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 Verbal Feedback Is the Primary Mechanism for Performance-Related Review in Professional English Male Soccer: A Quantitative Exploration

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Article

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1   **_Verbal_ feedback is the primary mechanism for performance related review in professional**

2   **English male soccer: A quantitative exploration**

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4   **ORIGINAL INVESTIGATION**
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28

29   **Abstract**

30   ***Purpose:*** Feedback is information that is provided to aid reflection and learning and enhance future

31   performances. Due to the increased demands of professional soccer and governance around staffing

32   structures, the number of stakeholders delivering/receiving feedback has grown over the past two

33   decades. The aim of the present study was to explore the feedback strategies used within professional

34   male soccer in England. ***Methods:*** 139 respondents comprising of coaches ($n = 34$), players ($n = 39$),

35   and performance-staff ($n = 66$) from the English Premier League and English Football Leagues

36   completed an online survey. The survey included 19 questions covering giving and receiving feedback.

37   ***Results:*** Daily verbal interactions such as conversations and informal chats were the primary source of

38   feedback and were highly prevalent between the three groups (59-80%). Feedback was delivered

39   frequently (daily/weekly) by all stakeholders at regular time points (before, during, and after training

40   and matches) with >75% of coaches reporting giving feedback at all time points. Two-way feedback

41   was also prevalent, with >76% of participants delivering or receiving feedback two-ways. ***Conclusions:***

42   The data highlighted the importance of verbal communication within the process of optimising

43   professional soccer player's development and performance. Professional soccer clubs should focus on

44   interpersonal and intrapersonal skill development and an approach that facilitate positive interactions

45   between staff and players within the optimal environment (i.e., time and space). We recommend further

46   exploration of stakeholders' perceptions and effectiveness of feedback in influencing decision-making

47   and informing behaviour change.

48

49   **Key words:** Development; Data; Practice; Survey; Decision-making

Introduction

Feedback is defined as information provided to a learner that allows them to reflect on their performance and determine what they subsequently should or should not do next.[1] The use of feedback has now expanded beyond skill acquisition and education-based literature to other contexts of sport such as the perceptions of athletes and coaches on the impact of feedback on their performance.[2,3] Athletes perceive feedback to be central to self-reflection and have repeatedly indicated preferences for delayed and individual feedback.[4] This feedback is provided not only from their coach, but from other stakeholders such as performance-staff, parents/carers, and teammates/peers.[4,5,6] Furthermore, athletes and coaches from various sports highlight that feedback is a two-way process between giver and receiver.[7,8] For example, team-sport players have indicated that feedback provided them with guidance on areas of development and performance, as well as a platform to share reflections with their coaches.[2,3] However, in these studies, preferences for greater opportunity to feedback to coaches and increases in individual feedback were demonstrated, as athletes felt that this gave them opportunities to clarify the feedback and increased the perceived quality of the information provided.[4,9] Evidence from rugby and soccer players suggests that future performance may be optimised when a two-way multi modal feedback approach (i.e., visual, auditory, written, and kinaesthetic) is utilised.[4,9] While studies recognise a need for two-way feedback between coaches and athletes, there is limited information on how this feedback is delivered (i.e., frequency, type, timing, location etc.) by a range of stakeholders.[10]

Both the acute and chronic physical demands of professional soccer have evolved and increased over time.[11,12] In England, the Elite Player Performance Plan (EPPP) specifies minimum requirements for performance-staff, and has therefore resulted in an increase in provision, resources, and staffing across soccer academies.[13] Subsequently, professional soccer clubs employ performance-staff (e.g., sport scientists) to feedback physical performance data to players and coaches.[14] Furthermore, with the evolution of rules, equipment, and technology there has been a significant growth of performance-staff (sports scientists; medical staff; performance analysts) over the last two decades.[15] These performance-staff typically use technologies such as global positioning systems (GPS) and micro electrical mechanical systems (MEMS) to assess athlete physical loading and activity profiles. Feedback of this information may support coaches decision-making processes for training prescription, and return-to-

78   play.[10,16,17] For example, when examining the perceptions of practitioners and coaches, these

79   stakehodlers generally agree that feedback of training load data is beneficial to their club.[18,19]

80   Furthermore, coaches, performance-staff, and players rated physical performance feedback as at least

81   'somewhat important' in guiding coaching practice and influencing the practices/behaviours of coaches

82   and players.[10]   While these studies have provided insights into the *what* and *why* of feedback in

83   professional soccer, it is important to understand the mechanisms of *how*. Thus, greater understanding

84   of the mechanisms of feedback employed in professional soccer are required.

