour & Potrac, 2003; Richards, Collins & Mascarenhas, 2012). Coaches at all levels tend to have a style of play which they attempt to instil into their teams and the individuals within them. This philosophy centres around expectations of team member roles within specific patterns of play (Richards et al., 2012; Standifer & Bluedorn, 2006). A clearly articulated strategy and game plan serves as a basis upon which coaches can analyse performance and deliver feedback within training and competitive games and over the course of a season (Wright, Atkins & Jones, 2012). Each coaches' philosophy is usually shaped by a number of factors including the background, values, beliefs, and prior knowledge of the coach (Stodter & Cushion, 2017). However, the way coaches go about achieving their goals is complex and multifaceted and involves a multitude of constantly interacting social, human, and environmental factors (Bowes & Jones, 2006; Jones et al., 2003). Coaches have been shown to place a high value on the importance of tools (i.e., performance analysis) to analyse their key performance indicators (KPIs) which are driven by their coaching philosophies (Wright, Atkins & Jones, 2012) thus highlighting the importance of constantly reviewing matches and training and providing feedback to key stakeholders. KPIs may therefore be indicative of what is important to a coach and to their strategy or playing philosophy, which they perceive to be critical to success. However, coaches' perceptions of feedback are limited within the literature and a better understanding of what they think feedback is and how they use it in practice is warranted.



In a study quantifying the demands of different training and game schedules in an English Premier League team, it has been shown that the manager tends to dictate the planning and periodization of training, as two different managers within the same club operated with differing weekly schedules (Anderson et al., 2016). Additionally, a recent study using an online survey to assess who was responsible for planning training and assess coach and practitioner perceptions of load monitoring, showed that coaches were responsible for the planning and delivery of training (Weston, 2018). Hence, it is important to understand how coaches use feedback from performance staff to influence their decision-making and whether this impacts upon the feedback they subsequently deliver to players. The implementation of a coaches' philosophy and values may be reflected within their coaching behaviours (Cushion, Ford & Williams, 2012). A number of studies have investigated coach behaviour using tools such as the Arizona State University Observation Instrument and the Coach Analysis Intervention System, which give an insight into how coaches tend to go about coaching their players (Cushion & Jones, 2001; Ford, Yates & Williams, 2010; Partington & Cushion, 2013). Interestingly however, is the fact that there appears to be an epistemological gap between understanding and practice, reflected in the fact that coaches display low self-awareness of their behaviours whilst coaching (Partington & Cushion, 2013). An enhanced understanding of coaches' perceptions of performance related feedback may be useful for informing future strategies to improve this area of practice and reduce the gap that exists between knowledge and practice.

### **2.5.1. Coaching Sessions**

Coaching involves the delivery of a series of activities and interventions designed to improve competition performance (Lyle, 2002). Feedback is one of the main interventions delivered by coaches to achieve this. A common research approach involves the observation of coaches in training



**Figure 2.2.** Schematic of the Coaching Process (adapted from Carling et al., 2018).

environments, with various behaviours categorised and quantified to provide a detailed breakdown of coaching practice (Ford et al., 2010). Observational studies of the microstructure of coaching practice have shown that coaches deliver high quantities of feedback to players to develop the skills necessary for successful sporting performance (Cushion & Jones, 2001; Cushion, Ford & Williams, 2012; Ford et al., 2010; Partington & Cushion, 2013; Williams & Reilly, 2000). It seems that this approach is frequently adopted and has been observed regardless of age or competition level (Cushion & Jones, 2001; Ford et al., 2010). For example, in a study observing the practice behaviours of eight professional youth football coaches, the largest single category of behaviour recorded was concurrent instruction; ~30% behaviours. All forms of instruction (i.e., pre, concurrent and post) made up 56%. Additionally, Ford et al. (2010) demonstrated that 30% of behaviours exhibited by professional coaches were instructions. Partington & Cushion (2013) employed a mixed methods approach (i.e., observations and interviews) with a similar cohort of professional youth football coaches within Premier League Centres of Excellence (now known as football academies). They supported the findings of both Cushion & Jones (2001) and Ford et al. (2010) by demonstrating that the predominant coaching behaviours observed were instruction (43%) followed by feedback (11%) and praise (10%). These behaviours contrasted with their desire to develop decision makers on the pitch and being facilitators of knowledge creation. Additionally, within subsequent interviews it became evident that coaches used high levels of prescriptive instruction and displayed low self-awareness of their behaviours. As such it seems that there may be an epistemological gap between understanding and practice, with intention not

matched by knowledge and action. Despite the provision of high proportions of verbal forms of feedback evident in this work, a more hands off approach and less prescriptive style has been recommended (Cushion et al., 2012). Though the provision of verbal feedback by coaches to players during training sessions is clear, the provision of other forms of feedback such as written and visual at other times are less known. Additionally, there is a lack of research examining how other stakeholders such as performance staff deliver feedback to players to enhance other aspects of performance (i.e., physical).

### **2.5.2. Video Feedback**

The use of video feedback within the performance analysis process has become a widely adopted tool used by coaches to aid learning and critically reflect on training and match performances (Groom et al., 2011; Middlemas & Harwood, 2018; Nelson et al., 2014; Wright et al., 2012). The use of video feedback to assist in the provision of augmented feedback is not a new phenomenon and has been reported in the literature for some time now (Kernodle & Carlton, 1992; Rothstein & Arnold, 1976). Whilst not providing direct verbal feedback, video feedback is seen as a form of augmented feedback and used by coaches after training and matches to provide supplementary information to performers. In addition, coaches also use video feedback as a method to change behaviour, facilitate learning and increase the motivation and future performances of their players (Groom et al., 2011; Wright et al., 2012). This has been demonstrated by Wright et al. (2012) who used an online survey to show that 82-86% of professional coaches used video feedback with their teams or individual athletes to monitor their key performance indicators which are driven by their coaching philosophies.

Additionally, players' feedback to the coaches and to each other are central to the process of using video sessions to guide and aid learning as they begin to reflect on their own performance and the performance of their teammates (Groom & Cushion, 2005; Middlemas & Harwood, 2018; Wright et al., 2016). Thus, though most information regarding tactical and technical aspects of performance is delivered from coaches to players, there is a two-way element as players feedback to coaches and their peers. These feedback strategies highlight the seemingly limited to the interactions between coach and player to improve an individual's technical and tactical performance.

Any proposed intervention of video analysis requires careful consideration of presentation format, session design, delivery approach and targeted outcome (Groom *et al.*, 2011). Coaches deliver a large quantity of feedback to players through the provision of instructions and video feedback, however their understanding of the broader concept of feedback has not been studied extensively in the literature. Moreover, explorations of the feedback they deliver to players and receive from performance staff have received little attention. Thus, the present thesis aims to further explore what stakeholders such as coaches, performance staff and players understand by the concept of feedback, the delivery strategies they choose and current feedback practices regarding provision and reception of performance related feedback.

## **2.6. Feedback from Performance Staff**

To plan effectively, coaches and performance staff need to have an implicit knowledge of their players and how they respond to various training

interventions. With the myriad of technologies available to practitioners in recent times there is no shortage of ways to collect and analyse data on human performance (Phillips et al., 2013). The most common forms of review/analysis of training are the quantification of the physiological demand placed on players during training and matches to monitor workload and the assessments of physical fitness and adaptation to training. **Table 2.1** provides the most common ways in which performance staff assess and monitor players and provide feedback to assist in the overall coaching process. Performance staff such as sports scientists have a responsibility to manage the optimum stress levels that result in desired positive adaptations (i.e., maximising fitness and minimising fatigue) (Kiely, 2011; Selye, 1956). Current monitoring systems provide an estimation or evidence-based “best guess” of individual and group responses to training programmes, however, to date no system has accurately quantified the fitness-fatigue response to training (Bourdon et al., 2017).

Sports science and medicine departments often have KPI's which centre around maximising training and match availability of players and therefore employ several strategies to collect, store and analyse data and provide robust information in order to aid the planning and decision-making processes (Lacome, Simpson & Buchheit, 2018; Thornton et al., 2019; Ward, Windt & Kempton, 2019). Akenhead & Nassis (2016) carried out a survey of the training monitoring practices employed by 41 pro football clubs across a range of countries and continents. They showed that all teams used GPS and heart-rate monitors and 28 used a subjective marker of internal training load

(RPE) to monitor variables such as, but not limited to, accelerations, total distance covered, high intensity distance covered, heart rate exertion and



**Table 2.1.** Common methods used by performance staff to monitor players and provide feedback to coaches and players.

	Category	Method of Assessment & Purpose	Example Literature
Lab & Field Based Assessments	Aerobic	Lab tests such as VO2 Max testing and field tests such as Yo-Yo Intermittent Recovery test to assess individual capacity to repeat high intensity exercise	Svensson & Drust (2005) Bangsbo, laia & Krstrup (2008)
	Speed	Testing speed and acceleration over a range of distances i.e., 10, 20 and 30 metres is a discriminating factor in performance of football players	Strudwick, Reilly & Doran (2002)
	Strength & Power	Common practical evaluation is maximum load lifted in a single repetition (1RM). Additionally, tests of isokinetic and isometric strength are regularly used	Svensson & Drust (2005) Wisloff, Helgerud & Hoff (1998)
	Body Composition	Body composition is analysed using equipment such as dual-energy X-ray absorptiometry (DXA) scanners	Milsom et al. (2015)
Monitoring Training Load and Response to Training	GPS	Valid & reliable method for quantifying external load placed on players	Cummins et al. (2013) Gregson et al. (2018)
	Heart Rate & RPE	Extensively used as a means of quantifying internal load and metabolic response to a training stimulus	Jeukendrup & van Dieman (1998) Impellizzeri et al. (2004)
	Wellbeing	Athlete self-report measures are used within many team sports to assess the subjective wellbeing of the players and have been shown to be highly sensitive to changes in fatigue due to training and match load	Saw et al. (2015) Thorpe et al. (2016)

metabolic power. This data suggests the perceived importance of these measures by performance staff and recent studies have suggested that this training load data is used by practitioners and coaches in an attempt to enhance performance, improve fitness and reduce injury (Weston, 2018). To date, there has been a lack of studies assessing the impact of training load monitoring and subsequent feedback of data on practice within professional sport. However, one study carried out on professional female water sport athletes seems to suggest that monitoring strategies can be effective when athletes have trust in the process and feel that their data is acted upon to improve outcomes i.e. maximising fitness and managing fatigue (Neupert, Cotterill & Jobson, 2019). It is clear that numerous methods are employed to quantify the workload experienced by players in a variety of different training modalities. However, a lack of integration with the coaching team and wider organisation can result in localised analytics (Bourne, 2012; Davenport & Harris, 2007; Madeiros, 2014), where even the most insightful analysis and interpretation of data may exist in a vacuum if it is not shared within and between departments i.e., coaches, players and amongst various performance staff disciplines (Ward et al., 2019; Wright, 2015).

Performance staff such as sports scientists, strength & conditioning coaches and physiotherapists are responsible for the physical performance, development and rehabilitation of professional footballers (Carter, 2016; Duncan & Strudwick; Reilly & Williams, 2003). Attempts have been made to examine some of the ways in which feedback is being used specifically by practitioners in these fields and is informed by the theoretical assumptions described earlier, such as the type and timing of feedback (Argus et al., 2011;

Chalker et al., 2018; Randell et al., 2011; Weakley et al., 2018; Weakley et al., 2019). Argus et al. (2011) determined the effects of verbal feedback on weightlifting performance in professional rugby union players. They demonstrated that groups who received verbal feedback during their resistance training sessions observed increases in peak power and velocity compared with a group receiving no feedback. Despite the relatively small improvements in velocity (1.3%) and power (1.8%) they concluded that providing verbal feedback was beneficial for acute upper body power outputs of well-trained athletes. Furthermore, Weakley et al. (2019) examined the influence of instantaneous visual feedback of barbell velocity on resistance training outcomes in younger athletes (16-18 years). It was found that the provision of visual feedback of mean concentric barbell velocity, presented to subjects on an iPad, resulted in greater velocities than for a control group who received no visual feedback. It was determined through the use of questionnaires that increases in performance were mainly driven by increased motivation and competitiveness of the players receiving the visual feedback. This added further weight to the findings of Randell et al. (2011) who had previously demonstrated that immediate visual feedback provided to professional rugby union players resulted in a number of positive improvements in acute and longer term (6 weeks) physical performance. Furthermore, Weakley et al. (2018) also demonstrated that provision of verbal, visual kinematic feedback and verbal encouragement were all more effective than no feedback when semi-professional rugby union players completed a back squat. The studies indicate the beneficial effect of feedback on weightlifting and resistance training for athletes. However, there is a lack of

research examining the effects of forms of feedback such as this in professional football. Indeed, prior to investigating areas of practice such as provision of feedback in these specific scenarios, it is important to understand the current landscape of feedback practices from a broader perspective.

As can be seen from the studies mentioned above, most of the feedback literature within sports science and strength and conditioning has focused on the provision of feedback to augment weightlifting performance. However, the provision of feedback by medical practitioners in rehabilitation and injury prevention settings has also been discussed within the literature (Chalker et al., 2018; Cronin, Bressel & Finn, 2008). For example, visual feedback provided on a screen for subjects performing Nordic Hamstring Exercises resulted in increases in mean peak force production, with increases observed in weaker than stronger limb (Chalker et al., 2018). Whilst no resultant improvements were observed in muscle strength due to the provision of feedback in this study, the results point towards the potential utility of such approaches to feedback within practical settings. Studies of this nature in professional sport are currently limited. However, what is lacking even more is a thorough understanding of why these feedback practices are used by practitioners and their perceptions of feedback delivery in professional football.

The provision of feedback by sports scientists within professional football is primarily concerned with the monitoring of player training load and assessments of physical fitness and fatigue in order to guide practice and maximise player readiness for competition (Akenhead & Nassis, 2016; Buchheit, 2017; Gregson et al., 2018; Nosek et al., 2021; Weston, 2018). A number of editorial/review pieces have been offered within the literature in

addition to some critical commentaries of this area of practice. Buchheit (2017) describes three stages of effective use of sports science data to influence coaching practice; (1) collecting and understanding the data, (2) presenting the data in attractive and informative ways, and (3) delivering and communicating the data effectively. Whilst the first two stages were considered to be important to using data effectively to influence coaching practice, the third stage was described as the most important. The importance of developing trust and respect was highlighted which was dependent on the attitude, personality and manner of the sports scientists involved. Gregson et al. (2018) suggested four key aims of a successful training load and monitoring system as evaluating sessions and drills, tracking individual player load profiles, supporting rehab and RTP practices and monitoring player fitness. In a similar fashion to that of (Robertson et al., 2017), it was recommended that this is achieved through feedback in a variety of formats (i.e., tables, graphs, colour coded thresholds) however, no further information was provided in either of these papers as to how and when this is done or who engages with the differing styles of data visualization better.

Ward et al. (2019) provided a framework for the ways in which sports scientists can assist multiple departments within sporting organisations with their decision-making processes. Much akin to that of Buchheit (2017), a three-phase decision support model which incorporated (1) data collection and organisation, (2) analytical models to drive insights, and (3) the interface and communication of information, was described. Once again, communication was reported to be the critical step in enhancing decision making. Data visualization and performance dashboards were recommended under the

assumption that attractive formats make it accessible for coaches allowing interaction with the data. Furthermore, effective verbal communication was also described as critical for providing context within decision making processes. As such, a focus on inter-personal relationships between key stakeholders was recommended. A methodological outline for the delivery of simple and effective feedback for coaches and players was put forward by Thornton et al. (2019). A four-step process was presented with considerations for monitoring coming before analysing the data and determining meaningful change. The fourth step was data visualisation and communication. Indeed, the ability of the practitioner to effectively communicate key information to stakeholders to allow the necessary action to be taken was deemed to be essential in implementing a successful monitoring system. The studies mentioned above provide useful information for practitioners within professional sport who are monitoring athletes. However, assessments of when, where, or how often different types of feedback are given, and the effectiveness of different delivery styles are currently lacking.

Studies using online surveys have begun to provide some empirical evidence for the suggestions made within the papers mentioned above by describing the practices and perceptions of key stakeholders towards training load monitoring in professional football (Akenhead & Nassis, 2016; Nosek et al., 2021; Weston, 2018). For example, Weston (2018) investigated the perceptions of training load monitoring amongst coaches and practitioners. It was suggested that coaches and practitioners used training monitoring to enhance performance and that coaches felt that using monitoring to “reduce injury” was vitally important. Interestingly, coaches rated a combination of

coach and sports science perception of training load as one of the most important methods of monitoring load alongside GPS. This may have been as a result of the fact that the majority of coaches (80%) worked with players under 16 and GPS and other more sophisticated monitoring tools may not have been used in the monitoring of training load. A recent exploration of the perceptions of coaches, performance staff and players towards GPS feedback in professional football was the first to assess the perceptions of three groups of stakeholders in football (Nosek et al., 2021). The broad sample of participants ( $n = 176$ ) illustrated that all stakeholders regarded feedback of training data as at least *somewhat important* in guiding coaches' practice. This was the first study of its type to examine player perceptions of training load data, and it was shown that player's behaviour was influenced by the feedback of GPS data. However, poor communication and lack of a common goal between coaches and performance staff were perceived to be barriers to the effective use of feedback. Though an understanding of some feedback practices is becoming clearer, further research is needed to better understand the perceptions of those involved within the feedback process. Indeed, the use of qualitative methodologies have been recommended (Weston, 2018), though they have been rarely followed up in the current literature. The systematic study of the perceptions of all stakeholders involved is essential to the translation of research findings to practice (Eisenmann, 2017). A collaborative approach between a university and stakeholders involved in a professional football club has been recommended and will be adopted within the current thesis. Thus, employing the principles of a translational research

model and setting up a knowledge transfer group will assist in the translation of knowledge to practice (Eisenmann, 2017).

## **2.7. Feedback Received by Players**

The review of the literature that has been conducted has focused on the provision of feedback from coaches and performance staff. However, as **Figure 2.2** shows, the third stakeholder group involved within the feedback process are the players themselves. Players are the primary recipients of the feedback from coaches and performance staff in attempts to optimise their performance and development. However, their perceptions of all aspects of the feedback process are not well understood, including what they understand by feedback and their perception of its effectiveness to improving their performances and assisting their development. The majority of literature that has explored player's perceptions has focused on their perception of performance analysis and video feedback (Groom & Cushion, 2005; Middlemas & Harwood, 2018; Nelson et al., 2014; Wright et al., 2016). For example, Wright et al. (2016) identified player perceptions of performance analysis and how they responded to differing PA interventions. They perceived PA to be central to self-reflection and displayed preferences for delayed feedback and individual feedback with input from their coach. Whilst this study was useful for understanding player's perceptions of feedback, it was centred around a very specific aspect of the feedback process – video feedback. As has been evidenced throughout this review of the literature, video feedback is only one aspect of the multitude of ways that feedback is delivered to players in professional football. A recent study by Nosek et al. (2021) explored coach,



PS and players perceptions of training load feedback through GPS data. However, the quantitative nature of this study meant that whilst there was breadth in the findings, there was a lack of depth which could be achieved by adopting a qualitative research approach. The only study to date that has provided a qualitative exploration of athlete perceptions of another aspect of feedback, specifically training load monitoring feedback, was conducted in professional water sport athletes (Neupert et al., 2019). Consequently, explorations of player's perceptions of current practice and perceived utility of feedback strategies from a broader perspective in professional football are warranted, and the current thesis aims to further this line of scientific enquiry.

## **2.8. Overall Approach to the Research**

As mentioned above, research into the perceptions of coaches, performance staff and players towards practices such as training load monitoring have utilised surveys and quantitative data analysis (Akenhead & Nassis, 2016; McCall et al., 2014; Nosek et al., 2021; Weston, 2018). These particular studies utilised surveys to examine the views of coaches, performance staff and players (Nosek et al., 2021) across a range of topics including training monitoring and injury prevention strategies. However, this research, whilst informative, only provides quantitative analysis of survey data and is indicative of the positivist and reductionist approach associated with the natural sciences. For example, the majority of literature examining training monitoring and coach, medical staff or player perceptions have employed Likert scale responses resulting in statistical analysis (Ekstrand et al., 2018; Weston, 2018). Interestingly, research which has examined coach,

practitioner, and player perceptions of training load monitoring via online surveys, concluded that qualitative methodologies would provide a more detailed understanding of these concepts moving forward (Nosek et al., 2021; Weston, 2018). The current thesis will explore the broader aspects of performance related feedback and will aim to understand views and perceptions within the specific research question. An interpretative approach will be adopted to fully understand what the interaction of the stakeholders within their environment is and how these impacts and influences current practice. Indeed, recommendations have been made for sports and exercise science doctoral projects to use qualitative research to interact with the target audience and inform the research process (Harper & McCunn, 2017).

The use of mixed methods are more in line with a pragmatic research philosophy. Concurrent mixed methods may serve as a 'middle ground' for evaluating that of the impact from organisational interventions (Abildgaard et al. 2016). Mixed methods have been defined "as a method [which] focuses on collecting, investigating, and blending both quantitative and qualitative data in research designs. Its central premise is that the use of [both] approaches in combination provides a better understanding of research problems than either approach alone" (Creswell & Plano Clark, 2011, p.5). A useful, but rare example of this in action was a study carried out by Neupert et al. (2019) investigating professional female water sport athlete's perceptions of a training monitoring system. Questionnaires and interviews were conducted concurrently with the athletes indicating preferences for visual feedback supported by formal and informal discussions. The concurrent use of surveys and interviews within this study within a similar area of study informed the

methodological choices. However, this study specifically addressed athlete perceptions of training monitoring and feedback however, mixed methods and qualitative explorations of feedback on a broader level are required to understand the concept of feedback, especially in relation to professional football.

Triangulation of methods (mixed methods) and data (i.e., exploration of multiple stakeholder perceptions) will allow for a more comprehensive understanding of the way feedback is delivered within professional football. Qualitative approaches alone have been adopted in the literature relating to performance analysis and video feedback and have regularly studied coaches and players perceptions of this area (Groom & Cushion, 2005; Groom et al., 2011; Middlemas & Harwood, 2018). However, studies concurrently exploring coach, performance staff and player perceptions will allow for triangulation of perceptions between three stakeholder groups. As such, the present thesis will provide a novel methodological approach concurrently exploring the practices and perceptions of three groups of key stakeholders within professional football. Consequently, the findings of such an approach may be used to inform potential future research studies and practical interventions aimed at improving and integrating feedback practices between the three groups (**Figure 2.1**). The literature illustrates that an integrated approach to feedback has been suggested and performance staff may attempt to “speak the language” of coaches and players (di Salvo, 2018). It is anticipated that the qualitative data collection methods will extract the language used by stakeholders involved in the delivery and reception of performance related

feedback. Thus, providing novel data which may influence feedback practices employed by coaches, performance staff and players.

**CHAPTER 3 - PERFORMANCE RELATED  
FEEDBACK: AN EXPLORATION OF CURRENT  
STRATEGIES OF COACHES, PLAYERS AND  
PERFORMANCE STAFF IN ENGLISH  
PROFESSIONAL FOOTBALL**

### **3.1. Introduction**

For players to acquire the necessary skills required in order to attain expertise in professional football, they regularly engage in deliberate practice in their training sessions (Coughlan et al., 2013; Ericsson, 2008). This practice is usually delivered by coaches who provide players with information to improve their overall learning/development for future performance. One behaviour provided by coaches to facilitate their players learning is to provide them with feedback. Feedback is defined as information given about a person's performance of a task which is used as a basis for improvement i.e., to provide knowledge or enhance skills (Hattie & Timperley, 2007; Kluger & DeNisi, 1996). Feedback is commonly used by elite football coaches and has been demonstrated through systematic observations of the practices and behaviours exhibited by coaches during pitch-based training sessions (Cushion & Jones, 2001; Ford, Yates & Williams, 2010; Partington & Cushion, 2013). For example, Ford et al. (2010) showed that ~30% of youth football coaches behaviours during training sessions were instruction and feedback. It would appear therefore, that coaches use forms of feedback during training sessions with the aim of improving the performance, learning and decision-making capabilities of their players.

Through advancements in technology, the use of video feedback and performance analysis in sport has increased in popularity (Groom & Cushion, 2005; Hughes & Franks, 2007; Middlemass & Harwood, 2018; Wright et al., 2012; Wright et al., 2016). Indeed, it has been shown by Wright et al. (2012) that 82-86% of coaches across a range of sports used video feedback with their teams or individual athletes. The coaches in this study were working in

professional sport, 60% were qualified to at least UEFA 'A' level (or equivalent) and 66% had over 11 years of experience. It can therefore be considered that the widespread use of video feedback within professional sport provides a platform for coaches to analyse previous performances, retrospectively reflect, deliver debriefs and plan modifications for future training sessions and match preparations (Groom, Cushion & Nelson, 2011; Pain & Harwood, 2004). For example, Groom et al., (2011) examined the perceptions of youth level football coaches towards video-based performance analysis with players representing their country at age group level. They demonstrated that video feedback was a complex process and involved numerous considerations to be made regarding contextual factors, delivery approaches and targeted outcomes. In addition to coach delivery of video feedback in football, recent studies have focused on the perceptions of players, and demonstrated a range of findings including a preference for targeted and individualised feedback, negative emotional responses, peer-to-peer feedback, and utilisation of feedback for critical self-reflection (Middlemass & Harwood, 2018; Wright et al., 2016). The feedback strategies highlighted above are seemingly limited to the interactions between coaches and players to improve individual/team technical and tactical performances. As stated previously, systematic observations have focused on the behaviours of coaches during training sessions and investigations into video feedback have begun to uncover the perceptions of coaches and players towards this area of practice. However, little is currently known about how coaches, players and performance staff deliver and receive performance related feedback. Increased knowledge of the perceptions of all of these key stakeholders may help to inform future decision making and practices of

coaches and practitioners as the key factors involved in feedback delivery are identified.

To support other aspects of player preparation such as improving the physical performance of players, reducing the risk of injury and maximising player availability, coaches and players rely on feedback from performance staff (i.e., sports science, medical, and psychological departments) (Duncan & Strudwick, 2016; Relvas et al., 2010). These staff/departments attempt to support the players, coaches, and each other in numerous ways, one of which is by feeding back information to each other to enhance future performances by potentially impacting on important decisions such as training prescription, player selection and return to play (Gregson, Hawkins & Thorpe, 2018; Nosek et al., 2021). Performance staff such as sports scientists are typically responsible for the monitoring and feedback of training load data (i.e., markers of internal and external load) through the use of GPS, heart rate monitoring systems and other associated technologies (Akenhead & Nassis, 2016; Bourdon et al., 2017; Impellizzeri et al., 2005; Lacombe, Simpson & Buchheit, 2018a; Nosek et al., 2021; Weston, 2018). For example, Akenhead & Nassis (2016) showed in a survey of forty-one professional football clubs, that all teams used GPS and heart-rate monitors during training sessions. As a result of this initial investigation into practitioners' use of training load data, Weston (2018) demonstrated that coaches and practitioners use monitoring tools such as GPS, heart rates and session RPE to enhance performance, improve fitness and reduce the risk of injury. Additionally, technological advances may provide opportunities for sports scientists to provide real-time feedback to coaches and players which may directly influence the coaching process



(Cummins & Orr, 2013; Weakley et al., 2019). The introduction of feedback during a session (continuous or concurrent) as opposed to post session (terminal) illustrates the consideration given to elements such as the timing of feedback within current practices utilised by performance staff in professional football (Magill & Anderson, 2010). Despite the widespread collection of training load data, relatively little is currently known about how this information is fed back to coaches, players and between performance staff departments and it's role within the decision-making processes. There is a growing body of evidence from applied practitioners that supports the notion that clear visualisation of training load data provided to coaches engages them with the monitoring process (Buchheit, 2017; Lacome, Simpson & Buchheit, 2018b). However, a more detailed understanding of how feedback is currently delivered in practice and an exploration of the perceptions of key stakeholders involved within this process on a daily basis is warranted.

Literature from the skill acquisition domain has provided insights into some of the characteristics (i.e., timing, type, and frequency) of feedback that are more optimal for attaining the necessary motor/perceptual-cognitive skills for expert performance (Salmoni, Schmidt & Walter, 1984; Sherwood, 1988; Swinnen et al., 1990). For example, Swinnen et al. (1990) demonstrated that delaying feedback of information regarding knowledge of results resulted in beneficial effects on learning and retention of novel tasks such as limb positioning and timing in a controlled laboratory setting. Despite this being a simple skills compared to the many complex skills executed in football, it highlights the importance and consideration that should be given to elements such as timing in the feedback process. As has been previously mentioned,

studies of video feedback and performance analysis demonstrate there is emerging evidence to support the notion that performance related feedback is a complex process which requires study with qualitative and mixed methods methodologies (Groom & Cushion, 2005; Groom, Cushion & Nelson, 2011; Nelson et al., 2014; Wright et al., 2016). For example, a study by Wright et al. (2016) adopting a consecutive mixed methods approach (i.e., surveys followed up with interviews) have revealed that youth football players display a variety of preferences for receiving feedback relating to elements such as type (e.g., verbal, kinaesthetic and visual feedback), timing (e.g., 1-2 days post game) and volume/frequency (e.g., 30–40-min meetings), to self-reflect and improve their understanding of the game. Additionally, it has recently been reported through the implementation of online surveys to key stakeholders (coaches, players, and performance staff;  $n = 176$ ) that the content of feedback i.e., GPS training load data has an influence on the practices and behaviours of both coaches and players (Nosek et al., 2021). Such methodological approaches are seemingly rare in investigations of performance related feedback but may provide valuable insights into current practices and perceptions of coaches, players and performance staff relating to feedback in an applied setting.

Until recently there has been a lack of scientific investigation that has concomitantly studied the delivery of feedback by three groups of key stakeholders (players, coaches, and performance staff) (Nosek et al., 2021). An approach such as this will be pivotal to triangulating (between these three groups) the perceptions towards how feedback is delivered in professional football. Considering the players are the recipients of feedback from both

coaches and performance staff, there is very little research which has attempted to understand their perceptions of the feedback they receive alongside the staff who are predominantly delivering the feedback. Efforts up to this point have either focused solely on coaches perceptions (Groom et al., 2011; Wright et al., 2012) or players perceptions (Francis & Jones, 2014; Groom & Cushion, 2005) of performance analysis. For example, a recent study has examined all three stakeholder groups' perceptions, specifically relating to GPS monitoring and feedback of training load data. It was reported that all stakeholders rated training load data as at least "*somewhat important*" in guiding coaching practice (Nosek et al., 2021). This research demonstrates that feedback is guiding the practice of key stakeholders in professional football, however it has been limited to specific elements of practice such as video feedback and training load data, rather than a broader approach to feedback. Additionally, qualitative methods have been recommended within the literature but not followed up (Weston, 2018). Therefore, the aim of this study is to examine current feedback delivery practices of key stakeholders (i.e., players, coaches, and performance staff) in professional football. To achieve this, the views of the current key stakeholders within the professional football environment will be assessed in multiple ways (i.e., online surveys and semi-structured interviews). This research is driven by the need to provide breadth and depth and allow a more detailed understanding of current practice relating to the feedback of performance related information.

### **3.2. Overall Research Approach**

The cross-sectional design of the survey has built upon the methodology adopted by several recent studies examining different aspects of current practice within elite football (Akenhead & Nassis, 2016; McCall et al., 2014; Weston, 2018). These studies utilised surveys to examine the views of coaches, sports scientists, and medical staff across a range of topics including training monitoring and injury prevention strategies. *The overall research approach which informed the methodological choices laid out in this chapter is explained in more detail in **Chapter 2.8**.* Further, the methodology employed for this study was considered appropriate following recent recommendations that surveys should be used *alongside* semi-structured interviews to elicit the views and opinions of players, coaches, and performance analysts with regards to video feedback/performance analysis in elite sport (Francis & Jones, 2014; Wright et al., 2016). Hence, a consecutive two-phase approach was adopted with two independent stages. The initial data gathered within the surveys (phase 1) provided direction when considering questions and areas to be explored within the subsequent interviews (phase 2). It was anticipated that the qualitative approach to the research (especially in phase 2) would help to provide context and deal with the complexities and nuances of findings within the quantitative element of the study (McCunn, Gibson & Harper, 2018).

### **3.3. Phase 1 Methods – Online Survey**

#### **3.3.1. Participants**

Potential participants were initially contacted by a social media post (Twitter and LinkedIn), which contained information relating to the survey and

a web link directing them to the survey online. To increase the visibility of the survey, 'snowball sampling' (Morgan, 2008) was used, whereby the participants were encouraged to circulate and promote the poster/infographic through their personal networks and directly to peers. The survey was available to participants between 1st July and 31st December 2018, with regular social media promotions, through the @LJMUFootball Twitter account:

- Twitter Post on 1<sup>st</sup> August 2018 (7295 impressions & 508 engagements).
- Twitter Post on 13<sup>th</sup> July 2018 (47, 437 impressions & 887 engagements).

Potential participants were purposely targeted to represent three different subgroups within professional football (i.e., clubs within the English Premier League and English Football Leagues/tiered academy structure). In order to meet the inclusion criteria, players were required to be aged over 16 and representing the professional development phase (aged 16–23 years) or first (i.e., senior) team. Coaches and performance staff were required to be working with any age group from foundation phase (aged 9–11 years), youth development phase (aged 12–16 years), professional development phase (16–23 years), and first team. The categories/age phases listed above are outlined by the Premier League's Elite Player Performance Plan (Premier League, 2011). To ensure that responses were collected from targeted populations, the inclusion criteria were included in the promotional poster and the first page of the survey, no information regarding participant age, gender or club was requested thus they remained confidential. All participants could view and

download a Participant Information Sheet on the first page of the survey and implied consent was given on submission. The procedure was in line with the Declaration of Helsinki and approved by the Liverpool John Moores University Research Ethics Committee (18/SPS/029).

### **3.3.2. Survey Design**

Three separate surveys were created, with one for each group of participants. Surveys took an average of three to five minutes to complete. Surveys began with a glossary of terms which classified feedback as “*Feedback is information on performance that is used to improve performance and/or development*”. This was followed by a number of multiple-choice questions examining participant demographics and a number of key topics relating to feedback in professional football including:

- **Frequency** of providing and/or receiving feedback provided an understanding of how often key stakeholders exchange different **types** of information between each group that improve the performance of their organisation.
- **Timing** of providing and/or receiving feedback provided an understating at what key time-points around practice and competition do key stakeholders exchange important information.
- **Location** of providing and/or receiving feedback provided an understating of where (e.g., pinned notice board) and how (e.g., meetings) important information was presented and/or exchanged between key stakeholders.

Each theme was contextually set to explore verbal, written and visual feedback. Some questions were specific to each group of participants while some questions were standardised to allow comparison across the groups. Questions included multiple-choice responses, and provided an opportunity for respondents to reply by way of free text comment if their responses were not presented, as well as yes/no only responses. Questions were developed by the lead researcher and were based on experience (**Chapter 1.1**) and relevant literature (Wright, Atkins, & Jones, 2012; Akenhead & Nassis, 2016; Stoszkowski & Collins, 2016; Weston, 2018). The survey was reviewed for content validity (Stoszkowski & Collins, 2016) via four rounds of group discussions with all members of the research team. Two rounds of pilot testing were performed through discussion with two coaches (one lead PDP coach and one assistant coach), two players (one first team and one U-23s development team) and two performance staff (one first team sport scientist and one U-18s development team sport scientist) working in an English Championship Football League club (participants in pilot testing were not included in the final data collection). This resulted in the following modifications of the wording of several questions/responses to enhance readability and understanding (coach = 6; performance staff = 6; player = 7):

- The clarity and coherence of the survey was improved through changes to the wording of some of the questions. For example, computer screen was changed to “on a computer screen i.e., laptop put in front of you”.
- Repetition was decreased through removal of 2 introduction slides, to improve readability.

- Answer options to the question “How often do you receive...information from...” Were changed from “every day/every week” to “every day/session and every week/game”. This was due to the fact that these time frames were more representative of the structure of the training week.
- Changes were made to the capitalisation and font type (i.e., bold) of certain words within questions. For example, “How often do you receive the following types of **VISUAL** information from your...”
- In the players survey, the section regarding feedback from coaches was changed from “coaches” to “football coaches”, so it was clear that all questions in this section were referring to only football coaches and not anyone else who could be considered coaching staff.
- The question relating to visual feedback had an option of “demonstrations”, this was changed to “demonstrations i.e., technical information”, as it was considered vague.
- It was made clear to all participants in the introduction that the survey would take 10 minutes to complete rather than 15 minutes as was initially thought.

The changes were then presented back and approved by the same stakeholders. The surveys were uploaded to the online survey platform Survey Monkey® (Survey-Monkey, California, USA). The final surveys consisted of 19 items for coaches and performance staff (11 multiple choice and 8 yes/no), and 17 items for players (9 multiple choice and 8 yes/no).



### **3.3.3. Data Analysis**

Responses from Survey Monkey® were exported into Microsoft Excel and subsequently SPSS (version 25, IBM, New York, USA) for further analysis. For categorical and multiple-choice questions, frequency analysis was conducted with the percentage of respondents reported for each response. Consistent with similar studies (Nosek et al., 2021; Weston, 2018), to assess for between-group differences in these responses, a proportion ratio was used (Hopkins, 2010). Qualitative inferences trivial, small, moderate, large, very large and extremely large were represented by the ratios 1.00, 1.11, 1.43, 2.0, 3.3 and 10 respectively, with their inverses represented by ratios of 0.9, 0.7, 0.5, 0.3 and 0.1 (Hopkins, 2010).

## **3.4. Phase 1 Results**

### **3.4.1. Participant Demographics**

Overall, 139 respondents completed the survey (coaches:  $n = 34$ ; performance staff:  $n = 66$ ; players:  $n = 39$ , first team = 8, U23s = 16, U18s = 15). Within this sample of participants coaching staff consisted of coaches (59%) assistant coaches (24%) heads of coaching (12%) and academy managers (3%). Performance staff identified their main roles as: sports scientists (38%), strength & conditioning coaches (9%), physiotherapists (6%), performance analysts (26%), nutritionists (6%), psychologists (3%) and head of sports science & medicine (6%) and head of physical performance (6%). In terms of experience, the most popular response by coaches was 3-6 years (24%) and 6-9 years (24%), whereas for performance staff it was 1-3 years (38%) (**Table 3.1**). All coaches and almost all players (98%) represented clubs

in either the Premier League or the Championship whereas performance staff were slightly more evenly distributed across the football league levels. However, it should be noted that only one respondent was a Premier League player, representing 3% of players overall. First team was much higher represented by players (21%) and performance staff (39%) than coaches (5%), resulting in very large and extremely large differences, respectively. Most performance staff (75%) worked with players older than 16 i.e., professional development phase or first team, whereas the distribution of coaches throughout the other academy phases, and therefore working with younger players, was more even. For respondents working at academy level, most respondents (>50%) across all three groups represented category 1 clubs, however there were large differences between coaches (37%) and performance staff (16%) at category 2 level. Additionally, there was some representation of coaches (10%) and performance staff (16%) across Category 3 & 4 levels, whereas there was none for players, representing extremely large differences (**Table 3.1**).

### **3.4.2. Type & Frequency**

Most performance staff (80%) and coaches (71%) reported that verbal feedback was delivered through 'daily' informal chats. Additionally, verbal feedback was delivered through formal meetings on a daily and weekly basis (performance staff, 75%; coaches, 72%). Moderate differences existed between coaches and performance staff (1.51) for delivering and receiving visual feedback via 'daily graph-based data', with 42% of performance staff reporting this compared to 28% of coaches. Most written feedback was

delivered in a combination of daily and weekly forms with 'reports on a computer screen' (performance staff, 63%; coaches, 62%), and 'E-mail/text' (performance staff, 72%; coaches, 61%) highly prevalent (**Table 3.2**). Most verbal feedback from performance staff to players was delivered through daily and weekly informal chats (performance staff, 93%; players, 90%) and instructions during training (performance staff, 71%; players, 90%). With

**Table 3.1.** Proportion of league clubs worked with, player age categories, academy status and level of experience represented by the participants. Also included are proportion ratios (C:PS, C:P, PS:P) and the qualitative inferences.

	Coaches % (no.)	Performance Staff % (no.)	Players % (no.)	Proportion Ratio	Qualitative Inference
<sup>a</sup> Which league does your senior team/club currently play in? <sup>a</sup> 77 Total responses, with 3 by coaches, 35 by performance staff and 39 by players. *C & PS only answered if they worked with First Team.					
Premier League	33 (1)	37 (13)	3 (1)	0.9; 13; 14.5	Small; Extremely Large; Extremely Large
Championship	67 (2)	37 (13)	95 (37)	1.8; 0.7; 0.4	Moderate; Small; Large
League 1	0 (0)	9 (3)	0 (0)	0.0; 0.0; 0.0	Extremely Large; Extremely Large; Extremely Large
League 2	0 (0)	17 (6)	3 (1)	0.0; 0.0; 6.7	Extremely Large; Extremely Large; Extremely Large
<sup>b</sup> Which team/age group do you currently mainly work with/play for? Please indicate all that apply** <sup>b</sup> 172 Total responses, with 44 by coaches, 89 by performance staff and 39 by players. **Professional development phase was further subdivided into Under 23s and Under 18s for players.					
First Team	5 (2)	39 (35)	21 (8)	0.1; 0.2; 1.9	Extremely Large; Very Large; Moderate
Professional Development Phase	41 (18)	36 (32)	79 (31)	1.1; 0.5; 0.5	Small; Moderate; Moderate
Youth Development Phase	36 (16)	17 (15)	0 (0)	2.2; N/A; N/A	Large; N/A; N/A
Foundation Phase	16 (7)	8 (7)	0 (0)	2; N/A; N/A	Large; N/A; N/A
<sup>c</sup> What is your club's current academy status?*** <sup>c</sup> 91 Total responses, with 30 by coaches, 31 by performance staff and 30 by players. ***Participants didn't respond if they selected that they worked with First Team on previous question.					
Category 1	53 (16)	68 (21)	77 (23)	0.8; 0.7; 0.9	Small; Small; Small
Category 2	37 (11)	16 (5)	23 (7)	2.3; 1.6; 0.7	Large; Moderate; Small
Category 3	7 (2)	13 (4)	0 (0)	0.5; 0.0; 0.0	Moderate; Extremely Large; Extremely Large
Category 4	3 (1)	3 (1)	0 (0)	1.0; 0.0; 0.0	Trivial; Extremely Large; Extremely Large
How many years' experience do you have in your current role?					
0-1 Year	15 (5)	6 (4)		2.4	Large
1-3 Years	12 (4)	38 (25)		0.3	Very Large
3-6 Years	24 (8)	21 (14)		1.1	Small
6-9 Years	24 (8)	20 (13)		1.2	Small
10-12 Years	9 (3)	9 (6)		1.0	Trivial
12+ Years	18 (6)	6 (4)		2.9	Large

**Table 3.2.** Proportion of performance staff and coach's responses to the frequency of delivery and reception of verbal, visual, and written forms of feedback along with ratio of proportion and qualitative inference for the ratio.

		Coaches % (no.)	Perfor Staff % (no.)	Proportion Ratio	Qualitative Inference
<b><i>How often do you give/receive the following types of VERBAL feedback to/from your coach/performance staff?</i></b>					
Informal Chats or Conversations	Never	3 (1)	2 (1)	0.52	Moderate
	Every Day/Session	71 (24)	80 (53)	1.14	Small
	Every Game/Week	21 (7)	9 (6)	0.44	Large
	Every 1-2 Months	3 (1)	9 (6)	3.09	Large
	Every 3-6 Months	3 (1)	0 (0)	0	Extremely Large
Formal Meetings	Never	12 (4)	15 (10)	1.25	Small
	Every Day/Session	27 (9)	35 (23)	1.28	Small
	Every Game/Week	45 (15)	39 (26)	0.87	Small
	Every 1-2 Months	9 (3)	9 (6)	1.00	Trivial
	Every 3-6 Months	6 (2)	2 (1)	0.25	Very Large
<b><i>How often do you give/receive the following types of VISUAL feedback to/from your coach/performance staff?</i></b>					
Video	Never	28 (9)	36 (24)	1.29	Small
	Every Day/Session	19 (6)	18 (12)	0.97	Trivial
	Every Game/Week	25 (8)	26 (17)	1.03	Trivial
	Every 1-2 Months	16 (5)	9 (6)	0.58	Moderate
	Every 3-6 Months	13 (4)	11 (7)	0.85	Small
Graph Based Data	Never	13 (4)	11 (7)	0.85	Small
	Every Day/Session	28 (9)	42 (28)	1.51	Moderate
	Every Game/Week	25 (8)	24 (16)	0.97	Trivial
	Every 1-2 Months	25 (8)	20 (13)	0.79	Small
	Every 3-6 Months	9 (3)	3 (2)	0.32	Large
<b><i>How often do you give/receive the following types of WRITTEN feedback to/from your coach/performance staff?</i></b>					
Reports on a Computer Screen	Never	15 (5)	17 (11)	1.13	Small
	Every Day/Session	21 (7)	30 (20)	1.47	Moderate
	Every Game/Week	41 (14)	33 (22)	0.81	Small
	Every 1-2 Months	12 (4)	18 (12)	1.55	Moderate
	Every 3-6 Months	12 (4)	2 (1)	0.13	Very Large
Email/Text/WhatsApp	Never	9 (3)	15 (10)	1.69	Moderate
	Every Day/Session	24 (8)	34 (22)	1.40	Small
	Every Game/Week	36 (12)	38 (25)	1.06	Trivial
	Every 1-2 Months	18 (6)	6 (4)	0.34	Large

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Every 3-6 Months	12 (4)	6 (4)	0.51	Moderate
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**Table 3.3.** Proportion of performance staff and player's responses to the frequency of delivery and reception of verbal, visual, and written forms of feedback along with ratio of proportion and qualitative inference for the ratio.

		Perf Staff % (no.)	Players % (no.)	Proportion Ratio	Qualitative Inference
<b><i>How often do you give/receive the following types of VERBAL feedback to/from your players/performance staff?</i></b>					
Informal Chats or Conversations	Never	5 (3)	3 (1)	1.77	Moderate
	Every Day/Session	79 (52)	59 (23)	1.34	Small
	Every Game/Week	14 (9)	31 (12)	0.44	Large
	Every 1-2 Months	2 (1)	8 (3)	0.20	Very Large
	Every 3-6 Months	2 (1)	0 (0)	0	Extremely Large
Instructions During Training/Match	Never	26 (17)	8 (3)	3.35	Very Large
	Every Day/Session	53 (35)	64 (25)	0.83	Small
	Every Game/Week	18 (12)	26 (10)	0.71	Small
	Every 1-2 Months	3 (2)	3 (1)	1.18	Small
	Every 3-6 Months	0 (0)	0 (0)	N/A	N/A
<b><i>How often do you give/receive the following types of VISUAL feedback to/from your players/performance staff?</i></b>					
Video	Never	26 (17)	21 (8)	1.26	Small
	Every Day/Session	14 (9)	15 (6)	0.89	Small
	Every Game/Week	32 (21)	51 (20)	0.62	Moderate
	Every 1-2 Months	21 (14)	10 (4)	2.07	Large
	Every 3-6 Months	8 (5)	3 (1)	2.95	Large
Graph Based Data	Never	18 (12)	3 (1)	7.09	Very Large
	Every Day/Session	18 (12)	21 (8)	0.89	Small
	Every Game/Week	41 (27)	54 (21)	0.76	Small
	Every 1-2 Months	20 (13)	13 (5)	1.54	Moderate
	Every 3-6 Months	3 (2)	10 (4)	0.30	Large
<b><i>How often do you give/receive the following types of WRITTEN feedback to/from your players/performance staff?</i></b>					
Reports on a Computer Screen	Never	17 (11)	13 (5)	1.30	Small
	Every Day/Session	18 (12)	15 (6)	1.18	Small
	Every Game/Week	50 (33)	59 (23)	0.85	Small
	Every 1-2 Months	15 (10)	13 (5)	1.18	Small
	Every 3-6 Months	0 (0)	0 (0)	N/A	N/A
Email/Text/WhatsApp	Never	33 (22)	62 (24)	0.54	Moderate
	Every Day/Session	12 (8)	8 (3)	1.58	Moderate
	Every Game/Week	32 (21)	21 (8)	1.55	Moderate
	Every 1-2 Months	23 (15)	5 (2)	4.43	Very Large

Every 3-6 Months	0 (0)	5 (2)	0.00	Extremely Large
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regards to visual feedback, 51% of players reported receiving video feedback from performance staff on a 'weekly' basis, however there were small to large differences between groups for the frequency of video feedback due to the varied responses by performance staff. The majority of written feedback was delivered daily and weekly through paper-based reports (performance staff, 51%; players, 72%) and reports shown on a computer screen (performance staff, 68%; players, 74%) (**Table 3.3**). Most verbal feedback was delivered by coaches to players through daily informal chats (coaches, 79%; players, 72%) and daily instructions during training/match (coaches, 91%; players, 92%). Visual feedback was predominantly delivered through daily demonstrations (coaches, 79%; players, 67%), weekly video feedback (coaches, 74%; players, 77%) and weekly use of a tactics board (coaches, 56%; players, 77%). Coach and player responses for written feedback were much more evenly distributed across frequencies and the highest proportion of responses for written feedback were reports shown on a computer screen by coaches to players on a weekly basis (coaches, 56%; players, 51%) (**Table 3.4**).

#### **3.4.3. Timing**

Most feedback between performance staff and coaches is delivered after training and matches (>85% for both groups), additionally, 68% of performance staff and 74% of coaches reported delivering/receiving feedback before training. However, only ~50% reported delivering/receiving feedback during training and matches (**Figure 3.1a**). Feedback from performance staff

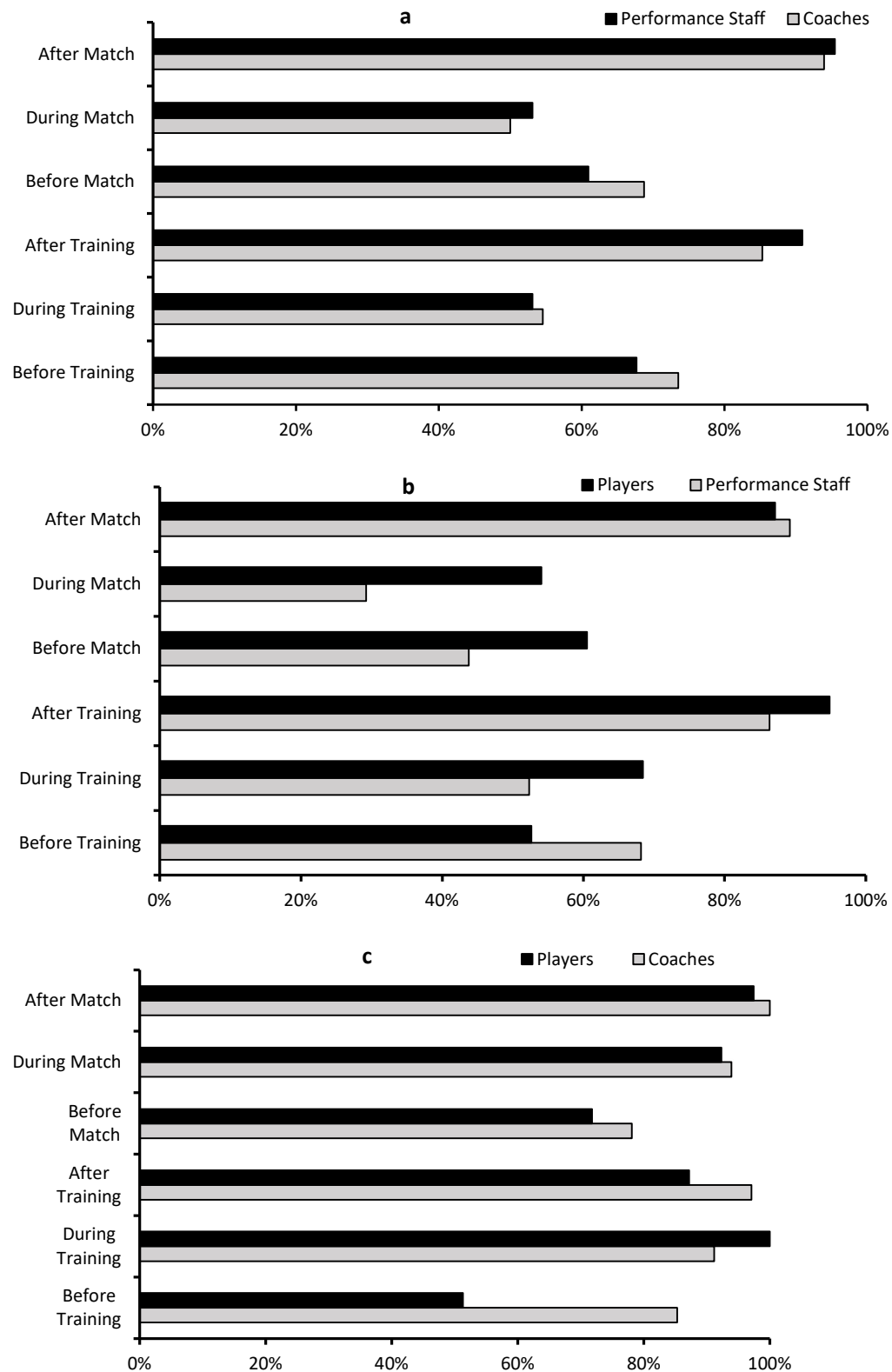
to players was delivered predominantly after training and matches with over 86% of respondents from both groups responding 'yes' to these times. Though

**Table 3.4.** Proportion of coach's and player's responses to the frequency of delivery and reception of verbal, visual, and written forms of feedback along with ratio of proportion and qualitative inference for the ratio.

		Coaches % (no.)	Players % (no.)	Proportion Ratio	Qualitative Inference
<b><i>How often do you give/receive the following types of VERBAL feedback to/from your players/coaches?</i></b>					
Informal Chats or Conversations	Never	0 (0)	3 (1)	0.00	Extremely Large
	Every Day/Session	79 (27)	72 (28)	1.11	Trivial
	Every Game/Week	18 (6)	21 (8)	0.86	Small
	Every 1-2 Months	0 (0)	5 (2)	0.00	Extremely Large
	Every 3-6 Months	3 (1)	0 (0)	0.00	Extremely Large
Instructions During Training/Game	Never	0 (0)	3 (1)	0.00	Extremely Large
	Every Day/Session	91 (31)	92 (36)	0.99	Trivial
	Every Game/Week	9 (3)	3 (1)	3.44	Very Large
	Every 1-2 Months	0 (0)	3 (1)	0.00	Extremely Large
	Every 3-6 Months	0 (0)	0 (0)	N/A	N/A
<b><i>How often do you give/receive the following types of VISUAL feedback to/from your players/coaches?</i></b>					
Video	Never	3 (1)	3 (1)	1.15	Small
	Every Day/Session	12 (4)	13 (5)	0.92	Trivial
	Every Game/Week	74 (25)	77 (30)	0.96	Trivial
	Every 1-2 Months	12 (4)	8 (3)	1.53	Moderate
	Every 3-6 Months	0 (0)	13 (5)	0.00	Extremely Large
Demonstration	Never	0 (0)	8 (3)	0.00	Extremely Large
	Every Day/Session	79 (27)	67 (26)	1.19	Small
	Every Game/Week	21 (7)	21 (8)	1.00	Trivial
	Every 1-2 Months	0 (0)	5 (2)	0.00	Extremely Large
	Every 3-6 Months	0 (0)	0 (0)	N/A	N/A
<b><i>How often do you give/receive the following types of WRITTEN feedback to/from your players/coaches?</i></b>					
Paper Based Reports	Never	30 (10)	31 (12)	0.98	Trivial
	Every Day/Session	3 (1)	3 (1)	1.18	Small
	Every Game/Week	24 (8)	36 (14)	0.68	Moderate
	Every 1-2 Months	27 (9)	15 (6)	1.77	Moderate
	Every 3-6 Months	15 (5)	15 (6)	0.98	Trivial
Email/Text/WhatsApp	Never	33 (11)	51 (20)	0.65	Moderate
	Every Day/Session	12 (4)	13 (5)	0.95	Trivial
	Every Game/Week	27 (9)	21 (8)	1.33	Small

Every 1-2 Months	21 (7)	10 (4)	2.07	Large
Every 3-6 Months	6 (2)	5 (2)	1.18	Small

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**Figure 3.1.** The timing of feedback delivery between key stakeholders (a) performance staff & coach, (b) performance staff & player, (c) coach & player.

a moderate difference (0.54) existed between the groups for feedback during matches (performance staff, 29%; players, 54%; **Figure 3.1b**). Except before training where there was a moderate difference (1.66) in the proportion of coach (85%) and player responses (51%), over 72% of players and coaches reported that feedback occurred at all time points (**Figure 3.1c**).

#### **3.4.4. Location**

Between performance staff and coaches the main locations reported by participants were training pitch (coaches, 88%; performance staff, 74%), e-mail/text (coaches, 82%; performance staff, 80%), and offices (coaches, 85%; performance staff, 92%). Between performance staff and players, 'training pitch' (performance staff, 72%; players, 77%), 'individual/group meetings' (performance staff, 86%; players, 82%), and 'gym' (performance staff, 72%; players, 85%), had the highest proportion of 'yes' responses from both groups. Most feedback between coaches and players was on the 'training pitch' (coaches, 100%; players, 100%), in 'group or individual meetings' (coaches, 94%; players, 95%) and in the 'dressing room' (coaches, 85%; players, 69%).

#### **3.4.5. 2 Way Feedback**

For 2-way feedback over 76% of participants responded 'yes' to giving or receiving feedback both ways between and within groups. There were small differences in the proportion of coach responses to receiving feedback from other coaches (1.13), and coach/player responses to receiving/giving feedback from the players/to the coaches (0.88). Furthermore, there was a

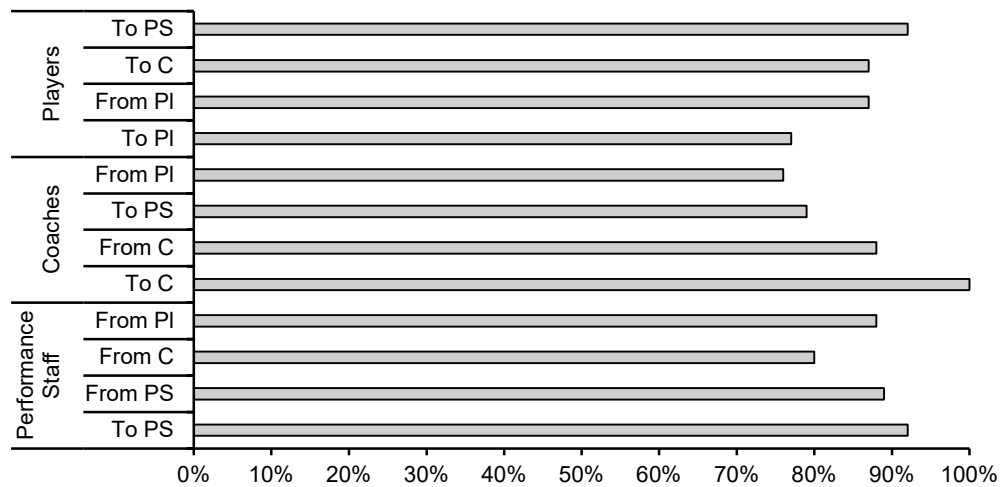
small difference within the player responses for giving/receiving feedback (0.88) (**Figure 3.2**).

### **3.5. Discussion-Phase 1**

The aim of this study was to examine current feedback delivery practices of key stakeholders (i.e., players, coaches, and performance staff) in professional football. More specifically, the aim of the first phase of this study was to examine key stakeholders' perceptions of feedback via completion of a survey by a broad sample of coaches, performance staff and players. The findings from this survey develop our knowledge of current feedback practices and begin to provide an assessment of player, coach, and performance staff perceptions of feedback practices. The key finding from this study was that there was a high volume of feedback, delivered frequently and in a range of formats. Players received vast quantities of feedback that was reflective of their daily and weekly training and games programme. In addition, it was evident from the data that high proportions of feedback delivered were informal in nature and occurred in the form of daily conversations between key stakeholders. Furthermore, the current study highlights that feedback is a two-way process between key stakeholders. These findings shed light on feedback practices and provide useful avenues for further inquiry in phase two of the study using a qualitative methodology to uncover the complexities of the data gathered from the surveys.

#### **3.5.1. Volume & Frequency**

The implementation of an integrated programme of preparation and competition with the aim of creating a purposeful and stable improvement in performance of athletes or teams is the responsibility of the coach (Lyle,



**Figure 3.2.** Player, coach and performance staff responses to delivering and receiving 2-way feedback between and within groups.



2002). Coaches regularly use feedback to achieve this aim, and it was evident from the survey data that a high proportion (>72%) of coaches and players reported feedback being delivered before, during and after matches, and during and after training. The exception to this was players reporting that they received feedback before training only 51% of the time. The timing of feedback and the frequency at which it is delivered to players, highlighted through the survey data, adds to previous literature in this area and displays the volume of information that players are exposed to on a daily (training) and weekly (games) basis. Previous research has shown that coaches use high quantities of verbal instruction during training sessions and matches (Ford et al., 2010; Partington & Cushion, 2013) in combination with video feedback methods after training and matches (Groom et al., 2011; Wright et al., 2012). For example, in a study by Wright et al. (2012), 46 experienced coaches were surveyed, and 82-86% of respondents reported using video feedback regularly with their athletes. Given the emphasis upon different forms of feedback from coaches to players, the high volumes and regular time points for feedback evident in this population are in line with previous research.

Feedback provided too frequently may increase the risk of information overload (i.e., too much feedback) and create an over reliance on the feedback, hence a more “hands-off” approach (i.e., reduced frequency) has been advocated within the literature (Sherwood, 1988; Williams & Hodges, 2005). The finding that verbal feedback was delivered by coaches to players predominantly through instructions during training on a daily basis (coaches, 91%; players, 92%) is supported by much of the previous coach observation literature (Ford et al., 2010; Partington & Cushion, 2013). Albeit that both

studies were conducted by observing coach behaviour, rather than simply asking coaching staff to report how frequently they deliver this type of verbal feedback to players, as was the case in this study. For example, Ford et al. (2010) used the Arizona State University Observation Instrument to quantify the specific behaviours that coaches adopted during their coaching practice. Despite differences in methodology, verbal feedback delivered via instruction is highly prevalent between coaches and players. Additionally, it has been reported that the high prevalence of instruction and feedback evident during coaching sessions is mirrored within the post session/game video feedback environment (Raya-Castellano et al., 2020). However, it is not clear whether players have the capacity to process all the information that is delivered to them by their coaches. A recent study by Januario et al. (2016) investigated athletes' retention of coach feedback during football practice sessions. They demonstrated through recall interviews of youth football players that only 57% of feedback delivered by the coach was retained by the players, and that the more ideas and information delivered the lower the retention levels. Hence, coaches should be mindful of the volume of feedback that they are delivering to players throughout the course of the day/week within both training sessions/matches and in video feedback sessions. It is not clear whether the regular feedback that is delivered is perceived as useful by the recipients of the feedback i.e., the players. Hence, assessments of how useful feedback is in determining subsequent player behaviour, development, learning and/or performance is warranted in future studies. It is anticipated that the methodological approach that will be adopted in phase 2 of this study and subsequent studies within this thesis will look to uncover the complexity and

depth of this phenomenon with regards to performance related feedback (as per Mason, Farrow & Hattie, 2020a).

The feedback practices adopted by performance staff and coaches are reflective of the current coaching process and workflow of key stakeholders who operate within the professional football environment. This is demonstrated by the large amount of feedback being delivered by performance staff to coaches in a variety of formats (verbal, graphical and written) on a daily/weekly basis. When combining these frequencies (i.e., daily & weekly), 74% of performance staff report that they deliver feedback in formal meetings (in addition to the volume of informal feedback mentioned earlier), 66% through graph-based data, and 72% through written feedback via email/text/WhatsApp. This adds to the contemporary literature concerning feedback of training load data, which reports that feedback is delivered by key stakeholders in a range of formats (verbal, written and graphical) and that clarity and timeliness of training data reports are important for communication (Buchheit, 2017; Gregson, Hawkins & Thorpe, 2018; Weston, 2018). Indeed, Weston (2018) demonstrated that coaches and practitioners (i.e., sports scientists) felt that training load reports were produced frequently, produced in a timely manner and were communicated in a clear and practical way. It is not clear whether the multiple methods and high volume of feedback are indeed influencing or impacting on coach's decision making (i.e., training session content and design). Indeed, recent research in feedback of training load data and visualization of physical performance data has suggested that the volume of information and poor communication may present a significant barrier to the effectiveness and impact of feedback (Akenhead & Nassis, 2016; Buchheit;

2017). Furthermore, Nosek et al. (2021) has recently presented evidence that coaches “agreed” that “too much information” presented a barrier to training load data being used to inform practice. Without careful consideration of feedback of performance related data, performance staff may be overloading coaches with information, which is indicative of a feedback approach that has since been refuted within the literature (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Thorndike, 1927; Salmoni, Schmidt & Walter, 1984; Williams & Hodges, 2005). Hence, a “less is more” approach has been recommended to reduce the translational gap that exists between data and decision making (Eisenmann, 2017; Nosek et al., 2021; Robertson et al., 2017). Recently there has been increased interest in key stakeholder perceptions of feedback (Nosek et al., 2021; Weston, 2018) however, there remains a lack of research assessing whether coaches’ practice or player behaviour is influenced by the feedback of data by performance staff. Hence, future research should look to assess the attitudes of key stakeholders towards how useful feedback of performance related data is in influencing subsequent decision making or behaviour of coaches, performance staff and players.

Few studies currently have examined the timing of feedback delivery between key stakeholders in professional football. The survey data presented here demonstrate that a high volume of feedback was delivered by performance staff to coaches before training (68%), after training (91%) and matches (95%). This was comparable with the findings of Nosek et al. (2021), who demonstrated that 59% of performance staff and 82% of coaches reflected and evaluated training sessions “in the morning before training”. However, the values reported for feedback after training and matches are

higher in the current study than those reported by Nosek et al. (2021). This may have been due to the differences in the way that the question was framed, they referred specifically to reflection and evaluation of GPS data, whereas this study posed a broader question relating to feedback in general, which may include other forms of feedback not related to GPS data per se. Regardless of the nature of the feedback provided, the data presented here strengthens the idea that feedback is done in order to facilitate reviewing and reflecting after training and matches and may therefore aid and support planning processes for subsequent training sessions and games, as has been alluded to in the recent literature (Akenhead & Nassis, 2016; Nosek et al., 2021; Weston, 2018). However, it is questionable from the data gathered in this study as to whether feedback is being used to support the “delivery” element of training and matches as these responses were much lower (training, 53%; match, 53%). The fact that feedback is reported to be lowest during matches/training supports the notion that an integrated model of delivery is not present and a potential area where future gains could be achieved. Akenhead and Nassis (2016) describe effectiveness of training load monitoring as lower than expected due to suboptimal integration between performance staff and coaches, citing issues such as low coach buy-in. This would suggest that performance staff are well integrated into the planning and reviewing process (or decision-making process) but perhaps not influencing the delivery element. However, it is difficult to ascertain from the data presented here whether performance staff are making an informed decision not to feedback to the coach during sessions to reduce input and noise when the coach is working, or opportunities to develop and influence practice are being missed.

### **3.5.2. Informal**

One of the main findings drawn from the survey data was the importance of informal forms of communication between key stakeholders within professional football. Most verbal feedback between performance staff, coaches and players was reported to be daily and predominantly came in the form of informal chats/conversations. This was highlighted by the fact that all groups reported delivering or receiving high amounts of feedback in this manner (>59% of participants). Furthermore, when the daily and weekly responses were combined, this resulted in over 89% of participants across all three groups reporting that they give/receive informal feedback on a daily and/or weekly basis. Whilst previous studies have alluded to the preferences of coaches and players towards informal forms of performance related feedback (Neupert et al., 2019; Nosek et al., 2021), this study demonstrates the volume of feedback that is perceived by key stakeholders to be informal. Using survey data and a similar cohort to the current study, Nosek et al. (2021) reported that coaches and performance staff reflect and evaluate their training sessions in an informal manner between 55% (performance staff) and 74% (coaches) of the time. This finding provides evidence that this transfer of information is typical within this environment and is similar to the contemporary suggestions of Littlewood et al. (2018, p.10) who suggested that the culture within professional football “tends towards informality”.

The data presented here aligns with evidence from a previous survey by Akenhead & Nassis (2016) that informal communication provides opportunities for shared reflections, informal learning, and relationship building between coaches and support staff. In addition to this, it has been shown that

coaches have a preference towards learning, and appear to be influenced in their coaching decisions, through informal sources (Mason, Farrow & Hattie, 2020a; Stoszkowski & Collins, 2016). Regular informal communication may therefore be seen as vitally important to the optimal functioning of multidisciplinary teams within professional football. Previous work has shown that when there is good internal communication between coaching, sports science, and medical staff then more favourable outcomes such as lower injury burdens and higher training and match availabilities are evident (Ekstrand et al., 2018). Whilst evidence exists to suggest that interpersonal skills are important for performance staff members such as sports scientists/S&C coaches (Till et al., 2019), further research should look to address the issue of whether interventions aimed at improving interpersonal skills and intrateam communication can result in higher levels of multidisciplinary team performances.

This study was the first to provide evidence of the perceived quantity of daily informal chats (coaches, 79%; players, 72%) between coaches and players. Additionally, it is the first research to show that 79% of performance staff report delivering feedback to players through daily informal chats and conversations. Therefore, this would support the notion that coaching is a dynamic and social process, and its effectiveness is dependent upon the communication and interpersonal skills of the practitioners involved (Bartholomew, 2017; Bowes & Jones, 2006; Jowett, 2017). For example, Jowett (2017) argues that the quality of the coach-athlete relationship is paramount to successful outcomes and is fuelled by communication between

the two parties. Furthermore, Cote & Gilbert (2009) proposed a definition for coaching effectiveness as:

*“The consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes’ competence, confidence, connection, and character in specific coaching contexts.”*

Considering that a high proportion of feedback delivered by performance staff to coaches was in a daily, informal manner (**Table 3.2**), it would be prudent to recommend that coaches and performance staff be mindful of their communication skills and considered in their approach during these regular opportunities which have the potential to shape and influence practice. It should therefore be recommended that both coaches and performance staff should regularly undergo training to develop their “integrated professional, interpersonal and intrapersonal knowledge” (Cote & Gilbert, 2009). Considering this, it would seem appropriate to recommend that future research looks to understand both performance staff-coach and performance staff-player relationships, and how ‘useful’ it is perceived to influence the practices of coaches, performance staff and players.

### **3.5.3. Two Way Feedback**

As demonstrated in **Figure 4.2**, the majority (>76%) of participants responded ‘yes’ to giving or receiving feedback in a two-way nature between



and within groups of key stakeholders. This finding adds to the body of work examining feedback which has begun to elucidate the directional relationships that exist between feedback providers and receivers. For example, coaches have previously been shown to deliver feedback to players through the use of verbal feedback i.e., instruction and through the provision of performance analysis via video feedback sessions (Ford et al., 2010; Groom & Cushion, 2005; Groom et al. 2011; Mason, Farrow & Hattie, 2021; Partington & Cushion, 2013). As has been previously mentioned, performance staff have been shown to monitor and analyse performance data and feed this back to both coaches and players (Akenhead & Nassis, 2016; Buchheit, 2017; Nosek et al., 2020). Further, the two-way nature of these feedback mechanisms has begun to be shown through athlete's accounts of their involvement in video feedback sessions and demonstrates that they are given the opportunity to feedback to their coaches and in some cases their peers (Francis & Jones, 2014; Middlemass & Harwood, 2018; Nelson et al., 2014; Wright et al., 2016). The data presented in the current study provides direct evidence to support the two-way model of interactions between key stakeholders presented by Cruickshank, Collins and Minten (2015). Their research, which adopted a qualitative approach indicates that there is a two-way interaction between manager/coaches and support staff, manager/coaches and players and manager and board. This study illustrates that 92% of players provide feedback to performance staff, which agrees with the 88% of performance staff who reported receiving feedback from players. Additionally, 79% of coaches reported giving feedback to performance staff. These novel findings display the open channels of communication between key stakeholders within

professional football. However, further research is required to shed light on what two-way communication looks like and whether it is effective for informing practice and improving performance.

#### **3.5.4. Limitations**

The present study is not without limitations, with regards to response rate, the survey was completed by 139 respondents across three groups of key stakeholders, which could be considered fairly low. Increased response rates are usually indicative of findings with greater external validity (Baruch & Holtom, 2008). As previously acknowledged in the methods, this number may only be representative of an extremely small percentage of all the coaches, performance staff and players who met the inclusion criteria for the survey. It is important to note that this may not be representative of feedback occurring at all levels of professional football i.e., the football league structure, academy categories and throughout the developmental phases i.e., foundation, youth, PDP and first team. However, the response rate in the present study is similar to research which has employed similar methodologies (Weston, 2018,  $n = 182$ ; Nosek et al., 2021,  $n = 176$ ), and more than other (Akenhead & Nassis, 2016,  $n = 41$ ) studies that were in performance staff only. A challenge during this research and for future research addressing perceptions of three groups of stakeholders was and will continue to be recruiting participants from the coaching and players groups. There is also a possibility within the findings of a clustering of responses, as multiple responses were allowed from one club. This was done to access as many participants as possible and also to ensure ecological validity of the findings in the applied club environment in which the

research was predominantly carried out. Although it should be acknowledged that responses within all three groups are from a range of football league clubs (as can be seen from the demographic information, **Table 3.1**).

Due to the varied nature of respondents within the performance staff group, responses may have been heavily influenced by the particular job role of the individuals involved. For example, there was large representation from both sports scientists and performance analysts, however these two job roles differ significantly in their content and delivery of feedback. Whilst it can be considered a strength of the study that a range of job roles were captured within the performance staff responses, it should be acknowledged that this breadth may make the interpretation of the results more difficult. Additionally, respondents self-selected their job roles from the options provided within the survey, the definitions of these job roles may vary significantly from club to club and consequently may impact upon their responses. The demographics of the participants are almost identical to that of Nosek et al. (2021), however differ from Weston (2018) as there is much more representation from performance analysts, physiotherapists, and nutritionists. Future research should look to address the complex interplay between these roles and how they interact with each other and other key stakeholders in an applied setting.

The potential for sampling bias must also be acknowledged when interpreting the survey data for a number of reasons. Firstly, there is a much higher representation from performance staff than coaches and players. This may indicate that the reach of the survey through social media and snowball sampling may have resulted in an over representation of participants from this stakeholder group. Therefore, it could be anticipated that response rates were

higher amongst this demographic, which may skew the results. One way that this could be offset would be to use a weighting system to compare data between groups. Secondly, the fact that the link to the survey was sent out to known contacts amongst coaches and players (via WhatsApp or email) within clubs where the primary researcher worked or had previously worked may have also resulted in a sampling bias. This could have increased the likelihood of increased response rates amongst these groups. Future research should look to anonymously send out survey links to potential participants from a wide range of clubs and a non-response bias impact assessment should be conducted and reported on (Baruch & Holtom, 2008).

Finally, it should be noted that there is a disparity between the level at which coaches were working compared to performance staff and players (**Table 3.1**). Most coaches who filled in the survey were working with academy players and working within different age group phases (i.e., PDP, YDP and FP). Low representation of first team coaches was also evident within the survey conducted by Weston (2018), and the distribution of coaches across age groups is similar to what was reported in that particular study. Therefore, caution should be adopted when interpreting the results for all coaches. Performance staff were more evenly distributed between first team and academy environments, as were players, albeit only 21% were first team players and the remainder were playing in the PDP. It is highly plausible that findings across developmental and performance settings would be different considering the objectives within these environments are markedly different (i.e., player development vs results). A further investigation of feedback as it

specifically relates to coaches, players and performance staff in different age group phases is warranted in future studies.

### **3.5.5. Conclusion**

The first phase of the present study provided an examination of current feedback practices and sheds light on “*how*” feedback is delivered in professional football. Firstly, key stakeholders perceive there to be a high volume and frequency of feedback delivered, thus highlighting the numerous opportunities where feedback could be used to enhance the performance and/or development of both players and coaching processes. However, it does appear that the high frequency of feedback delivered is at odds with the “hands-off” and reduced frequency approach highlighted in the feedback literature (Salmoni et al., 1984; Swinnen et al., 1990). Secondly, feedback was delivered in several ways (i.e., verbal, visual and written) and at different frequencies but it was primarily delivered informally daily and as part of the coaching process during planning, delivery and reviewing of training and matches. Finally, feedback was delivered in a two-way nature between all key stakeholders which illustrates there are open channels of communication. Additionally, further work is needed to understand the pathways/mechanisms to feedback that is perceived to be useful/effective by key stakeholders and may influence decision-making and result in behaviour change.

Whilst the data presented in this survey increases our understanding of current feedback practices, the reasons behind the responses that participants gave during the surveys are still unclear, hence the qualitative element which

will be applied during phase 2. The intended aim of the phase 2 will be to further inquire about findings from the survey data and offer participants the opportunity to provide depth and context to elucidate the mechanisms that underpin this frequently used communication and coaching tool.

### **3.6. Methods-Phase 2**

#### **3.6.1. *Participants***

Potential participants for this phase of the study were coaches, performance staff and players who met the inclusion criteria described in the methods section in Phase 1 of this study (**Chapter 3.3**). However, to examine the perceptions of similar groups, coaches and performance staff were only eligible if they represented the same age groups as players i.e., professional development phase (16-23 years) and/or the first team. Participants were recruited through online social media platforms (e.g., Twitter) as described in Phase 1 of this study and again relied on snowball sampling (Morgans, 2008), whereby potential participants were encouraged to circulate and promote the poster to their personal networks and peers. Furthermore, e-mails were sent to gatekeepers at several clubs i.e., managers, academy managers, heads of department, which were obtained through publicly available sources and/or previous working relationships. Volunteers from a variety of clubs and roles (i.e., academy managers, sports scientists, coaches, players) agreed to take part in the interviews through verbal (e.g., phone call) or written (e.g., text message/email) agreements and convenience sampling was utilised to organise and carry out interviews in a time efficient manner (Patton, 2002).

### **3.6.2. Procedure**

The interview guides were developed through an iterative process, whereby the outcomes from the first phase of the study (i.e., survey data) informed the design within subsequent phases. The data collection and subsequent analysis was conducted by the principal investigator (PI) (**see Chapter 1**) and to address potential researcher bias, the PI held regular meetings with members of the research team (MA, ZK), both experienced academics, who challenged the development of the interview guide throughout the design phase. Therefore, the interview guide explored the overall research question and focused on the type, frequency, timing, location and 2-way nature of feedback whilst further exploring the current practices and perceptions of key stakeholders. The interview guide was divided into five sections; examples and the question rationales can be seen in **Table 3.5** (see example interview guide in **Appendix A**).

The interview schedule was initially tested in a pilot study using a small convenience sample of four participants (two performance staff, one coach and one player), representing the participant criteria listed above (as per Middlemas & Harwood, 2018). No changes were made to the overall interview schedule following pilot testing, hence the participants in the pilot study were included in the final data analysis. It was deemed appropriate to utilise the definition of feedback (provided in the survey) as a probe/prompt when encouraging participants to answer questions in section 2. Where necessary, further prompts and probes were also used (derived from key data from the survey) to stimulate further discussion and the interviewer acted as an “active

listener” assisting the participant to share their experiences in their own way and with their own words (Sparkes & Smith, 2014). All interviews were carried out by the principal investigator, who possessed a practical understanding of the topic being discussed, having worked as a sports scientist within professional football clubs for over ten years, however with limited qualitative research experience (**see Chapter 1.1**). Therefore, the pilot interviews allowed the interviewer to refine their interview skills and techniques and were conducted with one other member of the research team present (MA). Further debriefs with members of the research team (ZK) were conducted following this process to provide guidance on delivery, timing, probing and minimising bias when carrying out interviews. All interviews were carried out at a time and location that was convenient for the participant. The interviews were primarily conducted face-to-face at each participants’ club facilities following gatekeeper approval. However, due to participants’ busy training, game and travel schedules, some interviews were conducted via telephone ( $n = 5$ ) or Skype ( $n = 3$ ). All interviews were digitally recorded on a Dictaphone (Sony-ICD-PX370, Sony Corporation, Japan), transcribed verbatim and anonymised to ensure a complete and accurate record of the data was obtained.



**Table 3.5.** Overview of the interview guide, example questions and rationale.

	<b>Section</b>	<b>Example Questions</b>	<b>Rationale</b>
1.	Participant demographics & background	Can you talk me through your background and how you got into your current role?	To build a rapport with the interviewee and ensure they were comfortable with the procedure.
2.	General exploration of understanding of feedback	Can you explain what the term feedback means to you?	To examine the participants perceptions and experiences of feedback. To provide a framing and reference point for the interview.
3.	Exploring feedback to/from a specific key stakeholder group. PS – To Coaches C – From PS PI – From PS	Example from coach interview - In a recent survey, high amounts of performance staff and coaches reported giving/receiving feedback via informal chats on a daily basis, could you talk us through your experiences of this?	For participants to provide rich accounts of the type, frequency, timing and location of feedback. The topics were driven by the skill acquisition and video feedback literature (Salmoni, Schmidt & Walter, 1984; Wright et al., 2016). Framing, prompts and clarification probes were informed by preliminary findings from Phase 1.
4.	Exploring feedback to/from a specific key stakeholder group. PS – To Players C – To Players PI – From Coaches	Example from player interview - Could you talk me through your experiences of when you tend to receive feedback from your coaches?	As above
5.	Exploring the nature of two-way feedback between key stakeholder groups.	Example from performance staff interview – Do you give feedback to other members of the performance staff, and if so could you give me some examples?	To follow up on the outcomes of Phase 1 Evidence of interaction between key stakeholders within elite sport (Cruickshank et al., 2014).

### **3.6.3. Data Analysis (Trustworthiness)**

Data were thematically analysed, utilizing the six-step process outlined by Braun and Clarke (2013). A combined approach of deductive then inductive analysis was deemed appropriate to provide a structure for the interviews and still allow participants to provide rich accounts of their experiences and perceptions (Patton, 2002). Hence, the analysis started deductively based on a combination of the previous literature surrounding skill acquisition and the structure and design of the survey (initial themes were, frequency, timing, type and location (Salmoni, Schmidt & Walter, 1984; Williams & Hodges, 2005), whilst also being aware of inductive themes emerging from the data. The primary researcher became immersed in the data, listening to audio files multiple times, rereading transcripts, and discussing initial ideas with members of the supervisory team. From here, initial codes were identified from the raw data using QSR NVivo (Qualitative Solution Research 2018, Version 12, [www.qsrinternational.com](http://www.qsrinternational.com)), to assist in the data storage, organisation, and analysis process. Once all raw data had been coded and collated, the primary researcher began to develop themes based on the initial codes. A thematic map was developed to assist in developing the different codes into themes (Braun & Clarke, 2013; Nowell et al., 2017). These themes were consistently reviewed and refined to ensure that they were coherent, consistent, and distinctive. A reflective and reflexive approach was adopted during the data analysis (Braun and Clarke 2019a). As such, members of the research team were employed to act as critical friends during the process, thus acknowledging the multiple truths and perspectives evident within the research process (Smith & McGannon, 2017). Whether or not data saturation

was achieved is up for debate, as it has been within the TA research (Braun & Clarke, 2019b), however, to operate within realistic time frames the research team met to define and name the final agreed themes.

#### **3.6.4. Data Representation**

Flexibility in data analysis and representation is an important feature of thematic analysis to capture the essence of the topic being explored (Braun & Clarke, 2013). Furthermore, it has been highlighted that it is important readers should be given the opportunity to interpret the data in a way that is most meaningful to them (Fletcher & Arnold, 2011). Consequently, a frequency analysis was conducted to illustrate how often themes were mentioned by the participants (Middlemas & Harwood, 2018). Additionally, the emergent themes are depicted within the appendices using a combination of pen profiles and verbatim quotes. Pen profiles provide a visual representation of themes via a diagram/thematic map and have been used in previous research employing similar methodologies (Downs et al., 2014; Mackintosh et al., 2011). This combination enables the reader to appreciate the richness and complexity of the analysis of a large data set.

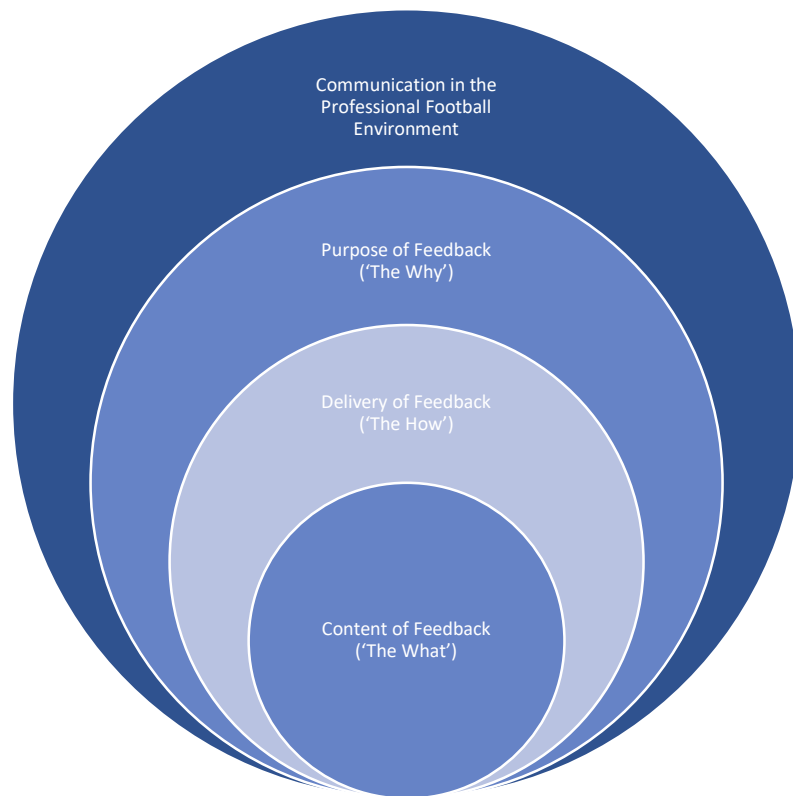
#### **3.7. Phase 2 Results**

Overall, thirty individual semi-structured interviews were conducted with participants from the three groups described above (eleven coaches, ten performance staff and nine players), over a period of six months. Coaches were comprised of participants from a range of specific job roles: Academy

Manager ( $n = 1$ ), Head of Coaching ( $n = 1$ ), Head of Academy Goalkeeping ( $n = 2$ ), Lead Professional Development Phase Coach ( $n = 4$ ), U23s Assistant Coach ( $n = 1$ ), U18s Coach ( $n = 1$ ), U18s Assistant Coach ( $n = 1$ ). Performance staff were represented by Sports Scientists ( $n = 4$ ), Performance Analysts ( $n = 2$ ), Physiotherapist ( $n = 1$ ), Psychologist ( $n = 1$ ), Nutritionist ( $n = 1$ ), and Head of Sports Science & Medicine ( $n = 1$ ). The players who took part represented four different clubs, ranging from Championship to League Two. Additionally, participants represented three separate age groups: First Team ( $n = 5$ ), Under 23s ( $n = 2$ ), Under 18s ( $n = 2$ ). Interviews were audio recorded and transcribed verbatim. Interviews ranged in length from 32 to 81 minutes (total = 1587 min;  $M = 52.9$  min).

Four general dimensions were identified from the analysis and are presented in relation to each key stakeholder group. To aid comparison between groups, the performance staff, coach, and player perceptions are presented together under these four dimensions. The general dimensions are: '*communication in the professional football environment*', '*purpose of feedback (the why?)*', '*delivery of feedback (the how?)*', and '*content of feedback (the what?)*'. These dimensions are inherently linked and are not presented in a hierarchical order, they will be presented and discussed independently but should be viewed as interacting and overlapping variables within the feedback process (**Figure 3.3**). They are presented in the order listed above to provide the reader with context for the environment in which feedback is delivered and the purpose for which it is given before moving on to the intricacies of how and what is delivered between key stakeholders. For clarity, the 'delivery of

feedback dimension was guided by the deductive framework used to design the survey and the subsequent interview schedules. The remaining



**Figure 3.3.** Thematic map of findings

dimensions emerged inductively during analysis of the interview data. Pen profiles were used to illustrate the themes and subthemes within the general dimensions. A detailed section of verbatim quotations is in **Appendix B**.

### ***3.7.1. Communication in the Professional Football Environment***

Coaches, players, and performance staff in this study demonstrated that the environment and the communication of stakeholders within it influenced feedback delivery. Consequently, communication in the professional football environment consisted of five higher order themes for all groups: 'relationships', 'two-way dialogue', 'psychological responses', 'delivery climate' and 'social environment' which are represented in **Table 3.6**. The differences between groups were that coaches and performance staff both cited 'buy-in' and 'interpersonal skills' as subthemes whereas players cited 'trust' under the relationships higher order theme. Whilst performance staff referred to using a 'shared language' for feedback, coaches spoke more about 'clarity & understanding' with regards to feedback delivery. Coaches referred to 'flow of information' and 'resources' as subthemes under delivery climate, which was not evident in the performance staff and player responses. Both performance staff and players cited 'insecurity & uncertainty' and 'hierarchy' under social environment, whilst this was not evident in the coach responses.

#### ***Coaches***

**Figure 3.4** illustrates the composite pen profiles and for the coaches in this study there were five higher order themes: relationships ( $n = 11$ ), two-way dialogue ( $n = 11$ ), psychological responses ( $n = 11$ ), social environment ( $n =$

**Table 3.6. Performance staff's, coaches' and player's perceptions of communication in the professional football environment. Numbers in parentheses denote frequency of participants who referenced a theme.**

<b>Performance Staff</b>	<b>Coaches</b>	<b>Players</b>
<b>Relationships (10)</b> <ul style="list-style-type: none"> <li>• Trust &amp; Respect (2)</li> <li>• Open &amp; Honest (3)</li> <li>• Preferences (10)</li> <li>• Interpersonal Skills (5)</li> </ul>	<b>Relationships (11)</b> <ul style="list-style-type: none"> <li>• Respect (6)</li> <li>• Open &amp; Honest Feedback (10)</li> <li>• Preferences (10)</li> <li>• Player Buy In (8)</li> </ul>	<b>Relationships (9)</b> <ul style="list-style-type: none"> <li>• Open &amp; Honest (8)</li> <li>• Player Preferences (7)</li> <li>• Trust (2)</li> </ul>
<b>Two Way Dialogue (9)</b> <ul style="list-style-type: none"> <li>• Intra &amp; Interdepartmental (10)</li> <li>• Shared Language (6)</li> <li>• Indirect Feedback (3)</li> <li>• Players to Performance Staff (7)</li> </ul>	<b>Two Way Dialogue (11)</b> <ul style="list-style-type: none"> <li>• Multidisciplinary (7)</li> <li>• Players &amp; Coaches (10)</li> <li>• Clarity &amp; Understanding (8)</li> <li>• Between Coaches (10)</li> </ul>	<b>Two Way Dialogue (9)</b> <ul style="list-style-type: none"> <li>• Players to Players (9)</li> <li>• Players &amp; Coaches (9)</li> <li>• Players to Performance Staff (8)</li> <li>• Conversation Opens It Up (7)</li> </ul>
<b>Psychological Responses (6)</b> <ul style="list-style-type: none"> <li>• Understanding the Individual (4)</li> <li>• Difficult to Receive It (4)</li> </ul>	<b>Psychological Responses (11)</b> <ul style="list-style-type: none"> <li>• Difficult to Give It (9)</li> <li>• Difficult to Receive It (5)</li> </ul>	<b>Psychological Responses (5)</b> <ul style="list-style-type: none"> <li>• Understanding the Individual (4)</li> <li>• Difficult to Receive It (3)</li> </ul>
<b>Social Environment (9)</b> <ul style="list-style-type: none"> <li>• Insecurity &amp; Uncertainty (9)</li> <li>• Egos &amp; Big Personalities (7)</li> <li>• Hierarchy (6)</li> </ul>	<b>Social Environment (11)</b> <ul style="list-style-type: none"> <li>• Egos &amp; Big Personalities (10)</li> <li>• Insecurity (9)</li> </ul>	<b>Social Environment (9)</b> <ul style="list-style-type: none"> <li>• Insecurity &amp; Uncertainty (7)</li> <li>• Egos &amp; Big Personalities (8)</li> <li>• Hierarchy (7)</li> </ul>
<b>Delivery Climate (10)</b> <ul style="list-style-type: none"> <li>• Fast paced (10)</li> <li>• Highly Emotional (6)</li> <li>• 1<sup>st</sup> Team v Academy Culture (3)</li> <li>• Club Culture (3)</li> </ul>	<b>Delivery Climate (10)</b> <ul style="list-style-type: none"> <li>• Fast Paced (8)</li> <li>• Flow of Information (8)</li> <li>• 1<sup>st</sup> Team v Academy Culture (5)</li> <li>• Resources (5)</li> <li>• Club Culture (4)</li> </ul>	<b>Delivery Climate (8)</b> <ul style="list-style-type: none"> <li>• Development or Results Driven (5)</li> <li>• Different Clubs &amp; Cultures (5)</li> <li>• Fast Paced (5)</li> <li>• Highly Emotional (5)</li> </ul>



11), and delivery climate ( $n = 10$ ). Within these higher order themes were seventeen subthemes of which open and honest feedback ( $n = 10$ ) and egos and big personalities ( $n = 10$ ) were two of the most frequently cited subthemes.

### ***Performance Staff***

**Figure 3.5** shows how performance staff in this study also reported five higher order themes: relationships ( $n = 10$ ), two-way dialogue ( $n = 9$ ), psychological responses ( $n = 6$ ), social environment ( $n = 9$ ), and delivery climate ( $n = 10$ ). Within these higher order themes were seventeen subthemes of which inter- and intradepartmental feedback ( $n = 10$ ) and fast paced ( $n = 10$ ) were two of the most frequently cited subthemes.

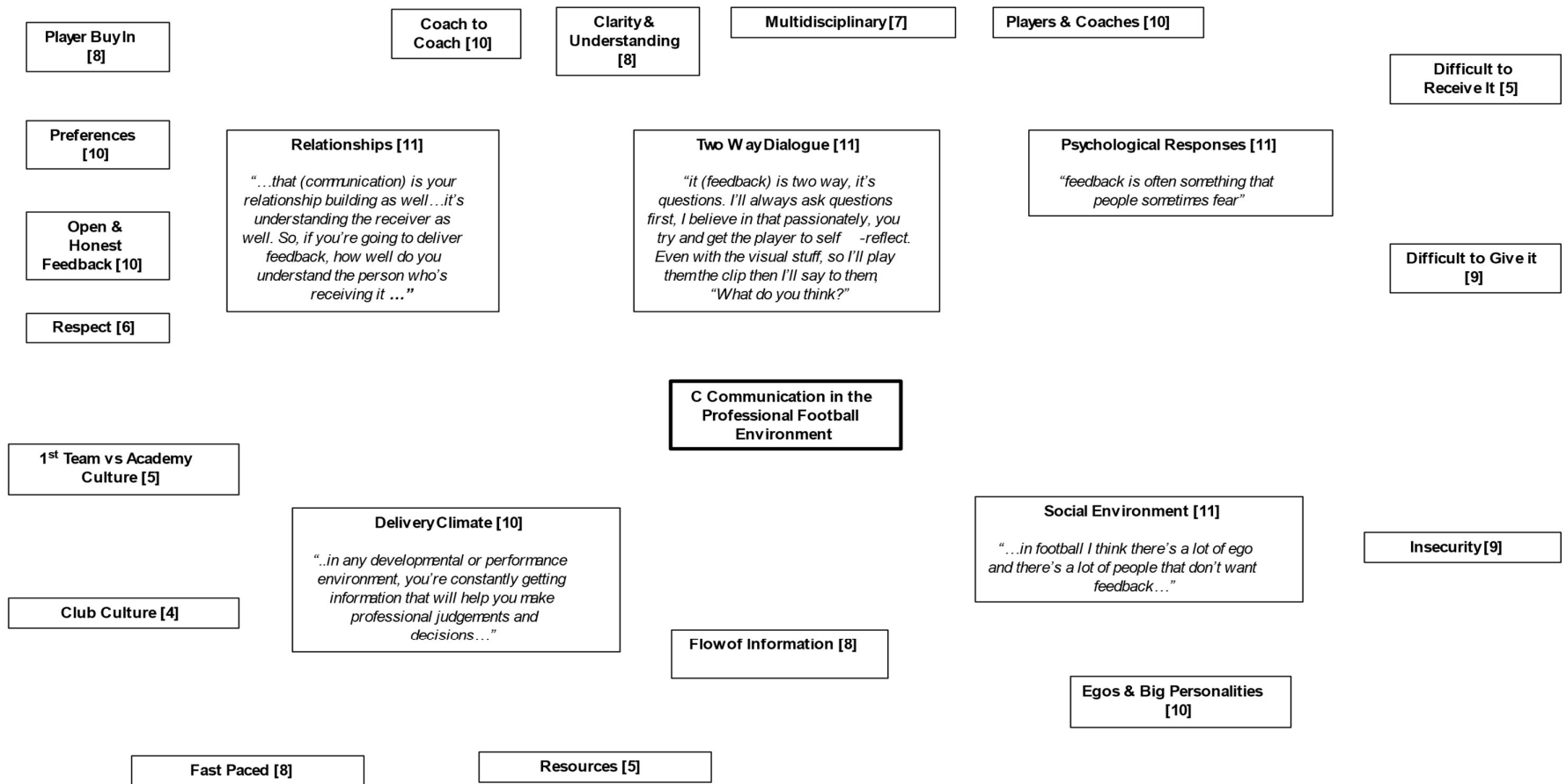
### ***Players***

**Figure 3.6** displays how players in this study also reported five higher order themes: relationships ( $n = 9$ ); two-way dialogue ( $n = 9$ ); psychological responses ( $n = 5$ ); social environment ( $n = 9$ ); delivery climate ( $n = 8$ ). Within these higher order themes were sixteen subthemes, and two-way dialogue between players and coaches ( $n = 9$ ), egos and big personalities ( $n = 8$ ) and open and honest feedback ( $n = 8$ ) were the most frequently cited subthemes.

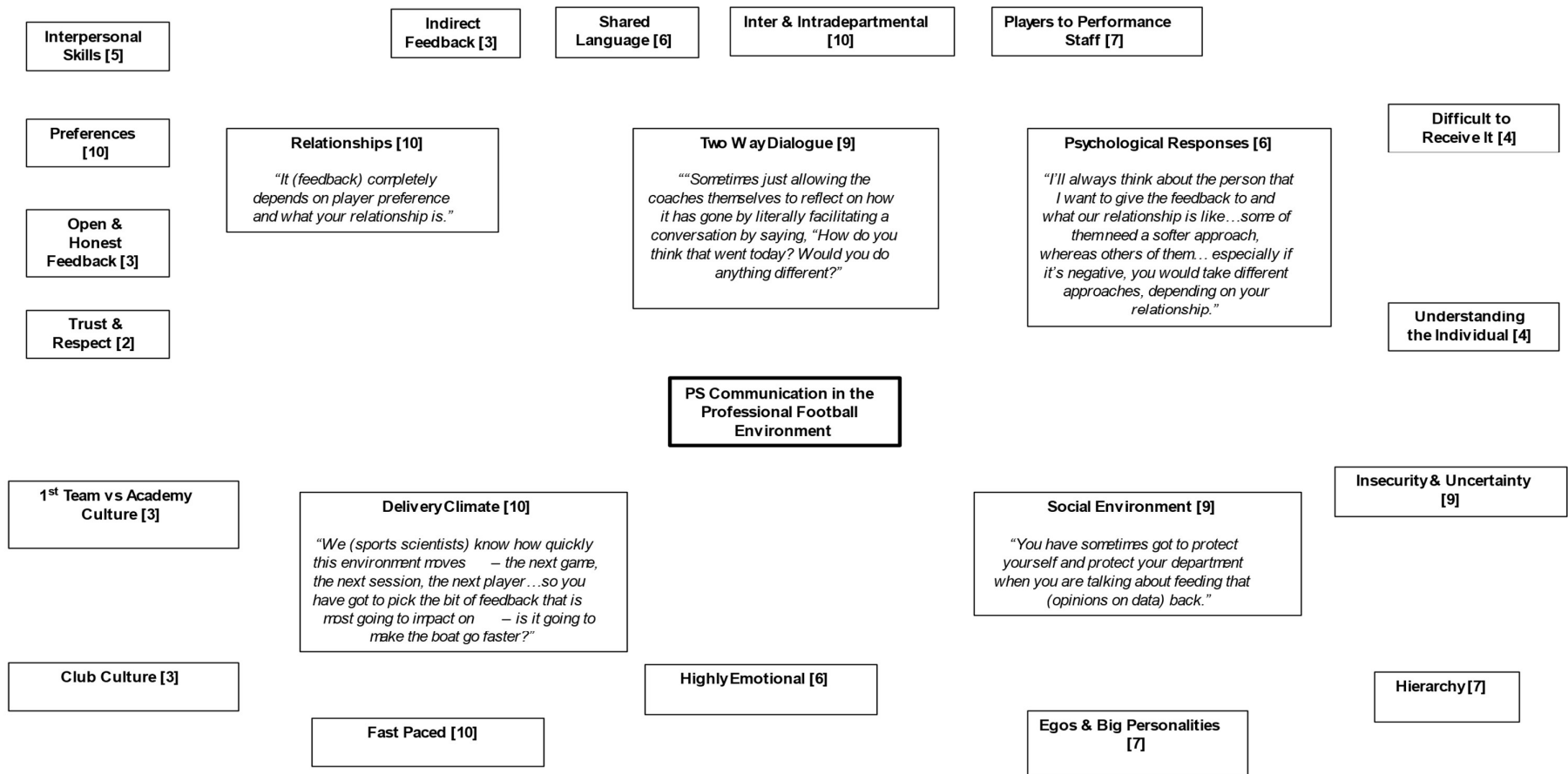
#### ***3.7.2. Purpose of Feedback ('The Why')***

The purpose of feedback ('the why') general dimension involved participants' perceptions of the reasons feedback was used (**Table 3.7**). For

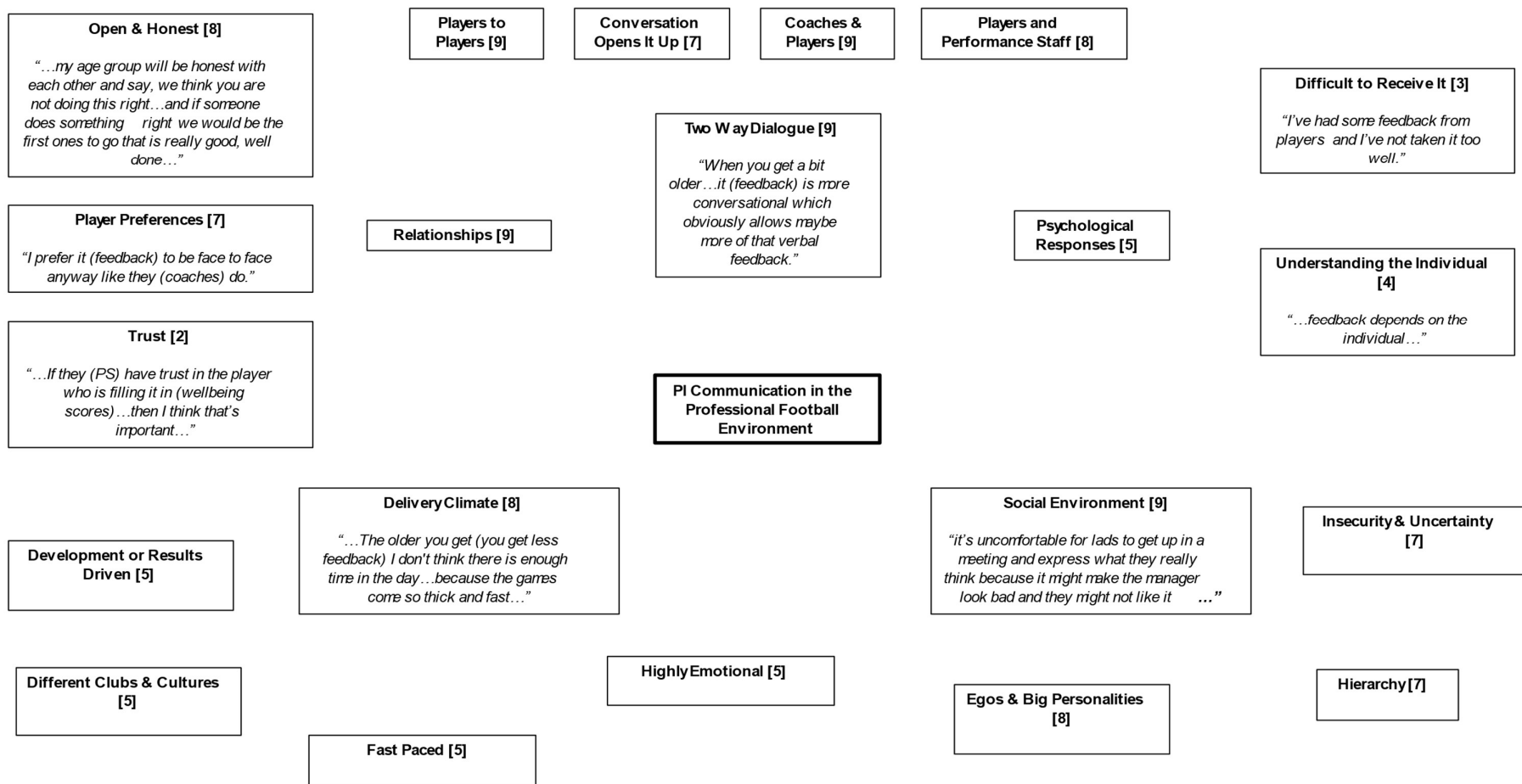
coaches, two higher order themes were developed: supporting the coaching process; development/performance focus. For performance staff, three higher



**Figure 3.4.** Pen profile for coaches' perceptions of communication in the professional football environment.



**Figure 3.5.** Pen profile for performance staff's perceptions of communication in the professional football environment.



**Figure 3.6.** Pen profile for player's perceptions of communication in the professional football environment.

**Table 3.7. Performance staff's, coaches', and players' perceptions of the purpose of feedback ('the why').**

Performance Staff	Coaches	Players
<b>Supporting the coaching process (10)</b> <ul style="list-style-type: none"> <li>• Planning (9)</li> <li>• Delivering (Doing) (3)</li> <li>• Reviewing (10)</li> <li>• Feedback Comes From Planning &amp; Periodisation (3)</li> <li>• Influencing &amp; Impacting Upon Decision Making (8)</li> </ul>	<b>Supporting the coaching process (11)</b> <ul style="list-style-type: none"> <li>• Planning (9)</li> <li>• Reviewing &amp; Reflecting (11)</li> <li>• Feedback Comes From Planning &amp; Periodisation (7)</li> <li>• Influencing &amp; Impacting Upon Decision Making (5)</li> </ul>	<b>Performance Focus (9)</b> <ul style="list-style-type: none"> <li>• Coaching Philosophy (4)</li> <li>• Motivation (7)</li> <li>• Managing Player Workload (8)</li> </ul>
<b>Performance Focus (9)</b> <ul style="list-style-type: none"> <li>• Feedback Provides Motivation (5)</li> <li>• Managing Player Workload (4)</li> <li>• Coaching Philosophy (8)</li> </ul>	<b>Performance/Development Focus (9)</b> <ul style="list-style-type: none"> <li>• Learning &amp; Education (9)</li> <li>• Players Individual Goals &amp; Targets (10)</li> <li>• Staff Development (9)</li> <li>• Club/Academy Philosophy (4)</li> <li>• Personal Philosophy (4)</li> </ul>	<b>Development Focus (8)</b> <ul style="list-style-type: none"> <li>• Tracking Progress (8)</li> <li>• Learning &amp; Development (7)</li> <li>• Individual Goals/Targets (7)</li> </ul>
<b>Development Focus (8)</b> <ul style="list-style-type: none"> <li>• Players Individual Goals/Targets (5)</li> <li>• Feedback Is Used For Education (6)</li> <li>• Academy Philosophy (3)</li> </ul>		<b>Reviewing &amp; Reflecting (8)</b> <ul style="list-style-type: none"> <li>• The Reflective Cycle (8)</li> <li>• Player Driven Process (4)</li> </ul>

order themes were developed; supporting the coaching process; development focus; performance focus. For players, three higher order themes were developed: development focus; performance focus; reviewing and reflecting.

### ***Coaches***

**Figure 3.7** illustrates the composite pen profiles relating to the purpose of feedback, the coaches in this study reported two higher order themes: supporting the coaching process ( $n = 11$ ), and performance/development focus ( $n = 9$ ). Additionally, there were nine subthemes of which reviewing and reflecting ( $n = 11$ ), and players' individual goals and targets ( $n = 10$ ) were the most frequently cited subthemes.

### ***Performance Staff***

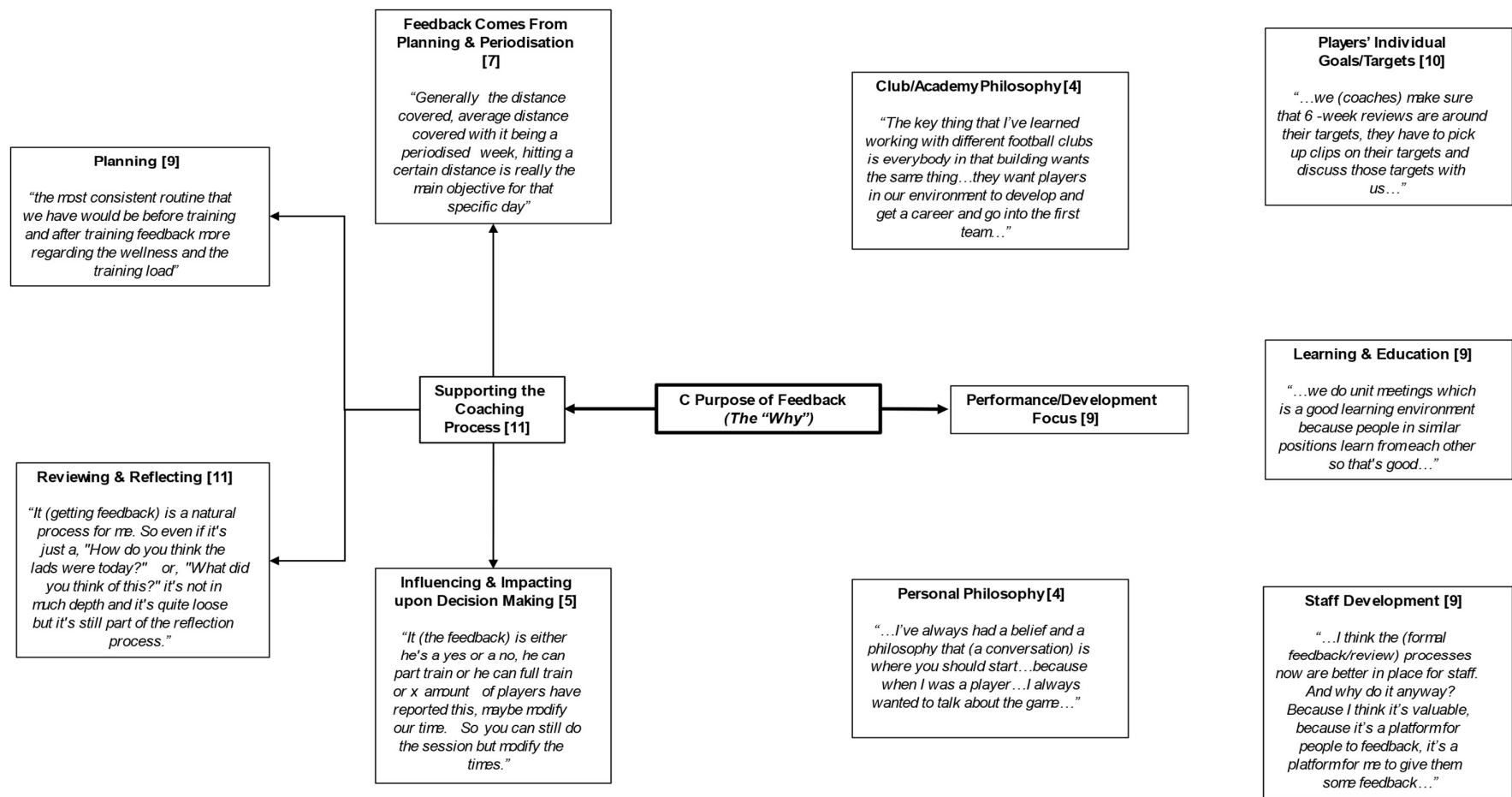
**Figure 3.8** illustrates how the performance staff in this study reported three higher order themes: supporting the coaching process ( $n = 10$ ), performance focus ( $n = 9$ ) and development focus ( $n = 8$ ). Additionally, there were eleven subthemes of which reviewing ( $n = 10$ ), influencing, and impacting upon decision making ( $n = 8$ ) and coaching philosophy ( $n = 8$ ) were the most frequently cited subthemes.