85   The aim of the current study is to examine current feedback strategies of performance related

86   information employed by stakeholders in professional male soccer in England. Furthermore, we aimed

87   to establish the use of two-way feedback across the stakeholder groups. Examinations of the behaviours

88   of youth soccer coaches have indicated verbal feedback is one of the most frequently utilised

89   strategies.[20] Likewise, coaches and athletes have exhibited preferences for learning and information

90   sharing through informal sources.[21,22] Due to the increased workforce and regular communication

91   within professional male soccer clubs, it was hypothesised that verbal interactions would be the primary

92   source of feedback (e.g., coaching instructions; conversations).

93

94   **Methods**

95   *Participants*

96   Coaches ($n = 34$), performance-staff ($n = 66$), and players ($n = 39$) working in male professional

97   English soccer clubs voluntarily completed an online survey. For the purposes of this study, professional

98   soccer clubs (time of data collection) were defined as those within the English Premier League (EPL)

99   and Football Leagues (EFL)/tiered academy structure. In line with the EPPP, academies are categorised

100   from category 1 (CAT 1) to category 4 (CAT 4) based upon the support that they offer to their players

101   (i.e., facilities, education, coaching and welfare provision).[13] To meet the inclusion criteria, players were

102   required to be >16yrs and representing the professional development phase (PDP; 16-23yrs) or first

103   (senior) team. Coaches and performance-staff were required to be working full-time with any age group

104   from foundation phase (FP; 9–11yrs), youth development phase (YDP; 12–16yrs), PDP, and first

105   team,[13] there were no stipulations on how much experience participants had in these roles. All

106   participants were provided with an information sheet on the first page of the survey and implied consent

107   was given on submission. For players <18 years of age, parental consent was provided. The procedure

108   was in line with the Declaration of Helsinki and approved by a university research ethics committee

109   (18/SPS/029).

110

111   ***Design***

112   Participants were recruited using social media platforms and directly through the research

113   team's professional network of contacts. 'Snowball' sampling was used to increase visibility where

114   participants were encouraged to circulate to their networks/peers.[23] The survey was open for

115   approximately twenty-weeks with regular promotions. Participants were purposely targeted to represent

116   the three groups.

117

118   ***Methodology***

119   Three separate surveys were created for each group and took an average of 4 ± 1mins to

120   complete. Surveys began with a glossary of terms defining feedback as *"information on performance*

121   *that is used to improve performance and/or development"*. This was followed by several multiple-

122   choice questions examining participant demographics and several key topics relating to feedback

123   including: frequency of providing and/or receiving feedback[19] (to understand how often stakeholders

124   exchange information between each group); timing of providing and/or receiving feedback [19] (to

125   understand the key timepoints when stakeholders exchange important information); and location of

126   providing and/or receiving feedback (to understand where and how important information was

127   exchanged). [10] Each theme was contextually set to explore verbal, written, and visual feedback. Some

128   questions were specific to each group, while some were standardised to allow comparison across

129   groups. Questions included multiple-choice and binary (i.e., yes/no). A free-text response option was

130   added to questions where required, allowing for respondents to provide context. Despite this, no

131   participants opted to add extra detail meaning no analysis of free-text data was required. Questions were

132   developed by the research lead and were based on experience and relevant literature.[10,14,19] The survey

133   was reviewed for content validity via four rounds of discussion with the research team.[21] Two rounds

134   of pilot testing were performed though discussion with two coaches (assistant and lead PDP), two

135   players (one PDP (18yrs) and one first team (22yrs)) and two performance-staff (PDP and first team

136   sport scientists) working in a Championship club (participants were not included in the final data

137   collection). The pilot testing resulted in changes in the wording of some questions/responses to enhance

138   readability and/or understanding (coach = 6; performance-staff = 6; player = 7) which were readdressed

139   and approved by the same stakeholders. The online surveys were then created via platform Survey

140   Monkey (Survey-Monkey, California, USA), and consistented of 19 items for coaches and

141   performance-staff (11 multiple choice; 8 yes/no) and 17 items for players (9 multiple choice; 8 yes/no).