### ***Players***

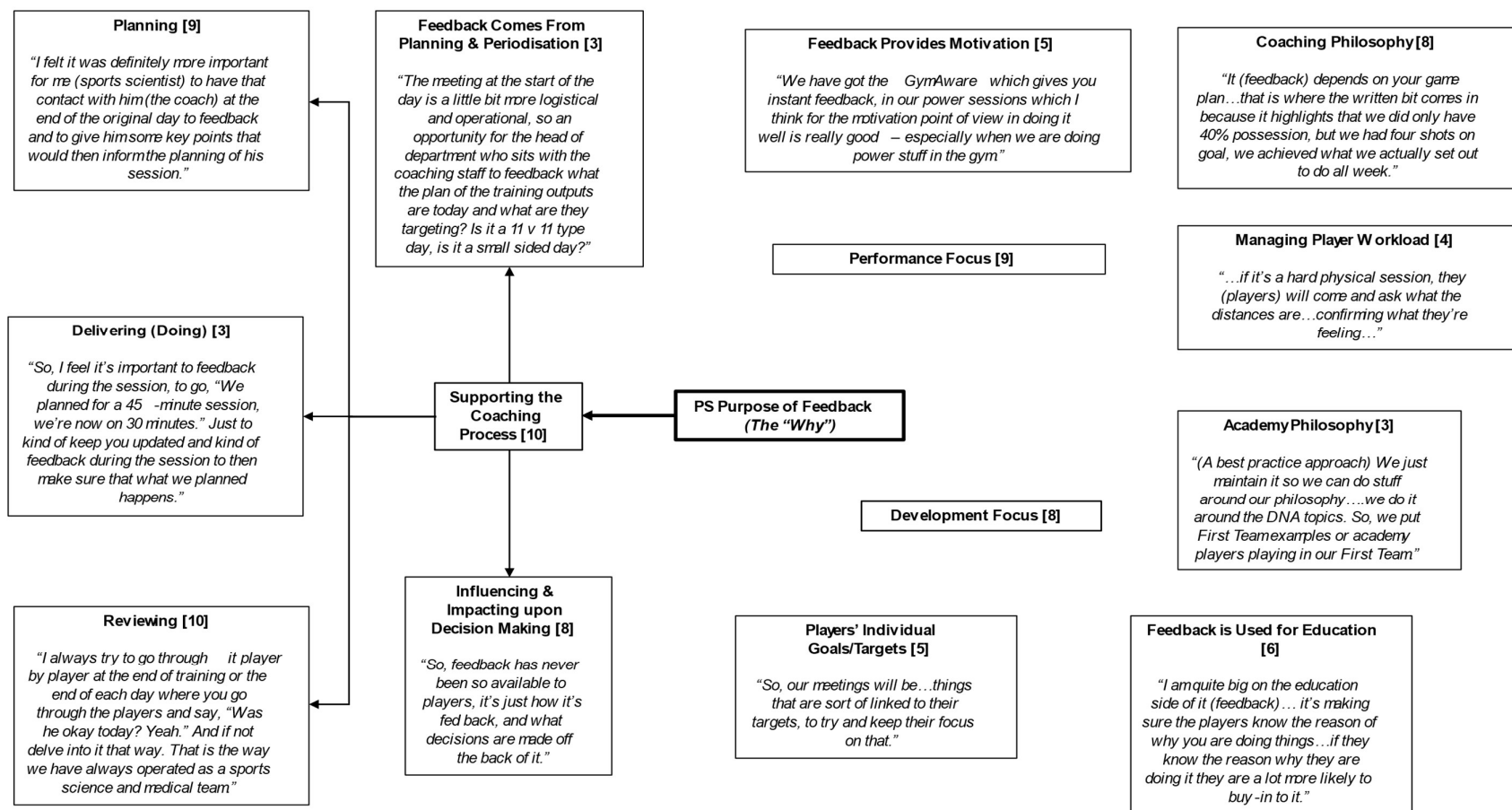
The players in this study reported three higher order themes, illustrated in **Figure 3.9**: performance focus ( $n = 9$ ); development focus ( $n = 8$ ); reviewing

and reflecting ( $n = 8$ ). Additionally, there were eight subthemes and managing player workload ( $n = 8$ ), tracking progress ( $n = 8$ ) and the reflective cycle ( $n = 8$ ) were the most frequently cited subthemes.

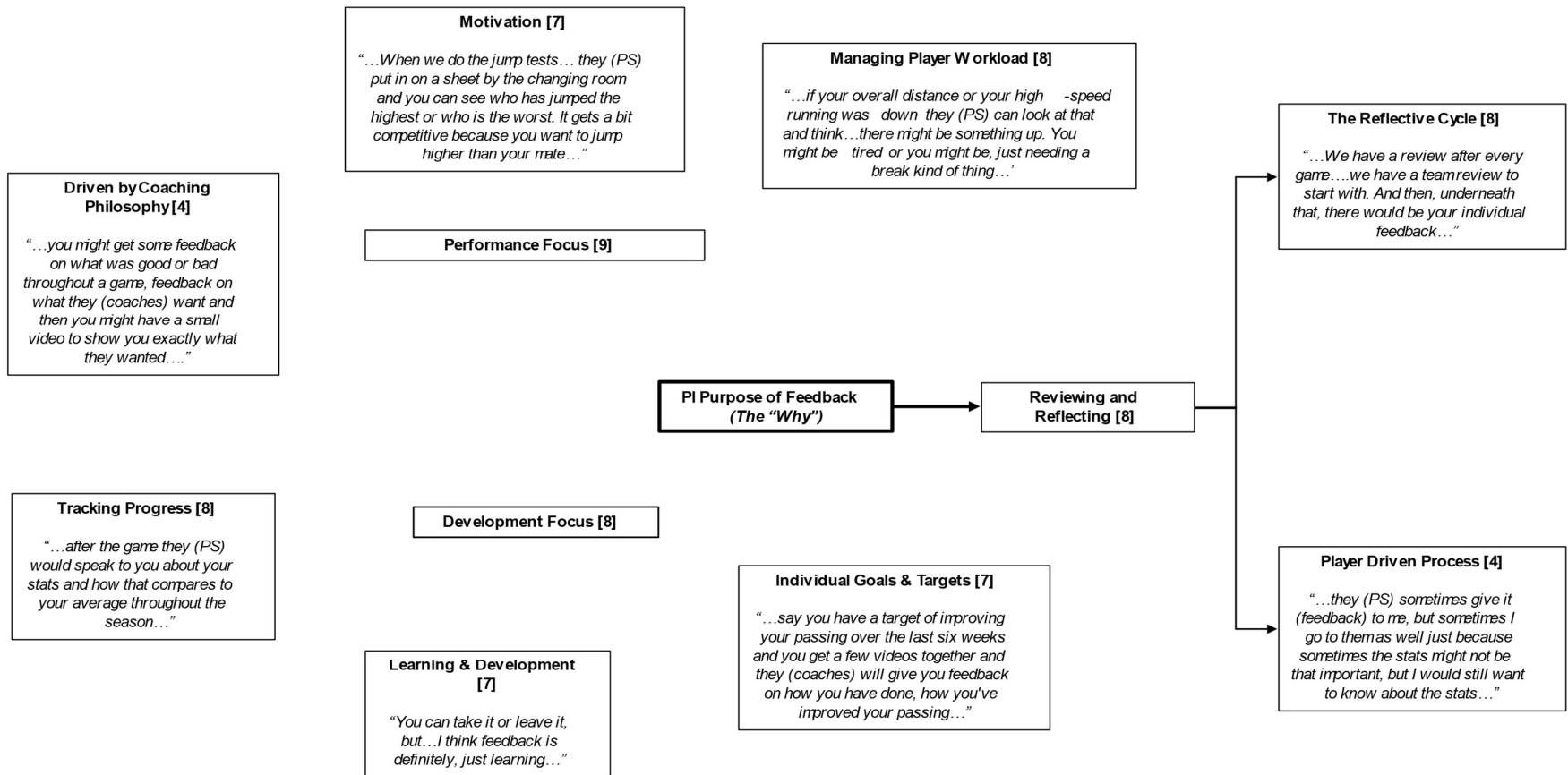




**Figure 3.7.** Pen profile for coaches' perceptions of the purpose of feedback (the why?).



**Figure 3.8.** Pen profile for performance staff's perceptions of the purpose of feedback (the why?).



**Figure 3.9.** Pen profile for player's perceptions of the purpose of feedback (the why?).

### **3.7.3. Delivery of Feedback ('The How')**

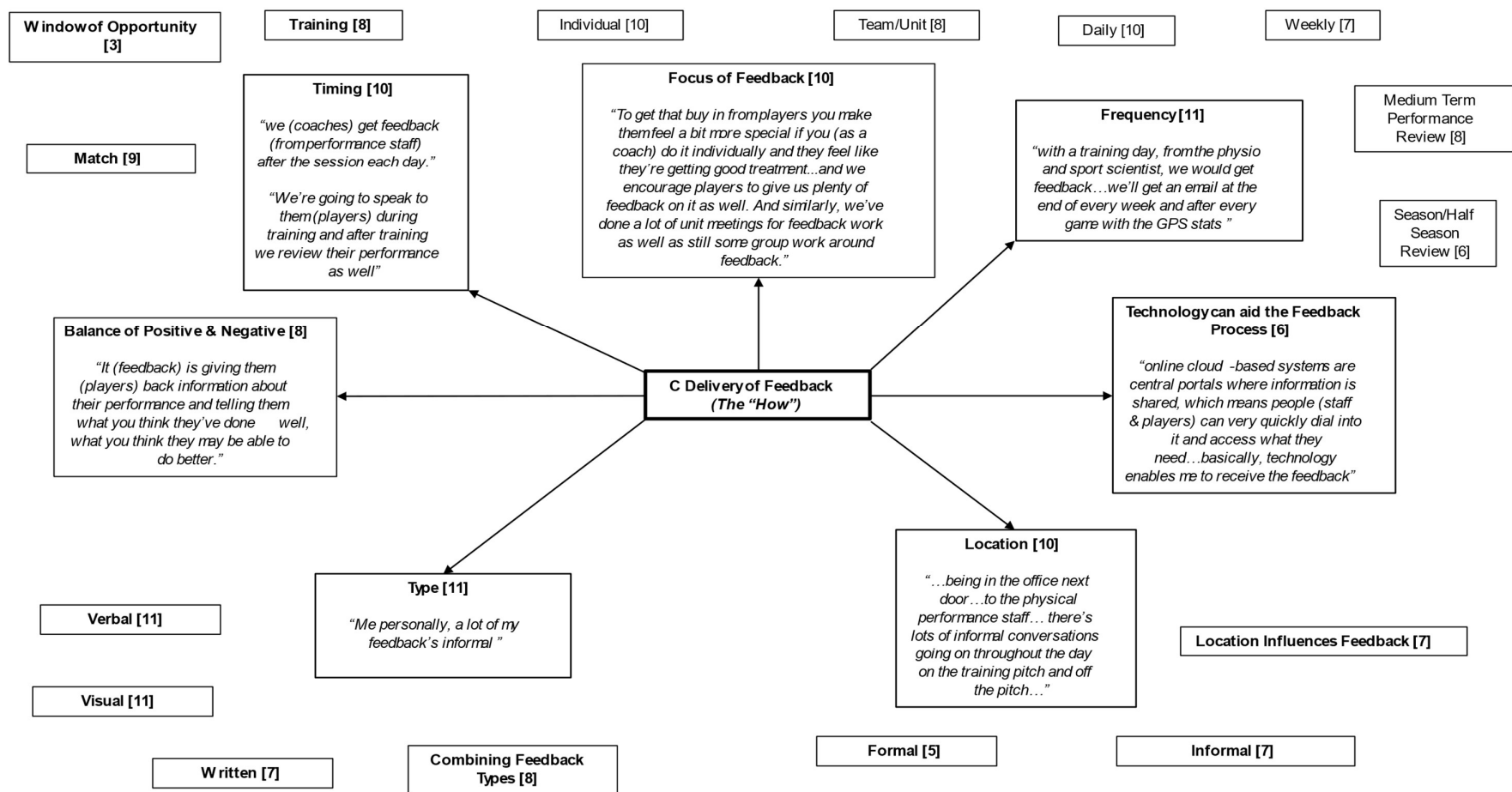
Delivery of Feedback ('The How') explores the detail of how feedback is given and received between key stakeholders (**Table 3.8**). Four higher order themes were explored deductively and related to the literature surrounding feedback and skill acquisition (Salmoni, Schmidt & Walter, 1984) and reflected the structure of the survey from phase one of this study. Those four themes were 'timing', 'frequency', 'type', and 'location' of feedback and were present for all groups. Additionally, three higher order themes were identified for coaches and performance staff: 'focus of feedback'; 'balance of positive and negative'; 'technology can aid the feedback process'. However, technology can aid the feedback process was not present in the players' analysis.

### **Coaches**

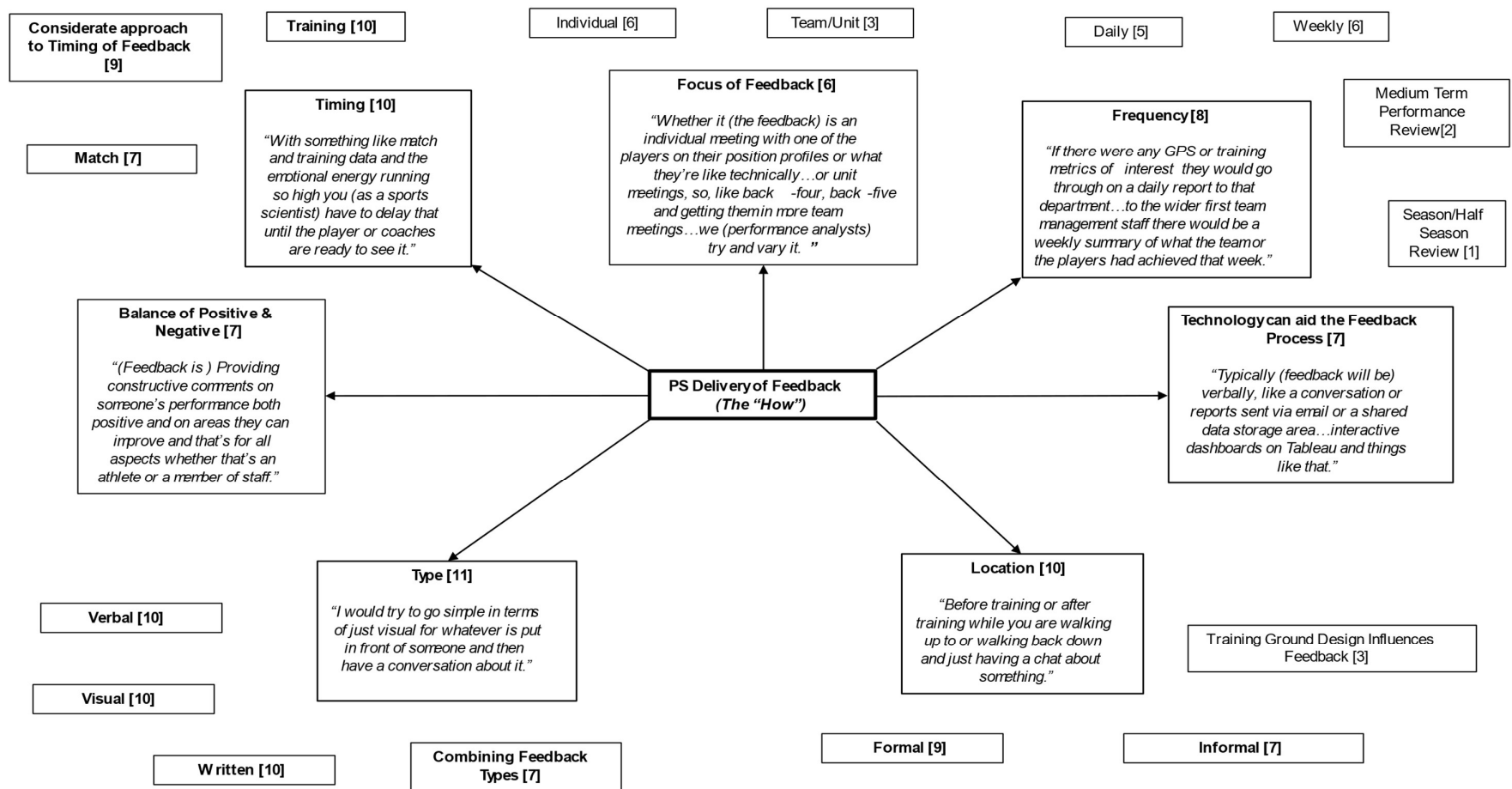
**Figure 3.10** illustrates the composite pen profiles relating to the delivery of feedback, the coaches in this study reported seven higher order themes: timing ( $n = 10$ ); type ( $n = 11$ ); location ( $n = 10$ ); frequency ( $n = 11$ ); focus of feedback ( $n = 10$ ); balance of positive and negative ( $n = 8$ ); technology can aid the feedback process ( $n = 6$ ). Additionally, there were sixteen subthemes of which verbal ( $n = 11$ ), visual ( $n = 11$ ), daily ( $n = 10$ ) and individual ( $n = 10$ ) were the most frequently cited subthemes.

**Table 3.8. Performance staff's, coaches', and players' perceptions of the delivery of feedback ('the how').**

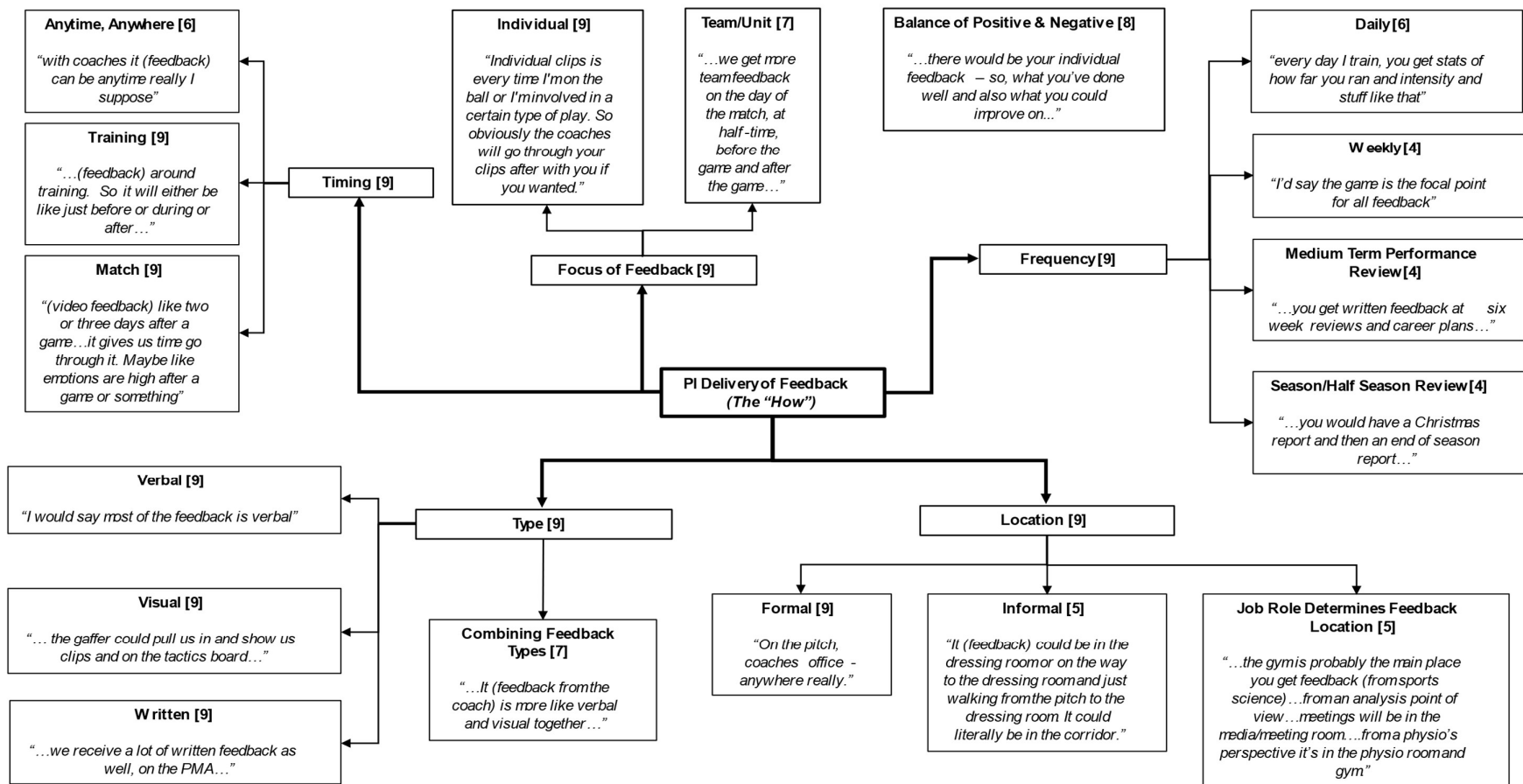
<b>Performance Staff</b>	<b>Coaches</b>	<b>Players</b>
<b>Timing (10)</b> <ul style="list-style-type: none"> <li>• Training (10)</li> <li>• Match (7)</li> <li>• Considerate Approach to Timing of Feedback (9)</li> </ul>	<b>Timing (10)</b> <ul style="list-style-type: none"> <li>• Training (8)</li> <li>• Match (9)</li> <li>• Window of Opportunity (3)</li> </ul>	<b>Timing (9)</b> <ul style="list-style-type: none"> <li>• Training (9)</li> <li>• Match (9)</li> <li>• Anytime, Anywhere (6)</li> </ul>
<b>Type (10)</b> <ul style="list-style-type: none"> <li>• Verbal (10)</li> <li>• Visual (10)</li> <li>• Written (10)</li> <li>• Combining Feedback Types (7)</li> </ul>	<b>Type (11)</b> <ul style="list-style-type: none"> <li>• Verbal (11)</li> <li>• Visual (11)</li> <li>• Written (7)</li> <li>• Combining Feedback Types (8)</li> </ul>	<b>Type (9)</b> <ul style="list-style-type: none"> <li>• Verbal (9)</li> <li>• Visual (9)</li> <li>• Written (9)</li> <li>• Combining Feedback Types (7)</li> </ul>
<b>Location (10)</b> <ul style="list-style-type: none"> <li>• Formal (9)</li> <li>• Informal (7)</li> <li>• Training Ground Design Influences Feedback (3)</li> </ul>	<b>Location (10)</b> <ul style="list-style-type: none"> <li>• Formal (5)</li> <li>• Informal (7)</li> <li>• Location Influences Feedback (7)</li> </ul>	<b>Location (9)</b> <ul style="list-style-type: none"> <li>• Formal (9)</li> <li>• Informal (5)</li> <li>• Job Role Determines Feedback Location (5)</li> </ul>
<b>Frequency (8)</b> <ul style="list-style-type: none"> <li>• Daily (5)</li> <li>• Weekly (6)</li> <li>• Medium Term Performance Review (2)</li> <li>• Season/Half Season Review (1)</li> </ul>	<b>Frequency (11)</b> <ul style="list-style-type: none"> <li>• Daily (10)</li> <li>• Weekly (7)</li> <li>• Medium Term Performance Review (8)</li> <li>• Season/Half Season Review (6)</li> </ul>	<b>Frequency (9)</b> <ul style="list-style-type: none"> <li>• Daily (6)</li> <li>• Weekly (4)</li> <li>• Medium Term Performance Review (4)</li> <li>• Season/Half Season Review (4)</li> </ul>
<b>Focus of Feedback (6)</b> <ul style="list-style-type: none"> <li>• Individual (6)</li> <li>• Team/Unit (3)</li> </ul>	<b>Focus of Feedback (10)</b> <ul style="list-style-type: none"> <li>• Individual (10)</li> <li>• Team/Unit (8)</li> </ul>	<b>Focus of Feedback (9)</b> <ul style="list-style-type: none"> <li>• Individual (9)</li> <li>• Team/Unit (7)</li> </ul>
<b>Balance of Positive &amp; Negative (7)</b>	<b>Balance of Positive &amp; Negative (8)</b>	<b>Balance of Positive &amp; Negative (8)</b>
<b>Technology can aid the feedback process (7)</b>	<b>Technology can aid the feedback process (6)</b>	



**Figure 3.10.** Pen profile for coaches' perceptions of the delivery of feedback (the how?).



**Figure 3.11.** Pen profile for performance staff's perceptions of the delivery of feedback (the how?).



**Figure 3.12.** Pen profile for player's perceptions of the delivery of feedback (the how?).



### ***Performance Staff***

**figure 3.11** illustrates how the performance staff in this study reported seven higher order themes: timing ( $n = 10$ ), type ( $n = 10$ ), location ( $n = 10$ ), frequency ( $n = 8$ ), focus of feedback ( $n = 6$ ), balance of positive and negative ( $n = 7$ ), and technology can aid the feedback process ( $n = 7$ ). Additionally, there were sixteen subthemes of which verbal ( $n = 10$ ), visual ( $n = 10$ ), written ( $n = 10$ ) and training ( $n = 10$ ) were the most frequently cited subthemes.

### ***Players***

The players in this study reported six higher order themes, which are displayed in **Figure 3.12**: timing ( $n = 9$ ), type ( $n = 9$ ), location ( $n = 9$ ), frequency ( $n = 9$ ), focus of feedback ( $n = 9$ ), and balance of positive and negative ( $n = 8$ ). Additionally, there were sixteen subthemes of which verbal ( $n = 9$ ), visual ( $n = 9$ ), written ( $n = 9$ ), training ( $n = 9$ ), match ( $n = 9$ ) and individual ( $n = 9$ ) were the most frequently cited subthemes.

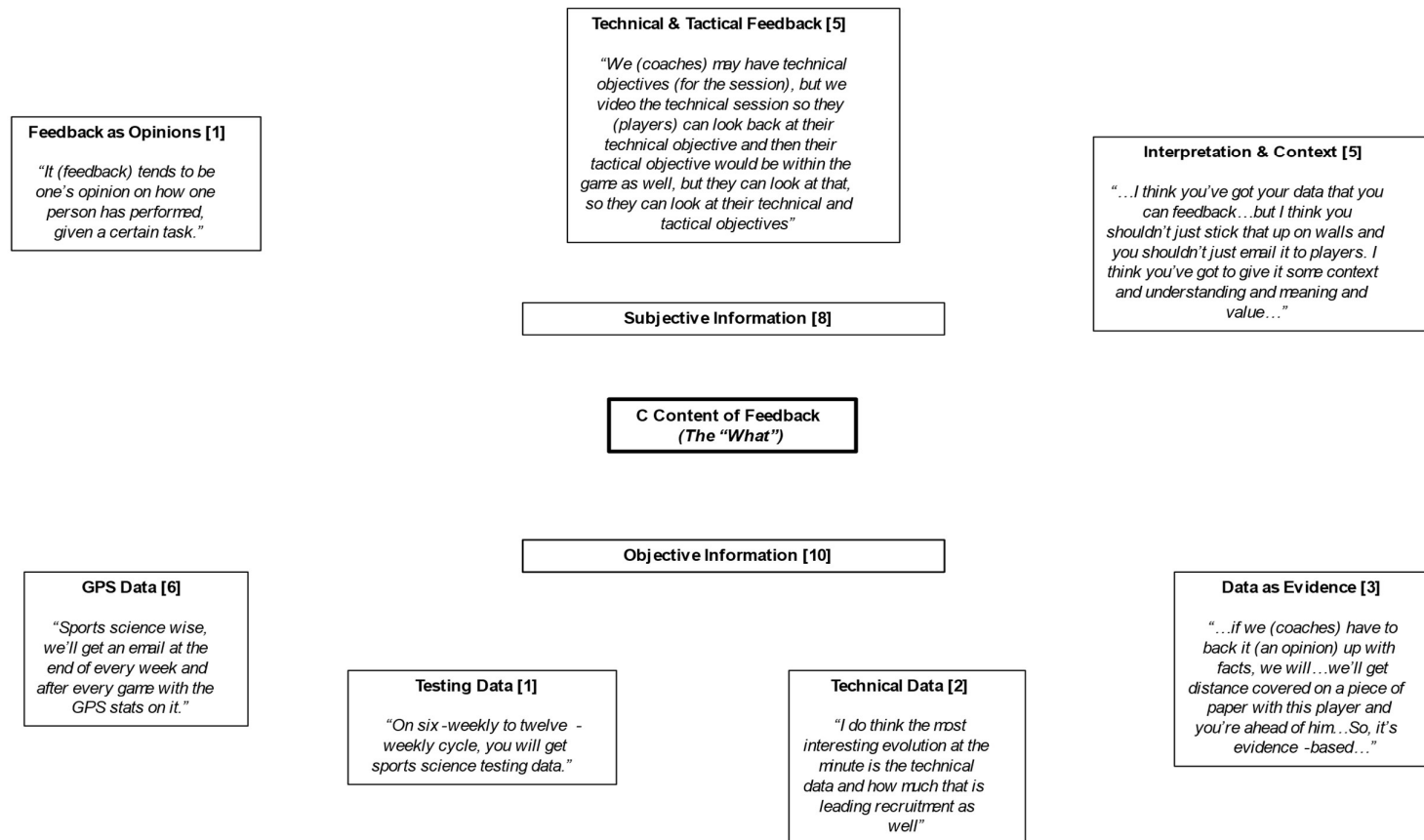
#### ***3.7.4. Content of Feedback ('The What')***

The general dimension represents the types of information contained within the feedback that is given to and received by key stakeholders and is represented by two higher order themes: 'subjective information'; 'objective information' (**Table 3.9**). With regards to subjective information, coaches discussed technical & tactical information that was fed back to players, whereas performance staff discussed corrective physical information delivered to players. Unsurprisingly, players spoke about receiving information in both

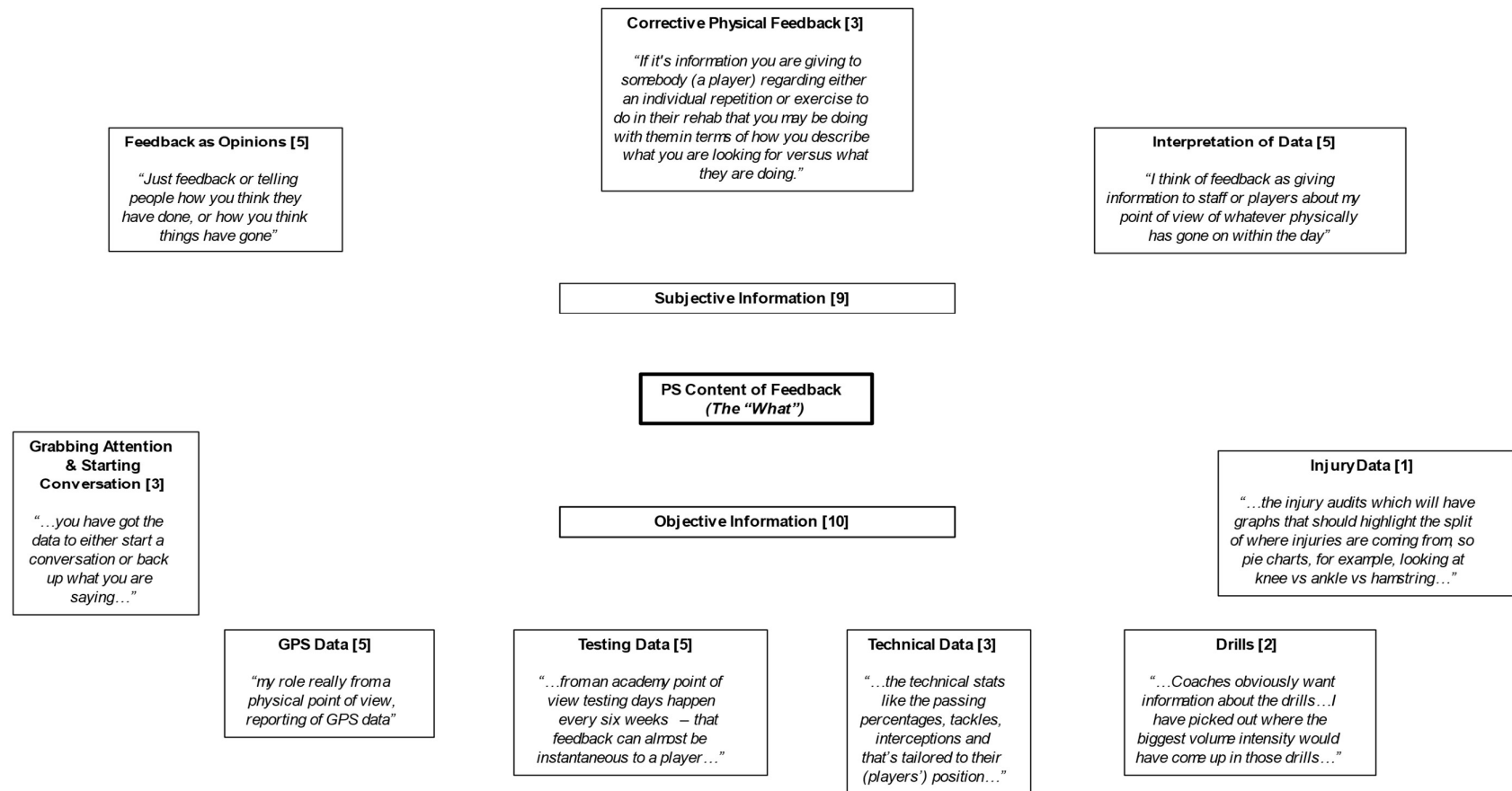
ways described. All groups discussed the feedback of objective information such as GPS data, testing data, and technical data.

**Table 3.9.** Performance staff's, coaches', and players' perceptions of the content of feedback ('the what').

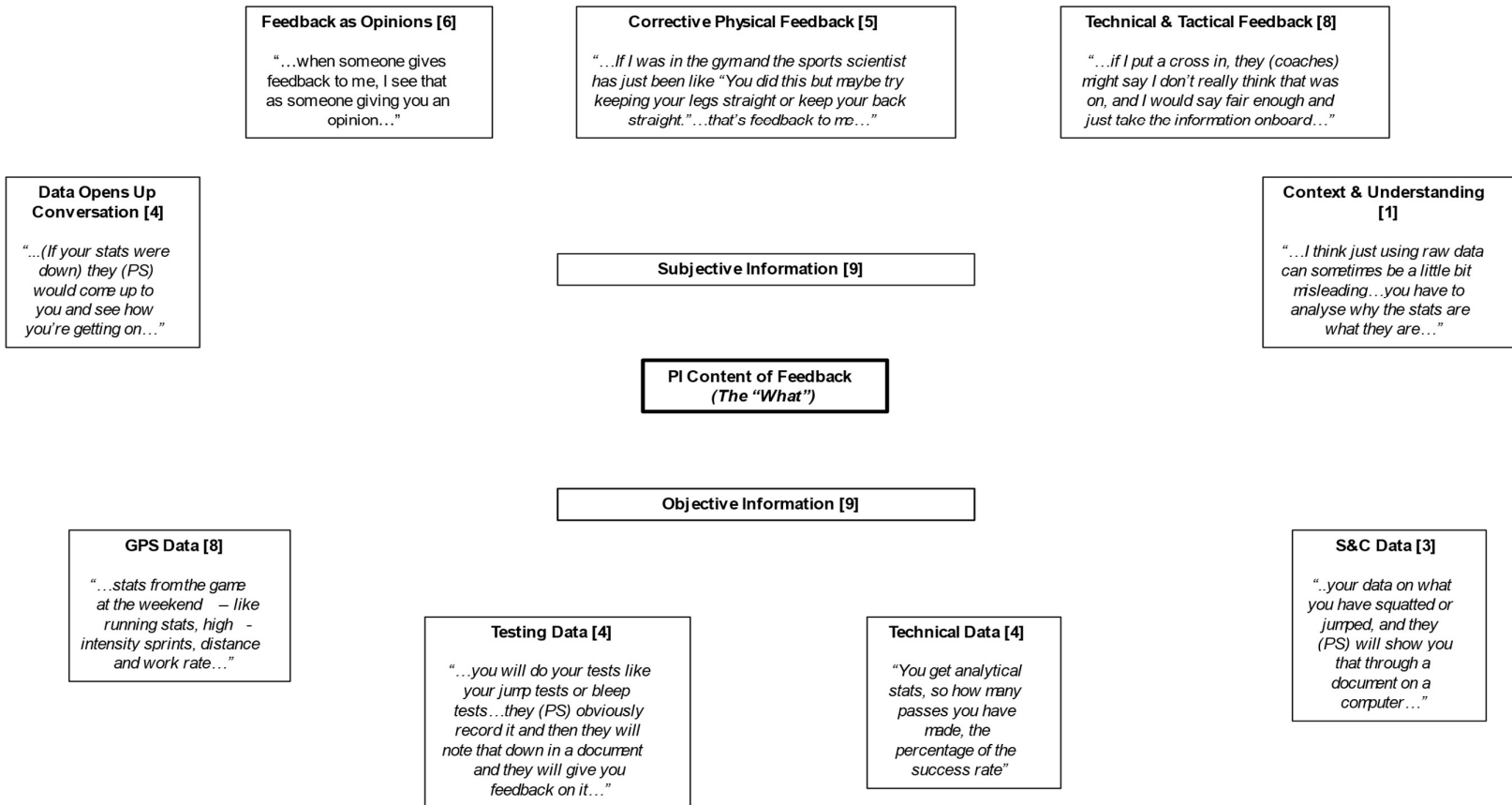
Performance Staff	Coaches	Players
<b>Subjective Information (9)</b> <ul style="list-style-type: none"> <li>• Corrective Physical Feedback (3)</li> <li>• Feedback as Opinions (5)</li> <li>• Interpretation of data (5)</li> </ul>	<b>Subjective Information (8)</b> <ul style="list-style-type: none"> <li>• Technical &amp; Tactical Feedback (5)</li> <li>• Feedback as Opinions (1)</li> <li>• Interpretation &amp; Context of Data (5)</li> </ul>	<b>Subjective Information (9)</b> <ul style="list-style-type: none"> <li>• Corrective Physical Feedback (5)</li> <li>• Technical &amp; Tactical Feedback (8)</li> <li>• Opinions (6)</li> <li>• Context &amp; Understanding (1)</li> <li>• Data Opens Up Conversation (4)</li> </ul>
<b>Objective Information (10)</b> <ul style="list-style-type: none"> <li>• Injury Data (1)</li> <li>• Technical Data (3)</li> <li>• Testing Data (5)</li> <li>• GPS Data (5)</li> <li>• Drills (2)</li> <li>• Grabbing Attention &amp; Starting Conversation (3)</li> </ul>	<b>Objective Information (10)</b> <ul style="list-style-type: none"> <li>• GPS Data (6)</li> <li>• Testing Data (1)</li> <li>• Technical Data (2)</li> <li>• Data As Evidence (3)</li> </ul>	<b>Objective Information (9)</b> <ul style="list-style-type: none"> <li>• GPS Data (8)</li> <li>• Testing Data (4)</li> <li>• Technical Data (4)</li> <li>• S&amp;C Data (3)</li> </ul>



**Figure 3.13.** Pen profile for coaches' perceptions of the content of feedback (the what?).



**Figure 3.14.** Pen profile for performance staff's perceptions of the content of feedback (the what?).



**Figure 3.15.** Pen profile for player's perceptions of the content of feedback (the what?).

## **Coaches**

**Figure 3.13** illustrates the composite pen profiles relating to the content of feedback, the coaches in this study reported two higher order themes: subjective information ( $n = 8$ ), and objective information ( $n = 10$ ). Additionally, there were seven subthemes of which GPS data ( $n = 6$ ), technical and tactical feedback ( $n = 5$ ) and interpretation and context of data ( $n = 5$ ) were the most frequently cited subthemes.

## **Performance Staff**

**Figure 3.14** illustrates how the performance staff in this study reported two higher order themes: subjective information ( $n = 9$ ), and objective information ( $n = 10$ ). Additionally, there were nine subthemes of which GPS data ( $n = 5$ ), testing data ( $n = 5$ ), feedback as opinions ( $n = 5$ ) and interpretation of data ( $n = 5$ ) were the most frequently cited subthemes.

## **Players**

The players in this study reported two higher order themes: subjective information ( $n = 9$ ), and objective information ( $n = 9$ ), which are displayed in **Figure 3.15**. Additionally, there were nine subthemes of which GPS data ( $n = 8$ ), and technical and tactical feedback ( $n = 8$ ) were the most frequently cited subthemes.

### 3.8. Discussion-Phase 2

The aim of the current study was to examine key stakeholders' perceptions of feedback in professional football. Specifically, the aim of phase two was to add depth to the breadth of survey data collected in phase one of this study. Whilst the importance of aspects of general feedback (i.e., skill acquisition in lab settings, systematic observations of coaching practice and use of video feedback) and training load feedback are well established and supported within the literature (Groom et al., 2011; Nosek et al., 2021; Weston, 2018; Williams & Hodges, 2005), this investigation addressed a gap in the current research by examining multiple key stakeholders' perceptions of feedback within professional football. This exploration has the potential to allow for triangulation of perceptions between coaches, players and performance staff thus extending our current understanding and allowing for comparisons to be made between groups. In line with previous research which identified that feedback (more specifically video feedback) is a complex phenomenon (Groom & Cushion, 2005; Middlemas & Harwood, 2018), this study confirmed that feedback within football is multifaceted and involved a combination of overlapping and interlinked factors (**Figure 3.3**). The main findings indicated that the content and delivery of feedback were directly shaped by the environment in which the feedback was taking place (i.e., performance or development focused) and hence, the purpose (The Why) of the feedback. On a broader level the communication of information was shaped by several factors including the need for key stakeholders to build and maintain relationships, the insecure social environment, and the fast paced



and emotional delivery climate. In order to take advantage of the frequent (i.e., daily) opportunities that exist to potentially influence practice, decision making and behaviours of other relevant stakeholders, practitioners (coaches and performance staff) should be proactive in their approach, in order to deliver feedback that is perceived to be useful and informative to the receiver. It is recommended that practitioners should take a reflective and considered approach towards their feedback delivery strategies and undergo regular interpersonal skills training to optimise how they feedback relevant performance related information.

### ***Communication in the Professional Football Environment***

When referring to communication within the professional football environment, it was evident from the data that the relationships between both providers and receivers of feedback shaped delivery practices for a number of reasons. Having what was perceived to be a friendly relationship facilitated more open and honest feedback and allowed the feedback provider to understand the preferences of the receiver and how the information should be presented to different individuals for maximum effect. Open and honest feedback was a frequently cited theme amongst coaches ( $n = 10$ ) and players ( $n = 8$ ) and one coach described how a friendly working relationship which was built on trust and respect served as a platform for open and honest feedback to be delivered with maximum impact. These sentiments align with previous studies on use of video feedback between coaches and players whereby respect between the two parties has been identified as vital for feedback to be

accepted (Nelson et al., 2014). The findings from this study further the notion which has been proposed within the coaching literature that a strong relationship between coach and athlete is pivotal to effective coaching and increases the chances of success for coaches and athletes alike (Jowett, 2017). Furthermore, building relationships and obtaining athlete and coach engagement has also been discussed between performance analysts, coaches, and players (McKenna et al. 2018). Additionally, contemporary literature in this area has regularly referred to coaches and performance staff being able to develop relationships built on trust and respect (Littlewood, 2018; Till et al., 2019; Ward et al., 2019). However, this is the first study to provide evidence highlighting key stakeholder perceptions of the importance of relationships in delivering open and honest feedback to improve performance. Previous recommendations have been made in the literature for coaches and performance staff to adopt an approach that prioritises relationships built on trust and respect (Bartholomew, 2017; Buchheit, 2016; Buchheit, 2017). The data presented in the current study sheds new light on the importance of developing interpersonal skills for delivering feedback with more impact. It is recommended, regardless of stakeholder group, that the first step towards delivering feedback that meets the needs of the receiver, should be to build a personal and friendly working relationship (McKenna et al., 2018), as this serves as a platform upon which to deliver feedback that is more likely to be accepted by the receiver.

Extending current knowledge in the coaching and performance analysis literature that contextual factors have an impact upon video feedback delivery strategies (Groom et al., 2011), it was clear across all three groups in the

present study that the environment and context shaped or framed the feedback that was being delivered. Contextual factors such as the social environment have been identified as having an influence on feedback delivery across professional sporting environments (Booroff, Nelson & Potrac, 2016; Groom et al., 2011; Middlemass & Harwood, 2018; Nelson et al., 2014). Indeed, these sentiments were echoed within the current study whereby “egos and big personalities” and “insecurity and uncertainty” were frequently cited themes across all participant groups. Coaches often reported how feedback was negatively affected due to the egos and big personalities of other coaches, and that some coaches would not want to receive any feedback on their delivery styles or training sessions at all. This contrasts with the literature surrounding coach learning which has previously demonstrated that coaches learn through observations and informal social interactions with other coaches (Stodter & Cushion, 2017; Stoszkowski & Collins, 2016). Additionally, this contrasts with the findings from the survey data presented in phase one of this chapter whereby all coaches reported delivering feedback to other coaches. The belief that egos and big personalities affected feedback delivery was shared by performance staff who often reported that the manager’s office and meetings with other members of staff were daunting scenarios. This is in line with previous literature which has examined neophyte performance analyst’s experiences of forging a career within a professional football club. They described an environment where performance staff should “know their place” and be cognisant of their background, experience, and position with the club (McKenna et al., 2018). This micropolitical milieu may challenge the notion of clear pathways for effective two-way dialogue to occur and may present a

significant barrier to feedback. A cautious approach may be taken by performance staff working within professional football, whereby they look to operate with humility, open-mindedness and respect for the professional experiences and backgrounds of the coaches and players they are working with (Buchheit, 2016; Foster, 2019). Ideally, an approach such as this may promote better working relationships and a more integrated approach to feedback of information thus leading to enhanced outcomes for stakeholders. More work is needed to understand if the feedback currently being delivered is perceived as useful by key stakeholders and whether it can be optimised to improve perceptions of feedback and ultimately enhanced performances.

Participants regularly referred to there being a high number of key stakeholders involved and a fast paced, highly emotional delivery climate. The delivery climate was often referred to, especially by coaches and performance staff, as fast paced. Descriptions of a fast-paced delivery environment may be indicative of the frequent match play and regular periods of fixture congestion observed within professional football (Anderson et al., 2016). Several performance staff described an optimum window of opportunity for feedback relating to training load data. They suggested that feedback should be delivered whilst it was still fresh in the players' and coaches' minds but before the focus was shifted to the next training session or match. Optimum windows of time (i.e., 24-48 hours) for feedback delivery have been described by players regarding feedback for analysis and critical reflection on match performances (Wright et al., 2016). However, preferences for the timing of feedback of performance related data (such as training load data) by players and coaches have not been extensively covered in the literature to date. The

contemporary literature has reported a need for fast and efficient data collection, storage and analysis coupled with clear and effective data visualisation techniques. This research also highlights how data visualisations accompanied by verbal feedback are critical to feedback being utilised by coaches, players, and other performance staff to influence the decision-making process (Thornton et al., 2019; Ward et al., 2019). The findings presented in the current study go some way to addressing the gap identified within the literature, thus attempting to better understand how feedback is delivered and impacts upon the communication processes in place within sporting organisations (Ward et al., 2019; Weston, 2018). Additionally, future research should look to examine the optimum timing of performance related feedback to key stakeholders. However, it is anticipated that this will be highly individual to the coach, player or performance staff member involved.

### **Purpose of Feedback (The Why)**

Consistent across all three groups was the idea that feedback is used for reviewing and reflecting on performance in training/matches or current progress towards specific goals/targets. Indeed, this was a frequently cited theme for performance staff ( $n = 10$ ), coaches ( $n = 11$ ), and players ( $n = 8$ ) alike. Feedback being used as a tool for critical reflection on match performance within both coaches and players has been demonstrated in the video feedback literature relating to several different sports (Francis & Jones, 2014; Groom & Cushion, 2005; Groom, et al., 2011; Middlemass & Harwood, 2018; Nelson et al., 2014; Wright et al., 2016). Players spoke more about the

reflective cycle described by Groom et al. (2011), in that the delivery of feedback starts from three central elements; performance, analysis and training and is ultimately cyclical in nature. The players' descriptions of post-match feedback from coaches support findings by Wright et al., (2016) that video feedback is a valuable tool for self-reflection and improving game understanding. In contrast, coaches and performance staff described reviewing and reflecting more on the physical aspects of training and game performances and how this impacted on subsequent planning of future training sessions. The integration of a multidisciplinary support team to assist and guide the coaching process is not a new phenomenon and has been described in the coaching literature previously (Lyle, 2002). Additionally, the extensive training load monitoring practices adopted by professional football clubs have previously been described (Akenhead & Nassis, 2016; Nosek et al., 2021; Weston, 2018). As such, the agreement between coaches and performance staff over the prevalence of training load monitoring practices displayed in a qualitative fashion is a novel finding within this area of scientific enquiry. Whilst the findings from the current study are in alignment with the notion of feedback providing an opportunity for reviewing and reflecting on performances, the work presented here extends current knowledge by providing evidence of the widespread use of performance related feedback between departments (i.e., coaching, sports science, performance analysis, medical, psychology).

Whilst feedback is closely linked with reviewing and reflecting on previous performances, it is also dependent on the environment in which it is being delivered. Hence, the purposes of feedback, whilst similar and overlapping in nature are somewhat different between performance (i.e., first

team) and development (academy) environments. Within the current study, a performance focused environment was characterised by the management of player workload, implementing a coaching philosophy, and maintaining motivation of players. Additionally, it seems that the feedback of data is driven by key performance indicators such as availability, fitness, and freshness (Lacome et al., 2018; Neupert et al., 2019). Whereas a development focused environment was more centred on learning, education and setting focused goals/targets for players to achieve (Relvas et al., 2010). Because of the coaches in this study working within the professional development phase (i.e., under 18s-23s), they regularly referred to feedback being delivered towards players' individual goals and targets. Additionally, players also frequently cited tracking progress towards goals as a key purpose of feedback. Indeed, combinations of goals and feedback have been shown to be more effective than goals alone in determining improvements in performances (Locke & Latham, 2002). This approach to goals forming the basis for feedback is in alignment with Hattie & Timperley's model of feedback within education settings, which may most closely represent the development environment within the current research (Hattie & Timperley, 2007). The majority of coaches interviewed within the current study were at the intersection of first team and academy environments. It may therefore be difficult to differentiate between the performance and development environments in the way that the coaches in this study spoke about feedback. This may have been because of their position within the PDP or because of several of them being ex-players who have only recently transitioned into coaching.

### ***Delivery of Feedback ('The How')***

The results from this phase of the study largely reflected the nature of the findings within the survey relating to the type, timing, location and frequency of feedback delivery. Consequently, the most frequently cited subthemes were related to the type (i.e., verbal, visual and written), timing (around training and matches) and frequency (i.e., daily) of feedback. In addition to this there were several findings which arose inductively when discussing feedback delivery such as, the balance of positive and negative feedback, how technology could be used to aid the feedback process and whether feedback was provided at a team, unit, or individual level. Indeed, individual feedback was one of the most frequently cited subthemes by both coaches and players during the interviews.

**Figures 3.10 - 3.12** highlight the numerous ways that feedback is delivered between key stakeholders in professional football. A combination of verbal and visual feedback delivered frequently around training and games supports the findings from phase one of this research. A previous study by Mason, Farrow and Hattie (2020a) examined the way in which sports coaches deliver feedback to their athletes. Their inductive analysis revealed three main themes: thinking and learning about feedback; providing feedback; evaluating feedback. Subthemes discussed under the 'providing feedback' theme were akin to elements discussed within the delivery of feedback theme in this study, namely feedback quantity and feedback timing. Indeed, coaches in the Mason et al. (2020a) study discussed not overloading their athletes with feedback, however the trend in the current study was towards high volumes of feedback delivered frequently (before, during, after training daily). Comparatively,



participants in both studies described feedback as before, during or after training and “*anytime, anywhere*”. Comparisons between the current study and that of Mason et al. (2020a) are difficult due to the different cultural environments of the participants and may be since only one participant (out of 8) was a football coach. The frequent nature of verbal and visual feedback reported in the current study may be representative of receiver preferences for feedback and indicative of how stakeholders within this working environment build and maintain relationships (Bartholomew, 2016; Neupert et al., 2019). Furthermore, athletes have been reported to display a preference for visual feedback of training monitoring data supported by formal or informal verbal discussions with staff (Neupert et al., 2019). Again, coaches and performance staff may recognise the regular opportunities for feedback to each other and to athletes and should look to develop interpersonal and conversational skills to build and maintain relationships with other key stakeholders.

Regarding the focus of feedback, it was evident that there was a combination of ways in which feedback was delivered by performance staff and coaches to players, namely team/unit and individual feedback. Team and unit feedback were grouped together in the same theme for this study, although it is acknowledged that there are differences in these methods of delivery, they both differ significantly from one-to-one individual feedback. Indeed, individual feedback was one of the most frequently cited subthemes within the delivery of feedback general dimension. All coaches ( $n = 10$ ) and players ( $n = 9$ ) cited individual forms of feedback. Whilst the combination of group and individual feedback delivery methods presented here are synonymous with the contemporary performance analysis literature it should

be noted that there is a stronger preference of players studied within the literature to date towards individual forms of feedback (Francis & Jones, 2014; Groom et al., 2011; Middlemas & Harwood, 2018; Nelson et al., 2014). Indeed, Francis & Jones (2014) reported that elite rugby union players requested more individual feedback from their coaches on their performances and that engagement within this process of individualised feedback could significantly improve future performances. Furthermore, in a study of academy football coaches and players, Middlemas and Harwood (2018) demonstrated that due to the complex nature of the feedback process, coaches may need to further individualise feedback to players to satisfy their preferences and needs. Consequently, it should be recommended that practitioners delivering feedback to professional football players are mindful of players' preferences for individual feedback and incorporate this into their practice wherever possible. Further research should look to address the perceptions of players of a range of different ages towards their preferences for receiving feedback and the social impact that negative or comparative feedback (Lewthwaite & Wulf, 2010) delivered in group settings (such as the gym/on the pitch) has on their motivation and subsequent behaviour in training.

Feedback took place in a range of locations that could be considered in both formal and informal ways. For example, formal locations where feedback would be expected to take place were supported within the interview data (i.e., pitch, meeting, offices, and gym/treatment room). Informal locations included walking to training, travel i.e., hotels & team buses, and corridor conversations. These formal locations for feedback are supported within both systematic observations of coaches (e.g., on pitch) (Ford et al., 2010; Partington &

Cushion 2013) and investigations into feedback in S&C settings (e.g., gym) (Weakley et al., 2019). Additionally, it has been shown that coaches and performance staff deliver feedback and reflect on sessions together in meetings and informal conversations (Nosek et al. 2021). However, no study to date has defined the locations in which feedback is taking place in professional football. The combination of formal and informal locations mentioned above displays the nuances and complexities of feedback in this environment and the considerations that practitioners must take when deciding when and how to deliver feedback. Regardless of job role i.e., coach or performance staff, the data presented in this study supports the notion that practitioners should be mindful of the myriad of opportunities to deliver feedback. As a result, practitioners should be considered in their approach to when and where they choose to communicate messages to influence decision making and behaviour.

The influence of training ground design was reported by both coaches and performance staff. Performance staff reported that this was both a help and a hinderance when attempting to deliver different forms of feedback to various stakeholders. For example, one sports scientist discussed how players would come into their office and seek feedback due to the fact that it was on their way to their gym session. Coaches from some clubs reported that the proximity of their office to the sports science or analysis office meant that more informal conversations were taking place which facilitated discussions and sharing of information. Additionally, findings from previous studies examining healthcare (Iedema, Long & Carroll, 2010; Waring & Bishop, 2010) and higher education settings (Thomson & Trigwell, 2018) have highlighted the

importance of informal locations i.e., “corridor conversations” or “water coolers” towards knowledge sharing, organisational learning and improved student and patient outcomes. Furthermore, shared office space for coaches and performance staff has been a recommendation within several studies (Akenhead & Nassis, 2016; Nosek et al., 2021; Weston, 2018), however this is the first study to provide qualitative data that evidences the perceptions of key stakeholders towards the locations for feedback and how training ground design influences how performance related information is shared. Therefore, the locations where feedback is being delivered should be a key consideration for practitioners and those responsible for training ground design. Consequently, it is recommended that future work should look to address whether there is an optimal office layout and configuration to stimulate conversation and informal feedback and whether this improves outcomes.

### ***Content of Feedback (‘The What’)***

Consistent with studies carried out in a wider variety of settings (Hattie & Timperley, 2007; Kluger & DeNisi, 1996), participants across all three groups in this study referred to feedback as information given to improve future performances. Feedback being referred to as information or data has been described within studies centred around employees within organisational settings (Latham & Locke, 1991), educational settings (Hattie & Timperley, 2007; Henderson, Ryan & Phillips, 2019) and motor learning (Schmidt & Lee, 2014). Within the current cohort, this “information” was further subdivided into two main themes as participants felt that the content of feedback was a

combination of subjective (i.e., opinions and interpretations of data) and objective (i.e., GPS data and fitness testing data) information. There are some subtle differences and nuances between the information delivered and received by each group of participants.

It has previously been demonstrated that coaches use feedback from performance staff such as performance analysts to analyse performance in relation to their coaching philosophies (Wright et al., 2012). Data presented here shows that a range of different forms of objective data were reported by performance staff within this study (i.e., technical data, injury data, and data on drills). Yet the most frequently cited forms of objective feedback were GPS data ( $n = 5$ ) and testing data ( $n = 5$ ), which is reflective of the current body of evidence regarding feedback of training load and physical data to players and coaches (Akenhead & Nassis, 2016; Buchheit, 2017; Nosek et al., 2021; Weakley et al., 2019; Weston, 2018). Using surveys, both Akenhead and Nassis (2016) and Nosek et al. (2021) have reported that training load monitoring and feedback using GPS monitors is a frequently adopted practice within professional football. Additionally, Buchheit (2017) reported that through attractive and informative reporting of training load and testing data practitioners can engage coaches and athletes with the monitoring process. However, detailed qualitative accounts from practitioners working in this practical and applied setting have been lacking to date. Therefore, this research adds to the current understanding by providing rich and detailed accounts of feedback by stakeholders directly involved within its delivery.

Furthermore, this study has highlighted the subjective nature of feedback from performance staff to coaches, with interpretation of data ( $n = 5$ )

and feedback as opinions ( $n = 5$ ) being frequently cited. Subjective feedback that was given as opinions centred mainly around performance staff's perceptions of the data that they had collected and analysed. For example:

*“How you think sessions have gone in terms of talking to coaches afterwards, how do you think certain things worked? Yeah, so really just feedback or telling people how you think they have done, or how you think things have gone” (P06 – Sports Scientist).*

The perceptions of performance staff represented in the current study are in line with previous work which has shown that most practitioners (i.e., sports scientists/fitness coaches) felt that they were primarily responsible for the analysis and interpretation of training load data (Weston, 2018). Additionally, it has been reported that irrespective of the data collection and analytic techniques implemented (i.e., training load monitoring, technical performance data, fitness testing data), the most important aspects to practitioners and coaches should still be how data is interpreted and used in training interventions (Bourdon et al., 2017; Foster, 2019). Indeed, Foster (2019) suggested that sports scientists should regard themselves as helpers to coaches and should respond to rapidly changing information about what data is important and how it should be interpreted. Hence, it should be recommended that performance staff take a proactive approach to “filtering” the vast quantities of data that are available and be highly selective over what is important to feedback to coaches to influence future coach decision-making.

In comparison to feeding back to coaches, performance staff in this study also referred to feedback of performance related information to players through the feedback of data (i.e., GPS data from training and matches, and testing data following fitness testing). The finding that GPS data is regularly fed back to players is in line with recent research in similar populations (Nosek et al., 2021; Weston, 2018) and is probably reflective of the fact that half of the performance staff interviewed within this study were involved in the provision of sports science services. Feedback of data was referred to by performance staff ( $n = 3$ ) as providing a starting point for drawing a players' attention to a key piece of information (i.e., a testing score or a physical match output) or as a conversation starter regarding the data that was being presented. Skill acquisition research has demonstrated that one of the functions of feedback is to direct attention, and performance staff were engaging in this practice when presenting information to players (Schmidt & Lee, 2014). However, the information presented should be relatively simple as forms of feedback such as video have been shown to provide too much information and recipients of the feedback may not know what to focus their attention on unless cues are used (Middlemas & Harwood, 2018). Performance staff also frequently cited how immediate testing data was evident within the content of their feedback ( $n = 5$ ). The finding that testing data is fed back to players almost instantaneously supports previous research on the effects of feedback of live data on subsequent weightlifting performance in the gym (Nagata et al., 2020; Weakley et al. 2019). These findings taken together highlight that feedback of performance related information may be important in guiding future player

behaviours. Future studies should look to assess how much feedback of data is perceived as useful by players and whether it impacts on performances.

Considering players are the recipients of high volumes of performance related feedback (as shown in phase one of this study), it is important to understand their perceptions of the feedback they are receiving. Almost all players referred to the content of feedback coming in the form of GPS data ( $n = 8$ ) from performance staff, namely sports scientists. The below quote shows the nature of this with relation to both training and match play scenarios:

*“With every game you get how much you have run or how much high speed you have covered. It’s the same for training. We do things like what your max velocity is and what top speed you have hit during that specific run or that specific session. With every training session there is GPS and heart rate to track, and they (performance staff) have it all on live data” (P22 – 1<sup>st</sup> Team Player).*

This is consistent with research which has specifically examined the feedback of GPS training load data showing players can be positively affected by being presented with their physical outputs after a training session (Nosek et al., 2021). This study adds depth to the survey responses presented in phase one of this study and previous survey data regarding players’ perceptions of performance related feedback in professional football (Nosek et al., 2021). Previous research has focused on players’ perceptions of video feedback in several sports including professional football and rugby union.



The methodological approach adopted in this study adds depth to some areas that were not evident in the literature. Although synonymous with other research in the area regarding feedback of performance related data by performance staff, this study provides novel qualitative data to display the nature of this feedback delivered by sports scientists and received by coaches and players. However, taking a view of the content of feedback alone is relatively simplistic and subsequent sections will describe how the *content* of feedback relates to the *purpose* of the feedback (i.e., educational, tracking progress) and the *nature* of the relationships between individuals involved.

### ***Strengths and Limitations***

This study extends current knowledge of perceptions of key stakeholders towards several different areas within professional football that have been obtained through online surveys (Akenhead & Nassis, 2016; Harper et al., 2016; McCall et al., 2014; Nosek et al., 2021; Towlson et al., 2013; Weston, 2018). Despite the ever-increasing use of surveys, more detailed qualitative investigations (i.e., interviews and/or focus groups), especially with performance staff are scarce in the literature to date. Hence, this study set out to interview participants from three key stakeholder groups, including performance staff to challenge the predominant quantitative epistemological approach adopted in sports science research. This approach allowed collection of data from a rich and varied source and attempted to provide context and illustrate the daily realities experienced by coaches, players, and performance staff (McCunn, Gibson & Harper, 2018).

A major strength of this research was the sample size ( $n = 30$ ) across three participant groups, which was large given the qualitative methodology employed. Previous studies employing similar methodologies in professional football have focused their attentions on one or two groups of key stakeholders and have studied far fewer numbers of participants (Groom et al., 2011,  $n = 14$  coaches; Groom & Cushion, 2005,  $n = 10$  players; Middlemas & Harwood, 2018,  $n = 11$  coaches and  $n = 12$  players; Wright et al., 2016,  $n = 22$  players). Hence, the volume of interviews carried out here and the subsequent data analysis have provided a rich corpus of data which offers depth and insight into a previously under researched area.

This study is not without limitations, and it should be recognised that players and performance staff were more highly represented by participants from a first team environment. In contrast the coaches were all from an academy environment (PDP) thus making comparisons between the groups potentially more difficult. In addition, the findings presented here may only be representative of the first team and professional development phase and not of other developmental phases (i.e., youth development phase and foundation phase). Future research should look to address the differences in feedback strategies evident within these phases as this may create a more longitudinal framework for feedback delivery throughout a players' and indeed a coach or performance staff member's career. The data presented here still provides evidence which was previously lacking in the literature regarding the perceptions of three key stakeholder groups and as such, the detail and examples provided shed new light on this area.

The varied roles of the different performance staff interviewed may make interpretations of the results more difficult as each role (i.e., performance analyst, sports scientist, physio, nutritionist) is very different in nature. Whereas the coaches and players were much more homogenous groups in terms of their roles and responsibilities. More investigations into feedback strategies adopted by specific job roles and larger sample sizes are warranted. Finally, to improve trustworthiness, all interviews could have been conducted face to face (some were done over phone and video call), and the interview guide could have been provided to participants prior to the interview.

### ***Conclusion***

The overall findings of this study (phase 1 & 2) elucidate the mechanisms of feedback practices within professional football club environments, which sheds new light on a previously underrepresented area in the literature regarding the broader concept of performance related feedback. The combination of quantitative and qualitative methodologies employed provide breadth and depth and an exploration of the perceptions of three groups of key stakeholders. In summary, feedback is delivered frequently between key stakeholders i.e., daily. Whilst this information is delivered in several ways, it appears that it is primarily delivered verbally and often informally. Additionally, the information and the way it is delivered is fundamentally linked with the purpose of the feedback and is shaped by the communication, culture, and context of the club that it is delivered within. Indeed, a What? How? Why? Model of feedback which is cognisant of interpersonal communication factors and sensitive to the environmental demands should be adopted by coaches, performance staff and players when

delivering feedback. The quantity of feedback reported, and the complexities of feedback uncovered within this study demonstrate the challenges and opportunities faced by coaches and performance staff in terms of aligning feedback practices that can improve performance or aid the development of players. As factors such as lack of a common goal, poor communication and high volumes of information have been reported as barriers to effective feedback practices (Nosek et al., 2021), it would seem prudent to recommend that future studies establish how useful the feedback strategies are that are currently in place. Consequently, future studies should attempt to examine attitudes of key stakeholders towards the utility of feedback strategies highlighted within this study with a view to designing specific feedback interventions which aim to enhance perceptions towards feedback and ultimately the performance or development of players and teams.

**CHAPTER 4 - PERFORMANCE RELATED  
FEEDBACK: THE PERCEIVED EFFECTIVENESS  
OF CURRENT STRATEGIES USED BY  
COACHES, PLAYERS AND PERFORMANCE  
STAFF IN ENGLISH PROFESSIONAL  
FOOTBALL**

#### 4.1. Introduction

**Chapter three** examined current feedback practices between key stakeholders and successfully triangulated the perceptions of a wide range of participants including players, coaches, and performance staff from various disciplines (e.g., sports science). Whilst the previous study provides a detailed overview of the highly frequent and informal nature of feedback, an assessment of how 'effective' (i.e., informing coaching practice or player behaviour) participants perceived those feedback practices to be remains lacking. Therefore, the current chapter looked to address this issue by examining whether the information (i.e., timing) of feedback in Chapter three was perceived to be effective by the provider and/or the receiver.

Studies examining whether feedback is perceived to be effective by both the provider and the receiver is currently limited. Examinations of feedback effectiveness have been carried out in a range of educational and business settings (Hattie & Timperley, 2007; Henderson, Ryan & Phillips, 2019; Kluger & DeNisi, 1996). For example, Henderson et al. (2019) examined student and university staff perceptions of the effectiveness of feedback and demonstrated that a number of factors including feedback content, context and the characteristics of individuals affected the effectiveness of feedback. However, studies examining the perceptions of the recipients of feedback in professional football (i.e., coaches and players) to determine how effective it was in influencing their future practices and/or behaviours, have been limited (Nosek et al., 2021; Weston, 2018; Wright et al., 2012; Wright et al., 2016). Furthermore, research has been restricted in its scope regarding stakeholder recommendations for improvements in current practices. Barriers to providing

effective feedback have been documented in the literature (Akenhead & Nassis, 2016; Nosek et al., 2021), such as misalignment in training philosophies between coaches and performance staff, high volumes of information and poor communication strategies. Consequently, there is a clear need to further investigate the attitudes of both providers and receivers of feedback towards how effective the feedback is in informing future practice and influencing athlete behaviours/choices. Moreover, more detailed assessments of effectiveness are warranted to provide recommendations for future feedback interventions/practices.

An understanding of the utility or effectiveness of interventions in applied practical environments can provide an invaluable source of information for stakeholders working in these settings (Bishop, 2008; Drust & Green, 2013). **Chapter three** demonstrated that feedback interventions are used frequently by both coaches and performance staff in professional football, however further understanding of the effectiveness of these practices is warranted. Moreover, without a quantification of perceived effectiveness, a translational gap may still exist between what is delivered and what is 'actually perceived' to be useful by the recipients of this information (Eisenmann, 2017). Furthermore, it has been recommended within the literature that qualitative and mixed methods research may be used to describe a problem and explore the perceptions of practitioners who implement various practices (Harper & McCunn, 2017). Triangulation of perceptions of effectiveness in relation to an area of practice is therefore necessary to foster a collaborative approach to improving outcomes for all stakeholders involved (Andrew et al., in press; Arnold et al., 2017). Feedback from performance staff is heavily context and

job role specific and the nature of typical coach feedback has been proposed in the aforementioned literature. Although they are often the recipients of the majority of feedback, players are often neglected in this process. Furthermore, there is also a lack of research that concomitantly explores coaches, performance staff and players perceptions of the effectiveness of feedback practices.

Understanding key stakeholder's attitudes towards the utility of feedback currently delivered is critical to ensuring that the numerous opportunities for feedback provision are maximised. It is anticipated that this study will give voice to all of these stakeholder groups and provide recommendations for future feedback practices. To our knowledge, this is the first study that uses a mixed-methods design (i.e., surveys coupled with interviews) to triangulate perceptions of three stakeholder groups towards the effectiveness of current feedback strategies in professional football. It is suggested that the findings of this study may provide the opportunity to inform future design of interventions to modulate perceptions of feedback clarity, usefulness and satisfaction in professional football. Therefore, the aim of the current study was to examine key stakeholder attitudes towards the perceived effectiveness of different types (i.e., verbal, visual, written), timings (i.e., immediate, delayed) and locations (i.e. pitch, gym, meetings) of feedback to provide recommendations for future improvements in feedback strategies.



## 4.2. Methods

### 4.2.1. Overall Research Design

As discussed in previous chapters (**Chapters Two** and **Three**) there has been a lack of empirical research which has attempted to examine the perceptions and experiences of all key stakeholders within a professional football environment. Most research has, to date, utilised a quantitative and therefore positivistic approach to understanding practitioner and/or coach perspectives simultaneously (Akenhead & Nassis, 2015; Weston, 2018). Alternatively, more qualitative, and interpretative, albeit singular approaches have been adopted to understand the perceptions of both coaches and players across a range of topics from coaching behaviours (Partington & Cushion, 2013; Smith & Cushion, 2006) to the use of video/performance analysis (Groom et al., 2011; Middlemas & Harwood, 2018; Nelson et al., 2014). Further, *combining* these research approaches into mixed methods studies using surveys alongside semi-structured interviews has been proposed within the recent literature (Francis & Jones, 2014; Harper & McCunn, 2017; Wright et al., 2016). With the specific research question in mind, it was deemed appropriate to adopt a pragmatic research philosophy to provide an in-depth exploration of stakeholders' daily practices and interpretation of the real-world feedback processes which they are involved in (Corbin & Strauss, 2008; Cruickshank et al., 2014; Wright et al., 2016). The study used a mixed-methods approach through the use of a face-to-face survey which concurrently facilitated an in-depth discussion within a semi-structured interview.

#### **4.2.2. Participants**

Participants that engaged in Chapter 3 were recruited. Participants had been made aware (via a participant information sheet) before taking part in Study One that this was a consecutive research design and that they may be contacted again to take part in a follow up interview (this was reiterated verbally at the end of the first interview). A total of fifteen potential participants were contacted to take part (five from each group) using purposive sampling to organise and carry out interviews in a time efficient manner (Patton, 2002; Wright et al., 2016). Consideration was taken as to which participants to approach to provide a representative sample (i.e., job roles, age groups represented) (**Table 4.1**). The study was granted institutional ethical approval by the Research Ethics Committee of Liverpool John Moores University (19/SPS/004). All participants provided written informed consent.

#### **4.2.3. Interview Design and Pilot Testing**

The survey and interview guide were developed with the aim of exploring the effectiveness of the feedback strategies discussed in the previous chapter and followed a similar format and structure to that employed in Study One (see **Table 3.5 & Appendix C**). Questions were developed by the lead researcher and were based on outcomes from Study One and relevant literature (Wright, Atkins, & Jones, 2012; Akenhead & Nassis, 2015; Stoszkowski & Collins, 2016; Weston, 2018). Additionally, a 5-point Likert scale was developed to quantify participants perceptions of effectiveness (1 = highly ineffective, 5 = highly effective) on a measurable scale (Likert, 1932; Ekstrand et al., 2018; Francis & Jones, 2014), this was designed to be

answered numerically and then discussed qualitatively within the subsequent interview. To minimise bias and ensure trustworthiness, the author and a group of experienced researchers and practitioners met on several occasions to analyse and challenge the development of the interview guide. The survey and interview guide were reviewed for content validity (Stoszkowski & Collins, 2016) via numerous rounds of draft feedback and group discussions with all members of the research team. In these early stages of development (which involved four meetings and two drafts), changes were made around framing of effectiveness in relation to the overall research question, providing examples and context for potential participants and reducing repetition of questions thus reducing participant burden. Pilot testing was carried out on a small convenience sample of participants matching the inclusion criteria ( $n = 4$ ; two sports scientists, one coach, one player). Pilot testing was an iterative process as it was carried out over a 4-month period (which included the off season). This allowed the author an opportunity to refine the implementation of the interview as it was a logistically difficult interview to carry out with the survey, scale and keeping participants on track i.e., requesting ratings and probing for more depth to participants' responses. Following the pilot testing the only alterations made were when participants were asked "*how could you improve each element of feedback?*", rather than asking "*how could you improve informal chats?*" it simply became a summary of "*how could you improve verbal feedback?*". These amendments were to avoid that of repetition and participant burden. It was during this process that the decision was made to carry out 15 interviews rather than 30 due to the long duration of the interviews (90 - 120mins) and thus considerations were made regarding time

efficiency and resources during data collection and analysis (Braun & Clarke, 2013; Patton, 2002). However, the interview guide was continued regardless of length as feedback from participants was that it was deemed appropriate. The process of pilot testing four participants informed the decision to aim to recruit fifteen participants (i.e., five from each group) and that it was sufficient to address the research question whilst being mindful of issues such as resources, time, and saturation/information power (Braun & Clarke, 2019b).

**Table 4.1.** Participant demographic information including years of experience, age group representation, league status, and academy status.

<b>Group</b>	<b>Participant ID</b>	<b>Years of Experience</b>	<b>Age Group</b>	<b>League</b>	<b>Academy Category</b>
Coaches	Coach 1	25 years	U18s	Championship	Category 2
	Coach 2	12 years	All	Premier League	Category 1
	Coach 3	15 years	All	Premier League	Category 1
	Coach 4	6 years	U18s	Championship	Category 1
	Coach 5	8 years	U23s	Championship	Category 2
Performance Staff	Performance Staff 1	5 years	First Team	Championship	Category 1
	Performance Staff 2	4 years	U23s/U18s	Championship	Category 1
	Performance Staff 3	12 years	First Team	Premier League	Category 1
	Performance Staff 4	11 years	U23s/U18s	Championship	Category 1
	Performance Staff 5	10 years	First Team	Premier League	Category 1
Players	Player 1		First Team	Championship	Category 1
	Player 2		First Team	Championship	Category 1
	Player 3		U23s	Championship	Category 1
	Player 4		U18s	Championship	Category 1
	Player 5		First Team	Championship	Category 2

#### **4.2.4. Procedure**

During the interview, the interviewer guided the participants through the survey whilst subsequently extracting more information as to why participants had selected their response (**Table 4.2**). The author used written recording templates (see **Appendix C**) to make a note of participants' responses to the survey items. During this process the author acted as an 'active listener' to assist the participants in describing their perceptions of effectiveness of feedback in their own words (Sparkes & Smith, 2014). Opportunity was given for honest and more in-depth answers due to the author's previous rapport with the participants from the interviews conducted in Study One of this research project and/or previous or current working relationships. All but one of the interviews were carried out face-to-face at a time and location that was convenient for the participant. The interviews were primarily conducted at each participants' club facilities, following gatekeeper approval. However, due to one of the participants' busy training, game, and travel schedule, one interview was conducted via telephone. All interviews were digitally recorded on a Dictaphone (Sony-ICD-PX370, Sony Corporation, Japan), transcribed verbatim and anonymised to ensure a complete and accurate record of the data was obtained.

#### **4.2.5. Data Analysis**

With regards to the survey data, the handwritten responses (written on recording templates) were manually input into Microsoft Excel and subsequently exported to SPSS (version 25, IBM, New York, USA). Likert scale responses were converted to integers and represented by the qualitative

**Table 4.2.** An overview of the interview guide with example questions including the rationale behind each section.

Section	Example Questions	Rationale
1. Recap and Reintroduction	Did our interview last time make you think about or reflect upon how you deliver/receive feedback?	To reintroduce the participant to the topic of feedback and prime them for the interview.
2. Feedback given to coaches	Using the scale can you rate how effective informal chats are for delivering feedback to coaches? Could you tell me why you feel this? How could verbal feedback be improved?	To follow up on the outcomes of Study 1 (i.e. feedback is highly prevalent between performance staff & coaches on a daily basis). To examine the performance staff's perceptions of the effectiveness of current feedback strategies with coaches.
3. Feedback given to players	Using the scale can you rate how effective "before training" is for delivering feedback to players? Could you tell me why you feel this? How could the timing of feedback be improved?	To follow up on the outcomes of Study 1 (i.e. feedback is highly prevalent between performance staff & players to support performance & development ). To examine the performance staff's perceptions of the effectiveness of current feedback strategies with players.
4. Two Way Feedback	Using the scale can you rate how effective is the feedback that you give to other members of the performance staff in influencing important decisions and affecting the training & planning process? Could you tell me why you feel this? How could feedback between departments/disciplines be improved?	To follow up on the outcomes of Study 1 (feedback was reported to be 2 way between all groups by >80%). To examine the performance staff's perceptions of the effectiveness of current feedback strategies between departments/disciplines.
5. Summary	Is there anything else you'd like to add that we haven't covered, or would you have any final words or summary on this area?	Question provided useful insight into key areas for analysis in study 1 and pilot studies.

anchor associated with the mean response (Hopkins, 2010). Findings are presented as means, standard deviations and the qualitative anchor (Weston, 2018). Independent t-tests were carried out, however due to the variation in the data and small sample size it was deemed appropriate not to include these in the results section. The interview data was thematically analysed, utilising the six-step process suggested by Braun and Clarke (2013), whereby the author became immersed in the data, listening to audio files multiple times, rereading transcripts and discussing with experienced researchers and practitioners who acted as critical friends. A framework/codebook was developed for the analysis which was informed deductively based on previous literature surrounding skill acquisition (Williams and Hodges, 2005) and the main areas investigated within Study One (i.e., timing, type, location). These deductive themes were focused on the feedback processes between stakeholder groups (i.e., performance staff and coaches, performance staff and players, coaches and players, and two-way feedback) however, all interview transcriptions were coded following an inductive approach throughout (Wright et al., 2016). From here, initial codes were identified from the raw data using QSR NVivo (Qualitative Solution Research 2018, Version 12, [www.qsrinternational.com](http://www.qsrinternational.com)), to assist in the data storage, organisation, and analysis process. Once all raw data had been coded and collated, the data was analysed, and methodological rigour was ensured in accordance with the procedures employed within Study One (**see Chapter Three – Phase Two**).



### 4.3. Results

Overall, fifteen individual semi-structured interviews were conducted with participants from the three groups described above (five coaches, five performance staff and five players), over a period of five months. Interviews were audio recorded and transcribed verbatim. Interviews ranged in length from 40 to 130 minutes ( $T = 1233$  min;  $M = 82.2$  min). The survey data is presented alongside the thematic analysis and discussed simultaneously in order to provide clear comparisons between groups and to provide a numerical reference point for discussion. Stakeholders' perceptions of perceived effectiveness of feedback are presented within four higher order themes of which two could be considered to be deductive based on the structure of the survey; optimising feedback delivery and areas of improvement. Hence, the findings from the surveys contained within the interviews will be presented alongside the optimising feedback delivery theme. The remaining two themes, understanding the individual and feedback climate arose inductively throughout the interviews. In order to offer a more comprehensive and detailed insight into the perceived effectiveness of feedback between stakeholder groups, the findings will be presented as dyadic relationships between two stakeholder groups i.e., performance staff and coaches.

#### 4.3.1. Performance Staff & Coach

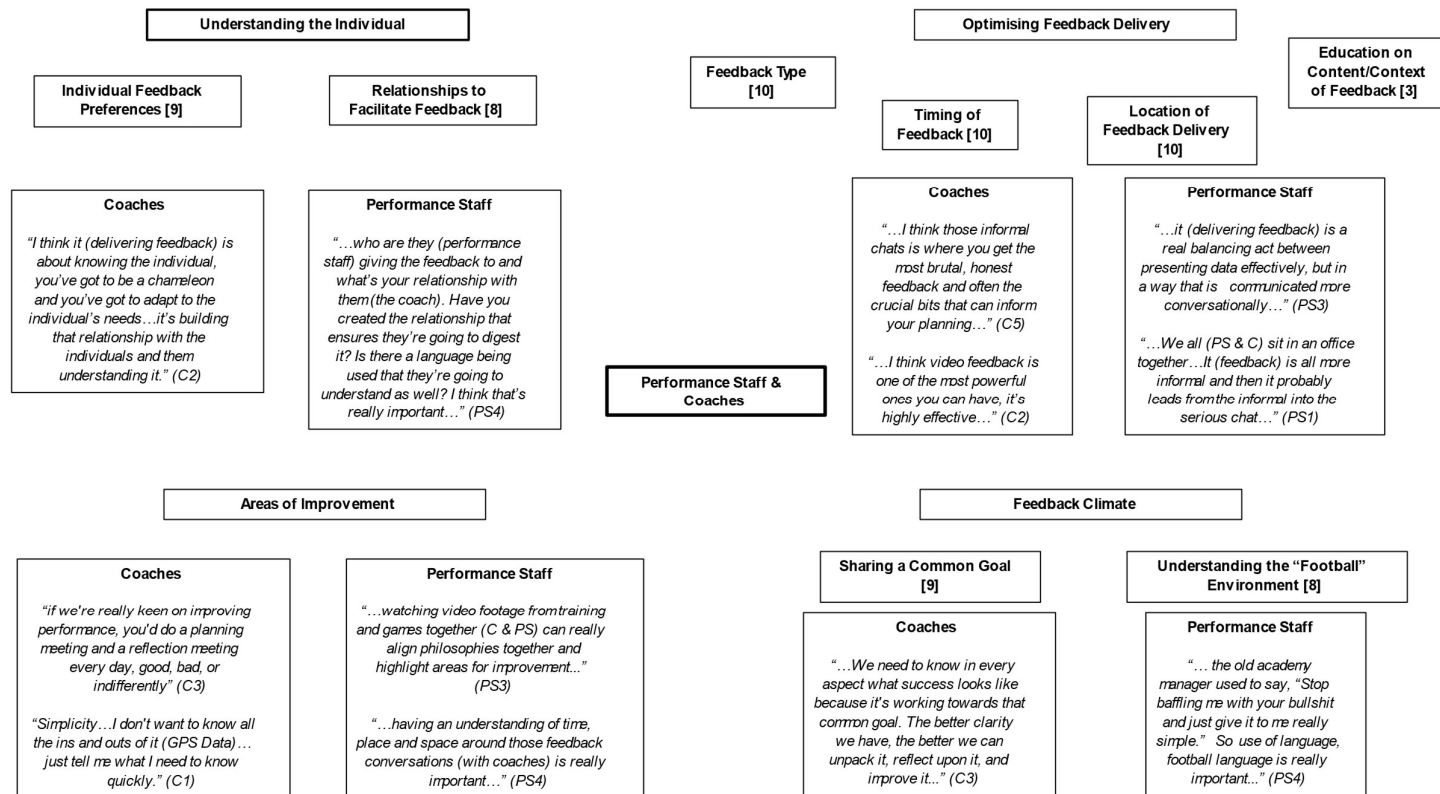
##### *Interview Data*

**Figure 4.1** illustrates the composite pen profiles relating to the perceived effectiveness of feedback captured within the performance staff and coaches' interviews. Four higher order themes were identified *understanding*

*the individual* ( $n = 10$ ), *optimising feedback delivery* ( $n = 10$ ), *feedback climate* ( $n = 10$ ), and *areas of improvement* ( $n = 10$ ). Additionally, there were eight subthemes of which *type of feedback* ( $n = 10$ ), *timing of feedback* ( $n = 10$ ) and *location of feedback delivery* ( $n = 10$ ) were the most frequently cited within the deductive theme *optimising feedback delivery*. An inductive subtheme *education on content/context of feedback* ( $n = 3$ ) was also recognised within *optimising feedback delivery*. The most frequently cited subthemes within the inductive themes were *individual feedback preferences* ( $n = 9$ ) and *sharing a common goal* ( $n = 9$ ).

### *Survey Data*

For type of feedback, performance staff perceived informal chats and video as *effective*. Coaches rated informal chats, formal meetings, video, and demonstrations as *effective* in influencing the coaching process (**Table 4.3**). Performance staff perceived written types of feedback as *ineffective*, and coaches rated all written types of feedback as *somewhat effective*. Performance staff felt that after training and during matches were *effective* in influencing coaching practice whereas coaches felt that all time points were at least *somewhat effective* with after a match being *highly effective* in influencing their practices. Performance staff felt that the office was *effective* for delivering feedback to coaches and coaches perceived the office to be *highly effective*, in addition to the pitch, which was also perceived to be *effective*.



**Figure 4.1.** Pen profile representing performance staff and coaches' perceptions of the perceived effectiveness of feedback. Numbers in parentheses indicate the total number of participants who spoke in relation to a theme.

**Table 4.3.** Mean ( $\pm$ SD) performance staff and coach responses to the Likert scale perceived effectiveness of feedback questions.

		<b>Performance Staff (mean <math>\pm</math> SD)</b>	<b>Coaches (mean <math>\pm</math> SD)</b>
<i>How effective are the following types of feedback in influencing the coaching process?</i>			
Verbal	Informal Chats	Effective (4.2 $\pm$ 0.4)	Effective (4.2 $\pm$ 1.3)
	Formal Meetings	Somewhat Effective (3.2 $\pm$ 0.4)	Effective (3.8 $\pm$ 1.3)
	Phone Calls	Ineffective (2.2 $\pm$ 0.8)	Ineffective (1.6 $\pm$ 0.9)
Visual	Video	Effective (3.8 $\pm$ 1.1)	Effective (4.0 $\pm$ 1.7)
	Demonstrations	Somewhat Effective (3.0 $\pm$ 1.6)	Effective (3.6 $\pm$ 1.1)
	Graphs	Somewhat Effective (3.0 $\pm$ 0.7)	Somewhat Effective (3.0 $\pm$ 1.2)
Written	Paper Based Reports	Ineffective (2.2 $\pm$ 0.4)	Somewhat Effective (3.0 $\pm$ 1.0)
	Reports on Computer	Ineffective (2.2 $\pm$ 0.4)	Somewhat Effective (3.4 $\pm$ 1.1)
	E/Mail/Text/WhatsApp	Ineffective (2.4 $\pm$ 0.9)	Somewhat Effective (2.8 $\pm$ 1.3)
<i>How effective are the following timings of feedback to influence the coaching process?</i>			
Training	Before Training	Somewhat Effective (3.2 $\pm$ 1.6)	Effective (4.0 $\pm$ 1.2)
	During Training	Ineffective (2.4 $\pm$ 0.9)	Effective (3.6 $\pm$ 1.1)
	After Training	Effective (3.8 $\pm$ 0.4)	Effective (4.0 $\pm$ 1.4)
Match	Before Match	Ineffective (2.4 $\pm$ 1.5)	Somewhat Effective (2.8 $\pm$ 1.1)
	During Match	Effective (3.6 $\pm$ 1.7)	Effective (3.6 $\pm$ 1.1)

After Match	Somewhat Effective (3.4 ± 0.9)	Highly Effective (4.6 ± 0.9)
<i>How effective are the following locations for feedback to influence the coaching process?</i>		
Pitch	Somewhat Effective (2.6 ± 0.9)	Effective (3.6 ± 1.1)
Phone	Ineffective (2.2 ± 0.8)	Ineffective (2.0 ± 1.0)
E-Mail/Text	Ineffective (2.4 ± 0.9)	Somewhat Effective (3.2 ± 0.8)
Office	Effective (4.2 ± 0.4)	Highly Effective (4.6 ± 0.5)
Notice Board	Highly Ineffective (1.4 ± 0.5)	Ineffective (2.2 ± 1.3)
Gym	Ineffective (1.8 ± 0.8)	Ineffective (2.4 ± 1.3)
Canteen	Somewhat Effective (3.2 ± 1.3)	Highly Ineffective (1.4 ± 0.5)
Dressing Room	Ineffective (2.2 ± 0.8)	Somewhat Effective (2.6 ± 1.5)

Likert Scale

1: highly ineffective; 2: ineffective; 3: somewhat effective; 4: effective; 5: highly effective

### 4.3.2. Performance Staff & Player

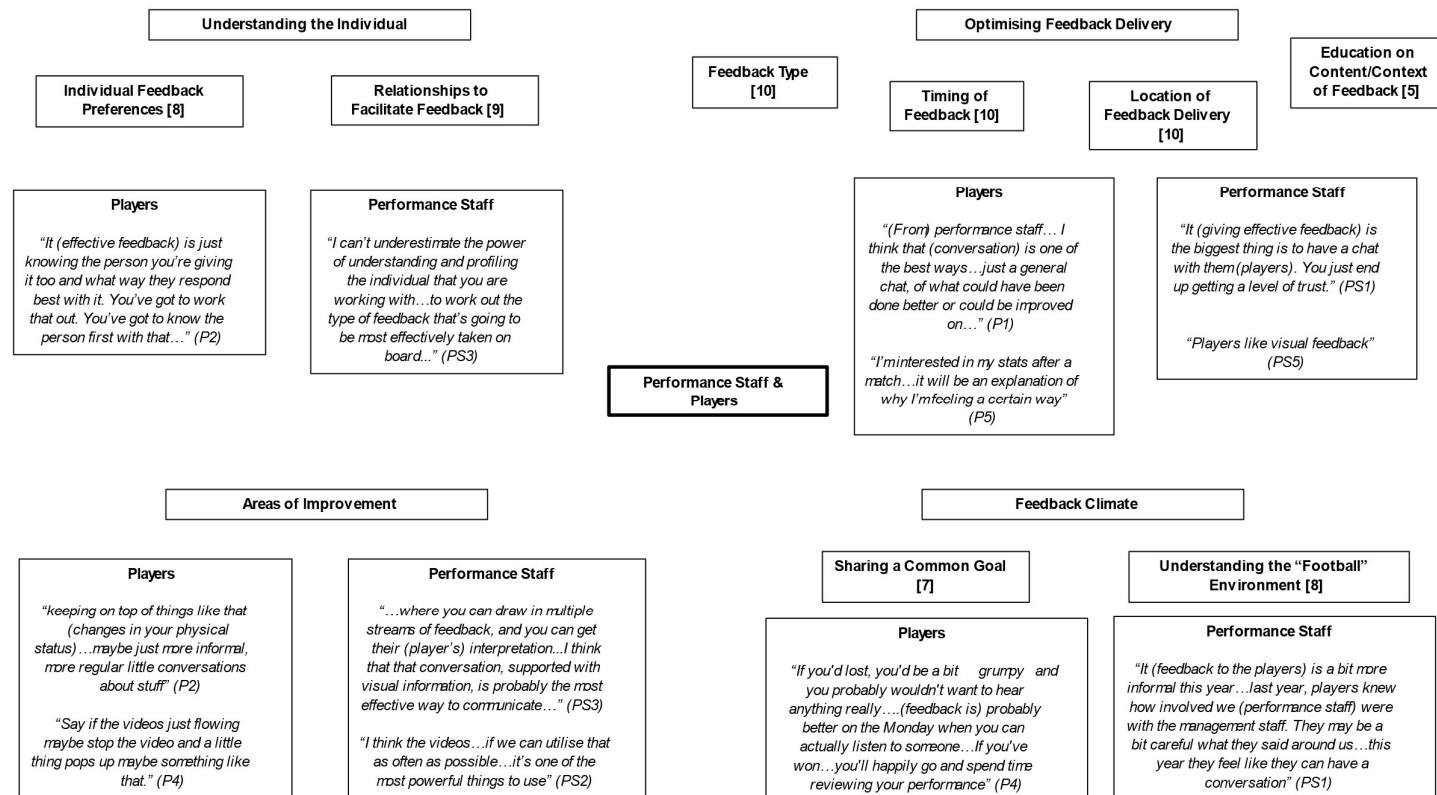
#### Interview Data

**Figure 4.2** illustrates the composite pen profiles relating to the perceived effectiveness of feedback captured within the performance staff and players' interviews. Four higher order themes were identified *understanding the individual* ( $n = 10$ ), *optimising feedback delivery* ( $n = 10$ ), *feedback climate* ( $n = 9$ ), and *areas of improvement* ( $n = 9$ ). Additionally, there were eight subthemes of which *type of feedback* ( $n = 10$ ), *timing of feedback* ( $n = 10$ ) and *location of feedback delivery* ( $n = 10$ ) were the most frequently cited within the deductive theme *optimising feedback delivery*. The inductive subtheme *education on content/context of feedback* ( $n = 5$ ) was also recognised within *optimising feedback delivery*. The most frequently cited subtheme within the inductive themes was *relationships to facilitate feedback* ( $n = 9$ ).

#### Survey Data

Regarding type of feedback, performance staff perceived informal chats, video and demonstrations as *effective*, whereas players perceived almost all types of verbal, visual, and written feedback (with the exception of formal meetings and phone calls) as *effective* in influencing player decision making or future behaviour (**Table 4.4**). Additionally, performance staff perceived both phone calls and paper-based reports as ineffective types of feedback. Performance staff felt that the most effective timing of feedback to players was before training, whilst feedback during training and matches was perceived as *ineffective*. However, players felt that feedback during training, after training and after matches was *effective*. Feedback before and during matches was

considered *ineffective* by players, with very little variance in the responses for during matches (0.7). Players generally responded more positively for perceived effectiveness of locations for feedback, with pitch, office, and gym rated the highest by players.



**Figure 4.2.** Pen profile representing performance staff and players' perceptions of the perceived effectiveness of feedback. Numbers in parentheses indicate the total number of participants who spoke in relation to a theme.



**Table 4.4.** Mean ( $\pm$ SD) performance staff and player responses to the Likert scale perceived effectiveness of feedback questions.

		<b>Performance Staff (mean <math>\pm</math> SD)</b>	<b>Players (mean <math>\pm</math> SD)</b>
<i>How effective are the following types of feedback in influencing behaviour/decision making?</i>			
Verbal	Informal Chats	Effective (4.0 $\pm$ 1.0)	Effective (4.0 $\pm$ 0.7)
	Formal Meetings	Somewhat Effective (3.4 $\pm$ 1.7)	Somewhat Effective (2.8 $\pm$ 1.8)
	Instructions	Somewhat Effective (3.0 $\pm$ 1.4)	Effective (4.0 $\pm$ 0.7)
	Phone Calls	Ineffective (2.2 $\pm$ 1.3)	Somewhat Effective (3.2 $\pm$ 1.8)
Visual	Video Demonstrations	Effective (4.4 $\pm$ 0.5)	Effective (3.6 $\pm$ 1.1)
	Graphs	Effective (4.2 $\pm$ 0.4)	Effective (4.4 $\pm$ 0.9)
		Somewhat Effective (3.2 $\pm$ 1.3)	Effective (4.4 $\pm$ 0.5)
Written	Paper Based Reports	Ineffective (2.2 $\pm$ 1.3)	Effective (3.8 $\pm$ 1.1)
	Reports on Computer	Somewhat Effective (2.6 $\pm$ 1.1)	Effective (3.6 $\pm$ 0.9)
	E/Mail/Text/WhatsApp	Somewhat Effective (3.0 $\pm$ 1.2)	Effective (4.0 $\pm$ 1.0)
<i>How effective are the following timings of feedback to influence behaviour/decision making?</i>			
Training	Before Training	Effective (4.0 $\pm$ 1.0)	Somewhat Effective (3.2 $\pm$ 1.5)
	During Training	Ineffective (2.0 $\pm$ 1.0)	Effective (3.6 $\pm$ 1.3)
	After Training	Somewhat Effective (3.4 $\pm$ 1.5)	Effective (3.8 $\pm$ 1.1)
Match	Before Match	Somewhat Effective (3.4 $\pm$ 1.5)	Ineffective (2.4 $\pm$ 1.3)
	During Match	Ineffective (2.4 $\pm$ 1.7)	Ineffective (2.0 $\pm$ 0.7)

After Match	Somewhat Effective (2.8 ± 1.1)	Effective (4.2 ± 0.8)
<i>How effective are the following locations for feedback to influence behaviour/decision making?</i>		
Pitch	Ineffective (2.4 ± 1.3)	Effective (3.8 ± 0.8)
Phone	Ineffective (2.2 ± 1.3)	Somewhat Effective (2.6 ± 0.9)
E-Mail/Text	Somewhat Effective (2.8 ± 0.8)	Effective (3.6 ± 0.9)
Office	Somewhat Effective (2.6 ± 0.9)	Effective (3.8 ± 0.8)
Notice Board	Ineffective (1.6 ± 0.9)	Somewhat Effective (2.8 ± 0.4)
Gym	Somewhat Effective (3.4 ± 0.5)	Effective (4.0 ± 0.7)
Canteen	Somewhat Effective (2.8 ± 0.8)	Somewhat Effective (3.0 ± 0)
Dressing Room	Somewhat Effective (2.8 ± 1.3)	Ineffective (2.0 ± 0.7)

Likert Scale

1: highly ineffective; 2: ineffective; 3: somewhat effective; 4: effective; 5: highly effective

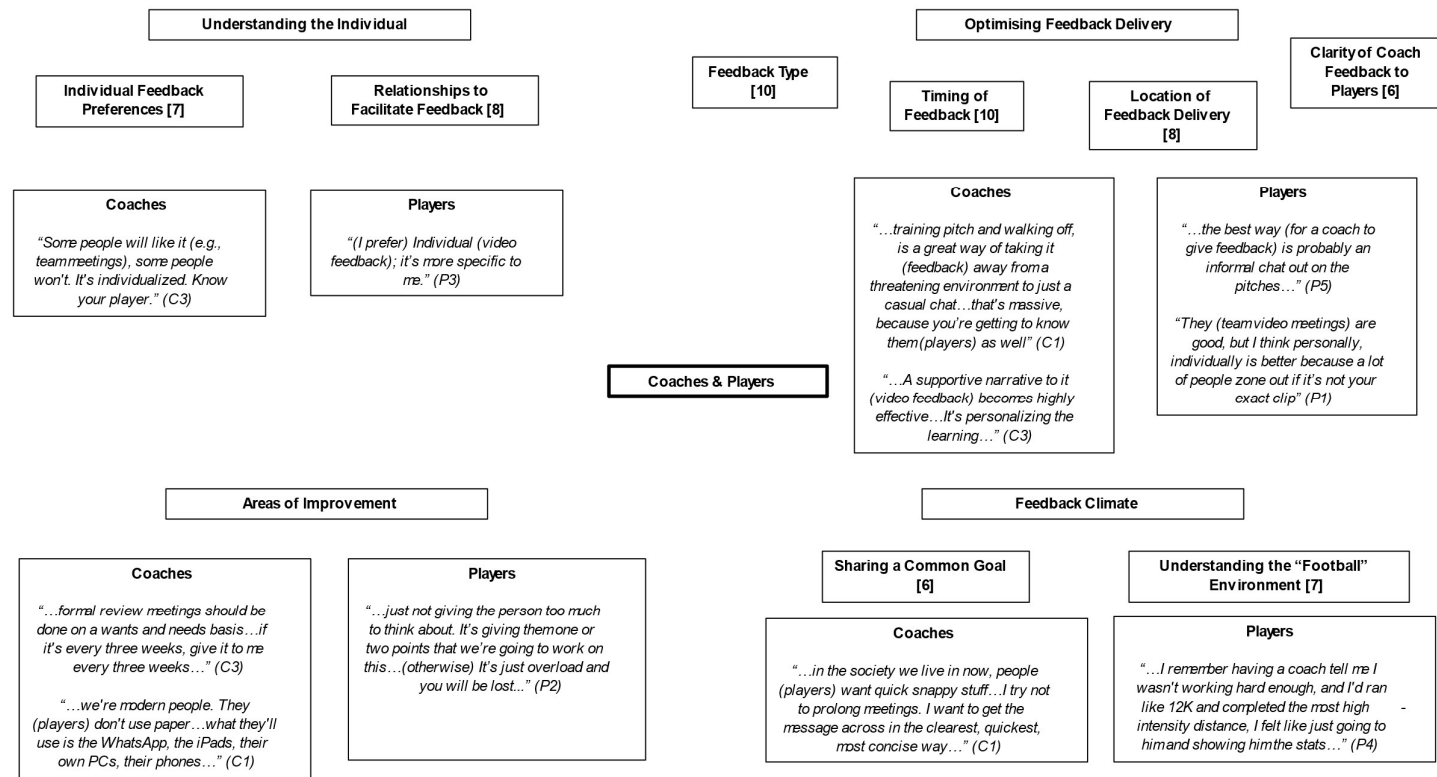
### 4.3.3. Coach and Player

#### *Interview Data*

**Figure 4.3** illustrates the composite pen profiles relating to the perceived effectiveness of feedback captured within the coaches' and players' interviews. Four higher order themes were identified: *understanding the individual* ( $n = 10$ ); *optimising feedback delivery* ( $n = 10$ ); *feedback climate* ( $n = 9$ ); *areas of improvement* ( $n = 10$ ). Additionally, there were eight subthemes of which *type of feedback* ( $n = 10$ ) and *timing of feedback* ( $n = 10$ ) were the most frequently cited within the deductive theme *optimising feedback delivery*. The inductive subtheme *clarity of coach feedback to players* ( $n = 6$ ) was also recognised within *optimising feedback delivery*. The most frequently cited subtheme was *relationships to facilitate feedback* ( $n = 8$ ).

#### *Survey Data*

Coaches perceived video to be *highly effective* for delivering feedback to players (**Table 4.5**). Also, they felt that informal chats, instructions, demonstrations, and tactics boards were *effective* in influencing player decision making or future behaviour. Coaches perceived all types of written feedback as *ineffective* for players. Players regarded all types of feedback (except for written reports on computer) from coaches as at least *somewhat effective* in influencing their future decision making or behaviour. There were large discrepancies between groups for phone calls and videos. Both groups



**Figure 4.3.** Pen profile representing coaches' and players' perceptions of the perceived effectiveness of feedback. Numbers in parentheses indicate the total number of participants who spoke in relation to a theme.

**Table 4.5.** Mean ( $\pm$ SD) coach and player responses to the Likert scale perceived effectiveness of feedback questions.

		<b>Coaches (mean <math>\pm</math> SD)</b>	<b>Players (mean <math>\pm</math> SD)</b>
<i>How effective are the following types of feedback in influencing behaviour/decision making?</i>			
Verbal	Informal Chats	Effective (4.0 $\pm$ 1.2)	Effective (4.2 $\pm$ 0.8)
	Formal Meetings	Somewhat Effective (3.4 $\pm$ 0.9)	Effective (4.2 $\pm$ 1.3)
	Instructions	Effective (4.2 $\pm$ 0.8)	Effective (4.0 $\pm$ 0.7)
	Phone Calls	Ineffective (1.6 $\pm$ 0.9)	Somewhat Effective (2.8 $\pm$ 1.8)
Visual	Video	Highly Effective (5.0 $\pm$ 0)	Effective (4.0 $\pm$ 0.7)
	Demonstrations	Effective (4.0 $\pm$ 0)	Effective (3.6 $\pm$ 0.9)
	Tactics Board	Effective (4.0 $\pm$ 1.0)	Somewhat Effective (3.0 $\pm$ 0.7)
Written	Paper Based Reports	Ineffective (2.0 $\pm$ 1.2)	Somewhat Effective (3.0 $\pm$ 1.2)
	Reports on Computer	Ineffective (2.4 $\pm$ 1.5)	Ineffective (2.0 $\pm$ 1.4)
	E/Mail/Text/WhatsApp	Ineffective (2.4 $\pm$ 1.5)	Somewhat Effective (3.0 $\pm$ 1.4)
<i>How effective are the following timings of feedback to influence behaviour/decision making?</i>			
Training	Before Training	Effective (4.4 $\pm$ 0.9)	Effective (4.2 $\pm$ 0.8)
	During Training	Effective (4.4 $\pm$ 0.5)	Effective (4.0 $\pm$ 0.7)
	After Training	Effective (4.0 $\pm$ 0.7)	Effective (4.2 $\pm$ 0.8)
Match	Before Match	Effective (3.8 $\pm$ 1.8)	Effective (4.4 $\pm$ 0.9)
	During Match	Somewhat Effective (2.6 $\pm$ 1.8)	Somewhat Effective (3.4 $\pm$ 1.1)
	After Match	Effective (3.6 $\pm$ 0.5)	Effective (3.6 $\pm$ 1.1)
<i>How effective are the following locations for feedback to influence behaviour/decision making?</i>			
	Pitch	Effective (3.8 $\pm$ 0.4)	Effective (4.2 $\pm$ 0.8)
	Phone	Ineffective (1.6 $\pm$ 0.9)	Ineffective (2.2 $\pm$ 1.3)

Meeting Room	Effective (3.6 ± 0.5)	Effective (4.2 ± 0.8)
E-Mail/Text	Ineffective (2.2 ± 1.3)	Somewhat Effective (2.6 ± 1.5)
Office	Effective (3.6 ± 1.7)	Effective (4.0 ± 1.0)
Notice Board	Ineffective (2.0 ± 1.2)	Somewhat Effective (2.6 ± 1.1)
Gym	Ineffective (2.0 ± 1.0)	Ineffective (2.0 ± 1.2)
Canteen	Ineffective (1.8 ± 1.3)	Somewhat Effective (2.8 ± 0.8)
Dressing Room	Ineffective (2.4 ± 1.9)	Somewhat Effective (3.2 ± 0.8)

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**Likert Scale**

1: highly ineffective; 2: ineffective; 3: somewhat effective; 4: effective; 5: highly effective

perceived almost all timings of feedback to be effective for feedback, apart from during match which both groups considered to be somewhat effective, albeit with coaches average responses being lower than players. Both coaches and players reported the pitch, meeting room and office as effective locations for feedback. However, coaches reported the canteen as ineffective whilst players reported it to be somewhat effective.

#### **4.3.4. Two Way Feedback**

Two-way feedback between all stakeholder groups was reported as at least *effective* in influencing future behaviour or planning. Furthermore, the highest values reported for two-way feedback were players receiving feedback from other players, was perceived to be *highly effective* (**Table 4.6**). Two-way feedback was perceived to be very useful for improving future performance if it came from senior and experienced professionals. For example:

*“I think if a senior player gives it (feedback) to a young player it’s really effective. I know I listen. I really, really value their opinion. I think for someone who is in the game and doing it, there’s no one better to listen to. I think peer to peer player like that is really good.” (P2)*

Despite all forms of two-way feedback being perceived to be effective, the highest responses for performance staff most likely to influence their future practice were receiving feedback from players. For example:

**Table 4.6.** Mean ( $\pm$ SD) performance staff, coach and player responses to the Likert scale effectiveness of two-way feedback questions.

	<b>Performance Staff</b> <b>(mean <math>\pm</math> SD)</b>	<b>Coaches</b> <b>(mean <math>\pm</math> SD)</b>	<b>Players</b> <b>(mean <math>\pm</math> SD)</b>
<i>How effective are the following forms of two-way feedback in influencing behaviour/future planning?</i>			
Give to performance staff	Effective (3.8 $\pm$ 0.8)	Effective (4.0 $\pm$ 0.7)	Effective (3.8 $\pm$ 0.4)
Receive from performance staff	Effective (3.8 $\pm$ 0.8)	N/A	N/A
Give to coaches	N/A	Effective (4.0 $\pm$ 1.0)	Effective (3.8 $\pm$ 1.1)
Receive from coaches	Effective (4.0 $\pm$ 0.7)	Effective (4.4 $\pm$ 0.5)	N/A
Give to players	N/A	N/A	Effective (3.8 $\pm$ 0.4)
Receive from players	Effective (4.4 $\pm$ 0.5)	Effective (4.2 $\pm$ 0.8)	Highly Effective (4.6 $\pm$ 0.5)

Likert Scale

1: highly ineffective; 2: ineffective; 3: somewhat effective; 4: effective; 5: highly effective



*“...If they (players) are feeding back, and they are totally engaged...in a gym session, or in a rehab setting, or if they are looking at their match data, it’s so, so powerful and so effective...” (PS3)*

The highest responses for coaches were coaches receiving feedback from other coaches. The following quote illustrates how feedback from senior or more experienced coaches is important for impacting on future practice:

*“...when you’re doing something that they (academy manager or head of coaching) have highlighted, it sets the alarm bells ringing, and you think well, hold on, this is what I got flagged up for. I need to work on this area...” (C1)*

#### **4.4. Discussion**

The aim of **Chapter Four** was to examine key stakeholder attitudes towards the perceived effectiveness of different types (i.e., verbal, visual, written), timings (i.e., immediate, delayed) and locations (i.e., pitch, gym, meetings) of feedback to provide recommendations for future improvements in feedback strategies. Four themes were constructed overall; two of which were constructed deductively (i.e., led by the survey): optimising feedback delivery ( $n = 15$ ) and areas for improvement ( $n = 14$ ); two were created inductively: understanding the individual ( $n = 15$ ); feedback climate ( $n = 14$ ). In the following sections these themes shall be discussed alongside the previous literature in this area. Recommendations for coaches, practitioners and organisations will be provided, which could be implemented in future

feedback interventions to improve the perceived effectiveness of feedback and enhance performance.

### ***Understanding the Individual***

Within this theme, two subthemes were constructed within all stakeholder groups and for all stakeholder relationships: *relationships to facilitate feedback* and *individual feedback preferences*. Indeed, the concepts of relationships and individual preferences are clearly linked, and participants frequently cited that strong relationships built on trust and respect between stakeholders, facilitated a better understanding of an individual's preferences for receiving feedback.