142   Links and QR codes for each survey were created for dissemination via posters, social media posts, and

143   contact emails.

144

145   *Statistical Analysis*

146   Survey responses were exported into Microsoft Excel and subsequently SPSS (IBM, New York,

147   US) for further analysis. For categorical, multiple-choice and binary questions, we calculated

148   frequencies and percentages for each response. To assess between-group differences in responses,

149   magnitude-based inferences were used.[10,19] Proportion ratios were calculated and assessed against the

150   following magnitude scale. Qualitative inferences trivial, small, moderate, large, very large, and

151   extremely large were represented by the ratios 1.00, 1.11, 1.43, 2.0, 3.3 and 10 respectively, with their

152   inverses represented by ratios of 0.9, 0.7, 0.5, 0.3, and 0.1.[24,25]

153

154   **Results**

155   *Participant demographics*

156   Of the 139 respondents (34 coaches, 66 performance staff, 39 players), the coaching group

157   contained: lead coach (59%); assistant coach (24%); head of coaching (12%); academy manager (3%).

158   Performance-staff group included sports scientists (38%); strength and conditioning coaches (9%);

159   performance analysts (26%); physiotherapists (6%); nutritionists (6%); psychologists (3%); heads of

160   sports science and medicine (6%); heads of physical performance (6%); and physiotherapists (6%).

161   Players represented the: U23s (41%); U18s (38%); and first team (21%) squad (**Table 1**). All coaches

162 (100%) and all but one of the players (97%) represented clubs in either the EPL or the EFL

163 Championship (one (3%) respondent was from League 2). Performance-staff were more evenly

164 distributed across leagues represented by clubs in the EPL (37%) and EFL Championship (37%). Within

165 first team environments, players (21%) and performance-staff (39%) were represented more than

166 coaches (5%), resulting in very large and extremely large differences, respectively. Most performance-

167 staff (75%) worked with players >16yrs (PDP or first team), whereas the distribution of coaches through

168 the other phases was more even. Respondents within academies were mainly represented by CAT-1

169 and CAT-2 clubs, yet there was some representation of performance-staff (16%) and coaches (10%)

170 across CAT-3/4 clubs, whereas there was none for players, representing extremely large differences.

171

172 **Insert Table 1 around here**

173

174 ***Type and frequency***

175 　　　Most performance-staff (80%) and coaches (71%) reported that verbal feedback was delivered

176 through daily informal chats. Moreover, verbal feedback was delivered through formal meetings on a

177 daily (performance-staff, 35%; coaches, 27%) and weekly basis (performance-staff, 39%; coaches,

178 45%). Written feedback between performance-staff and coaches was primarily delivered as a

179 combination of daily and weekly reports on a computer screen (62-63%), and e-mails/texts (61-72%;

180 **Table 2**). Verbal feedback from performance-staff to players was delivered through daily (performance

181 staff, 79%; players, 59%) and weekly informal chats (performance-staff, 14%; players, 31%), and

182 instructions during training (performance-staff, 71%; players, 90%). For visual feedback, 51% of

183 players reported receiving video feedback from performance-staff on a weekly basis, however there

184 were small to large differences between groups for the frequency of video feedback due to the varied

185 responses by performance-staff. Most written feedback was delivered daily and weekly through paper-

186 based reports (51-72%) and reports shown on a computer screen (68-74%; **Table 3**). Verbal feedback

187 was delivered by coaches to players through daily informal chats (coaches, 79%; players, 72%) and

188 daily instructions during training/matches (coaches, 91%; players, 92%). Visual feedback was primarily

189 delivered through daily demonstrations (coaches, 79%; players, 67%), weekly video feedback (coaches,

190   74%; players, 77%), and weekly use of a tactics board (coaches, 56%; players, 77%). There was less

191   use of written feedback between coaches and players, with reports shown on a computer screen on

192   weekly basis only being reported 51-56% of the time (**Table 4**).