The most frequently cited theme within the inductive themes for performance staff & players ( $n = 9$ ) and coaches & players ( $n = 8$ ) was *relationships to facilitate feedback*. Additionally, this was a frequently cited theme between performance staff & coaches ( $n = 8$ ). This is in line with the findings presented within this thesis (**Chapter Three**) which reported that relationships were used as a platform upon which *open and honest feedback* was delivered between stakeholders. Participants within all stakeholder groups felt that feedback was more effective if there was a strong relationship and understanding between the provider and the receiver of the feedback, and that this was important for “...*knowing your audience...and matching what the audience needs...*” (PS1). Research exploring communication of information across a range of professional sporting domains has demonstrated that the ability of practitioners to develop interpersonal relationships is critical to successful outcomes which influence the practice or decision making of key

stakeholders (Jowett, 2017; Till et al., 2019; Ward et al., 2019). Indeed, Ekstrand et al. (2018) quantified the perceived quality of internal communication between key stakeholders and demonstrated that high scores for internal communication were correlated with lower injury rates and higher training availability. It was concluded that high quality communications between members of the multidisciplinary team (i.e., head coach, sports scientists, and medical staff) resulted in good collaboration, enhanced informed decision-making and better outcomes regarding player wellbeing and return to play. Regardless of the absence of an outcome measure in the current study, the findings presented here extend previous findings and demonstrate that participants cited factors such as engagement, buy-in and respect as vital for ensuring strong relationships with other stakeholder groups (McKenna et al., 2018). This is the first study to demonstrate that key stakeholders in professional football perceive feedback to be more effective in influencing practice/behaviour if a strong relationship exists between the provider and recipient. Improving interpersonal relationships through processes such as diversity management training have been recommended within the organisational and sports psychology literature (Arnold et al., 2017; Rothman & Cooper, 2015). The findings presented within the current study could go some way to assist in developing a framework for enhancing the interpersonal skills of performance staff, coaches, and players within professional football in order to enhance performance and outcomes such as injury risk mitigation. Building relationships built on trust, respect and obtaining buy-in from relevant key stakeholders appears to be critical to the delivery of

effective feedback. For example, the following quote from a performance staff member illustrates how this may be achieved in practice:

*“I think the big thing for that (effective decision making that impacts the coaching process) is it’s personality led and personality dependent. So some of the coaching staff have really strong relationships with the sports scientists and the performance staff and that’s really important. There is a level of trust there that’s been earned over a period of time.” (PS4)*

Across all stakeholder groups participants frequently referred to the importance of *individual feedback preferences* for delivering what they perceived to be effective feedback. This involved understanding the individual that was being fed back to, what their needs were and in what format they preferred to receive information. It is widely accepted within the contemporary performance analysis literature that players across a range of sports and levels of experience demonstrate a preference towards individual video feedback over group feedback (Francis & Jones, 2014; Groom et al., 2011; Middlemas & Harwood, 2018; Nelson et al., 2014). Despite the evidence base demonstrating players’ preferences for individual feedback from their coaches, it seems a translational gap may still exist in current practice which meets the needs of the receivers of feedback, in this instance the players (Francis & Jones, 2014). For example, players felt that video was an effective type of feedback but still rated it 1-point lower on the Likert scale than coaches (**Table 4.4**). This was mainly down to the players’ preferences for more individual feedback meetings: *“They (team video meetings) are good, but I think*

*personally, individually is better because a lot of people zone out if it's not your exact clip" (Player 1).* An increased focus on individualised video feedback has been demonstrated to be a preference of players in previous studies, however coaches have cited issues such as lack of time and resources to deliver individual feedback for each player (Francis & Jones, 2014; Wright et al., 2012). Consequently, coaches should identify what is perceived to be of highest priority to enhancing player development and performance at different time points throughout a season. Additionally, in the performance staff & players dyads, participants frequently cited that having an understanding and appreciation of each individual's feedback needs was important for delivering effective feedback. For example: *"I can't underestimate the power of understanding and profiling the individual that you are working with...to work out the type of feedback that's going to be most effectively taken on board..." (Performance Staff 3).* Whilst athletes' preferences for feedback of training monitoring data have been discussed within the literature (Neupert et al., 2019; Nosek et al., 2021), the findings from this study extend previous knowledge in this area by providing depth within the data captured during interviews. For example, the following player quote highlights the need for performance staff (and coaches) to tailor feedback strategies to the individual's involved: *"I'd probably prefer to have feedback as soon as I possibly could after the event, and in quite a relaxed manner, but with a few stats in there, but not too many." (Player 4).*

Moreover, one of the most frequently cited themes by performance staff and coaches was *individual feedback preferences*, indicating that both groups understood the importance of recognising how performance staff should aim

to tailor their feedback to different coaches to be effective. Performance staff regularly referred to the need to constantly check and evaluate the influence that each different manager or member of coaching staff has on their feedback delivery methods. For example:

*“It (effective feedback) is just how you know your audience, I think. Can't really stress that enough that if I went and worked with a different set of coaches, my whole workflow would potentially change.” (PS1)*

Recommendations have been made in the literature for sports scientists to communicate data to coaches using data visualisations on online dashboards (Buchheit, 2017). However, whilst this may be effective for some coaches, practitioners may be mindful of how different managers and coaching staff are influenced by different types and presentations of information, for example:

*“If you find yourself working with a manager that really likes formal, presented... I've had this before... you've got to find the communication strategy that is the most effective. There is no point in having these formal presentations and...PowerPoint-based ways of feeding back to an office full of coaches if you don't feel that anyone is engaged or listening...You've just got to find the most effective strategy for the individuals, players or the staff you are working with.” (PS3)*

Feedback of training load data has previously been shown to be delivered in a range of formats, produced in a timely manner, and is perceived to positively affect coaching practices at professional football clubs (Nosek et al., 2021; Weston, 2018). Hence, taken together the findings from this study, alongside those of previous studies demonstrate that feedback is perceived to be useful for influencing coaching practice and may be even more useful if it is delivered in a way that meets the needs of each individual coach. Furthermore, participants described strategies that could be used in order to meet the needs of their coaches which involved engaging in regular dialogue with coaches, asking them their preferences for feedback and having a close working relationship through proximity to the coaches i.e., shared office space or creating purposeful regular interactions, for example:

*“...that (breakfast with the coaches) is your chance to get things across. Always try and make sure you have breakfast. I get in before them (coaches) typically every day, just wait until they get in to go and have breakfast...The first thing they say when they come in is have you been for breakfast yet?...if you go “no, I’ll come with you”, you get their attention straight away. You get the informal chat, you’re in the door. If you go, “no I’ve already had my breakfast”...you’ve lost it straight away...” (PS1)*

### ***Optimising feedback delivery***

Within the *optimising feedback delivery* theme, four subthemes were identified for each stakeholder relationship: *Feedback type; timing of feedback; location of feedback delivery; education on content/context of*

*feedback* were reported by participants within the performance staff & coach and performance staff & players relationships. *Clarity of coach feedback to players* replaced *education on content and context of feedback* in the coaches and players relationship. *Informal chats* and *video* were referred to as effective or highly effective across all participant groups and relationships, hence the following discussion will focus on these two areas. Additionally, aspects of effective two-way feedback of information will also be presented and discussed here.

The high frequency of feedback in the form of informal chats (i.e., daily) within professional football has been shown in chapter three of this thesis. This was in line with previous suggestions within the contemporary literature that the culture within professional football “tends towards informality” (Littlewood et al., 2018, p.10). A novel finding presented within the current study is that not only are informal forms of feedback highly frequent within professional football but that all stakeholders perceive them to be effective in influencing the coaching process and/or future player behaviours. Therefore, this demonstrates a preference of key stakeholders towards communicating in an informal manner. For example, the following performance staff members accounts highlights this:

*“I think the really rich and really valuable conversations – particularly with coaches – happen in a more informal setting, because guards are down, and you can explore things a bit more, and you can see it a little bit more from their point of view.” (PS3)*



This finding extends the work of Neupert et al. (2019) who demonstrated that players displayed a preference for visual feedback of training monitoring data supported by formal or informal discussions, by demonstrating that key stakeholders perceive informal feedback to be effective. Additionally, this builds on the current literature which has reported that both coaches and players learn and are influenced through informal sources (Stoszkowski & Collins, 2016; Nosek et al., 2021). Alternatively, it had been reported that it would be difficult to predict whether coaches and athletes preferred visual or verbal/informal feedback or relied more on quantitative or qualitative presentations of information (Buchheit, 2016). Consequently, the findings presented here, which were gathered using a detailed mixed methods procedure, shed new light on the perceptions of stakeholders of the effectiveness of current feedback practices. As a result, they highlight the need for development of not only practitioner's knowledge and experience but also both interpersonal and intrapersonal skill development.

All stakeholder groups perceived video feedback to be effective or highly effective in influencing practice or behaviour. Indeed, coaches rated video feedback as highly effective, whereas players rated it as effective with a 1-point difference in the Likert scale responses, which has been used previously to indicate a significant difference between survey responses (Nosek et al., 2021; Weston, 2018). It appeared that players perceived this form of feedback to be slightly less effective as they displayed a preference for more individual than group feedback. There is a large body of work which has highlighted the need for individualised feedback in order to satisfy athlete's and students needs across both sporting and educational settings (Francis &

Jones, 2014; Jowett, 2017; Killingback et al., 2019; Middlemas & Harwood, 2018). For example, when examining academy coaches and players perceptions towards video feedback, it has been reported that coaches may not have a sufficient understanding of how video feedback is affecting players psychologically in a group setting and recommend individualised feedback in order to satisfy their needs and preferences (Middlemas & Harwood, 2018). The findings presented here show that video feedback can be a powerful and effective tool for delivering feedback across all stakeholder groups, however stakeholders should be mindful of the psychological impact of this on the receiver of the feedback. For example, players with lower self-efficacy may react negatively to feedback delivered in a group as their may be a threat to their ego and self-esteem and a rejection of the feedback delivered (Bandura, 1986; Smither et al., 2005). Hence, an individualised approach to video feedback should be recommended within professional football. Video feedback from performance staff to players and coaches has not been extensively reported on in the literature to date. Current examples of sports scientists providing feedback to players have focused on the provision of forms of visual feedback such as velocity-based training to increase weightlifting performance in the gym (Nagata et al., 2018; Weakley et al., 2019). Consequently, given the findings of this study, that video feedback from performance staff to coaches and players is perceived to be effective, this provides an interesting avenue for further research. Future work should look to examine whether the provision of more visual feedback to players and coaches increases the perceived effectiveness of feedback and ultimately

whether it can serve to enhance future performance or developmental objectives.

All groups perceived two-way feedback to be effective in influencing planning or future behaviours. This extends findings from current literature that there is a two-way transfer of information between key stakeholders in order to meet performance objectives (Cruickshank et al., 2014; Hall et al., 2016). This two-way sharing and transfer of information has been shown to be present between managers, their coaching staff, players, board and in some cases the fans. In the current study one of the key findings was that players cited feedback from other players as highly effective and often referred to feedback from senior professionals as the most valuable source of feedback: *“...the best form of feedback is when older pros who have experienced it...know what you need to improve on...” (P1)*. The concept of peer-to-peer evaluation has been reported in the previous literature relating to video feedback (Middlemas & Harwood, 2018; Taylor et al., 2015) and may be useful as a tool for engaging players to think critically about performance. However, the notion of challenging and critiquing teammates and sometimes coaches has been shown to be problematic and some players may feel uneasy with this (Taylor et al., 2015). The findings demonstrated within the current study highlight the need for feedback mechanisms to be set up that facilitate this valuable source of feedback from senior professionals to younger players. Effective two-way feedback could be achieved through the introduction of mentor schemes between older and younger players and has been proposed in the previous literature regarding transitions from youth to senior football in order to counteract feelings of isolation in young professional football players

(Mitchell et al., 2020; Morris et al., 2015). This could result in the creation of a positive and supportive learning environment for younger players and facilitate successful transitions from academy to senior football. Additionally, this may present an opportunity for senior professionals to integrate into coaching roles and coach/play with younger age groups in order to facilitate this. This could be a powerful way of current professionals delivering feedback to younger players and which was shown to be highly effective by the players in this study. Furthermore, future studies should look to investigate the integration of parents into two-way feedback mechanisms that can further support and enhance the information that is being fed back between key stakeholders.

### ***Feedback Climate***

The feedback climate theme consisted of two subthemes *understanding the football environment* and *sharing a common goal*, both of which were prevalent across all stakeholder groups and dyads. Further, *sharing a common goal* was one of the most frequently cited themes between performance staff and coaches ( $n = 9$ ). Regarding *understanding the football environment*, participants across all three stakeholder groups frequently cited how understanding the feedback delivery climate was crucial to delivering effective feedback. Factors such as the general football culture, specific club cultures, a high turnover and change in coaching and management staff, notions of power and authority and a fast-moving environment were discussed. The findings presented here resonate with those within the previous literature that the ego-driven climate present within professional football has a significant effect on how feedback is delivered and how effective it is perceived

to be by the recipient of the feedback (Groom et al., 2011; Middlemas & Harwood, 2018). This coupled with the highly instruction-based nature of feedback within the present thesis may be indicative of a climate of authority and obedience which has been described in previous literature (Ford et al., 2010; Parker, 2001; Roderick, 2006). These notions have been supported in a recent study which showed that the professional football climate is a harsh environment where there is a hierarchical structure resulting in feelings of isolation by the players within it (Mitchell et al., 2020). As such, the recommendations of this research are similar to that presented in previous studies which have called for a more individualised approach to feedback delivery, especially with players who are undergoing the transition from youth to senior football (Middlemass & Harwood, 2018; Mitchell et al., 2020).

With regards to *sharing a common goal*, the performance staff and coaches in the current study regularly referred to feedback being perceived to be more effective if they were working towards a common goal and sharing language to clarify what the goals were. This is in line with previous studies which have demonstrated that multidisciplinary teams within elite sports settings rely on regular and effective interactions in order to share the decision-making process and achieve shared performance goals (Arnold et al., 2017; Dijkstra et al., 2014). Indeed, shared mental models of performance have been described as a key coordinating mechanism for effective organisational teamwork and have been defined as “an organising knowledge structure of the relationships among the task the team is engaged in and how the team members interact” (Salas, Sims & Burke, 2005). As such, it is clear that a shared understanding of the task or goal that a group is engaged in is crucial

to optimal functioning of the multidisciplinary team. Furthermore, the findings presented here extend recent work by Till et al. (2019), who reported that for strength and conditioning coaches to operate effectively within specific cultural environments then there must be a *shared vision*, role clarity and behavioural alignment within the organisation. Consequently, this highlights the need for members of the multidisciplinary team (i.e., performance staff and coaches) to work closely together to establish common goals (performance or developmental) and ensure that feedback is aligned towards these goals and that a shared language is adopted which can maximise effectiveness and positively influence the coaching process.

### ***Areas of Improvement***

When examining the performance staff and coach relationship, it was evident that both groups felt that for feedback to be effective it needed to be clear, concise and simple. Coaches in particular felt that feedback from performance staff could be overly complicated at times and would be much more effective if the message that was being delivered was centred on the main messages (i.e., *“bullet points”*) and accompanied with some verbal feedback. It was also highlighted by coaches that this verbal interaction should be simple and use a common or shared language rather than using domain specific knowledge. One coach highlighted how a subtle combination of these different types of feedback would optimise feedback delivery between performance staff and coaches: *“...if I had the written, the graph, and you (sports scientist), best of all three worlds, as long as we have that interpretation of commonality of language. If I had a strong relationship with you...then that's*

*optimal feedback...*" (C3). Additionally, performance staff highlighted the need for an individualised approach to feedback delivery, which was mindful of the audience and their preferences for receiving feedback. They also cited the difficulty of finding time and space to deliver feedback effectively due to a busy working schedule and fast-moving environment. Therefore, some participants spoke of the need to schedule in this reflective time formally into the working day. One participant suggested that a way of aligning philosophies and starting to develop a common language would be to watch video footage of training and games together.

With regards to performance staff and players, both groups frequently cited that a combination of verbal and visual feedback together was most effective (whether it be a video or a graph), thus allowing the receiver's attention to be focused on what was important/relevant to them. Players also cited the need for more regular individual feedback on their progress and for feedback to be more detailed and contain clear and concise information about how to improve future performances. Additionally, they referred to a preference for feedback to be made available to them on their phones, as this was easily accessible and readily available whenever they needed to refer back to it. Finally, players suggested that performance staff should operate with some "*social skills*" (P5) and recognise when to deliver feedback and when players wouldn't want it due to factors such as results, performances, and emotion/mood. Performance staff frequently cited that visual feedback was effective for football players due to the belief that they were "*visual learners*" (PS3). Other factors that performance staff referred to included the need to ask players more about their preferences for feedback and recognising

a need for more private spaces for delivery of certain types of feedback. A combination of formal and informal spaces for feedback delivery are necessary within professional football environments and creating spaces for both types of feedback to occur may be beneficial in a practical setting moving forwards.

Coaches and players agreed that feedback could be made more effective if more of an individualised focus was applied. Participants from both stakeholder groups cited the need for feedback to provide clarity around the goals and targets that were being set for the players. One coach felt that structure within content of meetings with players would serve to enhance the delivery of feedback. Additionally, coaches felt that feedback should be delivered whenever it was needed and that they shouldn't be restricted to the 6-week review processes that were in place at some clubs. This frequency of formal individual meeting is usually provided to meet the league guidelines set out within the EPPP (Premier League, 2010). As such, a more flexible approach should be advocated within professional football clubs with regards to feedback delivery. Furthermore, clubs should be allowed to deliver review processes such as those described above in a way which suits individual players in the context of their own club. Interestingly, both groups suggested that feedback could be made more effective if it was delivered before training and games in order to provide an individual *"focus or target"* (Player 4). Indeed, this may be considered as feedforward information which provides an answer to the "where to next?" question posed in the Hattie & Timperley (2007) feedback model. Regardless of the fact that phone calls were generally considered to be ineffective, some players felt that if coaches took the time to make a call or send a text message that this could improve motivation and



foster a positive and supportive learning and environment built upon mutual trust and respect, an approach which has been recommended in the literature (Middlemas & Harwood, 2018; Taylor et al., 2015). Similar to the performance staff and player relationship, players recommended that coaches should be more considerate around the timing of their feedback and have an awareness of factors such as how the player is feeling, their external circumstances and their overall physical and recovery status due to their outputs in both training and match play. Furthermore, coaches felt that using peer-to-peer demonstrations and video feedback methods could provide variety and improve the effectiveness of feedback strategies.

### ***Strengths and Limitations***

One of the main strengths of the current study is that it was the first to use a mixed methods design which both quantitatively and qualitatively investigated the perceptions of stakeholders towards the effectiveness of feedback strategies in professional football. Additionally, it is one of few studies in this area which has considered coaches, players, and performance staff as stakeholders, thus facilitating a triangulation of perceptions between groups. Furthermore, the volume of interview data gathered within the current study provides a rich body of useful evidence to support the development of future feedback interventions which may have implications for future research and applied practice. However, this study is not without limitations, which should be addressed for future studies. Whilst the inclusion criteria allowed for any players over the age of sixteen and their coaches and performance staff, participants were mainly recruited from first team or under-23s level. Hence,

the small sample size and distribution of participants may mean that findings are not generalisable to all professional football clubs throughout all age groups, levels, and academy categories (all participants were from category 1 and 2 clubs). Further research may be needed to elucidate the mechanisms of effective feedback with other age ranges and phases of development. In addition, five participants in each group could be considered a relatively small sample size for survey data and the high variability may indicate that there was a high degree of interpretation with the Likert scales used. However, the interviews which followed alleviated some of these issues and provided clarity to the participants response selection. Indeed, the variation in responses to the survey questions is indicative of one of the main findings of this study, that *individual feedback preferences* are of utmost importance when attempting to deliver “*effective*” feedback.

Finally, it should be noted that the Likert scale that was developed had qualitative anchors associated with the numerical values which were applied during the analysis of the data. However, when the scale was presented to the participants it was only presented with qualitative anchors for numbers either end of the scale (i.e., 1 = *highly ineffective* and 5 = *highly effective*). Future studies should look to provide participants with qualitative anchors for each numerical value and include the presence of a neutral mid-point, such as 3 = *neither effective nor ineffective*. Subsequent analysis of data should also reflect this as the numerical value of 3 in the current study was analysed as *somewhat effective*, which may have resulted in a bias towards effectiveness within the data analysis and interpretation of findings.

## Conclusions

This is the first study to explore and triangulate the perceptions of coaches, players, and performance staff towards the effectiveness of current feedback strategies within professional football. It is hoped that the findings of this study can help to inform the development of future strategies aimed at enhancing feedback delivery, the perceptions of effectiveness and ultimately performance of players. Critically, the inclusion of the players voice and the perceptions of a wide range of coaching and performance staff have provided a deeper understanding (i.e., triangulation of methods and data via a mixed methods design) of feedback delivery practices and subsequently answers the call for a broader range of participants in professional football research (Gledhill, Harwood & Forsdyke, 2017). The results of this study indicate that for the study participants, effective feedback relies on making sure that the elements of feedback delivery (i.e., type, timing, clear and simple content) are optimised and take into account the individual that is receiving the feedback and the environment in which it occurs. The provision of simple feedback content, with few but key messages may be in line with theoretical assumptions regarding the reduced frequency of feedback (Sherwood, 1988; Williams & Hodges). An underpinning factor in feedback delivery is the purpose that it is being delivered for and the intended action or outcome as a consequence. Examples of such outcomes may be; performance focused (i.e., fitness/fatigue, training/match availability), development focused (testing, progress towards goal), or reflection focused (coaching process, drills, desired outcomes). In addition, the application of a novel mixed methods design in the current study may serve to act as a framework for in-house applied research

projects within professional football and the wider sporting settings, whereby study outcomes can serve to provide recommendations for future interventions, inform future studies and improve applied practice.

**CHAPTER 5 – PLANNING, DESIGNING, AND  
IMPLEMENTING AN INTEGRATED FEEDBACK  
INTERVENTION WITHIN A PROFESSIONAL  
FOOTBALL ACADEMY – A PILOT STUDY**

## 5.1. Introduction

The importance of feedback for improving both learning and performance has been consistently demonstrated throughout this thesis and within the literature (Groom et al., 2011; Hattie & Timperley, 2007; Wright et al., 2016). The findings presented within **Chapter Three** demonstrated the highly frequent and often informal nature of feedback within professional football. Additionally, it was shown that feedback was delivered for three main purposes (i.e., *'The Why'*): (1) support the coaching process; (2) support development focused objectives; (3) support performance focused objectives. Within a development focused environment, such as that of professional academy football, it is clear that the goals are to develop the players' physical, technical, tactical, and psychological skills associated with progressing to and succeeding at first team level and beyond (Williams & Reilly, 2000; Nesti & Sulley, 2015; Relvas et al., 2010). For example, interviews with 26 academy managers from five countries demonstrated that the purpose of their programmes was to develop players for the first team (Relvas et al., 2010). **Chapter Three** also demonstrated that key stakeholders understood the importance of feedback being used to provide education for players, and for them to "buy-in" to the information that was being presented to them and subsequently use it to improve progress towards their goals. Acute interventions designed to improve specific aspects of performance (i.e., weightlifting) (Weakley et al., 2019) in addition to interventions aimed at enhancing coaching effectiveness (Andrew et al., in press; Eather et al., 2020) have been proposed within the literature. However, given the highly frequent nature and perceived importance of feedback within professional football, the

development of specific interventions and feedback strategies that can inform future studies and improve applied practice have been limited.

Setting specific performance goals to enhance development and progress is seen as a critical part of the coaching process (Lyle, 2002). Consequently, studies have consistently shown over several decades that feedback alone does not affect behaviour change, however goal setting in response to feedback may affect future performances (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Locke & Latham, 1990, Smith & Ward, 2006). Boekarts (1996) model of self-regulation states that the undefined nature of acute goals set by players may inhibit their ability to implement a plan of action or monitor progress. Hence, it has been recommended within the literature that coaches should emphasize goal setting behaviours and assist athletes with monitoring these goals until athletes demonstrate sustained attention towards them (Ansell & Spencer, 2020; Collins & Durand-Bush, 2014).

**Chapter Three** identified some of the ways in which the theoretical aspects of goal setting are evidenced in current feedback practices. For example, the regular (i.e., daily) feedback that is delivered to players by coaches and performance staff, regarding the training and games programme, is supplemented by 'medium-term performance reviews' such as six-week review meetings in line with EPPP guidelines (Premier League, 2010). It is within these review meetings that players are typically set developmental goals based on their strengths and weaknesses, usually identified through coaching observations, previous performances, fitness testing and training load monitoring data (see **Chapter Three**). Players are therefore provided with both subjective and objective information from both coaching and performance

staff. Yet few studies have looked to triangulate the perceptions of coaches, performance staff and players to develop integrated feedback interventions and assess whether players perceive the feedback to be effective.

Although it is clear from **Chapter Four** that effective feedback relies on understanding the individual and their preferences for feedback delivery, the translation of these preferences into meaningful feedback interventions has been limited. Furthermore, key stakeholder recommendations for improved feedback have not regularly been translated into practical interventions to improve effectiveness. However, one example was the development of video-based workshops using a co-creative approach to modulating practice activities of youth professional football coaches (Andrew et al., in press). Co-creative approaches between coaches, sports scientists and researchers have therefore been recommended to engage key stakeholders in the development of meaningful practical interventions (Andrew et al., in press). Additionally, feedback interventions have been described in a wide range of settings such as: optimising teaching in classrooms through the use of teacher educational workshops (Fonseca et al., 2015); improving sleep practices in athletes (van Ryswyk et al., 2017); improving student drinking behaviours (Cadigan et al., 2018). Therefore, there is a need to develop and test feedback interventions that aim to improve the players perceptions of the feedback they are receiving. Key stakeholder recommendations presented within **Chapter Four** alongside the contemporary literature discussed above have provided several recommendations that can aid in the planning, designing and implementation of an integrated intervention with the aim of enhancing perceptions of clarity, usefulness, and satisfaction (Ryan, Phillips, & Henderson, 2019).



Pilot studies to determine feasibility and acceptability are considered “best practice” for the development, evaluation, and implementation of complex interventions (Craig et al., 2008) and have been used in the development of interventions aimed at improving coaching practice (Eather et al., 2020). Feasibility has been described as whether it is realistic to consider implementing potential intervention strategies within specific contexts. Furthermore, acceptability involves assessing whether those likely to be affected by an intervention are willing to receive it (De Cocker et al., 2015). Methods typically used to gain insight into whether interventions are deemed acceptable and feasible are surveys and interviews (De Cocker et al., 2015; Eather et al., 2020). For example, Eather et al. (2020) utilised evaluation questionnaires to examine whether an intervention aimed at enhancing coaching practice and behaviour was feasible. Football coaches within the study indicated that the MASTER program was easy to understand, improved their coaching practice and they would recommend it to other coaches, suggesting that the intervention was deemed feasible for future use. The application of such interventions demonstrate that pilot studies determining the acceptability and feasibility of practically based interventions may be seen as the first step to enhancing practice regarding performance related feedback. If the pilot study is deemed to be successful in improving player perceptions of feedback, then it may subsequently enhance future research designs and inform practical recommendations for coaches and performance staff alike. Therefore, the aim of the current study is to use key stakeholder recommendations to design, deliver and evaluate a novel pilot study to

determine the acceptability and feasibility of an integrated feedback intervention within a professional football club.

## **5.2. Methods**

### **5.2.1. Experimental Approach/Research Design**

This study aimed to design, implement and evaluate a four-week pilot study to assess the acceptability and feasibility of an intervention aimed at improving the perceptions and attitudes towards performance related feedback in a professional football academy. Further to this, the pilot study aimed to inform the development of future practical interventions aiming to assess the effectiveness of different feedback strategies on markers of players' performance and/or behaviour change. The four-week pilot intervention (henceforth intervention) was guided by findings within chapter five and contemporary literature which, in no particular order, were: (1) education; (2) increased frequency of individual meetings; (3) increased use of visual feedback; (4) use of online interactive software (**Table 5.2**). The intervention was implemented for four weeks between February 2020 and March 2020. This time period was selected as it ran in conjunction with the club's multidisciplinary review processes where players' goals/targets are set and reviewed under the EPPP guidelines (Premier League, 2010). To evaluate the impact of the four-week intervention, three main measures were selected (Wright et al., 2016); an online survey which was administered to participants in **Chapter Five** assessing the perceived effectiveness of the type, timing and location of feedback, the feedback attitudes survey (Ryan, Phillips & Henderson, 2019), and semi-structured interviews. All surveys were carried

out on the players' mobile phones using the Survey Monkey® platform (see Chapter Three). The data was collected concurrently, as such, quantitative data (i.e., survey data) was collected with qualitative data (i.e., interviews) and results from the surveys did not inform the interview guide.

### **5.2.2. Participants**

Following verbal and written gatekeeper approval from the Academy Manager, twenty-five players representing the U18s squad from 1 EFL Championship Club (Category 1 academy) were approached during the 2019-2020 season, as potential participants. This included 14 first year scholars and 11 second year scholars (**Table 5.1**). Potential participants were invited to a short presentation delivered by the PI to introduce the research. At this presentation, potential participants were fully informed of the aims and objectives of the research and given 48 hours to consider whether they were willing to provide written consent. Players were enrolled in the study if they subsequently provided written informed consent. All participants met the inclusion criteria as they were: (a) registered to a football league club; (b) were over the age of sixteen. All twenty-five players who attended the introduction presentation agreed to take part in the study. During the intervention period, players completed their normal training and games programme, which typically consisted of team football training sessions (five times per week), team gym sessions (three times per week), and a competitive match (once per week). Participants were randomised into one of two conditions; feedback intervention (FI) or control (CONT). Each player was randomly assigned to

either the FI or CONT groups using an online random number generator (<https://www.random.org/>), as per Chalker et al. (2018).

**Table 5.1.** Demographic information of participants from a Category One professional English football academy, including age, years of scholarship, body mass and height for each participant group who took part in the study.

Group 1 – Feedback Intervention ( <i>n</i> = 12)	17.7 ± 0.5	1 <sup>st</sup> Years ( <i>n</i> = 6) 2 <sup>nd</sup> Years ( <i>n</i> = 6)	72.6 ± 6.8	179.1 ± 6.6
Group 2 – Control ( <i>n</i> = 13)	17.4 ± 0.6	1 <sup>st</sup> Years ( <i>n</i> = 8) 2 <sup>nd</sup> Years ( <i>n</i> = 5)	75.8 ± 6.6	185.1 ± 7.6

### **5.2.3. Design Phase - Theoretical and conceptual overview for intervention design**

As described in **Chapter Two**, the effect of provision of different forms of feedback on acute sporting performance, athlete preferences for coach feedback and retention of feedback have been measured (Chen & Rikli, 2013; Januario et al., 2018; Weakley et al., 2019; Weakley et al., 2020). However, no studies have attempted to implement interventions aimed at improving the perceived effectiveness of performance related feedback in professional football. The intervention was designed to address current issues surrounding feedback in professional football academies as no studies have specifically examined the effect of changing the way feedback is given in this environment. Chapters three and four provided evidence of the factors influencing the delivery of feedback and its perceived effectiveness and included identification of potential areas for improvement within current feedback mechanisms. Whilst numerous areas for improvements were identified by participants across stakeholder groups (see **Chapter 4.4**) such as:

- Providing education using combinations of verbal, visual and written feedback.
- More individual feedback.
- Increased use of visual feedback.
- Use of online interactive software accessible on phones, tablets and computers.

The foundation of the intervention was designed around “*individual goal-related feedback*”, which was provided in conjunction with goals/targets

set during multidisciplinary reviews (usually carried out on a 6-week basis). Goal setting has been shown to aid both learning and performance and serve as the foundation upon which feedback can be delivered (Brobst & Ward, 2002; Ford et al., 2018, Locke & Latham, 1990; Smith & Ward, 2006). A detailed outline of the intervention framework and scientific rationale is provided in **Table 5.2**.

To obtain multidisciplinary staff engagement with the project, three meetings were undertaken with the coaching and performance staff who worked with the U18s age group. This was done in order to provide a shared understanding of players' goals/targets and to form a common language when delivering information to the players. This involved meeting with the U18s coaches ( $n = 2$ ) on two occasions to discuss their understanding of what each player's physical target was and how this would affect their performance on the pitch. For example, one player's individual goal/target was to improve their speed. The meetings with the coach helped to clarify their understanding of this and provide position-specific examples of how improving this physical quality could improve their on-field performance. This process was repeated with the U18s sports scientist ( $n = 1$ ) in order to understand the performance staff's perceptions of the same player's physical target. Player engagement and buy-in was also obtained within the introduction presentation meeting (described above) with the players, whereby the aims and objectives of the research project were clearly explained. It was subsequently requested that the players identify their physical target and send the lead researcher the name of a professional player in their position who they felt demonstrated that particular physical attribute optimally within their performances. This was done

via a text message sent from each individual player to the lead researcher. These factors guided the development of a multi-modal (i.e., educational, individualised, visual, and interactive) feedback intervention which aimed to enhance participants' perceptions and attitudes towards performance related feedback strategies.



**Table 5.2.** A framework that guided intervention content; including the planned delivery, rationale, and evidence-base for each intervention component.

<b>(1) Education for Players about their Physical Goals</b>		
<b>Planned Delivery</b>	<b>Rationale</b>	<b>Theory and Supporting Evidence</b>
Example video clips of them executing their physical goal in a game scenario	To provide a shared mental model of optimal performance	Literature: Richards, Collins & Mascarenhas (2012), Hattie & Timperley (2007), Fonseca et al. (2015), van Ryswyk et al. (2017)
Video clips of “best practice/zero error” from effective performers in this area i.e. first team players	To educate players and provide task specific information	Study 1 Interview Data:  “Whereas I have had a conversation with a couple of lads (players) and been like if you are stronger in your legs then you are more likely to be able to sprint quicker, if you can back squat more you are more likely to be able to sprint quicker. And there was a few of them (players) going no way, they didn’t believe me, and it’s then trying to educate them, so we put posters up about their changes in strength over the year and their changes in speed” (Performance Staff Participant 1).
In an individual meeting at the start of the 6-week intervention	To provide a visual link between a physical characteristic and it being executed during performance	Study 2 Interview Data:  “I just think in ensuring that the education behind that visual feedback is solid sets you (as a practitioner) off in a really good standpoint. So if it’s a GPS report, we’ve got the report out there (on a notice board) and they’re looking at that and you were hanging our hat on that as a feedback tool for the players, how well do the players understand it? And how confident are we (as performance staff) that they understand it well, and how are they interpreting that to their own performance? And I think so ensuring that they’re educated

information that is fed back regarding their progress towards goals	around the metrics that we're using on the whole front is really important.” (Head of Academy Sports Science & Medicine – Club 1)
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## (2) Increased Frequency of Specific Individual Meetings

Planned Delivery	Rationale	Theory and Supporting Evidence
Individual meeting with the member of staff responsible for the specific physical goals i.e. sports scientist/S&C coach	To review performance and execution of physical goals in training and match play using a combination of verbal and visual information.	Literature: Hattie & Timperley (2007), Salmoni, Schmidt & Walter (1984), Phillips et al. (2013), Groom, Cushion & Nelson (2011), Groom & Cushion (2005), Francis & Jones (2014), Neupert et al. (2019), Chen & Rikli (2003), van Ryswyk et al. (2017)
Individual meeting to be held at the midpoint of the 6-week intervention	To provide task specific feedback in a one to one format thus providing clarity for the participant and an	Study 1 Interview Data: “So, trying to get them (players) in that one to one environment where you have got full attention, and rather than speaking to them as a group – if you have got males in a group and you are speaking to them about something – where you would get a lot of male bravado and people might not take it as seriously as when you are just sitting down one to one having a chat. So, I think that is a big one as well when you are trying to feedback to players.” (First Team Sports Scientist – Club 2).  “I think visual is, I think showing the players is the most powerful tool because it takes away the debate to some extent, doesn’t it, so if they say, “Well actually no, I was doing this.” Well let’s have a look at it. Let’s see now. But also, it’s two way, it’s two way, it’s questions.

(i.e. after 3 weeks).	<p>opportunity to reflect.</p> <p>To provide summary feedback at an increased frequency following a period of engagement in training and match play.</p>	I'll always ask questions first, I believe in that passionately, you try and get the player to self-reflect." (Academy Manager – Club 1).
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### (3) Increased Use of Visual Mode of Feedback

Planned Delivery	Rationale	Theory and Supporting Evidence
All education sessions, meetings and weekly feedback (see below) will incorporate an element of visual feedback i.e. video clips	To optimise the use of visual as a method of communication because the majority of players and coaches describe themselves as "visual learners".	<p>Literature: Groom et al. (2011), Wright et al. (2016), Groom &amp; Cushion (2005), Nelson et al. (2014), Middlemass &amp; Harwood (2018), Chen &amp; Rikli (2003), Neupert et al. (2019), Morgan &amp; Sproule (2013) – Gardner (1993)</p> <p>Study 1 Interview Data: "Yeah, in the game you are not seeing what other people perceive you to look like, so it's (visual feedback) really interesting for me. So, I was doing some exercise in the gym recently to do with fast feet, acceleration and quick changing of the feet, and I think I was doing it really well and then the clips showed I was really hunched over and I thought I was</p>

Performance analysis using video footage has been shown to be important to the coaching process and reflection cycle.	<p>really upright, and it's interesting to see how you look from another perspective." (Player 1 – Club 1)</p> <p>Study 2 Interview Data:</p> <p>"Videos could be much more effective if done more – it's not done enough" (Player 2 – Club 1)</p> <p>"I know that we get GPS results and everything. But maybe we can watch it visually. And that might give you more of an understanding here. So it's all good having the stats and stuff. But if you can see, you're working harder than someone else, or they're working harder than you, then you might think, right? It's very obvious to me, so I need to start pulling my weight." (Player 2 – Club 1)</p> <p>"So on a video, maybe I'm doing a lift, and the video pauses and something pops up like little notes on the video or something, might make it stick in your mind more." (Player 3 - Club 1)</p>
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#### (4) Individual Weekly Feedback via Online Interactive Video Analysis Software

Planned Delivery	Rationale	Theory and Supporting Evidence
Provide comments to players on their individual video footage	To enhance the visual nature of feedback.	<p>Literature: Groom et al. (2011), Buchheit (2017), Francis &amp; Jones (2014) – Goffman (1991), Jones, Armour &amp; Potrac (2003), Carling et al. (2018)</p> <p>Study 1 Interview Data:</p>

from games using the an online video analysis platform.	To optimise and individualise the feedback using a platform that players access on their phones & iPads after games.	“We (as analysts) do a bit of feedback to players in terms of opposition clips, and again it goes back to WhatsApp, so I will send a WhatsApp out to – only two players have them, but they have a WhatsApp video of what their opposition player does and what they are going to be coming up against”. (1 <sup>st</sup> Team Performance Analyst – Club 1).
	To utilise technology and modern methods of communication	Study 2 Interview Data:  “So on a video, maybe I’m doing a lift, and the video pauses and something pops up like little notes on the video or something, might make it stick in your mind more. The HUDL analysis has quite good detail on and the analyst does our clips” (Player 3 - Club 1)
	To provide a platform to combine both written (i.e. data and comments) and visual (i.e. video clips) forms of feedback in a novel way.	“What I’ve learned is you (as a coach) have got to give them (players) it in all ways, and if you can do it together in a joined up way. So give him (the player) verbal but at the same time, show him, show him with some video stuff, show him with some analytical. So I learned this about two three years ago. That the secret is, can you put it all together...so I’m delivering this feedback today verbally, visually, with a little bit of bar chart or graph or performance analyses, you know, shape position specific design, examining passes he made, misses, you know, put it together. And that’s what I find the most powerful. I don’t think one in isolation works particularly well, not with players. I think you’ve got to put it together as a little package.” (Academy Manager – Club 3)

#### **5.2.4. Delivery Phase**

##### **Phase 1 – Education (Group/Individual)**

Initially, all players were given a group education session delivered by the lead researcher. This session lasted approximately 30 min and covered an introduction to the project, the experimental groupings, the intervention timeline, and ethical considerations. The meeting took place in a meeting room at the club's training facility and all coaching and performance staff involved with this age group were invited to attend.

To provide education on their individual physical goals, participants in the intervention group were provided with a short (10-15 min) individual presentation highlighting their physical target (which had been previously identified by coaches and performance staff). Presentations involved players watching clips of themselves performing in match-play situations (*see Appendix D*). Players were shown two positive and two negative clips regarding their execution of a physical skill within a game, which were reviewed by coaches, and the opportunity to discuss this was provided in an individual meeting format. Additionally, players were then several clips (2-4) of their preferred player executing the same skill within a game (players had sent their preferred player's name to the author via text message previously). Written information was provided with each video clip and the lead researcher and participant discussed each clip as it was played. The presentation ended with a discussion of areas of improvement for the player and suggestions for the player of what to work on to address the area of performance. All individual meetings took place in a private office at the club's training facility.

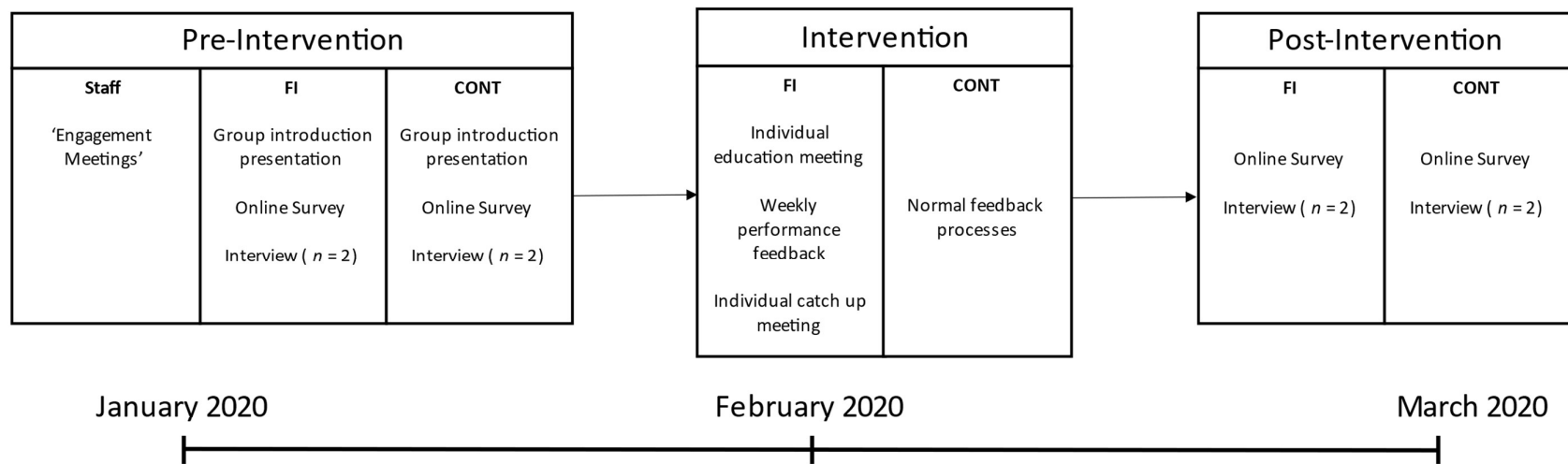
## **Phase 2 – Weekly Performance Feedback**

Participants were provided with weekly feedback regarding their performance which was focused on performance of their physical goals during match play situations. This feedback was delivered through an online interactive video analysis software (HUDL, Agile Sports Technologies Inc., Lincoln, NE, United States), which all players have access to on their devices (phones, tablets, laptops). This feedback involved the lead researcher reviewing clips of each players' performance in matches, alongside the coach and other members of the performance staff and selecting 2-4 clips (positive and negative) to share with players on a personalised "feedback project" playlist. Each clip was supported with a written comment that automatically paused when the physical action took place to focus the viewers' attention. These clips were delivered to players 48-72 hours following a match. Matches were usually played on Saturday mornings and feedback was given on Monday afternoon in the majority of cases. If the player was not selected for the match and there was no new footage to analyse then clips were made from footage of previous games. The players were also given the opportunity to reply to the comments made by the lead researcher and the coach within the video analysis software, however players did not choose to use this feature and usually followed up with a conversation once they had seen the clips. For clarity, it is not clear why the participants did not choose to engage with this part of the study and the informal discussions that took place around the training ground were not measured for frequency or recorded for content analysis.

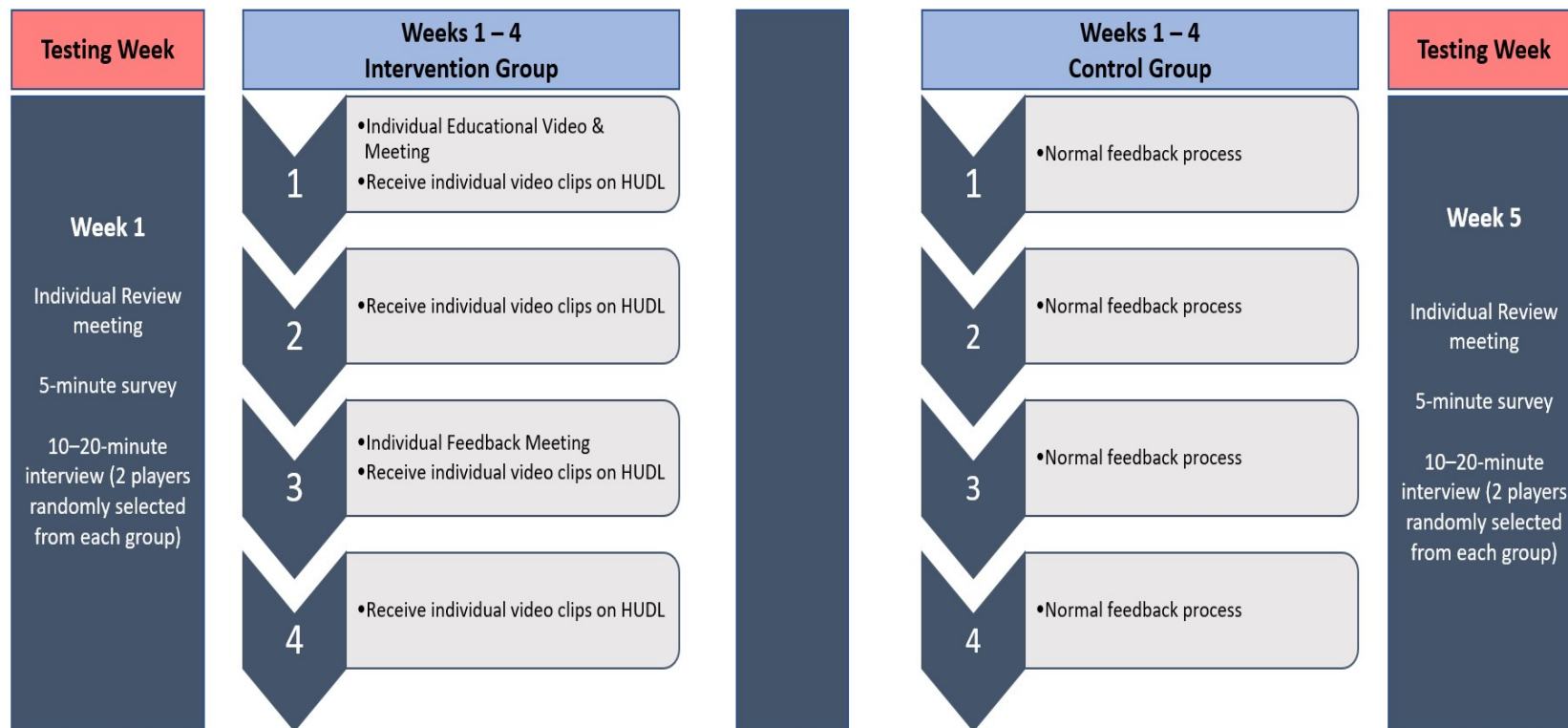
### **Phase 3 – Mid Programme Education/Catch Up Session**

A mid-programme education session was conducted on an individual basis by the lead researcher at week 3 of the intervention. This was delivered in a similar format to the initial education presentation whereby participants described progression towards their goals and reviewed the clips that had been shown to them on the online video analysis software over the preceding two weeks. Areas of improvement and suggestions for how to address them were reiterated and participants were given the opportunity to seek further clarity around their goals. As in phase 1, all individual meetings took place in a private office at the club's training facility.





**Figure 5.1.** Timeline depicting the experimental design and procedure of the study.



**Figure 5.2.** Detailed overview of the proposed intervention timeline for feedback intervention and control groups.

### 5.2.5. Evaluation Phase

The acceptability and feasibility of the intervention was examined by thoroughly exploring participants' attitudes towards the feedback delivered during the pilot study (Eather et al., 2020). This was implemented through a combination of surveys and interviews delivered concurrently. Prior to the first week of the intervention and at the conclusion of the four-week intervention period participants completed two online surveys. Surveys were completed via the players' mobile phones using the Survey Monkey® platform (as in **Chapter Three**). Questions included a combination of Likert scale responses (see **Chapter Four**) and open-ended responses, whereby participants were given the opportunity to include free text comments in order to clarify their responses. The first was a survey used in Chapter Five to assess the utility of the type, timing, and location of feedback. The second was the Feedback Attitudes Survey which measured the participants' perception of the clarity, usefulness, and satisfaction of the feedback delivered to them (Ryan, Phillips & Henderson, 2019). This survey was adapted following consultation with the authors of this research to include some open-ended responses and the wording of certain questions was adapted to reflect the nature of the participants' environment. For example, *"How satisfied were you with the feedback you received for your most recent assessment task?"* was replaced with *"How satisfied were you with the most recent feedback you received about your physical goals/targets?"*. Additionally, an open-ended question (*"Please could you explain why you feel this?"*) requiring a free text response was added. Additionally, four participants were selected randomly, using the

process described above (FI = 2; CONT = 2) to take part in semi-structured interviews prior to the first week and followed up at the intervention conclusion to provide more depth and understanding of participants' perceptions towards the feedback delivered to them. Interviews were carried out concurrently and were therefore not informed or influenced by the survey data provided by participants. Interview questions were purposely designed to build rapport, give an opportunity to reflect on the type, timing and location of feedback and, in the final follow up interview, to describe any changes they felt had been made to the feedback given to them over the intervention period. Please refer to **Chapter Three** and **Chapter Four** for a detailed description of interview methodology and **Appendix E** for the interview script used by the lead researcher.

#### **5.2.6. Data analysis**

##### *Survey Data*

Responses from all Likert scale and multiple-choice survey questions were treated the same as data in **Chapter Four**. In order to assess the potential acceptability and feasibility of the intervention a repeated measures analysis of variance (RM-ANOVA) was used. All of the items from both of the surveys carried out were categorised as variables and included for analysis in order to assess which elements of the intervention had changed significantly between time points and groups. In all cases, the sphericity assumption (Mauchly's test of sphericity) was met. Alpha was set at  $p < 0.05$  and partial eta squared ( $\eta_p^2$ ) effect size. Due to the relatively short nature of the study, it was deemed appropriate to adopt this approach rather than examine whether there

was a significant 1-point difference in Likert scale responses (as per Nosek et al., 2021).

### *Interviews*

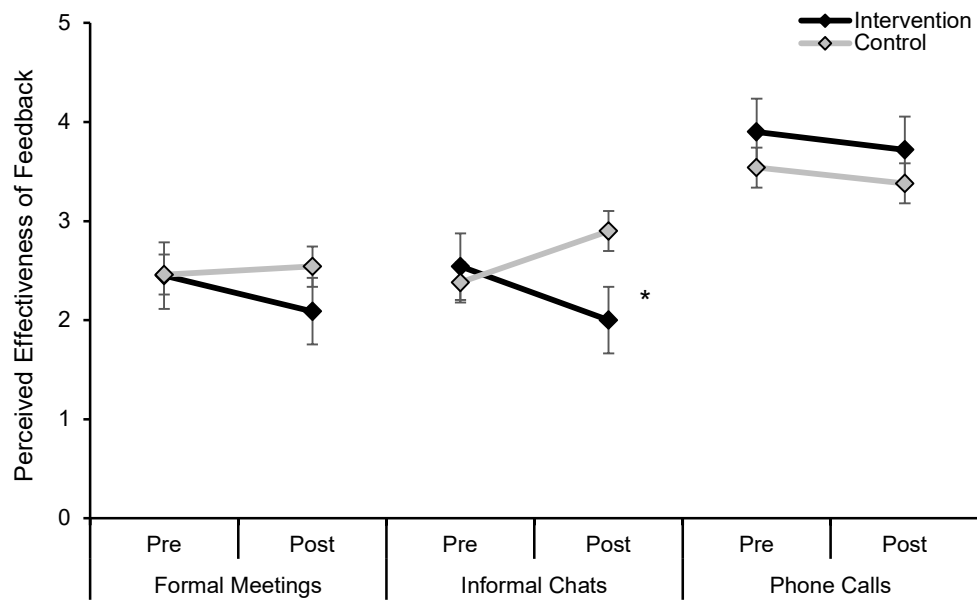
Overall, eight individual semi-structured interviews were conducted with participants. Two participants from each of the groups (FI vs CONT) carried out interviews before and after the intervention. Following transcription, data were thematically analysed, utilizing the six-step process suggested by Braun and Clarke (2013) (for a detailed description, see Chapters Three and Four). A combined approach of deductive and inductive analysis was deemed appropriate (Patton, 2002). Hence, the analysis started deductively based on a combination of the previous literature surrounding skill acquisition and the structure and design of the surveys that had also been administered to participants (initial themes were, frequency, timing, type and location (Salmoni, Schmidt & Walter, 1984; Williams & Hodges, 2005), whilst also being aware of inductive themes emerging from the data. The transcripts were read for familiarisation and were then coded completely using researcher-derived codes and then searched for themes. Themes were then reviewed where a thematic map was produced. Finally, the research team met to define and name the themes.

## **5.3. Results**

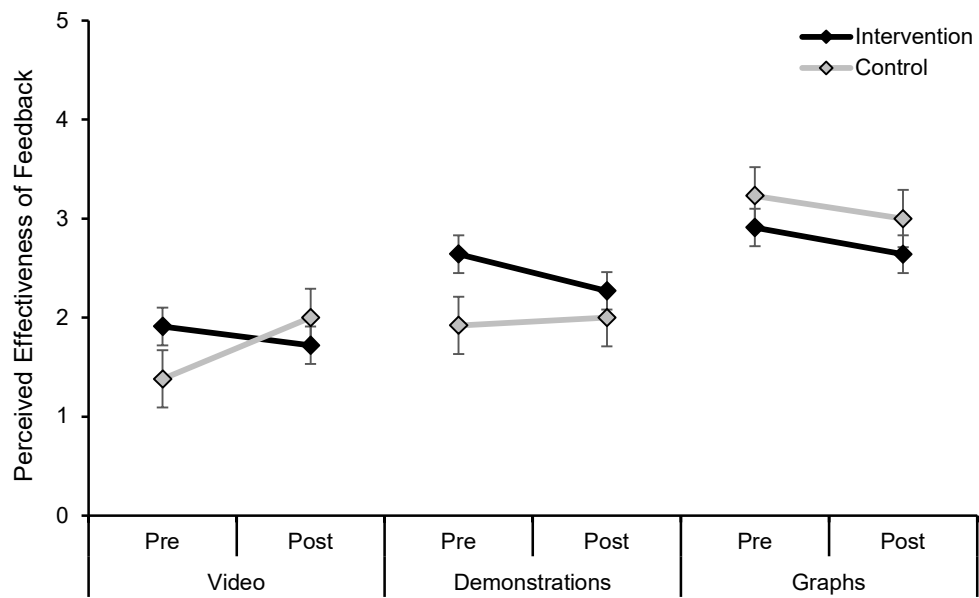
### ***5.3.1. Perceived Effectiveness Survey***

#### ***Type***

The ANOVA revealed no significant main effects of Group [meetings:  $F(1, 22) = 2.13, p = 0.16, \eta_p^2 = 0.09$ ; informal chats  $F(1, 22) = 2.77, p = 0.11, \eta_p^2 = 0.11$ ; phone calls:  $F(1, 22) = 1.05, p = 0.32, \eta_p^2 = 0.05$ ] or Phase [meetings:  $F(1, 22) = 0.46, p = 0.50, \eta_p^2 = 0.02$ ; informal chats:  $F(1, 22) = 0, p = 0.99, \eta_p^2 = 0$ ; phone calls:  $F(1, 22) = 0.29, p = 0.60, \eta_p^2 = 0.01$ ] for all types of verbal feedback. There was however, a significant Group x Phase interaction for informal chats [ $F(1, 22) = 5.93, p = 0.02, \eta_p^2 = 0.21$ ]. As can be seen in **Figure 5.3**, the intervention group increased their perception of effectiveness of informal chats from pre- to post intervention by 27%, whereas the control decreased by 18%. A Group main effect for demonstrations [ $F(1, 22) = 7.15, p = 0.01, \eta_p^2 = 0.25$ ] indicated that perceived effectiveness was significantly lower for the intervention group ( $M = 2.46, SD = 0.84$ ) than the control group ( $M = 1.96, SD = 0.54$ ). However, no other Group or Phase main effect, or Group x Phase interactions were observed for visual feedback (**Figure 5.4**). Furthermore, a significant Group [ $F(1, 22) = 5.31, p = 0.03, \eta_p^2 = 0.19$ ], Phase [ $F(1, 22) = 6.63, p = 0.02, \eta_p^2 = 0.23$ ] and Group x Phase interaction [ $F(1, 22) = 6.63, p = 0.02, \eta_p^2 = 0.23$ ] for reports on a computer screen was observed between intervention and control groups. As can be seen in **Figure 5.5**, the intervention group significantly increased their perception of effectiveness of reports on a computer screen by 59%, whereas the control group remained unchanged. No other significant main effects of Group, Phase or interactions for written types of feedback were observed ( $p > 0.05$ ).