193

194   **Insert *Tables 2-4* around here**

195

196   *Timing*

197   Most feedback between performance-staff and coaches was delivered after training and

198   matches (>85%), with 68% of performance-staff and 74% of coaches reporting delivering and/or

199   receiving feedback before training. 50-55% reported delivering and/or receiving feedback during

200   training and matches (**Figure 1a**). Feedback from performance-staff to players was delivered after

201   training and matches, with over 86% of respondents from both groups responding *yes* to these times

202   (**Figure 1b)**. Over 72% of players and coaches reported that feedback occurred across all time points

203   (**Figure 1c**).

204

205   **Insert *Figure 1* around here**

206

207   *Location*

208   Between performance-staff and coaches, the most frequent locations were training pitch

209   (coaches, 88%; performance-staff, 74%), e-mail/text (coaches, 82%; performance-staff, 80%), and

210   offices (coaches, 85%; performance-staff, 92%). Amongst performance-staff and players, training pitch

211   (performance-staff, 72%; players, 77%), individual/group meetings (performance-staff, 86%; players,

212   82%), and gym (performance-staff, 72%; players, 85%) had the highest proportion of *yes* responses

213   from both groups. Feedback between coaches and players was primarily delivered on the training pitch

214   (coaches, 100%; players, 100%), in group or individual meetings (coaches, 94%; players, 95%), and in

215   the dressing room (coaches 85%; players, 69%).

216

217   *Two-way feedback*

218   Survey responses to delivering or receiving two-way feedback are shown in **Figure 2**. Two-

219   way feedback within stakeholder groups was highly prevalent, with over 76% of participants responding

220   *yes* to delivering or receiving feedback two-ways. All coaches reported *yes* to delivering feedback to

221   other coaches.

222

223   ***Insert **Figure 2** around here***

224

225   **Discussion**

226   The aim of the present study was to examine the current mechanisms (i.e., what; why; how)

227   underpinning feedback strategies of performance related information in professional male English

228   soccer clubs. The central finding was that the primary source of feedback was verbal and was

229   predominantly delivered in an informal nature, such as daily conversations between stakeholders.

230   Furthermore, it was established that performance feedback between stakeholders was a two-way

231   process, demonstrating there were frequent opportunities where feedback can potentially improve

232   player performance and assist in the reflective elements of the coaching process.

233   A key finding from the survey was the importance of informal communication between

234   stakeholders. Most verbal feedback between performance-staff, coaches, and players was daily and

235   brief conversations. The combination of verbal instructions delivered daily during training and the

236   informal conversations that surround the transfer of data to aid reflections post training/games is

237   consistent with the research examining coaching practices and information sharing in multi-disciplinary

238   teams.[10, 19, 20, 22, 26.] For example, the relatively high frequency of verbal feedback reported by players

239   may be underpinned by their increased prospect of engagement with the feedback process when

240   presented in this way.[10] Coaches typically favour developing their knowledge (e.g., practice design) via

241   informal (collaboration with peers and/or mentor) over formal sources.[27] Thus it is not surprising that

242   the most frequent method of feedback from performance-staff to coaches was informal, supporting

243   previous findings that more opportunities should be provided to aid informal interactions such as shared

244   office spaces, canteens and shared lounges.[10] Furthermore, frequent informal communication methods

245   employed by all stakeholders may be seen as integral to the effectiveness of multidisciplinary teams

246 within professional soccer, as they provided opportunities for shared reflections, learning, and

247 relationship building.[14] Soccer clubs have previously reported that good internal communication among

248 coaches, sports scientists, and medical staff leads to more favourable outcomes, such as lower player

249 injury burdens and higher training and match availability.[28] The data provides further evidence of the

250 value of utilising the power of informal interactions for effective communication between all

251 stakeholders within the professional soccer environment. It may be recommended that stakeholders

252 such as performance-staff look to develop increased interpersonal skills such as knowledge of social

253 contexts, relationship building, and intrapersonal skills such as self-regulation and reflection to deliver

254 meaningful feedback that is purposeful and not 'noise'.[16,29] Education sessions for performance staff

255 and coaches should look to develop interpersonal and communication skills, given the increasing size

256 of multidisciplinary teams in elite professional soccer clubs.