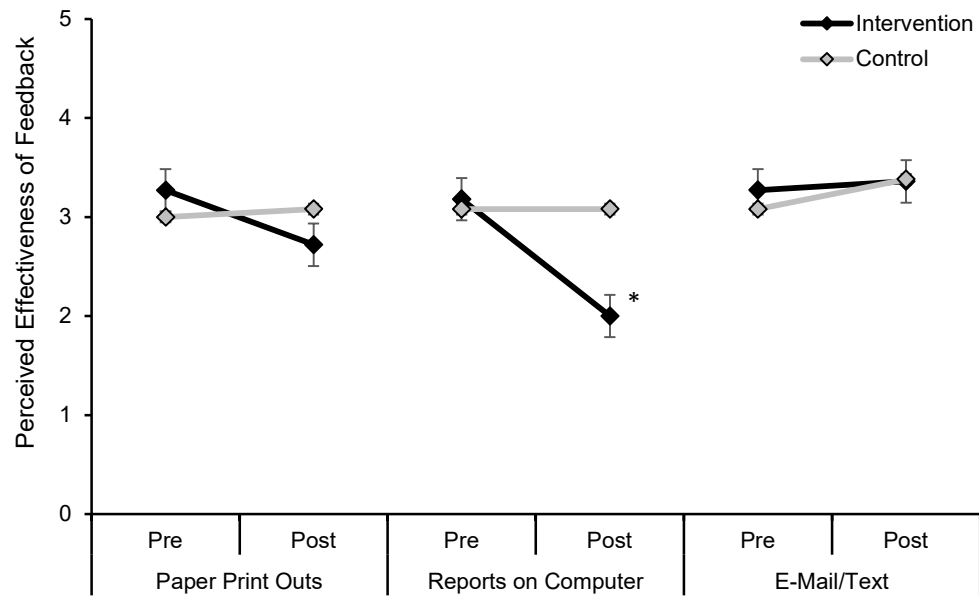


**Figure 5.3.** Mean (error bars represent standard error of the mean) Likert scale responses of perceived effectiveness of verbal feedback (1 = Highly Effective, 5 = Highly Ineffective). \* statistical significance, set at  $p < 0.05$ .



**Figure 5.4.** Mean (error bars represent standard error of the mean) Likert scale responses of perceived effectiveness of visual feedback (1 = Highly Effective, 5 = Highly Ineffective). \* statistical significance, set at  $p < 0.05$ .





**Figure 5.5.** Mean (error bars represent standard error of the mean) Likert scale responses of perceived effectiveness of written feedback (1 = Highly Effective, 5 = Highly Ineffective). \* statistical significance, set at  $p < 0.05$ .

### ***Timing***

The ANOVA revealed a Group main effect [ $F(1, 22) = 9.50$ ,  $p = 0.01$ ,  $\eta_p^2 = 0.30$ ] indicating that overall, perceived effectiveness of feedback delivered during training was significantly lower for the intervention group ( $M = 2.23$ ;  $SD = 0.82$ ) than the control group ( $M = 1.69$ ;  $SD = 0.63$ ) (**Table 5.3**). No other Group, Phase or Group x Phase interactions were observed for the timing of feedback ( $p > 0.05$ ).

### ***Location***

No significant main effects were observed for Group, Phase or Group x Phase interactions for the perceived effectiveness of the locations of feedback (**Table 5.3**).

**Table 5.3.** Mean ( $\pm$  standard deviation) Likert scale responses of perceived effectiveness for the timing and location of feedback (1 = Highly Effective, 5 = Highly Ineffective).

		Intervention		Control	
		Pre	Post	Pre	Post
Timing	Before Training	3.10 $\pm$ 0.83	2.73 $\pm$ 1.10	2.92 $\pm$ 0.95	2.92 $\pm$ 1.04
	During Training	2.10 $\pm$ 0.83	2.36 $\pm$ 0.81	1.61 $\pm$ 0.65	1.77 $\pm$ 0.60
	After Training	2.45 $\pm$ 1.04	2.36 $\pm$ 0.81	2.77 $\pm$ 0.83	2.70 $\pm$ 0.63
	Before Match	2.27 $\pm$ 0.79	2.18 $\pm$ 0.98	2.00 $\pm$ 0.71	1.92 $\pm$ 0.64
	During Match	2.36 $\pm$ 0.67	2.45 $\pm$ 0.82	2.23 $\pm$ 0.73	2.00 $\pm$ 0.58
	After Match	2.91 $\pm$ 0.94	2.10 $\pm$ 0.83	2.62 $\pm$ 0.96	2.70 $\pm$ 0.85
Location	Pitch	2.18 $\pm$ 0.98	2.18 $\pm$ 0.75	1.84 $\pm$ 0.69	1.84 $\pm$ 0.69
	Group/Individual Meeting	1.91 $\pm$ 0.54	1.91 $\pm$ 0.54	1.77 $\pm$ 0.83	2.15 $\pm$ 0.69
	Text/WhatsApp	3.00 $\pm$ 0.77	3.45 $\pm$ 1.29	3.15 $\pm$ 0.80	3.23 $\pm$ 1.01
	Dressing Room	2.63 $\pm$ 0.67	2.63 $\pm$ 1.29	2.62 $\pm$ 0.87	2.70 $\pm$ 0.95

<b>Notice Board</b>	$3.36 \pm 0.81$	$2.64 \pm 0.81$	$3.00 \pm 0.71$	$2.84 \pm 0.80$
<b>Gym</b>	$2.81 \pm 1.08$	$2.91 \pm 0.71$	$2.92 \pm 0.86$	$3.00 \pm 0.71$

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### **5.3.2. Perceived Effectiveness Open-Ended Survey Responses**

The open-ended survey responses for perceived effectiveness of feedback post-intervention for the intervention group are shown in **Table 5.4**. The sample quotes provide further clarity to participant's Likert scale responses and indicated whether they felt the feedback provided within the intervention had changed and whether it was more effective. Three main areas were identified from the responses; (1) Informal chats between coaches, performance staff and players opened up a discussion on what was needed to improve, (2) more clarity was provided as to how to improve on physical targets, and (3) individual (1 to 1) meetings were preferred over group meetings. **Table 5.5** displays the open-ended survey responses for the control group, which identified three main areas; (1) nothing changed within the feedback process, (2) player demand for more individualised feedback rather than group feedback, and (3) the suggestion that phone calls from coaches and performance staff may be an effective way of delivering feedback to players.

**Table 5.4.** Open ended survey responses: Categories, subcategories, and example quotes relating to the perceived effectiveness of feedback post-intervention for the Intervention group.

Categories	Subcategories	Example Quotes
<b>Type</b>	<i>Verbal</i>	<i>"The sport science staff have pulled me for chats to focus on the thing I'm working on. These informal chats have opened a discussion into what I need to do."</i>
		<i>"It has changed recently and it has made me clear on the things I need to improve on so that I can perform to a higher standard for the whole 90mins of a game."</i>
	<i>Visual</i>	<i>"Been shown videos of ourselves and other professionals which has been a lot more helpful."</i>
		<i>"It has and it's made me more aware of how and where I can improve on a Saturday."</i>
	<i>Written</i>	<i>"When stats and videos are shown to you it is easier to know what you need to do better."</i>
<b>Timing</b>		<i>"I can't take in information during the game as I cannot concentrate however if I got told what to do before I would have taken it into consideration more, however the times (we get feedback) haven't changed."</i>
<b>Location</b>		<i>"There have been more individualised 1 to 1 meetings which has helped a lot."</i>
		<i>"I prefer getting feedback in a 1 to 1 meeting and being shown on a notice board."</i>

**Table 5.5.** Open ended survey responses: Categories, subcategories, and example quotes relating to the perceived effectiveness of feedback post-intervention for the Control group.

Categories	Sub Categories	Example Quotes
Type	Verbal	<i>"It (feedback) has always been done by reviews every 6 weeks or if walking past for quick chat."</i>
		<i>"Nothing has changed recently, we don't have phone calls, but if we did I think it would be very effective."</i>
	Visual	<i>"I think individual visual feedback could be better as it tells you what to work on and what you are doing well."</i>
		<i>"Hasn't changed, we still have our normal team meetings and video analysis sessions."</i>
Timing	Written	<i>"I think written feedback could be better, the main one being text message feedback."</i>
		<i>"Sometimes during the week after a game we won't get specific feedback of my individual performance, we just get team feedback or units."</i>

**Location**

*"We never get phones calls...I think getting more texts and calls about my performance would be effective."*

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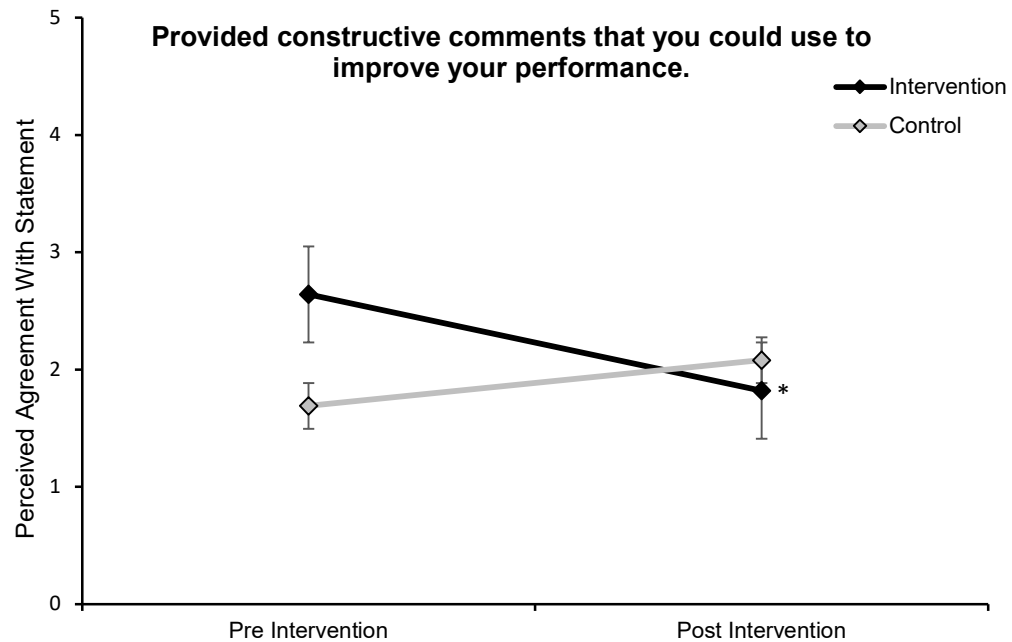


### **5.3.3. Feedback Attitudes Survey**

A significant change in responses from the feedback attitudes survey was identified for one of the seven items included which is displayed in **Figure 5.6**. A significant Group x Phase interaction [ $F(1, 22) = 8.35$ ,  $p = 0.01$ ,  $\eta_p^2 = 0.28$ ] for the provision of constructive comments was observed between intervention and control groups. The intervention group improved significantly in their perception of receiving constructive comments by 45%, whereas the control group decreased by 19%. No other significant main effects of Group, Phase or interactions were observed for any other items in the feedback attitudes survey.

### **5.3.4. Feedback Attitudes Survey Open-Ended Survey Responses**

The open-ended survey responses from the Feedback Attitudes Survey following the intervention for the intervention group are displayed in **Table 5.6**. Two areas were frequently cited during analysis of the responses; (1) The feedback from performance staff and coaches within the intervention provided more clarity on what was needed to improve, and (2) visual feedback (i.e., videos) helped to achieve clarity of expectations and performance. **Table 5.7** shows the open-ended survey responses for the control group post-intervention. The analysis revealed three frequently cited areas; (1) participants wanted more detail within the feedback provided, (2) required greater explanation in order to understand how to improve on areas identified, and (3) requested more individualised rather than feedback.



**Figure 5.6.** Mean (error bars represent standard error of the mean) Likert scale responses of perceived agreement with the following statement *“The most recent feedback you received from your performance staff about your physical goals and targets...provided constructive comments that you could use to improve your performance”* (1 = Strongly agree, 5 = Strongly disagree).

\* statistical significance, set at  $p < 0.05$ .

**Table 5.6.** Open ended survey responses: Survey items, and example quotes from the Feedback Attitudes Survey post-intervention for the Intervention group. Each item was framed with *“The most recent feedback you received from your performance staff about your physical goals and targets...”*.

Survey Item	Example Quotes
Used language/information that was easy to understand	<i>“Yes it was quite complicated but explained to me well.”</i> <i>“They have broke it down to me step by step on what I need to improve on.”</i>
Had a clear message	<i>“Yes it is explained to me well therefore I have a clear message from speech and an informative sheet.”</i>
Was confusing	<i>“No, it was very informative and detailed which could of been confusing but the communication from the staff was good to help me understand.”</i>
Provided constructive comments to improve performance	<i>“Shown videos and given constructive feedback on certain things to improve on and how.”</i> <i>“They have told me my weakness and explained it to me.”</i>
Improved confidence	<i>“Good feedback gives confidence. And it gives you confidence to go out and perform again.”</i>
Was useful	<i>“It was useful advice which can further me and help me keep consistent for the next game/training.”</i>
How satisfied were you with the most recent feedback you received about your physical goals/targets?	<i>“It was clear information and relevant to my performances. Looking forward to more feedback.”</i> <i>“I felt satisfied as I had a clear plan on what I wanted to do and how to achieve it.”</i>

**Table 5.7.** Open ended survey responses: Survey items, and example quotes from the Feedback Attitudes Survey post-intervention for the Control group. Each item was framed with “*The most recent feedback you received from your performance staff about your physical goals and targets...*”.

Survey Item	Example Quotes
Used language/information that was easy to understand	<i>“I understood what they were saying to me as it was clear and precise.”</i>
Had a clear message	<i>“Because it was very clear and I could carry out but could of been more detailed to get very best out of me.”</i>
Was confusing	<i>“You can understand it.”</i>
Provided constructive comments to improve performance	<i>“I’m getting some feedback but I would like to get it more explained to understand even better.”</i>
Improved confidence	<i>“I don’t think the coaches give you much confidence because they don’t give you enough individual feedback.”</i>
Was useful	<i>“You know what you need to do.”</i>
How satisfied were you with the most recent feedback you received about your physical goals/targets?	<i>“I got a goal that I just need to work for. However I don’t know how.”</i>

### 5.3.5. Interviews

Overall, eight semi-structured interviews were carried out (pre-intervention,  $n = 4$ ; post-intervention  $n = 4$ ), however it was only deemed appropriate to thematically analyse the interviews post-intervention to explore the effects of the intervention period. Consequently, four semi-structured interviews were conducted following the intervention (intervention group,  $n = 2$ ; control group,  $n = 2$ ). Interviews were audio recorded and transcribed verbatim (total = 42 mins;  $M = 10.5$  mins). Thematic analysis of the intervention group's perceptions of feedback following the intervention are presented in **Table 5.8**. Player's perceptions are presented within four higher order inductive themes: (1) individualised feedback, (2) increased frequency of feedback, (3) visual provides a shared understanding of feedback, and (4) time and space to deliver feedback. All higher order themes were frequently cited by both participants, additionally seven subthemes were constructed of which *specificity* ( $n = 2$ ), *maintains focus on targets* ( $n = 2$ ), *access to feedback* ( $n = 2$ ), and *privacy* ( $n = 2$ ) were the most frequently cited.

It was not deemed appropriate to incorporate the control group interview data into the thematic analysis, as their responses did not provide any further insight into the effects of the feedback intervention. However, the following quotes highlight that no changes were observed for the control group from pre- to post-intervention:

*“There wasn’t many things different (from normal). There was still the same meetings that I was having before and nothing really extra was happening...It was just the same six-week performance review.” (CONT1)*

*“There’s not really a lot that’s changed...(feedback) was just clips of us, clips of them. There’s not been really a main change with that.” (CONT2)*

Both participants within the control group did however cite the need for more individualised feedback based upon professional players in their positions as the following quote illustrates:

*“I’d want to watch a bit more of the professionals, how they do it, rather than watching us because we watch quite a bit of us and the opposition...personally, I’d like to watch what the professionals are doing because they do it the best. We can try and copy bits out of them and put it into our game.” (CONT2)*

**Table 5.8.** Post-intervention interviews: Higher order themes, subthemes, and example quotes for the intervention group following the feedback intervention.

Higher Order Theme	Subthemes	Example Quotes
<b>Individualised feedback</b>	<i>Specificity</i>	<i>“there were changes (to feedback)...it was a bit more specific to me and it was more frequent and more relatable for the games coming up and what had happened. So, yeah...it was just more individual.” (INT1)</i>
	<i>Increased feeling of care</i>	<i>“It made me feel more like people focusing on what I was doing so then they actually wanted to help...We were getting the targets but we weren’t really focusing on it all the time.” (INT1)</i>
<b>Increased frequency of feedback</b>	<i>Maintains focus on targets</i>	<i>“It just allowed me to see when I’m doing all my work, I can focus it around the targets which I’ve been set.” (INT1)</i>
	<i>Feedback is a reminder</i>	<i>“It just keeps reminding me to keep doing that and keep focusing on it.” (INT1)</i>
<b>Visual provides a shared understanding of feedback</b>		<i>“Before the visual feedback, there wasn’t really a lot of visual feedback unless you went and asked for it, but now with the visual feedback, getting to watch people in your position and areas that you need to work on.” (INT2)</i>
<b>Time and space to deliver feedback</b>	<i>Privacy</i>	<i>“At the training ground, it’s in meeting rooms which is obviously one to one and quiet, and there’s no one around laughing...It’s more private.” (INT2)</i>
	<i>Access to feedback</i>	<i>“Being given something written, you can take it away with you and you can always remind yourself of things that you can do.” (INT2)</i>

*Informal Chats*

*"I had some chats in the corridors and just walking out onto the training pitch or after or during training which was helpful leading towards games." (INT1)*

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## **5.4. Discussion**

The aim of the current study was to use key stakeholder recommendations to design, deliver and evaluate a novel pilot study to explore the acceptability and feasibility of an integrated feedback intervention within a professional football academy. An integrated feedback intervention involving all key stakeholders was designed and implemented over a four week in-season period and player's perceptions of the effectiveness of feedback, and attitudes towards feedback were measured. The intervention resulted in improvements in some markers related to perceived effectiveness of feedback (i.e., the provision of informal chats), and feedback delivered via reports on a computer screen and attitudes towards feedback (i.e., constructive comments). Interview data revealed that the increased frequency of individualised feedback helped to improve clarity and satisfied the need for more visual feedback which provided a shared understanding of physical goals/targets. As such, the delivery of integrated feedback interventions may be feasible within professional football. Do improvements in perceived effectiveness translate to improvements in performance, behaviour change or both should be explored in future studies. Significant findings from the surveys and the four themes identified from the interview data will be discussed alongside the relevant literature in these areas. Finally, recommendations will be made for future intervention designs.

### ***Informal Chats***

Findings within chapter four identified the high frequency of verbal feedback in the form of informal chats. Subsequently, data presented within

**Chapter Five** highlighted that not only were informal chats delivered frequently. They were also perceived by stakeholders to be effective for influencing both the coaching process and player behaviour. Additionally, the data presented within the current study shows that an integrated feedback intervention can improve perceptions of effectiveness towards feedback by professional academy football players. Indeed, data presented in **Figure 5.3** demonstrates a significant improvement in perceived effectiveness of informal chats following the feedback intervention. Furthermore, open ended survey responses and interviews (**Table 5.8**) indicated that some participants within the feedback intervention group perceived there to be a positive change in the delivery of informal chats, not only from performance staff but from coaches too. Whilst delivery of feedback by coaches was not part of the intervention, the engagement of the coaches with the research and buy-in may have influenced their decision to communicate with players regarding their physical performance targets.

The improved effectiveness of informal feedback presented within the current study is consistent with previous findings, which have demonstrated athlete preferences for feedback to be delivered through both formal and informal discussions (Neupert et al., 2019). Despite one of the main methods of feedback delivery in the intervention group being that of the provision of individual formalised meetings, there became a tendency through the buy-in and engagement of the players, for there to be informal discussions around feedback that was being delivered following matches using the online video analysis software. Poor levels of 'buy-in' have been previously reported and are considered to be a barrier to the effective delivery of information such as

training load monitoring data (Akenhead & Nassis, 2016; Noske et al., 2021). Indeed, the communication of data and information has been described as the critical step in ensuring that data is used positively to influence coach decision making processes (Lacome et al., 2018b, Thornton et al., 2019; Ward et al., 2019). Findings presented demonstrate the importance of communication and obtaining player ‘buy-in’ in order to provide optimal feedback that can aid players in their development and achievement of physical goals and targets. Whilst previous studies have demonstrated the preferences of athletes and coaches for informal forms of feedback (Fullagar et al., 2019; Neupert et al., 2019; Nosek et al., 2021). To our knowledge, this is the first study to illustrate that a feedback-specific intervention targeted at players’ physical goals/targets can improve perceived effectiveness of feedback. The findings presented within this pilot study intervention highlight the need for performance staff and coaches to adopt a feedback strategy that educates and engages players through regular provision of formal forms of combined feedback (i.e., visual, verbal, written), which are supported by informal verbal feedback.

### ***Reports on a computer screen***

Participants within the intervention group improved their perceptions of effectiveness of reports on a computer screen as can be seen in **Figure 5.5**. Whilst this was under the “written” category for types of feedback, it is quite plausible that participants could have regarded the feedback they received within their individual meetings as reports on a computer screen. In reality the information shown to the players was a combination of visual, verbal, and written feedback (in the individual meetings) and visual and written feedback

(with the online interactive video feedback). The need for feedback to be delivered in a variety of ways has been highlighted in the previous literature (Gregson et al., 2018; Ryan, Henderson & Phillips, 2019; Weston, 2018). Additionally, the demand for flexibility of a range of feedback delivery styles both in isolation and in combinations may be indicative of the different learning styles that each individual player has (Groom & Cushion, 2005). This has also been described within the literature as multiple intelligences, which states that athletes possess multiple intelligences such as verbal, visual, kinaesthetic, mathematical, interpersonal, and intrapersonal (Gardner, 1993). The combination of different types of feedback was described as a theme within **Chapter Four** of this thesis, additionally, data from the interviews conducted in **Chapter Five** highlighted that some of the most effective forms of feedback occurred when there was a combination of verbal and visual feedback with supporting written evidence. Indeed, **Table 5.4** shows how one participant within the current study felt that the combinations of videos and stats were useful for instance: *“When stats and videos are shown to you it is easier to know what you need to do better.”* As such, both coaches and performance staff alike should look to provide a more personalised feedback style, which may involve specific combinations of different feedback types which are aligned with the receiver’s preferences (Killingback et al., 2019).

The findings presented here are consistent with recent studies which have shown that innovative media approaches can enhance and improve the quality of student experiences (Killingback et al., 2019). As such, feedback delivered via the online interactive video platform, which was accessed via laptops, phones, and tablets, may have met the needs of the target audience.

However, it was not clear how much participants engaged with the online interactive element of the intervention, as an objective marker i.e., usage statistics were not used to measure whether they had accessed the content online. The absence of any comments in response to comments on the online software may show that adherence or engagement to this part of the intervention was low, albeit participants were not instructed that they had to engage with this. Personalised text messages have been shown to be an effective method of influencing behaviour change and improving health related outcomes in studies relating to alcohol consumption (Cadigan et al., 2018) and improving sleep hygiene (Gipson et al., 2019; van Ryswyk et al., 2017). For example, van Ryswyk et al. (2017) described the use of weekly text messages sent to participants in an intervention designed to optimise sleep. It was demonstrated that the educational and personalised content of the text messages served to engage participants within the intervention, thus enhancing the outcomes of the study. Contrastingly, it has been argued that text messages are not as effective as face-to-face communication as non-verbal information such as tone, pace and body language are necessary for full comprehension (Killingback et al., 2019). It may be concluded that for the participants in this study, they perceived the delivery of feedback on computer screens to be effective, however the personalised element of the interactive software was not central to this process. Similar future interventions may look to employ personalised text messages to reinforce feedback messages, thus stimulating interaction between feedback provider and receiver. Caution should be adopted however if delivering feedback in this way to ensure it is in line with club safeguarding policies in youth development settings.

### ***Constructive comments***

This is the first study to show that an integrated feedback intervention can improve markers of both perceived effectiveness and attitudes towards feedback in professional academy football players. The attitudes of participants towards the constructive comments they received significantly improved following the delivery of feedback in the intervention, which showed a 45% improvement from pre- to post-intervention (**Figure 5.6**). Quotes from the open-ended survey responses indicated a large discrepancy between the intervention and control group, whereby participants within the intervention group cited clear explanations were provided, not only on what their physical targets were but how to improve in these specific areas (**Table 5.6**). It appears that the provision of feedback within the intervention may have been perceived as effective as it satisfied the key criteria for feedback effectiveness discussed in previous studies, namely the provision of cues or reinforcement to the learner, using video assisted instructions and relating to goals (Hattie & Timperley, 2007, Chen & Rikli, 2003). Indeed, athletes of a similar age to those studied in the current study (14-18 years) have previously demonstrated a preference for delivery of constructive and informational feedback delivered frequently by their coaches (Chen & Rikli, 2003). As a result, it appears that the feedback provided within the intervention may have answered three pertinent questions that have been identified as being central to the feedback process; *'Where am I going?', 'How am I going?', 'Where to next?'* (Hattie & Timperley, 2007). Additionally, it has been shown that feedback should address a specific behaviour, be non-evaluative in nature and be followed by confirmation of understanding and an action plan (Jug, Jiang & Bean, 2019).

Consequently, it is recommended that performance staff and coaches ensure that not only are goals set but that they are consistently reviewed and that players are suitably educated to a level whereby there is a shared understanding of what is required to improve in these specific areas. Clear verbal explanations in combination with video feedback should be used where appropriate to support goal setting, regular performance reviews, and provide direction on specific aspects of each individual player's performance. Regular individual review meetings, where the player is shown video clips, provided with data to support the video, and given clear guidance or reinforcement should be incorporated into practice where appropriate and practically possible.

### ***Individualised feedback***

Within the interviews, participants frequently cited "individualised feedback", and as such this was constructed as a higher order theme with two subthemes, specificity, and increased feelings of care. The increased specificity of individual forms of feedback concurs with descriptions of feedback laid out in both Chapters Four and Five of the present thesis and previous literature (Groom et al., 2011; Henderson, Ryan & Phillips, 2019; Middlemas & Harwood, 2018). Whilst previous studies have successfully described coach and/or player perceptions of current video feedback practices (Groom et al., 2011; Middlemas & Harwood, 2018; Wright et al., 2016), this is the first study to demonstrate that an integrated feedback intervention can improve the perceived effectiveness of individual feedback compared with a control group who received feedback in line with their "normal" feedback

process (i.e., club specific and EPPP guidelines). The pilot study used the aforementioned literature as guidance to design and develop an intervention aimed at improving perceived effectiveness of feedback. Whilst the intervention delivered was only brief in nature (i.e., four weeks) it demonstrates the acceptability of such interventions in future research and provides evidence to further support the efficacy of feedback delivered individually and specifically rather than generically. The findings presented here should be used by coaches and performance staff to deliver individual forms of feedback to players rather than generic group feedback. This may be of particular relevance in a development environment such as academy football, whereby a self-referenced (mastery/learning) climate rather than a comparative (performance/ego) climate should be encouraged (Morgan & Sproule, 2013).

### ***Increased frequency of feedback***

When considering the theme of “increased frequency of feedback” participants referred to the fact that regular feedback (i.e., after every game) helped them to maintain focus on what their targets were and served as a frequent reminder to draw their attention to their physical targets. For example, *“It just keeps reminding me to keep doing that and keep focusing on it.” (INT1)*. Chapter Four demonstrated that feedback is frequently delivered to players within professional football clubs. Furthermore, findings within Chapter Four showed that feedback from performance staff was perceived to be effective if it was delivered in a timely fashion after matches, and with explanations of what could be improved upon. Feedback was delivered after every game (i.e., weekly) on the online interactive video software, in individual meetings twice



in a four-week period, and via informal chats (usually following feedback posted online after a game). The reinforcement of physical goals and targets delivered in this intervention differs significantly from what could be considered “normal” feedback processes within professional football club academies. Most feedback delivered to players by performance staff on a daily/weekly basis is training load monitoring data such as data derived from GPS and heart rate monitoring devices and fitness testing data (Akenhead & Nassis, 2016; see **Figures 3.13 - 3.15**). Despite the developmental aims of a professional football academy (Nesti & Sulley, 2015), it still seems that feedback delivered is comparative in nature, which is more typical of the performance related models of first team football. This may also be reflective of the departmental objectives of performance staff departments such as medical and sports science, which are often to reduce injury and maximise player availability, in addition to enhancing player fitness (Weston, 2018). As such, it seems that there still appears to be a lack of congruence between the objectives of performance staff, coaches, and the developmental environments in which they are working together. This may lead to a lack of effective feedback delivered to players who are striving for developmental goals which may provide them a better opportunity of progressing through the ranks of a professional football club and ensure a successful transition from youth to senior professional football (Mitchell et al., 2020).

### ***Visual provides a shared understanding of feedback***

Another theme identified by players within the intervention group was “visual provides a shared understanding of feedback”, within which players

discussed how watching clips of professional players helped them to understand elements of the task that required development and what optimum performance looked like in their area. This provided a shared mental model of performance, which is consistent with previous findings that have shown that knowledge structures are created between team members (Richards et al., 2012; Salas, Sims & Burke, 2005). Furthermore, the coaches' vision and philosophy are central to the feedback process and should be appropriately communicated to both performance staff and players, which can be enhanced through the provision of visual feedback (Francis & Jones, 2014; Groom & Cushion, 2005; Groom et al., 2011). Indeed, Groom & Cushion (2005) identified that a combination of video and "doing" on the pitch were considered by youth football players to be optimal for improving game understanding, decision making and understanding individual and team weaknesses. Current knowledge regarding provision of feedback has usually been examined within the coach-player dyad, whereas the findings of the current study demonstrate the importance of not only performance staff and player relationships but the shared understanding and relationships between coaches, performance staff and players simultaneously.

The feedback delivered within the intervention has served to build upon the findings presented in **Chapter Three** of this thesis which demonstrated that feedback delivered with the aim of enhancing the development of players should be educational in nature and in line with players individual goals and targets. Additionally, **Chapter Four** demonstrated that feedback was more likely to be perceived to be effective if a common goal was shared between key stakeholders and that sufficient education was provided on the content or

context of the feedback. Moreover, performance staff recognised within **Chapter Four** that *“players like visual feedback”*. A theme that has run throughout this thesis has been that of preferences of both coaches and players for visual feedback, especially the provision of video feedback (often in combination with other forms such as written or verbal). Therefore, this pilot study provides initial evidence that feedback interventions that use video feedback to answer the question ‘*where to next?*’ (Hattie & Timperley, 2007) may be of use for future research and practical settings for performance staff such as sports scientists, S&C coaches, and physiotherapists.

### ***Time and Space to Deliver Feedback***

Regarding “time and space to deliver feedback,” three subthemes were identified “privacy”, “access to feedback,” and “informal chats”. Both participants who were interviewed from the intervention group referred to the fact that individual feedback delivered within the intervention was perceived to be effective since it was delivered in a quiet location and away from the group environment. For example; *“At the training ground, it's in meeting rooms which is obviously one to one and quiet, and there's no one around laughing...It's more private.”* (INT2). This echoes the findings of both Groom et al. (2011) and Middlemass & Harwood (2018), who indicated that video feedback in academy football players is a complex process and players may exhibit a number of negative psychological responses to receiving feedback in front of a group such as feeling anxious about others seeing their mistakes, experiencing low mood after seeing mistakes, and loss of focus when not involved in video clips. Consequently, performance staff and coaches should

be acutely aware of their delivery methods when engaging in feedback to players and should look to find private spaces and times to deliver individual feedback for maximum effectiveness. Consolidating the findings reported in Chapter Four and of previous work (Killingback et al., 2019; MacGregor et al., 2011), players felt that feedback delivered in written forms that could be stored on their phones or personal devices were effective. This was generally because they felt that they could then access the feedback whenever they needed it, rather than the perception that sometimes verbal feedback may be forgotten in a fast-paced and busy environment (see **Chapter Three – Phase 2**). The findings presented within the current study, relating to accessing feedback, provide novel evidence to extend the suggestions made within the contemporary literature that feedback should be delivered in a variety of formats and practitioners should operate with a high degree of delivery flexibility (i.e., written, graphical, verbal) to optimise communication (Weston, 2018). Furthermore, it is recommended that practitioners look to use alternative methods of providing feedback to players, that are interactive, private and can be accessed multiple times (Killingback et al., 2019). The use of alternative and richer media modes of feedback have been demonstrated to improve student-lecturer relationships which may be translated to performance staff-player relationships if employed successfully in the current setting (Pokorny & Pickford, 2010). The subtheme “informal chats” discussed by participants in the interviews related to how feedback was delivered “*in the corridors and walking out onto the training pitches...which was helpful leading towards the games*” (INT2). Please refer back to the discussion of informal chats presented earlier on in this section.

### ***Strengths and Limitations***

A major strength of this study was the randomised and controlled nature of the intervention. Professional football is typically considered to be a difficult environment in which to carry out such studies, as it is often deemed inappropriate to split a group of players and place one in an intervention or “treatment” group which aims to enhance performance whilst the other group receive no intervention. However, considering the nature of this pilot study was to assess the acceptability and feasibility of carrying out such interventions within this practical environment, it was considered appropriate. Indeed, it should be noted that the intervention was initially introduced to participants as a crossover study. Thus, both groups were of the understanding that they would receive the feedback intervention and also be part of the control group. However, the full intervention which had been designed and planned to take place was unfortunately not possible to deliver due to the Covid-19 pandemic (see **Figure 5.7**).

Additionally, another strength of this study was the engagement and buy-in from three groups of key stakeholders (coaches, performance staff and players). Indeed, co-creative and multidisciplinary approaches to research have been shown to be useful in the design and delivery of coaching based CPD sessions (Andrew et al., in press), and researchers and practitioners alike should aim to adopt such methodologies when considering future research designs and practical interventions. Whilst the sample size is small (25 players), saturation point was reached as this was the total squad size of the U18s group at a professional football academy, so without adopting a multi-

club approach to the research and intervening at more than one club at a time it would be difficult to realistically increase this number. It should be reiterated at this point, that it was unusual for all participants who were approached to agree to take part in the study, however no coercion was present, and participants were made fully aware that they could withdraw or not participate.

The present study is not without limitations, and the short time frame over which the pilot study was conducted must be acknowledged. Due to the paucity of practical interventions in this area, a short pilot would seem a logical first step in line with applied research models (Bishop, 2008; Drust & Green, 2013). However, to fully explore the acceptability and feasibility of the intervention then a longer duration, such as that set out in **Figure 5.7**, would be recommended in future studies. Additionally, the study was conducted in one professional football club academy, and as such may not be generalisable to all football club academies. Indeed, the use of key stakeholders from one club has significant benefits to understanding the complex milieu within one context, although readers should consider the transferability of findings based on their own individual club/sporting environment. However, as participants within Category 1 football academies are relatively homogenous from a chronological age and anthropometric standpoint (Hannon et al., 2021, Morris et al., 2020), it is thought that there may be some practical utility to the findings presented here.

Furthermore, this pilot study has shown the potential of integrated feedback interventions in professional academy football players aged 16-18 however, it is not clear whether these findings are translatable and relevant to younger players within the academy system i.e., 9-15 year olds or older

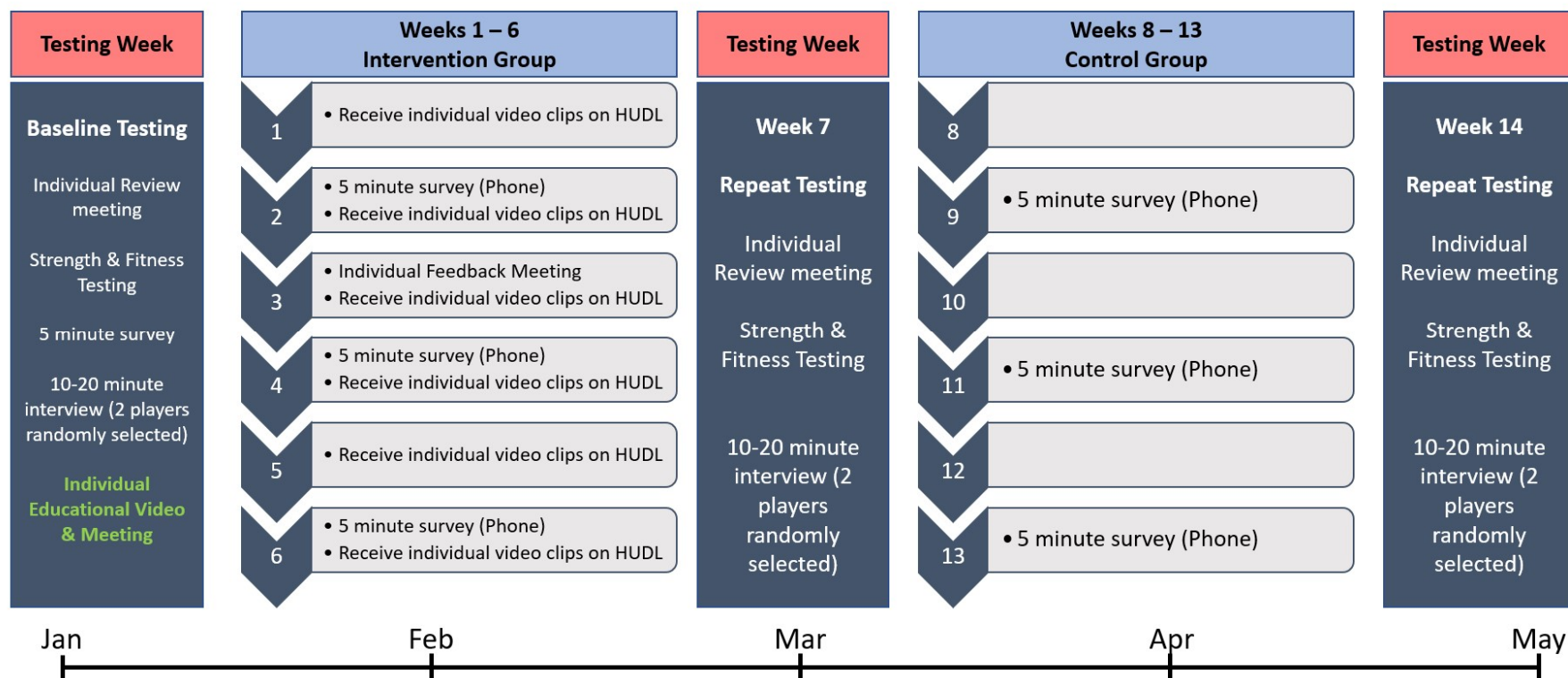
players within U23s and first team squads. Future studies should look to pilot and deliver larger scale interventions with players in these specific age ranges. Furthermore, this pilot study, whilst demonstrating the potential acceptability and feasibility of feedback interventions, the effectiveness of such interventions are not clear without a marker of behaviour change or performance indicator of the participants involved. Hence, future studies should look to develop specific outcome markers to measure the effectiveness of such interventions on key markers of development and performance (see section below).

### ***Implications for future research***

The pilot study was deemed effective to explore the acceptability and feasibility of such interventions within professional academy football. However, a full intervention had been designed and planned to take place which was unfortunately not possible to deliver due to the Covid-19 pandemic (**Figure 5.7**). **Figure 5.7** shows the manipulations that were planned to be made to normal feedback processes such as individual education video meetings, individual video clips on online interactive software (i.e., HUDL), and individual catch-up meetings at the mid-way point of the intervention (van Ryswyk et al., 2019). Additionally, it shows the methods that were used to assess the impact of the intervention such as surveys and interviews. Strength and fitness testing was intended to be used to assess the changes in physical status over the period of the intervention. Whilst not a direct marker of performance, this may have provided quantification of progress towards the individual's physical goal/target (Enright et al., 2017; Paul & Nassis, 2015). In order to measure the

effectiveness of feedback interventions on performance, future studies should aim to develop objective markers which are quantifiable, measurable and integrate markers of physical technical and tactical performance (Bradley & Ade, 2018; Brobst & Ward, 2002; Smith & Ward, 2006).





**Figure 5.7.** Proposed intervention timeline for the Intervention group, including feedback alterations and assessments of intervention impact.

## ***Conclusions***

In summary, this pilot study is the first to design, deliver and evaluate an integrated feedback intervention within a professional football academy. Whilst limited in terms of duration (i.e., 4 weeks) and adopting a single club approach, the findings may indicate the acceptability and feasibility of a feedback intervention of this nature. Improvements in perceptions of effectiveness of informal chats, and reports on a computer screen were observed. Additionally, attitudes towards feedback improved through participants' reception of constructive comments. The positive comments regarding individualised feedback, the increased frequency of focused feedback, the use of visual feedback and the time and space provided for feedback, may provide initial evidence for the use of similar interventions in future research and practical settings. Consequently, the feedback intervention documented above may provide a useful start point for both researchers and practitioners alike. Future studies should seek to intervene over longer periods of time, using randomised crossover designs and provide objective markers of performance and/or behaviour change to determine the overall effectiveness of such interventions.

## **CHAPTER 6 – SYNTHESIS OF FINDINGS**

## 6.0. Aim of Chapter

The aim of the following chapter is to integrate the findings presented within this thesis and interpret the results from a theoretical, conceptual, and applied perspective. An evaluation of the aims and objectives of the thesis will be conducted. Subsequently, the key findings from each of the experimental chapters will be discussed alongside a conceptual model for understanding feedback within professional football. Finally, the findings will be used to make recommendations for future research and applied practice.

### 6.1. Evaluation of Aims and Objectives

The overall aim of this thesis was to provide a critical appraisal and exploration of current feedback strategies within a professional football setting. This aim was achieved by adopting a three phased approach to the research. The first phase was to “scope” the landscape of feedback which was achieved by an online survey delivered within the first phase of **Chapter Three**. Findings from the survey subsequently informed the second phase, which set out initially to “understand” the perceptions of key stakeholders towards current practices and secondly to understand the perceived effectiveness of performance related feedback, which was achieved through completion of **Chapters Three and Four**. Recommendations from key stakeholders within **Chapter Four** provided a rationale for the third phase, which was to “intervene”, hence the design, delivery, and evaluation of a novel feedback intervention within **Chapter Five**. The following subsections will look to provide a brief synopsis of the results within each of these chapters that demonstrate the research aims and objectives were met, and importantly inform how they

can be impactfully applied in a practical setting. Before doing so, below we have reiterated the aims and objectives of the present thesis:

1. To examine current feedback delivery practices of key stakeholders in professional football.
2. To examine key stakeholder attitudes towards the perceived usefulness of different types, timings and locations of feedback in order to provide recommendations for future improvements in feedback strategies.
3. To use key stakeholder recommendations to design, deliver and evaluate a novel pilot study to explore the feasibility of an integrated feedback intervention within a professional football club.

### **Objective 1**

An examination of current feedback delivery practices within professional football was conducted via a consecutive two-phase study (**Chapter Three**) utilising an online survey followed by semi structured interviews. The online survey data indicated that there was a high volume and frequency of feedback delivered between key stakeholders (through a combination of various types, timings, and locations) and that a high proportion of this was delivered daily through informal chats and conversations. This demonstrates the importance of practitioners (i.e., coaches and performance staff) recognising that informal interactions are key opportunities for feedback, and should therefore, be more considered in their approach as a result (see practical recommendations section). Furthermore, the interviews yielded evidence that displayed how the information and the way it was delivered was

fundamentally linked with the purpose of the feedback (i.e., reflective, performance focused, or development focused) and shaped by the environment, culture, and context of the club that it was delivered within. Indeed, a proactive feedback strategy which is cognisant of inter- and intrapersonal communication factors and sensitive to the environmental demands should be adopted by coaches and performance staff when delivering feedback. Acknowledgement of the factors mentioned above may allow a better understanding of the feedback landscape and allow coaches and performance staff to deliver feedback that is perceived to be useful, which was explored in **Chapter Four**.

## **Objective 2**

Achievement of objective two was met in **Chapter Four** using semi structured interviews whereby participants rated (5-point Likert scales) and discussed the perceived effectiveness of various feedback delivery methods. Additionally, participants provided useful recommendations for improvements in feedback strategies. The analysis revealed that informal feedback was perceived to be effective by all key stakeholders. Feedback was also more positively perceived if there was a good relationship between the giver and receiver i.e., the giver understood the receivers' individual preferences for feedback and had trust/respect from the receiver. Feedback was also perceived to be effective if it was delivered clearly, and education was provided about the content and context of the information. Additionally, feedback was perceived to be effective if it was focused on clear and shared goals (performance vs development) and communicated with an understanding of

the cultural environment. The findings presented within this study may raise awareness to coaches, performance staff (and in some instances, players) as to what is perceived to be “effective” feedback and how this can inform the development of optimal feedback strategies in an applied practical environment. Indeed, it is recommended that an individual and club specific focus should be adopted in a practical setting, and practitioners should recognise that delivering effective feedback is complex and influenced by a multitude of social, individual, and environmental factors. Hence effective feedback delivery is far from a “one size fits all” approach. The triangulation of perceptions which was achieved throughout **Chapters Three and Four** allowed for the development of an integrated feedback intervention, which was subsequently piloted in **Chapter Five**.

### **Objective 3**

A feedback intervention pilot study based around recommendations provided in **Chapter Four** and the contemporary literature was designed, delivered, and evaluated within **Chapter Five**. The design and delivery of the intervention was documented along with the rationale and supporting evidence. The intervention was delivered as a 4-week pilot study which aimed to explore the acceptability and feasibility of adopting an integrated feedback intervention within a professional football club academy. Acceptability and feasibility were explored through a combination of surveys and interviews of participants pre-intervention and post-intervention. Participants’ perceptions of effectiveness within the intervention group significantly improved for informal chats and receiving reports on a computer screen. Additionally, the attitudes

of participants within the intervention group significantly improved for the constructive comments delivered. Moreover, participants identified that delivery of more individualised feedback on a regular basis helped them to maintain focus and motivation towards pursuing their developmental targets (i.e., physical goals). The use of visual feedback and the time and space provided for feedback were perceived positively by participants. The results of this pilot study show the potential of a feedback intervention within the environment such as that of the study, however future research and applied interventions should look to address whether improved perceptions of feedback result in behavioural changes and progress towards performance based or development focused outcomes. Specific “integrated” metrics may need to be developed which can accurately quantify whether the intervention has had a positive impact on performance both in training and competition.

## **6.2. General Discussion of Findings**

### ***6.2.1. Developing a Conceptual and Practical Model for Understanding Feedback in Professional Football***

The model illustrated in **Figure 6.1** provides a conceptual model for understanding feedback in a professional football setting and highlights some of the key practical recommendations from stakeholders involved in its delivery and reception, thus incorporating findings from the present thesis (**Chapters Three to Five**).

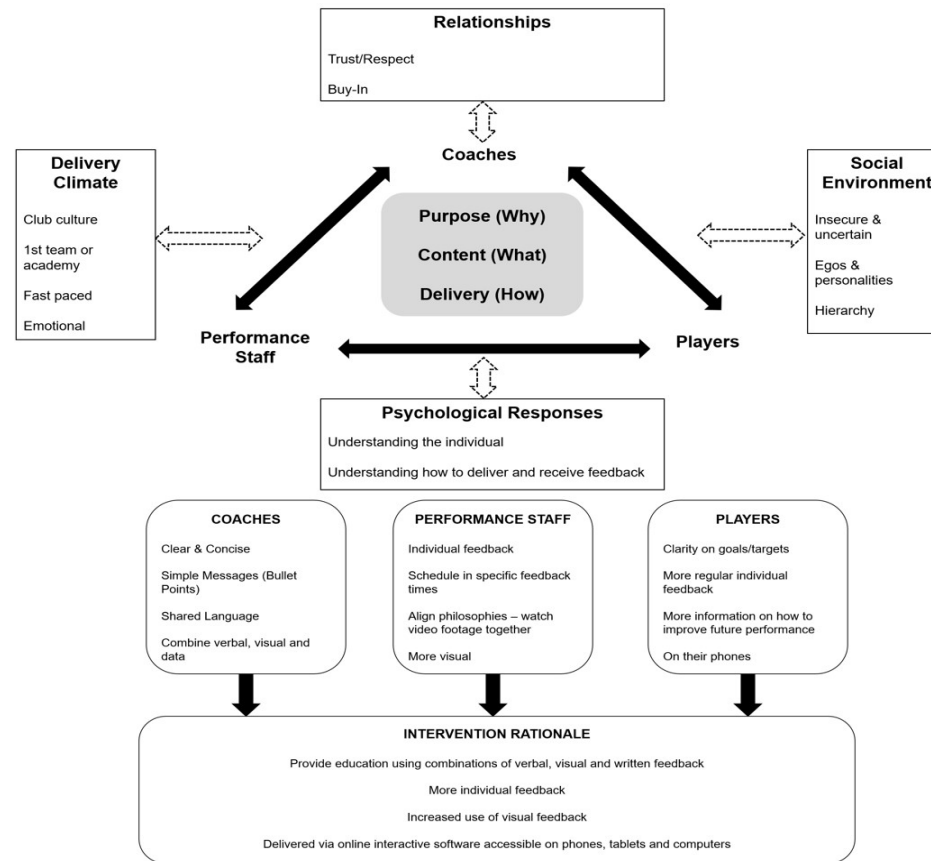
**Chapter Two** identified some of the key theoretical principles of feedback delivery and discussed feedback as information given about



performance of a task which is used as a basis for improvement (i.e., to provide knowledge or enhance skills) (Hattie & Timperley, 2007; Lee, Nyity & McGill, 1993). Theoretical models of feedback were constructed across a wide range of settings including education, business, and skill acquisition (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Salmoni et al., 1984; Smither et al., 2005). However, the development of models for understanding the broader concept and practical applications of feedback within a professional football setting were limited and had not been systematically studied within the literature. It was therefore the aim of this thesis to critically appraise current feedback strategies and synthesise the findings into a model which can be used for understanding the factors involved in feedback delivery with a professional football setting.

Throughout the thesis and in all experimental chapters the themes of context, culture, environment, and individual relationships arose inductively through interview data and subsequent thematic analysis. As such, a person–environment interaction is put forward whereby feedback delivery of key stakeholders is shaped and influenced by the factors described. This interaction of individual and organisation has been proposed by London and Smither (2002) as well as Smither et al. (2005) within the context of business personnel management. For example, individual characteristics and feedback orientation are considered alongside the organisation's feedback climate as factors considered important in feedback delivery. Consequently, the model proposed explores the interactions between key stakeholders, and the purpose, content, and delivery of feedback the relationships that exist between them. The delivery climate (culture), social environment, and psychological

responses of feedback providers and receivers will be considered. Additionally, the impact of these findings on how feedback delivery can be improved in a practical setting will also be discussed. The following section aims to describe the elements presented within the model and contextualise the findings in order to generate new insights that can be impactfully applied within a practical setting and inform potential future research.



**Figure 6.1.** A Conceptual and Practical Model for Understanding Feedback in Professional Football.

### ***The Why, How and What of Feedback Delivery***

**Chapter Three** demonstrated the importance of establishing the purpose or 'The Why' of feedback delivery. A clear understanding of the purpose feedback was being delivered for was a defining characteristic of effective feedback, as this had a direct impact on the information ('The What') delivered and the delivery style ('The How'). Within the present thesis, three main purposes were established for feedback: (1) Reflection on the coaching process or player performance; (2) development focused; (3) performance focused. An underpinning factor in feedback delivery is the purpose that it is being delivered for and the intended action or outcome as a consequence. Reflection focused outcomes would encompass feedback that supports the reflective cycle of analysis, training, and performance (Groom & Cushion, 2005) and feedback that supports the coaching process, such as reflections on the desired volume and intensity of training sessions and drills (Gregson et al., 2018). Performance focused outcomes would include tracking player workloads and increasing/reducing training load, or maximising training and match availability. Development focused outcomes include feedback relating to results of testing or displaying progress over time towards specific goals and targets. Feedback can also be used in order to educate the receivers by giving the information context and assisting with interpretation of the data (Thornton et al. 2019; Ward et al. 2019). Indeed, the focus on development focused outcomes (i.e., progress towards individual physical targets) through education was the focus of the intervention delivered within **Chapter Five**.

Practitioners may therefore be advised to adopt a prospective and considered feedback strategy by posing themselves the question of “*why am I feeding this back?*” before considering what is being fed back, as the intended outcome or action because of the feedback (i.e., a coaching decision or a player’s behaviour) should be the key driver of the feedback. A mitigating circumstance which should be acknowledged is where there are overlapping performance and development-based targets, as was evident in the thesis due to participants representing the professional development phase (PDP), which includes players aged 16-23 years. This is where priorities need to be established and aligned based on the club’s philosophy which is an amalgamation of the philosophies of other key stakeholders such as the board, the manager, technical director, and the academy director (Cruickshank et al., 2014; Dowling et al., 2018; Fletcher & Arnold, 2011). These organisational priorities then filter down to the staff responsible for obtaining club and departmental targets, which can facilitate the feedback strategies employed. Clear organisational priorities, philosophy and vision may enhance the performance leadership and management model in professional sport (Fletcher & Arnold, 2011) and may serve to improve the delivery of integrated feedback interventions, such as that documented within **Chapter Five**. Hence, communication between all levels within organisations should be recommended in order to establish priorities, goals and performance and development targets which can assist in the development of integrated and aligned feedback strategies. Indeed, future studies examining the perceptions of a wider range of stakeholders, including the senior management of football clubs, should be used to better understand whether the clubs’ visions and

philosophies are reflected in their approach to the delivery of aligned and integrated feedback from first team and throughout the academy.

### ***Key Stakeholders***

Within the proposed model are the three key stakeholder groups, whose perceptions have been triangulated through the mixed methods approach (i.e., combining surveys and interviews) present in all of the experimental chapters (Abildgaard et al. 2016). It has been established that feedback is delivered frequently in professional football, particularly verbal feedback by coaches to players during training sessions (Ford et al., 2010). Extending the knowledge base and providing evidence of the perceptions of coaches, performance staff and players, **Chapter Three** documented the highly frequent nature of feedback delivery, both in relation to regularity (i.e., daily/weekly) and timing (before, during and after both training and matches). In addition to this, the model presented in **Chapter Two** depicted how within the literature, elements of feedback between each of the stakeholder groups had been identified. For example, it was clear that coaches deliver feedback to players through the provision of verbal instructions during pitch-based training and video analysis sessions (Groom et al., 2011; Partington & Cushion, 2013). However, clear evidence of two-way feedback relationships between key stakeholders was not present, and studies concurrently examining three stakeholder groups were limited (Nosek et al., 2021).

### ***Two-Way Feedback***

Survey data from **Chapter Three** began to show the prevalence of two-way feedback between. As more than 76% of participants responded 'yes' to giving or receiving feedback both ways between and within groups. These findings were supported within the interview data (**Chapter 3.7**) whereby participants in all groups frequently cited "two-way dialogue" which was constructed as a higher order theme. Furthermore, all stakeholder groups perceived two-way feedback to be at least *effective* in influencing the coaching process or player behaviour. The data presented here provides further evidence in line with the suggestions of Cruickshank et al. (2015) who proposed a two-way model for the optimisation of culture within professional team sports. The model described how managers, support staff and players interact with each other and external agents such as the board, media, and fans in a reciprocal fashion. Players perceived feedback from other players to be *highly effective* which was exemplified when younger players described receiving feedback from senior professionals. Therefore, it is recommended that clubs may wish to consider how they look to facilitate this and incorporate into future practice. For example, they may look to adopt a mentor scheme whereby senior professionals deliver feedback to younger players. Additionally, clubs may consider employing senior professionals who are reaching the latter stages of their careers, into player/coach roles in order to benefit from these potentially effective feedback opportunities. The prevalence of two-way feedback and its perceived effectiveness, coupled with the high number of coaches, players and performance staff present at professional football clubs present numerous opportunities for the delivery of integrated and aligned feedback. These frequent feedback opportunities may have the

potential to improve future performances or impact positively upon practice. Whilst it is clear that all stakeholders deliver some form of feedback, it is now evident that individuals within each of the stakeholder groups receive feedback too. Consequently, it is imperative that not only are coaches, practitioners and players provided with training on how best to deliver feedback but also how feedback is received, interpreted, and subsequently applied to enhance future performances. Future research should look to develop a feedback curriculum for practitioners to increase the knowledge and skills associated with how to deliver and receive effective feedback.

### ***Relationships***

In addition to demonstrating two-way communication between groups, the two-way arrows also represent the relationships between each group. In accordance with the ongoing theme of individualisation, the nature of these relationships should be considered as between one individual from each stakeholder group (i.e., a sports scientist and a coach or a coach and a player). The nature of the coach-player (coach-athlete) relationship has been studied extensively (Bowes & Jones, 2006; Cote & Gilbert, 2009) and it has been argued by Jowett (2017) that the quality of the coach-athlete relationship is paramount to successful and effective coaching. The 4C's of closeness, commitment, complementarity, and co-orientation are the main factors involved with the mutual and causally interdependent nature of the relationship between a coach and an athlete (Jowett, 2017). This research may provide a backdrop for the data presented in this thesis whereby the importance of relationships and how they were a platform upon which to deliver open and



honest feedback was frequently cited by participants within **Chapter Three** and echoed within **Chapter Four** which demonstrated that relationships facilitated the delivery of effective feedback. An underpinning factor under the relationships theme was 'buy-in', which was frequently cited within **Chapter Three** and discussed by the participants within **Chapter Four**. Akenhead and Nassis (2016) demonstrated that poor coach buy-in was seen as a barrier to successful implementation of load monitoring strategies and their subsequent impact on the coaching process. Hence, a combination of an ability to develop relationships using the principles described above and the capacity to communicate effectively and translate information into clear and practical messages is paramount to obtaining both coach and player buy-in (Coutts, 2016; Weston, 2018). Furthermore, effective feedback delivery may depend on the level of trust and respect between the giver and receiver of the feedback, as has previously been shown between players and coaches (Cushion & Jones, 2006). Indeed, more positive experiences of feedback have been reported when mutual respect and openness is achieved between coaches and their athletes (Nelson et al., 2014). The findings presented here demonstrate that these interpersonal skills and relationship building skills are not only important in the coach-athlete dyad, but also within the coach-performance staff and performance staff-player dyads as well. Therefore, to enhance the delivery of feedback moving forwards in practice, it is suggested that both coaches and performance staff aim to develop their interpersonal skills and adopt a feedback strategy that places personal and professional working relationships at its core. Establishing clear roles, agreeing on working and communication practices and regularly engaging in discussions both

formally and informally should be recommended to enhance these relationship skills. Indeed, focusing on a way of 'creating space' for these informal feedback opportunities to occur such as engaging in corridor conversations, walking back from the pitches together, and sharing office space may maximise these opportunities. The focus should be less on the content of feedback and more on relationships and why the information being delivered is practically relevant to all parties involved. Also, it is recommended that future research should look to explore the nature of these relationships, whether they can be improved, and their effect on performance or development.

### ***Delivery Climate***

Several factors have been consistently identified throughout **Chapters Three** and **Four** regarding the factors that influence the content and delivery of feedback such as the feedback delivery climate, the social environment, and the individual psychological responses of both givers and receivers of feedback. Contextual factors influencing the delivery climate such as the club culture, performance (first team) vs. development (academy), fast paced and highly emotional environments, have been shown to influence the feedback process (Groom et al., 2011). The findings presented within **Chapters Three** and **Four** provide further evidence to support the notion that sports science staff need to have an appreciation of cultural and contextual factors to deliver clear, relevant, and applicable feedback to both players and coaches (Strudwick, 2016). Previous models developed to understand feedback have suggested that the culture and working practices of the organisation in which the feedback is being delivered are important to determine how feedback is

received and whether it is used to enact positive future changes in performance (London & Smither, 2002). As such, it is recommended that practitioners “get a feel” for the club’s specific culture and attempt to understand what is perceived as important to feedback and not feedback within each specific club environment. Thus, an open approach would be deemed appropriate, which involves practitioners engaging in regular formal and informal interactions with relevant key stakeholders in order to establish shared performance goals (Arnold et al., 2017). As such, the purpose of feedback will become clearer between all parties, thus informing the content and delivery methods selected.

### ***Social Environment***

**Chapter Three** demonstrated that the social environment was perceived by key stakeholders as a key factor influencing feedback delivery. An insecure and uncertain environment populated by big egos and personalities and with a hierarchical structure was demonstrated and shown to have an effect upon the feedback delivered. Perceptions of an authoritarian, hierarchical and dominant environment were similar to those previously reported and have been shown to be prevalent within professional football by both players and coaches (Groom et al., 2011; Middlemass & Harwood, 2018; Mitchell et al., 2020). However, the findings presented within **Chapter Three** and highlighted within some of the participants’ accounts (see **Appendix B**) demonstrate that the characteristics of the environment described above also impact upon the delivery of feedback by performance staff. It was identified that scenarios such as delivering feedback in the manager’s office and formal

meetings which were attended by staff with big egos and personalities presented a clear barrier to feedback delivery, as they were described as daunting environments where feedback was tailored accordingly. Following a large scale and detailed investigation into performance analysis in professional football, Wright (2015) concluded that engaging stakeholders such as coaches and developing relationships built on trust and respect, was key to effective feedback delivery for performance staff (in this case, performance analysts). Following on from this, **Chapter Four** showed that understanding the “football” environment was important for stakeholders to deliver what was considered to be effective feedback. Whilst accounts of performance analysts have acknowledged the experiences of working with coaches and the environment created i.e., a “know your place” environment (McKenna et al., 2018), the findings presented within this thesis put forward evidence to show that effective feedback delivery hinges upon the ability of the practitioners to build relationships, gain the trust of both coaches and players and develop a way of working which satisfies both personal and professional objectives. Consequently, the feedback intervention which was designed and delivered aimed to pay particular attention to the factors listed above and as such engagement of both the players and coaches was deemed important in the design phase.

### **Psychological Responses**

The psychological responses of the receivers of feedback were documented within **Chapter Three** and subsequently supported within **Chapter Four**, whereby it was demonstrated that understanding the individual

and how they like to receive information and react to information was considered of utmost importance to feedback delivery. Indeed, an individual's feedback orientation, personality and initial reactions to feedback have been shown to have a direct impact upon the effectiveness of feedback in enacting a performance improvement or behaviour change (London & Smither, 2002; Smither, London & Reilly, 2005). The understanding of each individual recipient's qualities and their psychological responses to the feedback being delivered is an important consideration regardless of which stakeholder group is providing the feedback and to whom. Interestingly, the findings presented within **Chapter Five** demonstrate that private one-to-one environments for feedback were viewed positively by participants since no one else was around to listen or laugh at the conversations that were taking place (as is the case in more public settings or group-based performance analysis sessions). As such, a key practical recommendation would be for practitioners to be mindful of participants reactions to feedback, their feedback orientation, and the location of feedback. Individual feedback delivered in private spaces such as meeting rooms is recommended for impactful and insightful feedback delivery that may be more likely to be listened to.

### ***Integrated Feedback***

When there is more alignment between the components proposed within the model described above, then it is considered more likely that effective integrated feedback can be delivered. A working definition of integrated feedback is that which is understood by all stakeholder groups and a common goal relating to either performance, development or reflection

purposes is shared between all parties. If the feedback is integrated in this way, then optimal practices for the delivery of informal and individual feedback can be developed. Conversely, informal feedback which is not integrated and is delivered on an ad hoc basis may lead to confusion and a lack of congruence and clarity between stakeholder groups. Whilst informal feedback was perceived to be effective by all stakeholder groups within **Chapter Four**, it is probably indicative of the informal nature of the environment (Littlewood et al., 2018, p.10) rather than a carefully considered and targeted feedback strategy. It was suggested that due to the multidisciplinary and complex environment present in modern professional football, feedback may be delivered in this way due to the lack of role clarity and can often result in difficulties with communication and ambiguity (Littlewood et al., 2018). Hence, close integration between coaches, performance staff and players is warranted as a practice in order to deliver informal feedback that is aligned, integrated and effective in ensuring progress and action towards a specific purpose or goal. Indeed, this approach may look to overcome some of barriers that have previously been identified, such as lack of a common goal and limited coach and player buy-in (Akenhead & Nassis, 2016; Nosek et al., 2021). Findings presented throughout the thesis supported previous findings relating to video feedback in professional football and indicated that individual feedback preferences needed to be fulfilled for feedback to be perceived as effective (Francis & Jones, Middlemass & Harwood, 2018). Indeed, the notion of understanding each individual's preferences for receiving feedback (regardless of stakeholder group) and delivering individually focused feedback meetings was consistently referenced by participants throughout the

experimental chapters. In summary, informal feedback may already be considered to be effective by coaches, performance staff and players, however when feedback is both integrated and individualised this may optimise its delivery, as was described within **Chapter Five**. In order to do this, coaches and performance staff should aim to establish a shared language, agree on clear common goals, involve the players and each other in discussions and engage in regular interactions to ensure a clear purpose ('The Why').

### ***Key Stakeholder Recommendations***

**Chapter Four** examined the perceived effectiveness of feedback in professional football and key stakeholders provided recommendations for improvements in feedback that could be applied within the practical setting and inform future research studies. Specifically, the recommendations were used within the present thesis to inform the development of an intervention aimed at improving the perceived effectiveness of feedback by stakeholders within **Chapter Five**. The practical recommendations have been merged into the conceptual model of feedback presented in **Figure 6.1**. An integrated summary of the key recommendations that were made by each of the three groups and how they informed the development of the intervention serves to provide a rationale for testing an aspect of the conceptual model. Whilst this is not an exhaustive list of all recommendations made, they were frequently cited by participants within **Chapter Four**. The recommendations provided within **Figure 6.1** have clearly been used in this instance to inform the development of an intervention however, practitioners may be able to utilise these recommendations to improve and inform future feedback strategies and

practices. With these suggestions in mind, future feedback strategies must be considered from an individual perspective. Meaning that feedback delivered should be carefully considered with the receiver in mind. A practical strategy that can be adopted to maximise this approach is regular individual meetings both formally and informally in order to develop and build the relationship and understanding between giver and receiver. It is also essential that feedback delivered is simple and clear for the receiver. This means practitioners should endeavour to establish common goals, whether they be performance, developmental or reflection focused.

### ***Integrated Feedback Intervention***

**Chapter Five** used the recommendations described above and contemporary literature (see **Table 5.2**) to assist in the design, delivery, and evaluation of a novel integrated feedback intervention. The intervention was delivered as a four-week pilot study to explore the acceptability and feasibility of such an intervention within a professional football academy. Player's perceptions of the effectiveness of feedback, and attitudes towards feedback were measured and the intervention resulted in improvements in some markers related to perceived effectiveness of feedback i.e., the provision of informal chats, and feedback delivered via reports on a computer screen and attitudes towards feedback i.e., constructive comments. Participants revealed that the increased frequency of feedback delivered within the intervention helped to individualise the feedback, improved clarity and satisfied the need for more visual feedback which provided a shared understanding of physical goals/targets. The intervention was conducted over a four-week period to align



with the multi-disciplinary review processes that were in place at the club, whereby staff from all departments feedback to players on their progress in technical, tactical, physical and psychological areas. The intervention demonstrated that whilst the feedback mechanisms in place at professional football academies (Premier League, 2010) have utility, feedback strategies can be developed and implemented which can continue to increase players perceptions of the effectiveness of the feedback delivered. The significant improvements in the factors mentioned above alongside the positive feedback provided within the interviews provide useful avenues for future studies and practical recommendations. Indeed, a randomised crossover design whereby participants are exposed to both the control and intervention conditions is warranted in future studies. Additionally, studies conducted over a longer period are essential to further understanding the effect of manipulations to “normal” feedback processes, a proposed research design is presented within **Chapter Five (Figure 5.7)**. Whilst the current intervention shows promise for improving the perceived effectiveness of feedback, there is clearly a need to ascertain whether improvements in perceived effectiveness are reflected in improvements in the areas that were targeted at improving i.e., physical attributes such as speed/agility. The primary outcome measure of whether feedback is being used to its maximum effect is an improvement in performance. Improvements in performance can be difficult to measure and as such integrated performance metrics should be developed which are used to quantify whether feedback interventions are successful at improving player performance (Bradley & Ade, 2018).

It should be noted at this point that the intervention has only tested one component of the model (**Figure 6.1**) which was the delivery of integrated feedback from performance staff to players using input from both the players and coaches themselves. Future studies may wish to explore whether interventions or strategies can be put in place that improve the perceived effectiveness of feedback from performance staff to coaches. Specific outcome measure such as training and match availability, injury severity and injury burden as described by Ekstrand et al., (2018) may provide useful examples of key performance indicators within the performance staff-coach relationship.

In summary, these findings provide evidence which can develop the theoretical model of feedback proposed in **Chapter Two (Figure 2.1)**. The relational arrows which indicate the direction of feedback can now be shown to be bidirectional between all three groups of key stakeholders (**Figure 6.1**). As a consequence of the factors mentioned above, it is recommended that in the practical setting, performance staff and coaches focus their attention on development of interpersonal and intrapersonal skills in order to capitalise on these frequent opportunities to enhance the performance/development of the players. Performance staff should spend less time focusing on generating overly complicated and detailed training reports and spend more time having conversations with key decision makers. In this way they will build relationships (trust/rapport/respect) with key stakeholders and be more likely to have an influence on the coaching process and/or player behaviour. It should also be recommended that coaches are mindful of how much

information they are delivering to players both during training and matches and in video feedback sessions. It would be prudent to recommend that a “less is more” and a “hands off” approach (Williams & Hodges, 2005) be adopted when planning future feedback strategies (see practical recommendations section below).

### **6.2.3. Methodological Approach within an Applied Setting**

Throughout the experimental chapters (3-5), a mixed methods approach was adopted using both surveys and interviews to provide a detailed analysis of the perceptions of key stakeholders. The methodology employed, answered the call for more qualitative and mixed methods approaches to research in practical settings. This approach facilitates recommendations and interventions that have practical relevance whereby scientific findings can be translated to meaningful practical interventions (Harper & McCunn, 2017). Indeed, qualitative methodologies provide a number of benefits that are harder to achieve with quantitative research alone. For example, providing context in complex and nuanced environments, accessing the vast and rich data source of coaches, practitioners and players, and allowing exploration of *how* and *why* questions (McCunn et al., 2018). Bishop (2008) described an 8-stage model for applied research and the current thesis addressed the final three stages of this model i.e., interventions, barriers to uptake and implementation studies. Additionally, impact has been described as efficacy multiplied by implementation, meaning that the impact of research can only be truly known when it has been applied in a real-world setting under specific time and

resource constraints (Bishop, 2008). The current thesis partially achieved this by using the data gathered within the initial stages of the project to inform the development, implementation, and evaluation of a novel intervention. Drust and Green (2013) argued that there should be a shift in emphasis to "effectiveness" research which evaluates the impact of interventions in applied settings. The methodology described where surveys and interviews of multiple stakeholder groups form the basis for practical interventions is highly recommended for both future research and practitioners in the field. The current research has provided a template for how this can be applied to impact on current practice within professional football. Whilst the project explored the concept of performance related feedback in professional football, this may provide a framework for enhancing practice in related areas of sports science, coaching, education, performance analysis, medicine, and recruitment.

### **6.3. Conclusions**

The current thesis demonstrated the high volume and frequency of feedback in English professional football clubs. With technological advancements and the subsequent increase in data available there is a risk of an overload of information being delivered to key stakeholders. Coaches and performance staff should be aware of the potential danger of delivering too much information, an approach which has been refuted within the literature (Salmoni et al., 1984; Swinnen et al., 1990; Williams & Hodges, 2005). A reduced frequency of feedback or an approach similar to bandwidth feedback may be deemed appropriate, whereby feedback is only delivered when it is deemed necessary (i.e., it falls outside of acceptable limits) (Sherwood, 1988).

A caveat to this is that an increased frequency of individual feedback may serve to educate, motivate, and direct attention, which are known to be key functions of feedback (Schmidt & Lee, 2014).

This thesis forms a part of the growing body of literature that demonstrates there is a high volume of feedback delivered to key stakeholders in a variety of different formats on a regular (daily/weekly) basis (Buchheit, 2017; Nosek et al., 2021; Weston, 2018). However, it extends the current knowledge in this area by adopting a mixed methods approach and using interview data to provide depth to initial data gathered within surveys, as has been the typical approach adopted to this point. A high proportion of feedback is delivered informally through daily chats, as such practitioners (coaches and performance staff) should recognise the numerous and frequent opportunities to influence and inform practice. A focus should be placed on the development of relationships with other key stakeholders through regular personal and professional (formal and informal) interactions.

The *content* and *delivery* of feedback is directly influenced by the *purpose* of the feedback and the desired *outcome* (i.e., supporting coaching reflections, supporting performance or development focused objectives). Indeed, the purpose of the feedback could be considered to be the main driver or influencer of feedback. Thus, it is essential that practitioners recognise “The Why” of the feedback they are delivering, and that careful consideration is given to this before feeding back information. Environmental factors such as the delivery climate (i.e., club context and culture), the social environment and the characteristics of individuals involved within the feedback process may also influence feedback delivery and in some cases present barriers to

effective feedback. A number of factors were identified that were seen to facilitate the delivery of feedback that was perceived to be effective. Informal feedback, personal relationships built on trust and respect, clear and simple feedback delivery, education on the content and context of feedback and an understanding of clear and shared goals were all seen as important factors in the delivery of effective feedback. Stakeholders made some key recommendations for improvements that could be used to inform future feedback interventions and applied practice; that an individual approach, combinations of feedback types (including visual) and easy access to feedback were important in improving feedback delivery. Therefore, a novel pilot intervention was designed, delivered and evaluated which implemented some of these recommendations to assess the feasibility of such interventions in future research and practice.

Improvements in some markers of perceived effectiveness and attitudes indicated that feedback interventions may be feasible in professional academy football environments. However, future studies should look to develop integrated ways of measuring performance/behaviour change in response to manipulations to normal feedback processes to support an integrated and interdisciplinary approach to feedback between key stakeholders. The development of personalised and integrated metrics to measure performance may be used as an outcome marker in response to manipulations to feedback, such as those proposed within the feedback intervention described.

## **6.4. Practical Recommendations**

### **6.4.1. *Within Person Approach***

This section will look to highlight the individual strategies that practitioners such as coaches and performance staff should take when attempting to deliver feedback. A proactive and planned strategy to feedback should be taken in order to optimise the feedback being delivered. Additionally, ad hoc, and unnecessary feedback that is given without a clear purpose should be avoided. As such, anyone delivering feedback is urged to first consider *why* they are giving the piece of information before deciding upon content (the what) and delivery (the how). The skills needed to develop an effective feedback strategy can be developed through multidisciplinary in house CPD training events such as reflective workshops, seminars, and group discussions. Furthermore, the development of professional knowledge, interpersonal skills and intrapersonal skills are essential to maximise outcomes for coaches, players, and multidisciplinary teams (Cote & Gilbert, 2009). Hence, it is recommended that coaches, performance staff and players are exposed to regular interpersonal skills training sessions (i.e., >twice per season) to develop skills that are critical for delivering and receiving information effectively (Hunt & Baruch, 2003).

- Understanding of audience and increasing pedagogical knowledge (Gardner, 1993; Morgan & Sproule, 2013).
- Stimulating feedback between players - training younger age groups/players to do this. Building this into the feedback process.
- Empowering players to deliver feedback to coaches and to other players - comparisons to other sports and development of "player-led" delivery.

- The importance of goal setting and career planning that is in line with both organisational and personal objectives and how this can form the basis for most feedback delivered.
- Delivering information concisely and with clarity & simplicity.
- The importance of feedback being time efficient (to produce and to consume).
- How to deliver feedback which is sensitive around mood, performance, and personal factors.

#### **6.4.2. Between Person Approach**

A “less is more” approach to coach and sports science feedback has been recommended in previous studies and throughout the present thesis (Burgess, 2017; LeMeur & Ronda, 2019; Mason et al., 2021). However, the findings presented, particularly in **Chapter Five** extend those previous recommendations by providing direct evidence that feeding back fewer pieces of information is perceived by key stakeholders to be effective. Indeed, recommendations were frequently made by coaches and players in particular that feedback should be clear and concise with simple messages. They often referred to the use of bullet points to summarise 1-3 key action points from data being fed back. Some players and coaches displayed a preference for points being delivered visually, verbally, or a combination. As such, the notion of delivering overly complicated training load monitoring reports with multiple data metrics must be challenged. Sports scientists especially are urged to find ways of reducing the complexity of data sets and communicating only relevant and pertinent information, through techniques such as principal component



analysis (LeMeur & Ronda, 2019; Nosek et al., 2021). Adopting approaches such as these may confirm that feedback is accepted, interpreted accordingly, and can be used to inform and influence practice and player behaviour.

Feedback has been shown to be highly frequent and evident between all groups of key stakeholders throughout this thesis, therefore a between person approach to feedback is a critical factor in the delivery of integrated feedback. Input from all members of the multidisciplinary team (i.e., technical, tactical, physical, and psychological) and obtaining “buy-in” and involvement from players can help to achieve an integrated approach to feedback which is aligned with both organisational and personal objectives. The intervention described within **Chapter Five** provides a useful framework for clubs to adopt so that a clear roadmap (mental model) for optimal performance is created alongside the provision of clear information on how to achieve it (Hattie & Timperley, 2007; Salas et al., 2005). It is recommended that this information is primarily delivered to players individually and should be achieved by using visual feedback combined with both verbal and written forms of feedback. Interventions such as these have been shown through the present thesis to be feasible to deliver and result in improvements in perceived effectiveness and attitudes towards feedback. Hence, it is recommended that the interventions such as those described could enhance the utility of processes such as individual learning plans and the multidisciplinary review process. The intervention content provides a framework for future practice and could provide an educational tool for clubs to adopt within their specific contexts and cultures. Given the time demands that are evident within this environment it would be difficult for performance staff to adopt this approach for a whole

squad of players, however it is recommended that interventions could be carried out on a smaller scale, and specific players or groups of players are targeted at selected intervals throughout the season. Alternatively, an increase in individual feedback sessions with a player and different members of the multidisciplinary team (i.e., coach, assistant coach, analyst, sports scientist and psychologist) may be more effective than group-based video feedback sessions (Nelson et al., 2014; Middlemass & Harwood, 2018).

It can be suggested that that Academy Managers, Heads of Coaching or Sports Psychologists work with coaches and the multidisciplinary team to implement interdisciplinary sessions whereby coaching philosophies can be collaboratively developed. The delivery of these sessions could then result in the development of club specific step-by-step frameworks to delivering integrated feedback. This process should be conducted regularly and be carried out in conjunction with suitably timed medium term performance reviews (i.e., every 10-12 weeks). A template with three strands (Alignment, Education, Organisation) to follow to integrate this practice is provided below:

### **Alignment**

- How to create a strong interdisciplinary mental model/vision of performance (best practice).
- Conversation with MDT about what positional profiles look like and what this means to each member of the team.
- The language that is used to describe elements of that profile should be common between coaches and performance staff members and the players should understand it too.

- Buy-in and involvement from players – recommending players that they like/aspire to be like.
- Guides informal chats and training prescription.

## **Education**

- Educate players.
- Education around how informal communication can be very powerful when there is a clear vision of what optimal performance looks like – after following the above guide.
- Education about setting clear goals/targets. Feedback is driven by goals/objectives. Whether this is a club, 1st team, academy, departmental or team/individual goals.

## **Organisation**

- Assign roles to members of MDT.
- Set up a structure and meeting format.
- Individualise.
- Regular touch points to maintain focus and motivation
- Training regarding use of online data sharing systems i.e. HUDL and other dashboard software.

### **6.4.3. Organisational/Club Approach**

The factors highlighted above describe how clubs can improve the working practices, alignment and integration of individuals within them. Additionally, professional football clubs (and other sporting organisations)

should look to make it clear what the priorities and expectations of staff and players at different developmental stages are. For example, a clear picture of the first team playing and training philosophy is essential in order for the style of play and individual positional profiles to be created, thus influencing the recruitment policy and the academy philosophy. This has a direct influence on the academy coaching philosophy, as the type of players who can match the positional profiles and fit in the system or style of play can be developed over a longer period of time. The shared understanding of first team and academy playing, and training philosophies may then filter down into the performance staff philosophy. Therefore, exerting an influence on whether there is a focus on maximising resilience and robustness or prioritising availability and injury prevention (Kiely, 2011; Gabbett et al., 2018). Regardless, it seems that no matter what the specific philosophies and priorities are, it is critical that there is a shared understanding across all levels of the club, which is then reflected in the key performance indicators selected and ultimately the feedback delivered. The subsequent recommendations look to facilitate ways in which alignment throughout the club can be implemented so that feedback can be joined up between all departments and functions of the club.

All key stakeholders should focus on building relationships and adopting an individual focus to deliver feedback that has more impact. The evidence built throughout this thesis strongly supports the notion that relationships (trust/rapport/buy in) are a platform on which to deliver feedback that has the potential to change behaviour and improve performance and development. Professional football clubs should look to provide more

opportunities for team building, cohesion, bonding, and improving intra-team communication in different settings such as tours, tournaments, away days.

All professional football teams should consider how their training grounds and stadiums are set up to optimise both formal and informal forms of feedback between key stakeholders. Considerations should be made regarding the specific locations and spaces for feedback. Shared office space for staff may allow for more informal feedback and hence consistency of messages and adoption of a shared language. Provision of more social spaces (i.e., games rooms/common rooms/informal analysis suites with computers) to allow for more informal opportunities between staff and players. Aspects such as the length of the walk to the pitches should be considered. Additionally, private spaces such as small offices should be provided for individualised feedback to be delivered in a safe and private space. The use of technology, such as online cloud-based software, interactive platforms, and dashboards (as described in **Chapter Five**) may facilitate integrated and aligned feedback between phases within the club (first team; academy), departments (coaching; analysis; sports science) and players.

#### **6.4.4. System Approach**

The previous sections detailed how individuals and clubs can implement practices to develop future feedback strategies. Additionally, these strategies could also be applied for education purposes on a wider level to the governing bodies such as the FA. For example, dissemination of these findings within coaching courses and other initiatives will raise awareness of how feedback practices can be enhanced from a broader perspective. League

regulations and audit requirements regarding feedback provision should also be reviewed. The current requirements for feedback delivered within 6-week multidisciplinary reviews under EPPP guidelines have formalised the process of feedback (Premier League, 2010). However, a focus on alignment, integration, development of relationships and interpersonal skills and use of both formal and informal processes are recommended rather than an over reliance on formal processes. Consequently, clubs should be able to operate with flexibility, whereby they can provide evidence of multidisciplinary reviews that have maximum impact on individual players. For example, a formal meeting with all members of the MDT team, may not be considered appropriate for all young players, as this is a daunting experience and may mean that the feedback is not taken on board. Instead, the documentation of a feedback meeting with a coach on one occasion, a sports scientist another and a psychologist on a separate occasion may be more appropriate for certain individuals and more in line with their individual preferences for feedback. It is therefore proposed that a more flexible approach be taken to delivering and documenting this MDT feedback. There should still be requirements around feedback (especially with younger age groups), however clubs should be allowed to deliver this in a way which suits their players in the context of their own club.

## **6.5. Recommendations for Future Research**

The following section aims to set out some of the challenges and limitations encountered within the present thesis and how they can be

addressed in future research. Following this, specific recommendations for future research arising from each experimental chapter will be provided.

Firstly, due to the nature of the environment in which the research was carried out there were issues with recruitment, selection, and access to participants throughout the research. A number of participants agreed to take part in the project and then had to withdraw at short notice. This usually occurred due to high staff turnover and changes of management (first team & academy) and coaching staff during the time the research was being carried out. The resulting changes in staff, philosophy, and practice throughout the time under which the project was completed created physical, geographical and political barriers to completion. Online surveys were used in this project to reach large numbers of participants and were considered to be effective due to their time efficient nature. Additionally, a flexible approach is paramount to the collection of interview data within this population. The use of remote online meetings (i.e., Microsoft Teams/Zoom) should continue to be used to carry out interviews with a wide range of participants and in a time efficient manner.

It could be argued that the number of participants (sample size) are generally fairly low, and findings may not be generalised to all professional football coaches, players, and staff. However, numbers obtained within these studies are comparable, if not higher than those employed within other similar studies of a similar nature (Middlemass & Harwood, 2018; Nosek et al., 2021; Weston, 2018; Wright et al., 2012; Wright et al., 2016). Indeed, the very assumption of a lack of generalisability would challenge the research philosophy and methods employed i.e., mixed methods and a highly qualitative approach. The range of participants used throughout the thesis and

the depth achieved within the interviews may provide some naturalistic, transferable, theoretical and/or intersectional generalisations to staff and coaches within other clubs, contexts, and cultures (Smith, 2017). Whilst it is important that the results presented in the thesis are not over reached, there are still some useful conclusions to be drawn and practical recommendations to be made. In order for sample sizes to be increased in future studies, especially online surveys, influential gatekeepers such as technical directors, managers and academy managers should be targeted to filter down to staff working at their particular clubs. Additionally, the broad selection of participants from a number of roles and different levels/age groups may have diluted some of the findings and made comparisons between stakeholder groups more difficult (as per Weston, 2018). Future research should look to focus on research questions that are specific to age groups or phases within the club structure (i.e., first team, PDP, YDP, FP) and target coaches, performance staff and players from the same group/phase. Furthermore, future studies should look to address research questions that are specific to individual disciplines/departments that sit under the performance staff umbrella (i.e., sports science, S&C, medical, analysis, psychology, nutrition), as the practicalities of each job role are very different.

With regards to the intervention, participants were not blinded to which group they were in (control vs intervention) and all participants were aware that they were part of a research project involving feedback. Hence, the results should be interpreted with caution as simply being part of the intervention may influence the perceptions of the feedback being received. A crossover in the research design may have gone some way to alleviating this issue and is



recommended for future studies (**Figure 5.7**). Whilst feedback from the interviews was generally positive regarding the intervention, engagement and buy-in to the research project may not have been equal across all participants. This is to be expected with a group of players aged between 16-18 years and must be acknowledged as a limitation of working with this age group and cohort of young academy footballers. Ongoing education about the purpose of research studies with this population is paramount to the success of future research studies and should be given careful consideration by researchers and practitioners alike. Although players were receiving similar types of feedback in their normal programme (i.e., individual meetings, education, online video-based software) they may not have received it in such a focused and individual manner which may have been unusual to them. The increased frequency and detailed nature of the feedback may have limited their ability to fully engage with all aspects of the research. Additionally, it is plausible that not all players would have the *psychological capability* to receive the information, process it, and the *motivation* use it to affect future behaviour (Michie, van Stralen & West, 2011). However, the age group selected for the intervention is probably the ideal one in a professional football setting as the players are consistent throughout the whole season, the training and games schedule is predictable and very rarely changes, and the participants are as close to first team football as possible so that the findings are practically relevant within the professional (first team) realm, albeit the performance focus of the environment is slightly different.

Finally, the fast paced and time pressured environment (which was evidenced in **Chapter Three**) also caused some issues when carrying out the research. During the design phase of the intervention (**Chapter Five**), it proved difficult to get all key stakeholders (i.e., Academy Manager, Head of Sports Science & Medicine, and Lead Coach) sat down together to engage them with the planning and delivery of the intervention. Thus, highlighting the fact that it is difficult to carry out applied research in this environment as it is not a wholly accepted practice as of yet. As was the case in this project, the lead researcher was an embedded PhD student working within a professional football club. An integrative model between the academic community and applied practitioners to investigate real-world problems and improve performance based solutions has been proposed within the literature (Bishop, 2008; Drust & Green, 2013). This collaborative approach should continue to be recommended in future research and practice as relationships between key stakeholders are essential to the design and delivery of impactful work. A practical and realistic attitude is needed from both the academic community and professional football clubs in order to balance time frames and scientific rigour when carrying out applied research projects such as this. There currently appears to be a lack of congruence between the expectations of both parties when it comes to understanding the perceptions and realities experienced by embedded PhD students. As such, it is recommended that academic institutions work closely with clubs to align expectations, set clear and defined boundaries and develop realistic time frames and deadlines for projects.

### **6.5.1. *Suggestions arising from Chapter 3***

As described above, a broader sample of participants that may be more representative of age groups, phases and job roles is recommended for future studies. Whilst it was a relatively good achievement to recruit 139 participants for an online survey in this cohort, it is still a very small percentage of all coaches, performance staff, and players working in all football league clubs at all levels from foundation phase to senior team. Alternatively, using a more narrowed down approach and targeting one age group or stage of development, thus requiring targeted sampling rather than relying on snowball sampling, may be advised in future studies. Access to a wider database of contacts within clubs and going straight to gatekeepers such as academy managers to forward to their staff may result in better completion rates in future studies and serve to enhance both of the suggestions made above. Further research should look to address the perceptions of players of a range of different ages towards their preferences for receiving feedback and the social impact that negative or comparative feedback (Lewthwaite & Wulf, 2010) delivered in group settings (such as the gym/on the pitch) has on their motivation and subsequent behaviour in training. Additionally, the prevalence of informal feedback was highlighted and consequently, it is recommended that future studies should look to address whether there is an optimal office layout and configuration to stimulate conversation and informal feedback and whether this improves outcomes. Finally, future studies should attempt to examine attitudes of key stakeholders towards the utility of feedback strategies highlighted within this study with a view to designing specific feedback

interventions which aim to enhance perceptions towards feedback and ultimately the performance or development of players and teams.

#### **6.5.2. *Suggestions arising from Chapter 4***

The survey that was developed within **Chapter Three** was altered slightly in this study alongside semi-structured interviews, in order to provide numerical reference points for the subsequent analysis. Though the data collected through implementation of this survey was pertinent to the aims and objectives, future research should look to utilise different surveys that have been designed to address the issue of feedback preferences and effectiveness. For example, the Feedback Attitudes Survey (Ryan et al., 2019), the Sport Feedback Self Efficacy Scale (Mason et al., 2020b), and the Feedback Orientation Scale (Linderbaum & Levy, 2010) have been developed and could also be utilised and/or adapted to address future feedback related issues. Within this study we effectively monitored perceived utility of feedback to the key stakeholders. Subsequently, it was evident from the thematic analysis carried out within this chapter that relationships played a key part in the delivery and acceptance of “useful” feedback. The coach-athlete relationship has been well researched (Jowett, 2017) however, future research should look to address the relationship between members of performance staff and coaches, or alternatively, performance staff and player relationships. Given the findings of this study, that video feedback from performance staff to coaches and players is perceived to be effective, this provides an interesting avenue for further research. Future work should look to examine whether the provision of more visual feedback to players and coaches increases the

perceived effectiveness of feedback and ultimately whether it can serve to enhance future performance or developmental objectives. It has been shown that supportive parents may be influential in talent development (Clarke, Harwood & Cushion, 2016), and as such future studies should look to investigate the integration of parents into two-way feedback mechanisms that can further support and enhance the information that is being fed back by club staff to players.

### **6.5.3. *Suggestions arising from Chapter 5***

The pilot study implemented within **Chapter Five** should be used to inform and enhance the design of future interventions for improving feedback effectiveness. Several suggestions can be made following designing, implementing and evaluating a novel pilot study. Firstly, the intervention was only delivered over a four-week period to assess its feasibility and a randomised crossover design that is carried out over a longer period (16 weeks) is recommended and laid out in **Figure 5.7** within **Chapter Five**. This timeframe has been proposed in order to utilise a baseline testing week (week 1), a six-week intervention/control period (weeks 2-7), a mid-point testing window (week 8) and a final six-week intervention/control period (weeks 9-15), culminating in a post intervention testing window (week 16). Secondly, a case study approach or a smaller sample size may be more practical as an intervention and may also allow for more accurate tracking of performance changes in training and games (Brobst & Ward, 2002; Smith & Ward, 2006). The development of specific training and match performance metrics have been observed in American Football (Smith & Ward, 2006) in a study

assessing the impact of goal setting on performance. This approach may be recommended in future studies as recent research has proposed an integrated method for assessing performance which incorporates both technical, tactical, and physical markers within matches and training (Bradley & Ade, 2018). These integrated performance metrics (Bradley & Ade, 2018) may be useful for measuring the effectiveness of interventions on performance.

## **6.6. Reflecting Back and Forwards – Impact on Applied Role and Practice**

Considering researcher positionality is integral to the process of research, and positionality may influence how research is carried out, the outcomes and the results obtained (Holmes, 2020; Rowe, 2014), especially when qualitative research and thematic analysis is present within the methodology, it is important to follow up on the biographical positioning section in **Chapter One**. As such, this section will endeavour to reflect on my academic and professional journey during my time at West Bromwich Albion FC as an embedded PhD student. Additionally, through opportunities that have recently arisen, a discussion of the continuous impact my new role may have on dissemination of the findings will also be presented.

### **6.6.1. Research and Professional Timeline**

Consistent with my background prior to commencing the PhD project and previous research (Wagstaff et al., 2015), a volatile climate of organisational change was experienced throughout the research period. **Figure 6.3** highlights the turnover of managers (top line of images), and academy managers (bottom line of images) between 2017 and 2021 at West Bromwich

Albion FC. This instability was evident after around two weeks of commencing my new role at the football club when [REDACTED] was sacked, and [REDACTED] took over as caretaker manager. Before long, the club had appointed a new full time head coach in [REDACTED], and the stages of change described by Wagstaff et al. (2015) were being fully recognised once more. Below are some reflections based around these stages of change and have occurred at different times throughout the last four years whilst the PhD has been completed.

1. ***Anticipation & Uncertainty*** – even though I wasn't directly involved with the first team at the club, the training ground was quite small and players and staff from first team and academy shared a gym, canteen and office space. Hence, I would regularly see and be in contact with first team management staff. When a new manager comes through the door, there is always a feeling of anxiety and uncertainty as people try and establish their roles and align themselves with a new philosophy.
2. ***Upheaval & Realisation*** – it became quickly apparent that the new manager wanted a different approach to gym sessions, and he would regularly change the programmed gym sessions for group team bonding and competition sessions in the gym. This was a big change in what could be normal operating procedures in place within the sports science department and this created a great deal of chaos and upheaval at times which directly impacted on me as I often ended up taking a group or “counting” reps in the competition sessions.
3. ***Integration & Experimentation*** – one key example of this which sticks out in my mind would be when a new academy manager had been in place

around two months, and I needed to try and begin to implement the intervention. For this to happen I needed to quickly build relationships and integrate with his philosophy and communication strategy. I feel if I had not taken a proactive approach to developing this relationship through regular conversations when I saw him then I wouldn't have been able to carry out the intervention with the applied setting.

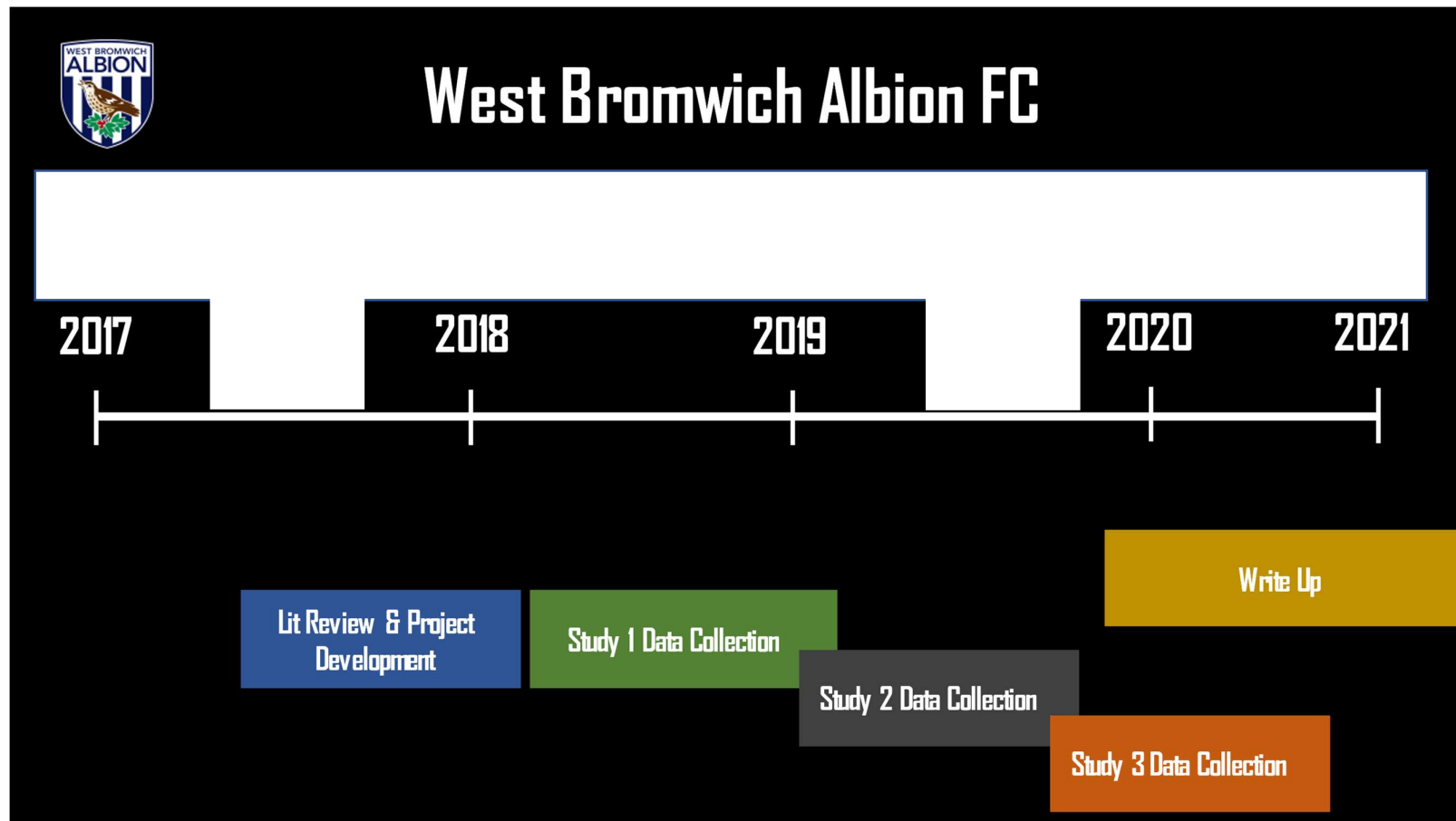
4. **Normalisation & Learning** – I feel that this stage took place over the past 12 months in my new role as Head of Academy Sports Science. I have had to find a new way of working in this role as I am now required to split my time between daytime sessions, evening sessions, admin and managerial tasks and delivering sessions on the grass and in the gym. This normalisation has occurred against a backdrop of organisational change as the academy manager was in his second full season at the club, the Covid-19 pandemic was affecting daily decision making and practice and the working practices (i.e., location) were significantly different than normal.

At the time of writing (July 2021), I am experiencing my eighth manager in less than four years at the club. Additionally, I have experienced three Chief Executives, two different Technical Directors, two Academy Managers, four Heads of Sports Science and a number of changes at board level. As well as resulting in insecurity and uncertainty for myself and many of the staff I work alongside, it significantly impacted upon the philosophy and approach of the club towards research and practice. When I began the process, three of the sports science department were enrolled on Doctorate programmes and one



of my supervisors was in place as a consultant to the sports science and medicine department. The changes that occurred throughout this period of time have meant that I am now the only member of the team engaged in a doctoral programme with no real support in place at the club. Hence, completing the PhD has become a personal rather than group effort within the football club which has resulted in feelings of isolation and frustration at times.

It should also be acknowledged that the project was iterative in nature and informed by findings from the studies, personal and professional reflections, input from the supervisory team, perceptions of those involved in the research (i.e., pilot studies) and the contemporary literature in this field. The best example of this is probably the inception of the intervention described in **Chapter Five**, which took place simultaneously alongside study 1 and 2 data analysis and study 2 data collection. All of the stages listed above were happening simultaneously at this time during the project. As “being explicit, thoughtful and deliberate in application of method and theory is important” (Braun & Clarke, 2019, p. 595), a constant process of reflection and reflexivity during the research may have exerted an influence on the choices made, data analysis and conclusions drawn. It is therefore important for future practitioners/researchers to be cognisant of the fact that PhD projects carried out in applied settings are evolutionary in nature. They are simultaneously *influenced by* and *have an influence on*, current applied practice and the specific conditions under which the research is being conducted.



**Figure 6.2.** Timeline of research conducted alongside the changes in management at the club during the PhD.

### **6.6.2. Impact of my role on the research**

It is important to acknowledge that my position within the club, as a practitioner and a researcher may have facilitated some opportunities and created some limitations during the project. In the first instance, being situated within the club allowed close proximity to the majority of the research participants (although not all were from West Brom). This proximity allowed for easier and more time efficient data collection. Additionally, being embedded within the club allowed me to build relationships and rapport with potential participants, which was beneficial when it came to obtaining detailed and insightful answers and the collection of *rich* data during the interview process. Whilst ensuring that no coercion was present during the recruitment process by informing volunteers that they could withdraw and did not have to take part in the study, these relationships certainly facilitated recruitment of participants for pilot studies and subsequent semi-structured interviews within the studies. Being located away from the club, possibly in an academic environment, may have made the process of recruitment and data collection more challenging.

The positives of being an embedded PhD students outweigh the negatives, however it is important to discuss the possible limitations my role may have caused. They relate primarily to data collected during the intervention study within **Chapter Six**. Firstly, the I may have inadvertently delivered more feedback to players than was set out in the methodology through the fact that I was exposed to the players on a daily basis. It was impossible to avoid the informal feedback opportunities that were provided whilst carrying out the study as players led many of these informal discussions.

They took place in the form of questions from players, such as “*Tom, have you seen my clips from the weekend?*” and “*Did you see how quick I was when I did that sprint in the game on Saturday?*”. It was due to these regular interactions with the players that I may have had an unconscious bias towards players who were in the intervention group. For example, when delivering gym sessions or warm ups with players I may have provided unintended feedback to participants or questioned participants about their engagement with the intervention. Whilst this may pose a number of problems in terms of repeatability, this approach was deemed appropriate as this is the applied practical environment which the intervention was aimed at and will be aimed at in future research studies or practical interventions and may be considered ecologically valid. Additionally, I feel it may be a double-edged sword using the lead researcher to interview participants. On the one hand, the rapport was often already built with participants which made them feel comfortable and allowed for more detailed answers to be given. Conversely, it may have also skewed the participants’ responses, resulting in answers they thought I wanted to hear (i.e., specifically related to sports science).

### **6.6.3. Reflections**

This project has been a huge part of my life for a significant amount of time, and I feel within it I have had many highs and lows, periods of clarity and confusion, feelings of elation and despair. Ultimately, it has changed my thinking about many things, but I would like to highlight here one thing in particular, that of the shift from an outcome focused to a process driven mindset. I have experienced a paradigm shift in terms of focusing on details of

the day with one squad or one player to a more aligned, integrated and organisation level focus. The ability to “zoom out” and consider organisational and systems approaches to performance-based problems such as feedback has been revolutionary for me as a researcher and practitioner.

There are a variety of ways in which practitioners and researchers can engage in reflective practice (Knowles et al., 2014). They range from written forms such as journals, visual forms such as mind maps to more verbal and social reflections i.e., reflective conversations and communities of practice (Knowles et al., 2014). Throughout the process I used combinations of these approaches to be critically reflective of my experiences in a different role to that which I had done before. I engaged in the formal writing process i.e., journaling, of reflective practice for a considerable period of time on a weekly basis. This allowed me to become a relatively “deep” reflector, however as I progressed through the project, had a second child, lived through a global pandemic, and took on a role as a head of department, I found that there was less and less time available to do what I would consider to be formal reflecting i.e., sitting in front of a laptop and typing reflections down. I took to handwritten notes and occasionally typed deep reflections. However, I feel that these occurred at crisis moments as the following candid reflection during the Covid-19 lockdown illustrates:

*“I am getting absolutely nowhere with my PhD today and feeling completely mentally and physically drained by it all. I felt the need to write this down as I have been bottling it up for a few days. I feel like it is taking a toll on my relationships with the ones I love. I am snappy with my wife and getting*

*frustrated with my daughter (or at least having to take many deep breaths when she is not doing something when I ask her to). I feel so stressed with trying to complete my PhD on time and feel like I should have made much better progress over the 4 months since lockdown began. I have not even finished writing up the first study of my PhD yet!! I also feel like going back to work in a couple of weeks is just going to add additional stress when I already feel like I am at my limits. I think the hardest thing to do is to relax and take my foot off the gas for a bit but it might be necessary in order for me to progress. I just feel like if I relax then I have even less time to get things done even though I know that the current quality and intensity of my work is not there. I just looked back at my diary and realised I have had 2 days completely off in the last 6 weeks. I have done nothing else other than try and make time for my PhD and I think this has taken a toll on me and those around me. I am going to suggest taking a few days off completely and not touch my PhD - maybe just Sat, Sun, Mon. I think I deserve this as I have not even had a holiday this year (ours got cancelled due to Covid back in early June). I need to reconnect with the world around me rather than just heading down a PhD rabbit hole all the time!" (15<sup>th</sup> July 2020)*

Evident here are not only my thoughts, feelings, and personal evaluations, but a willingness to use these reflections to take effective action when required. This demonstrates personal development throughout the PhD process, as I had never really engaged in reflective practice in this way.

During the latter stages of the process, I begun to engage in weekly "momentum meetings" with one of my supervisors in a fairly informal fashion

but in a timely and practical manner i.e., a 45-min commute to work once a week. This process, whilst not documented, became pivotal to ensuring I progressed successfully towards submission of my thesis, and provided a regular opportunity to verbally reflect and plan relevant action points for the upcoming week. This demonstrates how a semi-informal interaction can influence and shape practice and has implications for the dissemination of the findings presented within the thesis into practice moving forwards. Additionally, I feel that using this format is a combination of the communities of practice and reflective conversations approach suggested by Knowles et al. (2014) and can be powerful and practical as a reflective tool.

#### ***6.6.4. New Role and Potential Impact***

In September of last year, I took on a new role as Head of Academy Sports Science at West Brom. I am extremely proud of this achievement and feel it can be used as a marker of the progression and development that has occurred throughout the three years at the club. The exciting thing is that the new role provides an opportunity to translate the findings of this research into practice (Eisenmann, 2017). Whilst not a novel situation, it does provide a situation which may allow the research to have maximum impact on practice. Additionally, I will be in a position to monitor the impact of any future feedback interventions delivered in a practical setting. It is also envisaged that I will look to develop and pilot integrated metrics for monitoring individual performance and assess whether feedback influences this (as per the practical recommendations made). Formal opportunities to disseminate and share the research findings are possible through the organisation of in-house training

sessions to staff at West Brom. Additionally, due to the profile of the job role, opportunities have and will continue to arise to speak at coaching courses, national and international conferences.

In addition to the formal ways in which the research can be shared, there will also be a multitude of chances to informally share the research findings. It is in this way which the true impact of the research may be realised through daily interactions with key stakeholders such as the Manager, Academy Manager, Head of Coaching, Head of Sports Science, Head of Recruitment, Technical Director. Given the fact that I am working in an applied environment, in close proximity with these influential club personnel who drive philosophy and change within the club, this is something I intend to focus on in my role moving forward. The practical recommendations made earlier in this chapter are more actionable within my current role. As such, the findings presented, and recommendations made may be used to influence my own practice first and foremost.



## **CHAPTER 7 - REFERENCES**

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## **APPENDICES**

## Appendix A

### Study 1 Interview Question Guide – Performance Staff

Research Question	Main Interview Questions	Probes/Prompts
1. Explore the current landscape of feedback in elite football.	<ul style="list-style-type: none"> <li>• <b>Section 1 – Background</b></li> <li>• Can you talk me through your background and how you got into your current role?</li> <li>• What have been the key experiences or highlights of your career to date?</li> <li>• Which team/age group do you work with?</li> <li>• <b>Section 2 – Explore Feedback</b></li> <li>• Can you explain what the term feedback means to you?</li> <li>• How might you use feedback in your current role?</li> <li>• How would you usually deliver feedback?</li> <li>• <b>Section 3 – Feedback to Coaches</b></li> <li>• High amounts of performance staff reported giving feedback via informal chats on a daily basis, could you talk us through your experiences of this?</li> <li>• Our recent survey suggested that 37% coaches said they</li> </ul>	<ul style="list-style-type: none"> <li>- Which title best describes your role?</li> <li>- How much experience? How long have you been doing this role?</li> <li>- Which league? Academy Status?</li> <li>- Current research would suggest that feedback was information about a performance that is given in order to improve future performances and/or development. Would you agree with this definition?</li> <li>- How might you define feedback?</li> <li>- For example, all performance staff agreed that they gave some form of feedback, verbal, visual (i.e. demos), written, is this the case for you?</li> <li>- Verbal (Chats, meetings, phone calls), Visual (Videos, demos, graph based data), Written (Paper reports, reports on computer, E-mail or text)</li> <li>- Before, during, after training or match?</li> </ul>



	<p>received demonstrations from performance staff, could you explain what sort of demonstrations you might give to the coaches?</p> <ul style="list-style-type: none"> <li>• Could you talk us through your experiences of giving written feedback to coaches?</li> <li>• Could you talk about when you usually give feedback to the coaches?</li> <li>• The majority of feedback is given after training and matches. However, feedback is also relatively high before training. How do you tend to give feedback to the coaches before training, could you give some examples?</li> <li>• Could you tell us about where you tend to give feedback to coaches, what are the main locations, and could you give some examples?</li> </ul> <ul style="list-style-type: none"> <li>• <b>Section 4 – Feedback to Players</b></li> <li>• Our recent survey suggests that PS give high amounts of feedback to players via daily conversations, could you explain whether this is the case for you? Could you provide some examples of this?</li> <li>• Can you talk through your experiences of giving visual feedback (i.e. videos, demonstrations, graphs) to players? (Use statistics as probes).</li> <li>• How often do you give written feedback (i.e. paper print outs or computer reports) to</li> </ul>	<ul style="list-style-type: none"> <li>- Locations (Pitch, phone, e-mail, office, canteen, notice board, gym, dressing room).</li> </ul> <ul style="list-style-type: none"> <li>- 50-60% of PS and P say they give/receive demonstrations daily. 40-50% say they give and receive weekly video sessions. 35-50% say they give/receive weekly graph-based reports.</li> </ul>
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	<p>players? Can you talk through some examples or your experiences of this?</p> <ul style="list-style-type: none"> <li>• Could you talk about when you usually give feedback to the players?</li> <li>• What types of feedback are given before training? What types of feedback are given during training?</li> <li>• Could you talk me through the main places that you give feedback to players? Are the types of feedback given on the training pitch, in meetings and in the gym different?</li> </ul> <p>• <b>Section 5 – Giving &amp; Receiving from Other Parties</b></p> <ul style="list-style-type: none"> <li>• Do you give feedback to other members of the performance staff? Could you give some examples?</li> <li>• Do you receive feedback from other members of the performance staff? Could you give examples?</li> <li>• Do you receive feedback from coaches? Could you give some examples?</li> <li>• Do you receive feedback from players? Could you give some examples?</li> </ul>	<ul style="list-style-type: none"> <li>- Clarify performance staff (Physio, medical, performance analysis, nutrition, psychologist).</li> <li>- Recent survey suggested that 85% of performance staff give feedback to other members of the performance staff. Is this the case for you?</li> <li>- 82% said that they received feedback from other performance staff.</li> <li>- 78% said that they received feedback from coaches.</li> <li>- 82% said that they received from players.</li> </ul>
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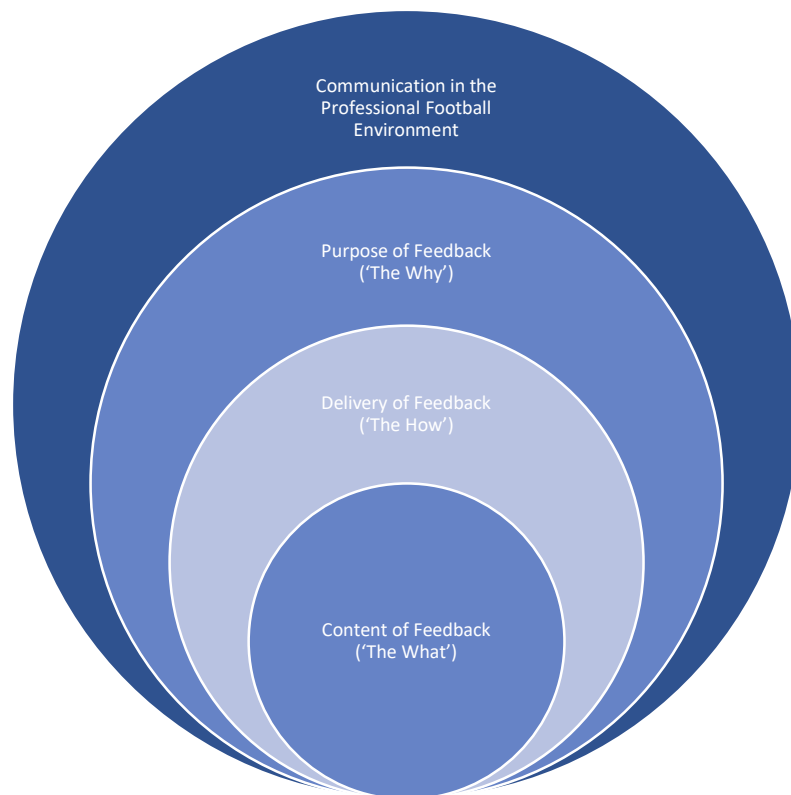
## Appendix B

### ***Study 1 - Phase 2 Results***

Overall, thirty individual semi-structured interviews were conducted with participants from the three groups described above (eleven coaches, ten performance staff and nine players), over a period of six months. Coaches were comprised of participants from a range of specific job roles: Academy Manager ( $n = 1$ ), Head of Coaching ( $n = 1$ ), Head of Academy Goalkeeping ( $n = 2$ ), Lead Professional Development Phase Coach ( $n = 4$ ), U23s Assistant Coach ( $n = 1$ ), U18s Coach ( $n = 1$ ), U18s Assistant Coach ( $n = 1$ ). Performance staff were represented by Sports Scientists ( $n = 4$ ), Performance Analysts ( $n = 2$ ), Physiotherapist ( $n = 1$ ), Psychologist ( $n = 1$ ), Nutritionist ( $n = 1$ ), and Head of Sports Science & Medicine ( $n = 1$ ). The players who took part represented four different clubs, ranging from Championship to League Two. Additionally, participants represented three separate age groups: First Team ( $n = 5$ ), Under 23s ( $n = 2$ ), Under 18s ( $n = 2$ ). Interviews were audio recorded and transcribed verbatim. Interviews ranged in length from 32 to 81 minutes (total = 1587 min;  $M = 52.9$  min).