257   The feedback process observed by coaches and performance-staff were indicative of the current

258 coaching process and workflow of stakeholders who operate in professional soccer environments.[30,31]

259 For example, feedback was delivered at a high frequency by performance-staff to coaches in a range of

260 formats (verbal; graphical; written) on a daily/weekly basis (**Table 2**). In addition to informal

261 communication, performance-staff also reported they deliver feedback in formal meetings (74%) and

262 using graph-based data (66%) or email/text/WhatsApp (72%) on a daily/weekly basis. This is not

263 unexpected given previous work examining the nature of feedback from scientists such as performance

264 analysts across a range of sporting contexts.[4,32,33] It has previously been reported that the clarity and

265 timeliness of training load data reports are central for communication.[10,18,19] However, coaches generally

266 agree that high volumes of data and/or poor communication can cause barriers to effective feedback.[10]

267 Without consideration, performance staff may risk an information overload to coaches, an approach

268 which is indicative of feedback strategies that can attenuate understanding/learning.[1] It could be

269 recommended that reducing the amount of information provided to coaches, yet ensuring the correct

270 data is included may bridge the translational gap between data and decision-making.[10,31,34] For instance,

271 principal component analysis of training load data can be applied within professional soccer to reduce

272 the amount of GPS information fed back from sports scientists to coaches.[35] Feedback was delivered in

273   high frequencies and varying formats, however further research is required to understand whether the

274   information provided is perceived to be useful by all stakeholders.

275   The data illustrated that performance-staff primarily provided feedback to coaches before

276   training and after training/matches. This finding is consistent with previous literature indicating that

277   both groups reflected post session and evaluated previous training sessions prior to subsequent

278   training.[10] The higher values in the present study may be reflective of feedback from a broad range of

279   performance-staff rather than physical data alone, fed back by sports scientists. For example, it has been

280   shown that as players progress through age groups they are exposed to an increasing array of feedback

281   providers such as physiotherapists, performance analysts, nutritionists and strength & conditioning staff

282   that provide information to both coaches and players before training sessions.[6] Notwithstanding the

283   nature of the information, these data support the suggestion that feedback of such information facilitates

284   not only the use of reflection and/or review after training or matches[36,37], but also planning and decision-

285   making processes prior to training or matches.[10,19] While information was typically provided by coaches

286   during practice, feedback from performance staff was more rare (**Figure 1**), therefore an 'integrated

287   delivery model' may not be regularly applied currently. For example, research contextualising the

288   physical actions such as high intensity actions/sprints in relation to positional actions (e.g., overlapping

289   runs for full backs) highlights the potential for merging departmental disciplines (i.e., coaching and

290   sports science).[38] Integrated and contextualised feedback of physical, technical, and tactical skills in

291   professional soccer is an area for development, which could enhance the functioning of interdisciplinary

292   teams, thus potentially improving performance and developmental outcomes for players.

293   A further study aim was to identify the use of two-way feedback processes across stakeholder

294   groups. All participants reported they both delivered and received feedback between and within groups,

295   indicating that a two-way interaction exists (**Figure 2**).[7] For instance, two-way interactions between

296   managers/coaches and their support staff, managers/coaches, and their players, as well as

297   managers/coaches and the clubs board, have been shown to be prevalent across different sports

298   settings.[39] For players, the two-way nature of the feedback mechanisms has been shown through

299   athlete's accounts of their involvement in video feedback sessions, demonstrating they are given the

300   opportunity to feedback to their coaches and/or peers.[3,4,5,9] These findings provide further evidence that

301   athletes are no longer seen as just the receivers of feedback, but now play an active role in the process.[32]

302   An agreement between both players and performance-staff indicated that players are also the givers of

303   feedback to both performance-staff and coaches, showing further support for the suggestion that players

304   should be recognised and included within the feedback process.[10,22] The high quantity of two-way

305   feedback together with verbal feedback as the primary source demonstrates that lines of communication

306   are open between all stakeholders, and two-way feedback during daily conversations may be vital to

307   improve performance and development in professional soccer. Professional soccer clubs may look to

308   carefully consider facility design in order to optimise the time, space, and opportunities for two-way

309   feedback to occur. Further research is still warranted to understand the mechanisms that underpin two-

310   way feedback and whether it is effective to inform practice and improve performance.

311

312   **Limitations**

313   With regards to response rate, 139 stakeholders completed the survey across three groups and

314   could be considered low in comparison to the total number of players, coaches, and performance staff

315   in professional soccer. Increased response rates are usually indicative of findings with greater external

316   validity.[40] However, the current response rate is similar to previous survey-based studies examining

317   feedback of training load data in professional soccer clubs.[10,19] The novelty and quality of the data set

318   should also be acknowledged whilst recognising that challenges arise when recruiting participants from

319   coach and player subgroups, thus limiting a full understanding of feedback in professional soccer.

320   Further investigation of coach and player perceptions from a quantitative and qualitative perspective

321   should be recommended. There is also a possibility within the findings of a clustering of responses, as

322   multiple responses were allowed from one club. This was enabled to access as many participants as

323   possible, and to ensure ecological validity of the findings in the applied club environment in which the

324   research was predominantly carried out. It should be acknowledged that responses are from a range of

325   soccer clubs, yet the potential for sampling bias must also be acknowledged when interpreting the

326   survey data for several reasons. Firstly, there is a much higher representation from performance-staff

327   than coaches and players, which may indicate that the reach of the survey through social media and

328   snowball sampling may have resulted in an over representation of participants from this stakeholder

329   group. Therefore, it could be anticipated that response rates were higher amongst this demographic and

330   may skew the results.

331

332   **Practical Applications**

333   Frequent informal communication methods among all stakeholders are integral to the

334   effectiveness of multidisciplinary teams within professional soccer, providing opportunities for shared

335   reflections, learning, and relationship building. Through bespoke training and education sessions,

336   performance staff and coaches should develop interpersonal skills (e.g., social context knowledge,

337   relationship building) and intrapersonal skills (e.g., self-regulation, reflection) to deliver meaningful

338   and purposeful feedback. Reducing the amount of information provided to coaches, while ensuring the

339   inclusion of relevant data, can help bridge the gap between data and decision-making. An approach

340   which optimises the time, space, and opportunity for feedback may be recommended, yet further

341   research is necessary to understand the mechanisms underpinning effective two-way feedback to inform

342   practice and improve performance.

343

344   **Conclusions**

345   Building on previous work in performance analysis, coaching, and training load monitoring,

346   this study examined the *how* of feedback of performance related information in professional soccer in

347   England. Key findings from the survey demonstrated the prevalence of verbal feedback within this

348   environment. Feedback was delivered in several formats but was primarily delivered via daily informal

349   conversations during planning, delivery, and reviewing of practice and matches, thus highlighting the

350   importance of verbal communication in the process of attempting to optimise player development and

351   performance. Stakeholders perceived feedback to be delivered highly frequently, highlighting the many

352   opportunities where it can be utilised by practitioners. Finally, feedback was delivered via a two-way

353   process between all stakeholders, illustrating open channels of communication. Practitioners should aim

354   to optimise their interpersonal and communication skills to capitalise on these frequent verbal feedback

355   opportunities within the professional soccer environment. To improve the process, future research may

356   provide opportunities to further explore stakeholders' perceptions of feedback, their motivations to use

357   these strategies, and their effectiveness in influencing decision-making and informing behaviour

358   change.