Four general dimensions were identified from the analysis and are presented in relation to each key stakeholder group. To aid comparison between groups, the performance staff, coach and player perceptions are presented together under these four dimensions. The general dimensions are: '*communication in the professional football environment*', '*purpose of feedback (the why?)*', '*delivery of feedback (the how?)*', and '*content of feedback (the what?)*'. These dimensions are inherently linked and are not presented in a hierarchical order, they will be presented and discussed independently but should be viewed as interacting and overlapping variables within the feedback process. They are presented in the order listed above to provide the reader with context for the environment in which feedback is delivered and the purpose for which it is given before moving on to the intricacies of how and what is delivered between key stakeholders. For clarity, the 'delivery of

feedback ('the how') dimension was guided by the deductive framework used to design the survey and the subsequent interview schedules. The remaining dimensions emerged inductively during analysis of the interview data. Pen profiles have been used to illustrate the themes and subthemes within the general dimensions.



## ***Communication in the Professional Football Environment***

Coaches, players and performance staff in this study demonstrated that the environment and the communication of stakeholders within it influenced feedback delivery. Consequently, communication in the professional football environment consisted of five higher order themes for all groups: 'relationships', 'two-way dialogue', 'psychological responses', 'delivery climate' and 'social environment' which are represented in Figure xxxx. The differences between groups were that coaches and performance staff both cited 'buy-in' and 'interpersonal skills' as subthemes whereas players cited 'trust' under the relationships higher order theme. Whilst performance staff referred to using a 'shared language' for feedback, coaches spoke more about 'clarity & understanding' with regards to feedback delivery. Coaches referred to 'flow of information' and 'resources' as subthemes under delivery climate, which was not evident in the performance staff and player responses. Both performance staff and players cited 'insecurity & uncertainty' and 'hierarchy' under social environment, whilst this was not evident in the coach responses.

### ***Coaches' Perceptions of Communication in the Professional Football Environment***

For the coaches in this study there were five higher order themes: relationships ( $n = 11$ ), two-way dialogue ( $n = 11$ ), psychological responses ( $n = 11$ ), social environment ( $n = 11$ ), and delivery climate ( $n = 10$ ). Within these higher order themes were seventeen subthemes of which open and honest feedback ( $n = 10$ ) and egos and big personalities ( $n = 10$ ) were two of the most frequently cited subthemes.

All coaches spoke about the importance of relationships when communicating effectively, and this higher order theme consisted of four subthemes; respect, openness & honesty, receiver preferences and buy-in. The majority of participants ( $n=10$ ) emphasised the importance of having strong relationships with the other

coaching and performance staff that they were working with in order to provide more open and honest communication and feedback. For example:

*“...I think when you do have fun and you build that relationship with somebody (other coaches & performance staff), it's easier then to discuss things or it can be easier to get feedback because you've built that almost friendship of a relationship...” (P19 – U18s Assistant Coach).*

Two-way dialogue as a higher order theme was concerned with the way in which coaches deliver feedback to the multidisciplinary team members, receive it from players and give it to other coaches. A theme cited frequently by coaches (n=8) was ‘clarity & understanding’ for the receiver, whereby participants discussed how simple feedback could convey a clear message and allowed there to be a shared understanding between key stakeholders.

Coaches referred to the psychological responses to feedback, how they found it difficult to give and receive feedback and often described taking a number of factors into account when delivering feedback such as a fear of feedback from certain players (n=3), use of indirect feedback (n=4) and using body language to convey a message (n=4). Additionally, the majority of participants (n=9) suggested that it was difficult to give feedback at times as they were anticipating the receivers’ reaction, especially with other members of staff:

*“There are certain members of staff that won’t take it (feedback) well off me... some people just don’t want to hear it (feedback) and see it as you are getting after them all the time...” (P11 – Head of Academy Goalkeeping).*

With regards to the social environment, participants often cited how there was an element of insecurity (n=9) and that egos and big personalities (n=10) were potentially a barrier to feedback within the environment:

*“To be honest, in football I think there’s a lot of ego and there’s a lot of people that don’t want feedback. There’s a lot of people that don’t want to hear anything.” (P21 – Lead PDP Coach).*

In terms of the delivery climate, coaches described how a number of factors affect the nature of feedback such as the culture of the club, whether they were operating in a 1<sup>st</sup> team or academy environment and the resources of their club. Coaches often spoke about the constant flow of information (n=8) and this was one of the most frequently cited themes under this higher order theme. Furthermore, the environment was frequently described as 'fast-paced' (n=8) and coaches often mentioned the need for frequent and concise feedback between players and performance staff in order for it to have impact as the following quotes highlight:

*From performance staff - "...a lot of the time, football is so fast-paced that you've got to be able to hold a conversation quickly and often it can just go in too many different directions that the feedback is not concise enough and you know you probably haven't got time..." (P20 – Lead PDP Coach).*

*To players - "I think it's very constant giving verbal feedback with players. It's relentless...you're always around them, you're always in team talks or team meetings or during the games..." (P13 – U23s Assistant Coach).*

### ***Performance Staff's Perceptions of Communication in the Professional Football Environment***

Performance staff described how relationships that they had with other stakeholders were important when considering how to feedback information, this higher order theme consisted of four subthemes; interpersonal skills, preferences, open & honest feedback, and trust & respect. Participants reported that having a strong working relationship with trust and respect that was built up over time affected how likely it was for the feedback to influence the decision making of managers/coaches:

*"They have got a good relationship (the manager and the HOD) – yeah, they have got a good enough relationship to call him (HOD) to ask for advice for a decision or to inform him (the manager) about something...I think the biggest thing is that*

*relationship... Because obviously they have worked together for two and a half years now at three different clubs...” (P09 – Sports Scientist).*

Two-way dialogue involved feedback from players to performance staff in response to training sessions and games and performance staff using a shared language to convey messages to coaches and players. The most frequently cited theme (n=10) was how inter- and intradepartmental feedback was used to plan, review and reflect on both training and match performance:

*“In the academy setting you have the six weekly review processes where it’s a multi-disciplinary feedback opportunity with your sports scientists, your medical, your coaching staff, your performance analysts and everyone gets the opportunity to feed back in.” (P05 – Head of Sports Science & Medicine).*

Participants were mindful of the psychological responses of different individuals when delivering feedback. Additionally, the following participant commented on how it was difficult to receive feedback and reflected on a specific example of receiving feedback from a coach:

*“...it was really interesting because my first reaction was to think to myself “you look after the players that are fit and I will look after the players who were unfit”...but as a result we created a growth management group... and I think that really improved our practice.” (P05 – Head of Sports Science & Medicine).*

The social environment was characterised typically by references to egos & big personalities, a hierarchical structure, and insecurity & uncertainty. In summary, performance staff described how they were constantly evaluating what the information was, where it was going and who was hearing or had access to the information they were feeding back. Performance staff typically indicated that feedback was affected by the ‘big personalities and egos’ within the environment and that this altered or influenced the content and delivery of feedback especially in meeting situations. This was highlighted by the following participants’ response when discussing delivering feedback in a 1<sup>st</sup> team staff meeting:



*“I suppose there is lots of big personalities and perhaps influences around them (managers) and we (staff) would all adjust our feedback according to who is around and what their (i.e. coaches) thoughts are...” (P05 – Head of Sports Science & Medicine).*

The delivery climate in which participants were operating was typically described as “...time pressured...” or “...fast-moving...” and participants often described feeling a need for feedback of information to occur as quickly as possible, especially after training sessions. Participants also described how the environment directly influenced the delivery of feedback due to the perceived time constraints under which they were operating. For example:

*“...because we are in such a fast-moving environment...you can’t necessarily wait for an opportunity to give feedback on a structured basis sometimes, because things change so quickly from one week to the next.” (P02- Psychologist).*

### ***Players’ Perceptions of Communication in the Professional Football Environment***

Relationships was a higher order theme cited by all participants and further divided into three subthemes; openness & honesty, player preferences, and trust. Participants emphasized the importance of performance staff and coaches having a good understanding of them as individuals and how they responded or reacted to receiving different types of feedback. Additionally, the most frequently cited theme was openness & honesty (n=8), and participants described how the nature of the relationship would often determine how honest the feedback would be. For example:

*“...with my closest friends in football there is no limits to the feedback, like I can give that to them over the phone or when I am texting them, or chilling around their house or when we are having dinner or something...with your closest friends there is no limits on where you are going to give feedback...” (P30 – 1<sup>st</sup> Team Player).*

Two-way Dialogue was a higher order theme composed of four subthemes; conversation opens it up, player to player, players & coaches, and players to performance staff. There appears to be a close association between this theme and the relationships theme as participants indicated that a strong relationship was usually a precursor for two-way dialogue to occur, as the following quote highlights:

*“I’ve had one manager before who I was in quite regular contact with after a game (on the phone) and he wanted more feedback on how I thought the game went and what I thought about it, but I think that’s a unique situation because I got on well with the manager...” (P25 – 1<sup>st</sup> Team Player).*

Within the psychological responses higher order theme, participants typically indicated that it was difficult to give feedback and also described the difficulty players had regulating their own emotional responses when receiving negative feedback. For example:

*“...some players are different. Some players wouldn’t take it (feedback) so well. So, you’ve got to know how to speak to different players...” (P29 – U18s Player).*

The delivery climate was a higher order theme further divided into four subthemes; development or results driven, different clubs & cultures, fast-paced, and highly emotional. Whether participants were discussing changes between academy and senior football, different cultures in place at clubs or the emotional nature of a results driven environment, they were exposed to a high volume of feedback delivered in a number of context-specific ways. For example:

*“It (how feedback is presented) depends on the club and the staff you have in place. I’ve been at places where every single day your training stats are on a screen the next morning or after the game they’re on the screen for everybody to see. I’ve been at places where you have to ask if you want to know what your stats were, so I think it’s something that changes from place to place.” (P25 – 1<sup>st</sup> Team Player).*

The higher order theme ‘social environment’ was frequently cited by all participants and consisted of three subthemes; egos & big personalities (n=8), hierarchy (n=7),

and insecurity & uncertainty (n=7). Players often spoke about the insecure nature of the environment and the reactions of their team mates and coaches when they attempted to give them feedback. Additionally, there was a perception from players of a hierarchical relationship between coaches and players and that voicing an opinion is done in a cautious manner, depending on the setting and the environment the feedback is being delivered in (i.e. team or individual meetings). The following players' account provides an insight into the potential barriers to communication due to the perception of coaches' and performance staff's egos and big personalities:

*"It just depends on the person, I think (how open they are to feedback), some people are very set in their ways which is not something I particularly like, I respect everybody's different. For me, if people want the feedback then they need to be willing to listen to it and come up with solutions to help, we all probably want the same thing at the end of the day." (P25 – 1<sup>st</sup> Team Player).*

### **Purpose of Feedback ('The Why')**

The purpose of feedback ('the why') general dimension involved participants' perceptions of the reasons feedback was used. For coaches, two higher order themes were developed; supporting the coaching process and development/performance focus. For performance staff, three higher order themes were developed; supporting the coaching process, development focus, and performance focus. For players, three higher order themes were developed; development focus, performance focus, and reviewing and reflecting.

#### ***Coaches' Perceptions of Purpose of Feedback ('The Why')***

Supporting the coaching process was a higher order theme which involved: 'planning', 'reviewing & reflecting', 'feedback comes from periodisation & planning', and 'influencing and impacting upon decision making'. The most frequently cited themes were how feedback was used for planning (n=9) and reviewing & reflecting

(n=11) on training sessions and matches and there was a close association between these particular subthemes. In terms of planning the coaches often spoke about how performance staff would feedback data from wellbeing testing and the subsequent physical status of the players. Additionally, a number of coaches (n=3) felt that feedback received from performance staff allowed them to keep a record of their training sessions and drills in order to aid both short- and long-term reviewing and planning of subsequent sessions. Participants also emphasized the importance of how feedback can be used for reviewing and reflecting on elements of the coaching process i.e. training sessions, matches and performance of the players. Additionally, they spoke about how this was a shared part of the coaching process and was done between departments to serve as a basis for subsequent planning. This is illustrated by the following quote:

*“Then we also have end of day meetings where we’ll sit down again as a multidisciplinary staff and discuss how the day has looked, what we’ve done, maybe planning for the following day, we’ll use that as a way of feedback to each other”*  
(P15 – Head of Academy Goalkeeping).

Coaches consistently referred to how there was both a performance and development focus to the feedback they delivered and received and hence constructed as the higher order theme ‘performance/development focus’, which consisted of five subthemes: player learning & education, players’ goals & targets, staff development, academy philosophy and personal philosophy. A number of coaches spoke about how the content of the feedback was representative of their club or academy philosophy (n=4) and that their personal philosophy (n=4) influenced the way this was delivered. The most frequently cited themes were learning & education (n=9) and players’ individuals goals/targets (n=10) which were usually set at the start of the season. Some coaches spoke about how these goals were based around development within a four-corner model and the following quote provides an insight into the goal-setting process:

*“...we have tried to hone in (the feedback) on their (players’) individual learning guides. And what we do, we asterisk one (area of development) every ten weeks that we want them to focus on. But they will also have a (professional) player who is*

*asterisked, who they have got to focus on over that ten weeks, in their position...”*  
(P12 – U18s Coach).

### ***Performance Staff's Perceptions of Purpose of Feedback ('The Why')***

Supporting the coaching process was developed as a higher order theme further subdivided into five subthemes: 'influencing & impacting upon decision making', 'feedback comes from periodisation & planning', 'planning', 'delivering (doing)', and 'reviewing'. Within this theme participants described how the feedback they gave to coaches (rather than players) was aimed at influencing and supporting the coaches'/managers' practices or decision making as the following quote highlights:

*“we (performance staff) used the feedback of information to support our argument that this player hasn't had the appropriate periodisation of training load and gym load to allow him to perform and be at the lowest possible risk of injury going into that game. We were able to persuade the coaching staff and manager that it wasn't appropriate, and we were putting him at a high risk of injury and a decreased chance of optimum performance.”* (P04 – Sports Scientist).

Development focus contained three subthemes; players' individual goals & targets, education, and academy philosophy. The most frequently cited subthemes within this higher order theme were players' individual goals & targets (n=5) and education (n=6). Participants described how feedback was delivered based on the players' targets or goals that were usually defined by coaches and performance staff periodically throughout the season. Regarding education, participants described how providing education to players allowed them to understand how to improve their own performances. The following sports scientists' account describes a specific example of the type of information that could be fed back to players for educational purposes and why they felt it was important:

*“If they (the players) have done jump testing in the morning in the gym, feeding that back and saying, “You were X amount higher within the gym after you have been squatting because the squatting helps you jump higher.” So, it's that kind of educational one as well.”* (P09 – Sports Scientist).

Performance focus consisted of three subthemes; managing player workload, motivation and the coaching philosophy. Within this theme participants described how players seek feedback from performance staff in order to understand and manage their own fatigue levels and it appeared that players used this information to compare their data to previous data or that of others to facilitate this. Participants described how feedback was given in order to aid players' motivation thus increasing adherence and effort and that this was done in both short term (i.e. during a session) and long term (i.e. using a trend analysis) ways. Long term feedback such as this was particularly prevalent in rehab settings to maintain motivation. The most frequently cited subtheme (n=8) was coaching philosophy which was influenced by factors such as the game plan, or coaches' expectations of players. For example:

*"...sometimes on a match day we might just do something simple like four pictures, it might not be a video it might just be a freeze frame of a picture from outside on the training pitch of this is what we want today – this shape. And then when we have not got the ball this is the shape" (P01 – Performance Analyst).*

### ***Players' Perceptions of Purpose of Feedback ('The Why')***

Participants highlighted the development focus of feedback and this was constructed as a higher order theme containing three subthemes; tracking progress, learning & development, and individual goals & targets. Participants regularly spoke about how feedback was delivered to them at various times throughout a season to track their progress and development. This was the most frequently cited subtheme (n=8) and participants typically reflected on their experiences of this as academy players rather than first team players. Additionally, the following players' account provides an insight into the vast amount of information players are exposed to with the aim of aiding their learning and development:

*"I think it (feedback) is any information that any coach at the club gives me...there is that many people within the football club that can give me the information and the feedback because they see me on a day-to-day basis they see different elements of me. So, you have got sports science, psychology, nutritionists and you have also got*

*the coaches who can give feedback, so I think feedback is just giving me the information to help develop.” (P28 – U18s Player).*

Performance focus was developed as a higher order theme and further subdivided into three subthemes; managing player workload, feedback is driven by the coaching philosophy, and motivation. Participants described how feedback was influenced by each specific coaches' tactical philosophy and how they wanted their team or individuals within their team to play. Another common theme (n=7) was motivation and participants described using feedback for providing comparisons to other players. The most frequently cited theme within this higher order theme was 'managing player workload' (n=8), which illustrates how feedback was used by performance staff and players themselves to ensure fitness was optimised and fatigue was being managed. This player spoke about how he used the feedback of GPS data to find an explanation for why he felt a certain way:

*“...you don't really need to know how much you have ran or the intensity or whatnot, but I would like to know that, so that is when I would go to the coaches and speak to them and say can I just have a look at the stats? It is probably psychological more than anything because if I know I have ran this much in a session, I think I can be honest with myself and think I have worked hard in this session, or maybe I am a bit fatigued from a game or the gym, so this is the reason for it...” (P28 – U18s Player).*

Players often cited that feedback was used for reviewing and reflecting and this was developed as a higher order theme with two subthemes; 'the reflective cycle' and 'player driven process'. Some players discussed how they drive the reflective process and go and seek out feedback from the relevant departments. In addition to players driving elements of the feedback process, participants also discussed how the process was already in place through team meetings and conversations that occur within the environment. This was reflected by the most frequently cited theme being the reflective cycle, and participants described this in the following way:

*“I might come in have a recovery session and maybe a debrief session analysing the game in the media room. That is probably the most part where you get it, and then*

*just looking back at your clips as well. Maybe, if you're not in that day, looking back at your clips and kind of giving yourself a bit of feedback and seeing what you've done right and what you have done wrong.” (P24 – 1<sup>st</sup> Team Player).*

### **Delivery of Feedback ('The How')**

Delivery of Feedback ('The How') explores the detail of how feedback is given and received between key stakeholders. Four higher order themes were explored deductively and related to the literature surrounding feedback and skill acquisition (Salmoni, Schmidt & Walter, 1984) and reflected the structure of the survey from phase one of this study. Those four themes were 'timing', 'frequency', 'type', and 'location' of feedback and were present for all groups. Additionally, three higher order themes were identified for coaches and performance staff; 'focus of feedback', 'balance of positive & negative', and 'technology can aid the feedback process'. However, technology can aid the feedback process was not present in the players' analysis.



### ***Coaches' Perceptions of Delivery of Feedback ('The How')***

All participants (n=11) referred to the 'timing' of feedback delivery and this was constructed as a higher order theme further subdivided into three subthemes; 'training', 'match', and 'window of opportunity'. With regards to training, coaches described the ways in which they receive feedback from performance staff on a daily basis to facilitate planning and reviewing performance of the players. For example:

*"...say a training day, from the physio and sport scientist, we would get feedback before training on current status of injuries and current wellbeing in fitness of the players. We get feedback during the session through the GPS in the iPads to know where we are in terms of if we're doing too much and getting carried away..." (P18 – Lead PDP Coach).*

Coaches also described how feedback was typically delivered after matches by the performance staff, as well as delivering feedback to players at regular time points i.e. before, during and after training. Before training was described as an opportunity to provide the players with a focus for the training session. Whereas, it was almost seen as a prerequisite of the coaches' role to deliver feedback during training sessions and feedback after training was an important part of the coaching process. Additionally, some participants described delivering feedback to players instantly following a match whilst it was still fresh in their minds.

The 'frequency' of feedback was a higher order theme further subdivided into four subthemes that described the coaching and review processes in place: 'daily' (n=10), 'weekly' (n=7), 'medium term performance reviews' (n=8), and 'season/half season reviews' (n=6). The majority of participants (n=10) described receiving feedback from performance staff on a daily basis to support the planning and reviewing around training sessions. Participants described how daily forms of feedback to the players were synonymous with the coaches' job role:

*"Obviously, they're going to get immediate feedback. We're going to speak to them during training" (P21 – Lead PDP Coach).*

Weekly forms of feedback from coaches to players typically appeared in line with the games programme. Participants described how some form of performance review and hence feedback was delivered on a medium-term basis anywhere between each month and 12 weeks, dependent on club. Additionally, participants discussed the longer-term review processes that are in place and typically take the form of half-season or seasonal performance reviews.

The type of feedback higher order theme was further subdivided into four subthemes, 'verbal', 'visual', 'written' and 'combining feedback types'. All participants cited delivering or receiving feedback using verbal and visual feedback whereas fewer participants (n=7) reported giving or receiving written feedback. Additionally, participants (n=8) reported giving or receiving combined types of feedback. Coaches reported that informal chats were highly prevalent and daily/weekly meetings were used to provide additional opportunities for formal verbal feedback in order to facilitate planning and communication between and within departments. For example:

*"I think a lot of it (verbal feedback) is more informal, so on a day-to-day, weekly basis, you have conversations with people (other coaches and staff) about certain things that are happening. I mean, we're structured that we have a weekly meeting which is an opportunity in a formal way for people to feed back about things" (P14 – Academy Manager).*

With regards to delivering feedback to players, participants described using a combination of formal and informal verbal feedback strategies in order to provide pertinent information to players. For example:

*"...our most valuable ones (feedback opportunities) would be where you stay out with the player and do extras and then you get a chance just to talk and feedback on anything that they're feeling or you're seeing. Again, a lot of the time when you're walking in or walking out (to training), that's a good time with them and after that, we have a lot of meetings with the players where we'll call them into the coach's room and we'll show them something or just give them something on the opposition but it will be very individual..." (P20 – Lead PDP Coach).*

Participants described the majority of visual feedback from performance staff as coming in the form of graphs. However, some coaches referred to the video feedback from analysts as a form of visual feedback and how this was delivered predominantly through video. All participants reported delivering visual feedback to players in the form of demonstrations, and video analysis and referred to the way in which this was ingrained into the coaching culture and practice. For example:

*“I might speak about moving in relation to the ball in the session or something has come up and we spoke about it, highlighted it. Then we'll watch that in the game on the weekend and then on the back of that we'll analyse it. So we do a plan, do, review type thing. We do training. We'll watch it in the game and then we'll review it in analysis.” (P19 – U18s Assistant Coach).*

Participants described how written feedback was reflective of the processes in place within clubs in order to document and evidence practice. Additionally, ‘combining feedback types’ summarised the way in which a high proportion of participants (n=8) discussed how feedback is rarely isolated and can be powerful when combined with another type, for example:

*“I think visual feedback... but the auditory stuff that you complement it with, I think, is the magic dust that you can get your real impact, because I think language is really powerful” (P16 – Head of Coaching).*

The location/s in which feedback was delivered to players and received from performance staff was a higher order theme further subdivided into three subthemes; ‘formal’, ‘informal’ and ‘location influences feedback’. With regards to ‘formal’ participants generally reported feedback that was delivered from performance staff in offices around the training ground. The majority of participants (n=7) referred to giving and receiving feedback in what could be described as a large range of ‘informal’ locations such as corridors and walking to/from training pitches. Additionally, participants described how the nature of feedback is influenced by the location, reporting that office spaces and locations sometimes presented physical barriers to feedback. Furthermore, participants described that travel can be used as an opportunity for informal feedback. For example:

*“That (feedback between staff) will just be a general informal chat, that might be on the bus on the way home from an away game, or it’ll definitely be the next morning before we feedback to the players” (P11 – Head of Academy Goalkeeping).*

Participants (n=6) described how technology could aid the process of feeding back to players or receiving feedback from performance staff. With regards to feedback from performance staff, participants reported using group messaging services (i.e. WhatsApp™) to facilitate communication and planning. Additionally, participants referred to their use of a range of apps and online systems to allow access to a number of key stakeholders and this coach described how technology is at the forefront of his approach to meeting the needs of his target audience (i.e. young players) when selecting how to deliver feedback:

*“I give a development plan to the goalkeepers on their phone, which is all video based, it’s all linked to how we play...the idea of it being on their phone is the type of kids we’re working with now...they like to see things in their own time, you constantly see a player on his phone” (P11 – Head of Academy Goalkeeping).*

The balance of positive and negative feedback was concerned with how coaches approached delivering balanced feedback to players and other coaches in order to improve performance/practice. For example, with regards to delivering feedback to players:

*“...that (feedback) might be a positive praise towards what the action was, to reinforce it. It might be negative to reinforce that...” (P20 – Lead PDP Coach).*

Additionally, coaches also described their experiences of delivering feedback to other coaches following their observations of a training session. For example:

*“...there may be some verbal communication after the session had finished just to give some key points of areas where I think they (another coach) have done well, areas where they can potentially get a little bit better...” (P15 – Head of Academy Goalkeeping).*

The focus of feedback was developed as a higher order theme and further subdivided into two subthemes based on feedback from coaches to players; 'individual', 'team/unit'. Coaches described how the nature of the content ranged in specificity with team feedback being the most generic and individual feedback being most specific. Team/unit feedback to players tended to be in post-match video review sessions delivered to either the whole team or people in similar positions. The most frequently cited subtheme within focus of feedback was individual feedback (n=10). Coaches described how this form of feedback contained the most individualised and personal elements of feedback. For example:

*"The (individual) feedback is based across the five pillars, obviously, technical, tactical, physical, psychological, social and education...but it's about making it really personalised to the player, so that they really focus their efforts after training or focus their efforts during training and before on those key areas" (P20 – Lead PDP Coach).*

### ***Performance Staff's Perspectives on Delivery of Feedback ('The How')***

All participants (n=10) cited 'timing' of feedback as a higher order theme which arose from 3 subthemes; 'training', 'match', and 'considerate approach to timing of feedback'. With regards to training, participants provided rich and varied accounts of how feedback of information before, during and after training may assist coaches and affect practice. The following quote illustrates the way in which information should be delivered in a timely fashion after training to support the coaching process. For example;

*"I think the most common one is probably after training – how did training go? This is your report from training, I think as immediate as possible after is probably the best way of doing it as well – while it's fresh in the mind, I think that is the biggest one." (P09 – Sports Scientist).*

Additionally, feedback that was delivered to coaches and players before, during and after matches was discussed by performance staff. A frequently cited theme amongst performance staff (n=9) was taking a 'considerate approach to timing of feedback' and that they had to be aware of the environment and demands on players and

coaches. Some members of the performance staff reported that after training i.e. afternoons were usually a better time to deliver feedback to both coaches and players than before or during training sessions. Participants described that it was also important to be aware of coaches' working schedules and routines when considering when and how to deliver feedback. For example:

*"I think it (feedback) is all about timing as well, so I go in the gym every morning at quarter past seven, our current manager is sat in his office at seven o'clock every time I get there, so I have an informal ten minutes with him now before I go into the gym and it's maybe a good way of getting things in...It doesn't sound like you are having a serious conversation" (P01 – Performance Analyst).*

The frequency with which performance staff delivered feedback to coaches, players and between departments was identified as a higher order theme further subdivided into four subthemes which reflected the coaching and review processes in place; 'daily' (n=5), 'weekly' (n=6), '6-week reviews' (n=2), and 'Season/Half Season Reviews' (n=1). Participants described how daily feedback from performance staff supports the planning and reviewing of training and this goes on between (i.e. sports science, medical, coaching, performance analysis) and within departments too. Performance staff frequently spoke about how weekly feedback supports the post-match review process and to provide summaries for coaches and other departments; *"...there is a weekly review sent to the coach as well as all of the performance staff..." (P07 – Physiotherapist).* The subthemes of '6-week reviews' and 'season/half season review' show how feedback from performance staff supports the long-term review processes in place within the football club environment.

The location/s in which feedback was delivered to players, coaches and other performance staff was a higher order theme further subdivided into three subthemes; 'formal', 'informal' and 'training ground design influences feedback'. With regards to 'formal' participants reported a range of locations that could be considered as places where feedback is structured to take place i.e. gym, notice boards, offices, training pitch, meeting rooms. Whereas 'informal' locations for feedback may be places in which feedback is delivered and may be more unstructured such as the canteen, the

corridors, walking to the pitches or travel situations. One participant described this in the following way:

*“...around the coffee machine or pitch side while training is going on or travelling, a lot of time is spent on the road during a pre-season training programme, so you have got bus journeys and waiting in airports. These are opportunities to connect and speak with the staff that you are working with” (P04 – Sports Scientist).*

Additionally, participants referred to how training ground design can positively influence the way in which feedback occurs;

*“the way our training ground is set up...the office being so close to the gym when players come in for activation or recovery...they would pop into the office and ask to have a look at their match data.” (P06 – Sports Scientist).*

The type of feedback higher order theme was divided into four subthemes, ‘verbal’, ‘visual’, ‘written’ and ‘combining feedback types’. All participants cited delivering feedback using the three different types i.e. verbal, visual and written. Performance staff described the majority of ‘verbal’ feedback as informal and coming through daily informal chats/conversations with coaches, players and between departments.

*“...informal chats are a massive part of how I deliver any kind of feedback...the biggest thing is daily conversations and those things that you are talking about all the time. The walk out to training and the walk in from training, sitting in the office, having lunch are the bigger opportunities.” (P02 – Psychologist).*

Additionally, participants described the more formal and structured forms of verbal feedback as taking place in daily/weekly meetings whether that was an MDT or an intradepartmental meeting. Despite participants being from a number of different clubs the majority referred to numerous methods for giving ‘visual’ feedback to coaches and players including graphs, video feedback, demonstrations, and colour coded reports. Written feedback was mainly described by participants as information contained in e-mails sent to other departments, WhatsApp™ messages sent out to coaches and players, daily training reports with supplementary written elements to summarise key points, and longer-term progress reviews. The ‘combining feedback types’ subtheme summarised the way in which a high proportion of participants (n=8)

discussed how feedback is rarely isolated and is usually combined with another type. For example:

*“If you (sports scientists) have got some visual feedback that is there up on the poster board and one of us is floating around while people are looking at it. Either we can draw attention to a certain area that was positive that they did well or need to improve on....I think that then gives you a chance to give that good verbal feedback.”*  
(P09 – Sports Scientist).

The influence of technology in the feedback process was constructed as a higher order theme as participants (n=7) described a number of developments which play a pivotal role in the gathering of data and feedback of information. The key considerations were around the immediacy of the information to affect practice, through the use of live data presented on tablets, and smart phones. Additionally, one sports scientist described the way in which developments in technology allow them to try and make data and feedback to coaches more visual and interactive through the use of data visualisation dashboards;

*“We have invested in moving more towards Tableau, the more interactive intuitive kind of dashboards really to engage a number of stakeholders in terms of the immediacy of sport science data”* (P08 – Sports Scientist).

A frequently cited higher order theme by performance staff (n=7) was the ‘balance of positive & negative feedback’ directed towards the players. It would appear that this is a key consideration that performance staff have to make when deciding on the content of their feedback. An analyst described his approach in the following way:

*“I always start with my negatives – anything negative goes at the top – and all the positives go at the bottom, never end on a negative”* (P01 – Performance Analyst).

The ‘focus of feedback’ higher order theme was related to feedback from performance staff to players and more specifically whether the feedback was directed *towards* the individual (n=6), the team/unit (n=3). Team/unit meetings were



referred to by performance analysts when describing the ways in which feedback was delivered to the players and may be representative of the coaches' decision on the provision of technical/tactical feedback to the players. However, there was a stronger emphasis upon the use of an individual focus by performance staff for delivering feedback to players (n=6):

*“Trying to get them (players) in that one-to-one environment where you have got full attention, and rather than speaking to them as a group...and people might not take it as seriously...” (P09 – Sports Scientist).*

### ***Players' Perspectives on Delivery of Feedback ('The How')***

All participants (n=11) referred to the 'timing' of feedback delivery and this was constructed as a higher order theme further subdivided into three subthemes; 'training', 'match', and 'anytime, anywhere'. Timing was mainly centred around how participants receive feedback from coaches and performance staff at regular time points based around training sessions and the match/fixture programme. The following players' account provides an insight into how coaches feedback is not limited by a specific time point and may be delivered at any time depending on the relevance of the information:

*“From a coach perspective, getting feedback off a coach, could be anytime. It could be before training, after training or during training. It can be literally during a match or before a match. It can literally be anytime with the coach.” (P22 – 1<sup>st</sup> Team Player).*

Participants also described the ways in which they receive feedback from performance staff was predominantly during training to address coaching observations such as *“running technique”* or *“lifting technique”*, or after training and matches to feedback physical data as the following quote highlights:

*“...obviously after different matches or training, every day I train, you get stats of how far you ran and intensity and stuff like that, decels, accels. So you'll see that every day whenever you want after training...” (P23 – U23s Player).*

The frequency of feedback was developed as a higher order theme further subdivided into four subthemes: 'daily', 'weekly', 'medium term performance reviews', and 'season/half season review'. The most frequently cited theme for frequency was daily (n=6) and the following quote provides an insight into how this was prevalent between performance staff and players:

*"On a day to day basis you speak to the physios and the sports science staff every day. The general conversation is, 'How are you? How are you feeling?' It's things like that, especially with the physios...It's definitely more verbal. You do obviously have other ways of getting feedback but definitely it is more verbal and day to day." (P22 – 1<sup>st</sup> Team Player).*

The type of feedback was again constructed as a higher order theme, as it was cited by all participants and was further subdivided into four subthemes: 'visual', 'verbal', 'written', and 'combining feedback types'. Participants described how visual feedback was delivered in the form of graphs, demonstrations and use of a tactics board. However, players most often spoke about the use of video feedback as a visual aid which coaches used to feedback on elements of their performance in training or matches. Verbal feedback in the form of instructions during training/matches and in team meetings was discussed often by participants. Additionally, the majority of participants (n=7) emphasised the prevalence of informal chats and conversations as the following player account highlights:

*"...it (feedback) is more like just in conversations. You do get some feedback that's pinned on the wall in the changing rooms with distances that you've ran and that sort of thing but general feedback is given, just in daily conversations, over lunch or something..." (P30 – 1<sup>st</sup> Team Player).*

The location/s in which feedback was received by players was a higher order theme further subdivided into three subthemes; 'formal', 'informal', and 'job role determines feedback location'. With regards to formal locations for feedback, players reported that they generally tended to receive feedback in formalised structured environments like the training pitch, meeting rooms, offices and the gym. The most frequently cited

location (n=9) was the training pitch and this is where the majority of immediate player to coach feedback occurs. Players often described how feedback was also delivered in informal locations such as the canteen, the corridor and traveling to and from games. However, the most frequently cited informal location that players received feedback was walking to and from the training pitches (n=4) and the following quote provides an insight into this process:

*“...after a session we (player and coach) would just walk in from the session. Just have a little chat about something. It’s like, oh, “You could have done this better,”...just talk about the game...” (P27 – U23s Player).*

The balance of positive and negative feedback was constructed as a higher order theme concerned with feedback received by players from coaches and performance staff and also delivered and received between players. Players from an academy environment indicated there was a mixed or balanced approach to feedback from a range of coaching and performance staff, as the following quote exemplifies:

*“...you have got sports science, psychology, nutritionists and you have also got the coaches who can give feedback, so I think feedback is just giving me the information to help develop. And I think it can be different types of feedback – positive, negative or areas I need to improve on...” (P28 – U18s Player).*

Whereas in the 1<sup>st</sup> team performance environment players often spoke about how feedback may be delivered in a negative or critical way. Players also discussed giving feedback to each other and often reported that they tried to adopt a positive approach when delivering feedback. Additionally, one player spoke about how if he had a strong relationship with a teammate as a “friend” then he could deliver feedback in any way whether it was positive or negative. For example:

*“...I give quite a lot of feedback to my closest mates within football, say if I’ve watched them play or I think they could do something better, I would definitely give them feedback...” (P30 – 1<sup>st</sup> Team Player).*

The focus of feedback was developed as a higher order theme comprised of two subthemes; 'individual' and 'team/unit' and was focused on feedback received by players from coaches and performance staff. Participants regularly (n=7) spoke about how feedback was delivered to the whole team in team meetings, pre/post-match debriefs and at half time. The most frequently cited theme (n=9) was individual focused feedback whereby players spoke about how feedback was delivered to them within individual performance review meetings, individual programs or video feedback in a one to one setting and how beneficial and focused they found feedback delivered in this way. For example:

*"...I'd probably say the individual ones are best (meetings with the coaches), because it's more based around you and it's more focused around you. And it's the same with the sports scientists as well..." (P29 – U18s Player).*

### **Content of Feedback ('The What')**

The general dimension represents the types of information contained within the feedback that is given to and received by key stakeholders and is represented by two higher order themes; 'subjective information' and 'objective information'. With regards to subjective information, coaches discussed technical & tactical information that was fed back to players, whereas performance staff discussed corrective physical information delivered to players. Unsurprisingly, players spoke about receiving information in both of the ways described. All groups discussed the feedback of objective information such as GPS data, testing data, and technical data.

### ***Coaches' Perceptions of Content of Feedback ('The What')***

When referring to objective information, participants regularly referred to feedback of various sources of data received from performance staff or used to deliver information to players. Four subthemes were cited in this particular theme which consisted of; GPS data, testing data, technical data, and data as evidence. Some coaches (n=2) reported that feedback of data was not solely physical performance data delivered by sports scientists but may also include technical data. One participant described how this technical data could be used as evidence and directly influenced the content of feedback delivered to their players. However, the most frequently cited theme was GPS data and participants went on to describe their typical experiences of receiving this type of information from sports scientists:

*"We get a lot of GPS feedback (from sports science)...it would be the length of the session, the intensity of the session, how that compares to game day. Then for each individual, it has the total distance, high-speed running, sprints, acels, decels, training load" (P20 – Lead PDP Coach).*

In terms of subjective information, this was a higher order theme that consisted of three subthemes; technical & tactical, opinions, and interpretation of data. The coaches discussed how feedback often contained technical & tactical information and opinions delivered to players. When coaches were referring specifically to feedback of subjective information to players, they described it as "...giving them (players) back information about their performance and telling them what you think they've done well, what you think they may be able to do better" (P14 – Academy Manager). A frequently cited subtheme (n=5) was interpretation of data whereby participants described how data such as GPS data shouldn't be viewed in isolation and always had to be interpreted in relation to the game and the context of the situation. For example:

*"...sports scientist sends me the (GPS data) report... and I'll see that my number nine was in the top three for total distance...people are saying: "He's in the top three, he's covered the most distance," whereas I'm saying he's covered the most distance*

*because of his positioning, he had no idea what he was doing, so as a number nine, he shouldn't be in the top three of total distance, he shouldn't be up there, maybe more high intensity running, more sprinting..." (P11 – Head of Academy Goalkeeping).*

### ***Performance Staff's Perceptions of Content of Feedback ('The What')***

Despite the differences in specific job roles between participants, all participants (n=10) cited feedback as information to describe their use of feedback i.e. *"Feedback for me is the passing on of useful information or any information really"*. Specifically, objective information for performance staff consisted of six subthemes; GPS Data, injury data, technical data, testing data, drills, grabbing attention & conversation starter. All participants (n=10) reported feeding back *data*, whether this was to players, coaches, or both. A number of participants reported feeding back 'testing data' (n=5) and 'GPS data' (n=5), however both tended to be related specifically to the sports scientists' job role. For example:

*"Feedback is so readily available to the guys now in terms of as soon as they set foot out onto the pitch the (GPS) units and the tracking systems they are wearing tell us how far, how fast, how often and what percentage of their heart rate they are working at" (P04 – Sports Scientist).*

With regards to subjective information, performance staff spoke about feedback of opinions to coaches and players, delivering corrective physical feedback relating to elements of physical performance i.e. lifting technique, and interpretation of data. Sports scientists and physiotherapists reported using feedback to provide corrective physical feedback to players based on performance of a task. Participants (n=5) often described feedback as being akin to giving their opinions on an event or performance that had occurred, regardless of whether this was delivered to a coach or to a player;

*"How you think sessions have gone in terms of talking to coaches afterwards, how do you think certain things worked? Yeah, so really just feedback or telling people*

*how you think they have done, or how you think things have gone” (P06 – Sports Scientist).*

### ***Players’ Perceptions of Content of Feedback (‘The What’)***

Objective feedback was a higher order theme which explored the differing types of data that players receive from performance staff and coaches, and as such, was subdivided into four subthemes; GPS data, fitness testing data, technical data, and strength & conditioning data. The most frequently cited subtheme was GPS data (n=8) and the following quote illustrates the nature of this with relation to both training and match play scenarios:

*“With every game you get how much you have run or how much high speed you have covered. It’s the same for training. We do things like what your max velocity is and what top speed you have hit...With every training session there is GPS and heart rate to track and they (performance staff) have it all on live data” (P22 – 1<sup>st</sup> Team Player).*

Participants discussed five subthemes under subjective information; corrective physical feedback, technical & tactical feedback, opinions, context & understanding and data opens up a conversation. Players discussed how feedback received from performance staff was predominantly focused upon correcting physical elements of performance in warm ups, rehab sessions and gym sessions. Additionally, players (n=6) often spoke about how they perceived feedback to be opinions from coaches and performance staff. The majority of players suggested opinions were positive and could be used to aid learning and improve performance. The most frequently cited subtheme under subjective information for players was about how the information that was fed back to them from coaches contained content related to the technical & tactical elements of their performance (n=8). This is illustrated by the following quote:

*“...so at the training pitch let’s say you have finished your session or during your session you are doing a drill, I am not saying you are doing it wrong but you might not do it as well as you should have, they (coaches) will come over and say, ‘This is*

*how you should have passed that.’ or, ‘this is how you should have had the shot’...”*  
*(P22 – 1<sup>st</sup> Team Player).*



## **Appendix C**

### **Interview 2 Question Guide - Performance Staff**

#### **Research Question 2 – Examine the views of key stakeholders towards the current effectiveness of feedback in elite football**

##### **Introduction:**

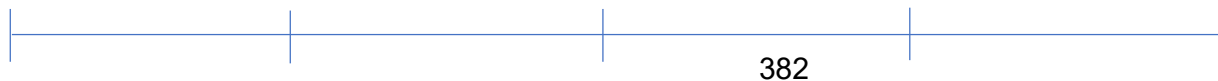
Thanks a lot for sitting down with me again and taking the time to answer some questions for me. Just to give you a brief recap to the topic area, you may remember we are carrying out some research into the nature of feedback and how it is given to people in elite football. The next part of the research is about trying to understand how effective those feedback strategies are in influencing important decisions and supporting the coaching, training and planning process. The interview will last roughly between 45 and 60 minutes and we will discuss the following areas; a bit of a recap on the first interview we did and whether that led you to think about feedback differently at all. Then the following 2 sections will look at the effectiveness of feedback to coaches and players but will

allow you to rate how effective different forms of feedback are, provide reasons as to why they are effective or ineffective and say how they could be improved. The final section will look at how effective the feedback is between disciplines i.e. medical, analysis, psychology, nutrition, and then whether feedback you get from coaches and players is effective to improving your own planning and practice.

Just to put you at ease, there are no right or wrong answers to any of these questions and it's certainly not a test in anyway, also if there are any questions you don't want to answer or don't feel comfortable answering then that is fine. We just want to understand this topic by speaking to people who have some excellent experience in this environment. A couple of housekeeping things, the data is being recorded on an audio device so I can go back over it later, but just to clarify, all of your answers will remain confidential and your identity will always be protected. This interview data won't be used within the research study, but will form the basis of some really important pilot testing for the interviews to come later. And lastly, just to let you know, I may make a couple of notes during the interview, this is just to remind me of certain things I may want to come back to as I have a memory like a sieve.

1 = Highly Ineffective

5 = Highly Effective



Research Question	Main Interview Questions	Probes/Prompts
<b>2. Examine the views of key stakeholders towards the current effectiveness of feedback in elite football.</b>	<ul style="list-style-type: none"> <li>• <b>Section 1 – Recap</b></li> <li>• One of your colleagues described feedback as coming in all sorts of forms, both formal and informal which provide observations on aspects of training and match performance. They spoke about GPS, wellbeing and RPE data from players and how this can be shared between departments to improve outcomes.</li> <li>• Has our discussion from last time made you think about or reflect upon the ways in which you give or receive feedback?</li> <li>• Is your current role the same as during interview 1?</li> <li>• <b>Section 2 – Feedback to Coaches</b></li> <li>• Using the scale can you rate how effective the following types of verbal, visual, written feedback you give to coaches are in influencing important decisions and affecting the coaching &amp; planning process.</li> <li>• Could you tell me why you feel this?</li> </ul>	<ul style="list-style-type: none"> <li>- Clarification of definition of feedback for this research.</li> <li>- i.e. Current research would suggest that feedback was information about a performance that is given in order to improve future performances and/or development.</li> <li>- EXAMPLES (survey)</li> <li>- Verbal (Informal chats, formal meetings, phone calls)</li> <li>- Visual (Videos, demos, graph based data),</li> <li>- Written (Paper reports, reports on computer, E-mail or text)</li> </ul>

	<ul style="list-style-type: none"> <li>• How do you think verbal, visual, written feedback could be improved?</li> <li>• Using the scale can you rate how effective the following times are for giving feedback to coaches in order to influence important decisions and affect the coaching &amp; planning process.</li> <li>• Could you tell me why you feel this?</li> <li>• How do you think the timing of feedback could be improved?</li> <li>• Using the scale can you rate how effective the following locations are for giving feedback to coaches in order to influence important decisions and affect the coaching &amp; planning process.</li> <li>• Could you tell me why you feel this?</li> <li>• How do you think the location of feedback could be improved?</li> </ul> <p>Provide summary before asking next question (if necessary):</p> <ul style="list-style-type: none"> <li>• Are there any additional considerations you account for when deciding how to effectively deliver information to your coaches?</li> </ul> <ul style="list-style-type: none"> <li>• <b>Section 3 – Feedback to Players</b></li> </ul>	<ul style="list-style-type: none"> <li>- Before, during, after training, before, during, after match?</li> <li>- Locations (Pitch, phone, e-mail, office, notice board, gym, canteen, dressing room).</li> <li>- Are there any we haven't mentioned?</li> <li>- Provide examples i.e. time of season, results, personality types/traits, any other contextual factors.</li> <li>- EXAMPLES (survey)</li> <li>- Verbal (Informal chats, instructions, formal meetings, phone calls)</li> <li>- Visual (Videos, demos, graph based data),</li> </ul>
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	<ul style="list-style-type: none"> <li>• Using the scale can you rate how effective the following types of verbal, visual, written feedback you give to players are in influencing their behaviour and/or improving their future performances.</li> <li>• Could you tell me why you feel this?</li> <li>• How do you think verbal, visual, written feedback could be improved?</li> <li>• Using the scale can you rate how effective the following times are for giving feedback to players in order to influence their behaviour and/or improve their future performances.</li> <li>• Could you tell me why you feel this?</li> <li>• How do you think the timing of feedback could be improved?</li> <li>• Using the scale can you rate how effective the following locations are for giving feedback to coaches in order influence their behaviour and/or improve their future performances.</li> <li>• Could you tell me why you feel this?</li> <li>• How do you think the location of feedback could be improved?</li> </ul> <p>Provide summary before asking next question (if necessary):</p>	<ul style="list-style-type: none"> <li>- Written (Paper reports, reports on computer, E-mail or text)</li> <li>- Before, during, after training, before, during, after match?</li> <li>- Locations (Pitch, meeting, phone, e-mail/text, office, notice board, gym, canteen, dressing room).</li> <li>- Are there any we haven't mentioned?</li> <li>- Provide examples i.e. time of season, results, personality types/traits, any other contextual factors.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Are there any additional considerations you account for when deciding how to effectively deliver information to your players?</li> <li>• <b>Section 4 – Feedback to/from Other Parties</b></li> <li>• Using the scale can you rate how effective is the feedback that you give to other members of the performance staff in influencing important decisions and affecting the training &amp; planning process?</li> <li>• Could you tell me why you feel this?</li> <li>• Using the scale can you rate how effective is the feedback that you receive from other members of the performance staff in influencing important decisions and affecting the training &amp; planning process?</li> <li>• Could you tell me why you feel this?</li> <li>• How could feedback between disciplines and within performance staff teams be improved?</li> <li>• Using the scale can you rate how effective is the feedback that you receive from coaches in influencing important decisions and affecting the training &amp; planning process?</li> <li>• Could you tell me why you feel this?</li> <li>• How could feedback you receive from the coaches be improved?</li> </ul>	<ul style="list-style-type: none"> <li>- Clarify performance staff (Physio, medical, performance analysis, nutrition, psychologist).</li> <li>- i.e between disciplines and within teams i.e. sports science.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Using the scale can you rate how effective is the feedback that you receive from players in influencing important decisions and affecting the training &amp; planning process?</li> <li>• Could you tell me why you feel this?</li> <li>• How could feedback you receive from the players be improved?</li> </ul>	
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### **Section 1 – Background:**

### **Section 2 – Feedback to Coaches**

### **Section 3 – Feedback to Players**

### **Section 5 – Giving & Receiving from Other Parties**

### **Closing Statement/Question**

I think that is all the questions I had for you really, is there anything else you'd like to add that we haven't covered or would you have any final words or summary on this area?

Well, I'd just to like to say a massive thanks to you for your time and the interesting and illuminating answers that you have given for me.

**Coaches:**



	Feedback Type	Example	Rating	Reasons	How to Improve
Verbal	Informal Chats	General daily conversations around the training ground			
	Formal Meetings	Daily/Weekly MDT meetings			
	Phone Calls	Conversation on the phone after training/in the car			
Visual	Videos	Physical/Technical clips after a game			
	Demonstrations	Some form of technical information i.e. lift in the gym			
	Graph Based Data	Charts/graphs with physical or technical stats			
Written	Paper Reports/Print Outs	Daily/weekly physical or technical			
	Reports on Computer	As above but shown on screen			
	E-mail/Text	Reports with additional written element on e-mail/WhatsApp			
Timing	Before Training	Info that affects planning training i.e. wellbeing			
	During Training	Live GPS data			
	After Training	Feedback on volume/intensity of training or player response			
	Before Match	Intended match minutes if returning from injury			
	During Match	Individual player response to match			
	After Match	Any data physical/technical related to match performance			
Location	Pitch				
	Phone				
	E-Mail				
	Office				
	Notice Board				
	Gym				
	Canteen				
	Dressing Room				
	Any Other?				
Additional Considerations					

**Players:**

	Feedback Type	Example	Rating	Reasons	How to Improve
<b>Verbal</b>	Informal Chats	General daily conversations around the training ground			
	Instructions	Explaining a drill – maybe after done wrong			
	Formal Meetings	6 week reviews/parent reviews			
	Phone Calls	Conversation re element of performance			
<b>Visual</b>	Videos	iPad/Phone/HUDL			
	Demonstrations	Technical element of a physical drill			
	Graph Based Data	Visual representation of physical/technical performance e.g. iPad			
<b>Written</b>	Paper Reports/Print Outs	Reports of testing or training sessions			
	Reports on Computer	As above shown on computer screen			
	E-mail/Text	Performance data via WhatsApp			
<b>Timing</b>	Before Training	Motivational/informative material			
	During Training	Live performance data i.e. GPS Stats			
	After Training	Any info relating to training performance			
	Before Match	Motivational/informative based on previous training/match info			
	During Match	Information at half time			
	After Match	Physical/technical stats or opinion			
<b>Location</b>	Pitch				
	Team/Individual Meeting				
	Phone				
	E-Mail				
	Office				
	Notice Board				
	Gym				
	Canteen				
	Dressing Room				
	Any Other?				

<b>Additional Considerations</b>	
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**Other Parties:**

	<b>Example</b>	<b>Rating</b>	<b>Reasons</b>	<b>How to Improve</b>
<b>Give to PS</b>	Discuss player wellbeing in an MDT meeting			
<b>Receive from PS</b>	Physio assessments of players Psychologist info on players personal life			
<b>Receive from C</b>	Coach opinion on intensity of session or player application to elements of training session			
<b>Receive from PI</b>	Players preferences – whether they liked a certain treatment, session or intervention.			

## **Appendix D**

Google Drive link for example presentations delivered to participants in the intervention group within Chapter Five (please follow link and download to view content):

<https://drive.google.com/file/d/1bwfSWaYvrgfekgtQpbND4-pM63RahOk9/view?usp=sharing>

## **Appendix E**

### **Study 3 – Interview Script**

#### **Players**

##### **Introduction:**

Thanks a lot for sitting down with me and taking the time to answer some questions. This interview is part of a research project being run by West Bromwich Albion FC and Liverpool John Moores University. We are looking at feedback in elite football and whether making some changes to how you as a player receive feedback can improve the overall effectiveness,

compared with the typical feedback you have been receiving over the course of the season.

The interview will last roughly between 10 and 20 minutes and we will discuss the following areas; a little bit about the different types of feedback (so verbal, visual, written) and whether they have changed, the timings (before, during and after training and matches) and places (pitch, office, gym etc.). We are interested in whether you think there has been a change and how it has changed, if at all.

Just to put you at ease, there are no right or wrong answers to any of these questions and it's certainly not a test in anyway, also if there are any questions you don't want to answer or don't feel comfortable answering then that is fine, just ask to move on – no explanation needed. A couple of housekeeping things, the data is being recorded on an audio device so I can go back over it later, but just to clarify, all of your answers will remain confidential and your identity will always be protected. And lastly, just to let you know, I may make a couple of notes during the interview, this is just to remind me of certain things I may want to come back to as I have a memory like a sieve.

1. First of all could you tell me how you think the last month has gone for you?
2. Could you tell me about the type of things you regularly get feedback on from your performance staff (so that would be sports science, analysts, psychologists and physios)?

- a. Prompt – typical week/month/6 week review
- 
- 3. Please could you explain what your physical goal is for the season and what does that mean to you?
    - a. Has the recent feedback influenced your goals/targets in any way?
    - b. How do you use feedback to help you improve?

For the next set of questions, think about a typical 6 week block, so this would include typical daily and weekly feedback and your 6 week review that comes at the end of that.

- 4. How effective is verbal feedback for you? This would include things like informal chats, formal meetings, phone calls.
  - a. Could you describe if there have been any changes to verbal feedback that you receive recently? How did this make you feel?
- 5. How effective is visual feedback for you? This might include things like video clips, demonstrations, graphs etc.
  - a. Could you describe if there have been any changes to visual feedback that you receive recently? How did this make you feel?
- 6. How effective is written feedback for you? This might include things like written reports/print outs, reports shown on a laptop, Emails or Text/WhatsApp messages.
  - a. Could you describe if there have been any changes to written feedback that you receive recently? How did this make you feel?
- 7. For feedback to be most effective for you, when's the best time for receiving it from your performance staff?
  - a. Could you describe if there have been any changes to the times you receive feedback at all and how does this make you feel?

8. For feedback to be most effective for you, where's the best place for receiving it from your performance staff?
  - a. Could you describe if there have been any changes to the places you receive feedback at all recently and how does this make you feel?
9. So, now is the opportunity to put yourself in a sports scientists role and you can change how feedback is given. Imagine you've got all the money and the best technology in the world. What would you change about how feedback is given and why?