359

360   ***Insert **Tables 5-7 as appendices** around here***

361

362

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457   **Figure Captions**
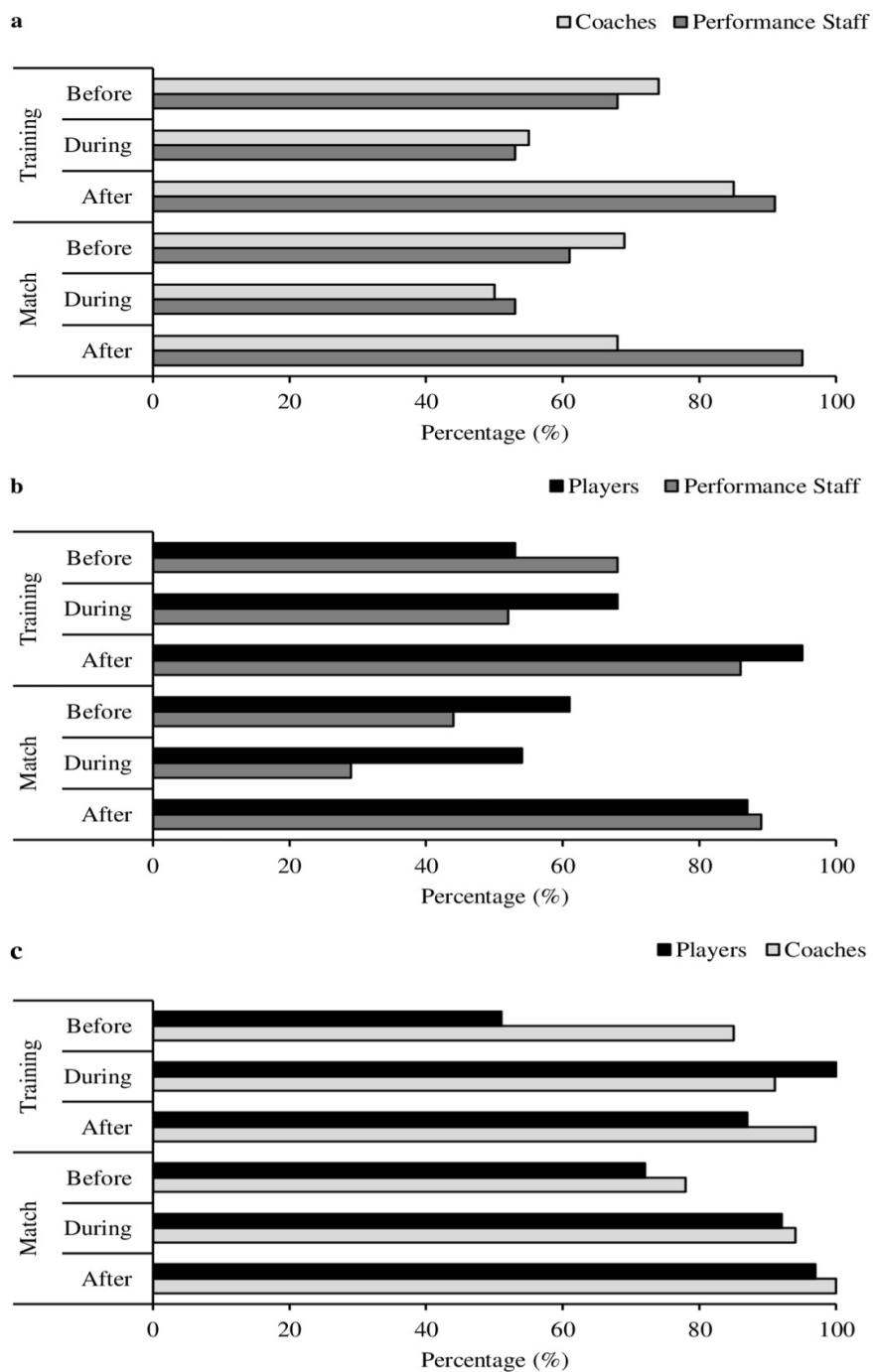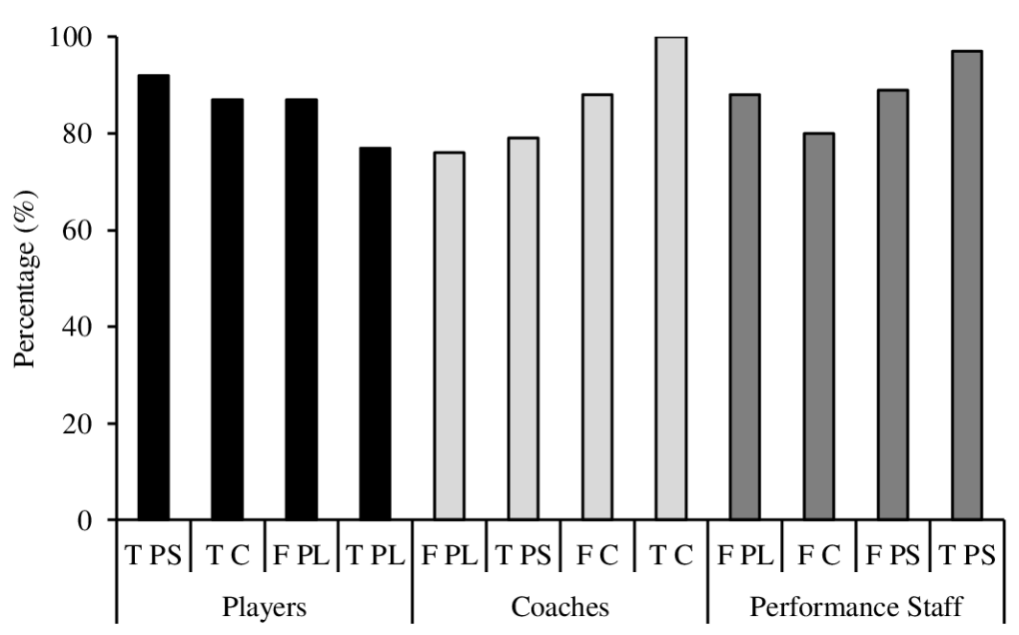

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460   **Figure 1**. Timing of feedback delivery between key stakeholders (a) performance staff (black bars) and

461   coach (light-grey bars), (b) performance staff (dark-grey bars) and player, (c) coach and player.

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Figure 2. Player, coach and performance staff responses to delivering and receiving 2-way feedback between (T = To; F = From) and within groups.

467 **Table 1.** Proportion of league clubs worked with, player age categories, academy status and level of experience represented by the participants. Also included

468 are proportion ratios (coaches: performance staff, coaches: players, performance staff :players) and the qualitative inferences.

469

	Coaches % (no.)	Perf Staff % (no.)	Players % (no.)	Proportion Ratio	Qualitative Inference
*[a]Which league does your senior team/club currently play in?**					
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
*[b]Which team/age group do you currently mainly work with/play for?***					
First Team	5 (2)	39 (35)	21 (8)	0.1; 0.2; 1.9	
Professional Development Phase	41 (18)	36 (32)	79 (31)	1.1; 0.5; 0.5	
Youth Development Phase	36 (16)	17 (15)	0 (0)	2.2; N/A; N/A	
Foundation Phase	16 (7)	8 (7)	0 (0)	2; N/A; N/A	
[c]What is your club's current academy status?					
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

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471 **Footnotes** [a]77 Total responses, with 3 by coaches, 35 by performance staff and 39 by players. *coaches and performance staff only answered if they worked
472 with First Team; [b]172 Total responses, with 44 by coaches, 89 by performance staff and 39 by players. **Professional development phase was further
473 subdivided into U23s and U18s for players. ?*** [c]91 Total responses, with 30 by coaches, 31 by performance staff and 30 by players. ***Participants didn't
474 respond if they selected that they worked with First Team on previous question.

475 **Table 2.** Proportion of performance staff and coach's responses to the frequency of delivery and reception of verbal, visual, and written forms of feedback

476 along with ratio of proportion and qualitative inference for the ratio.

477

		Coaches % (no.)	Perf Staff % (no.)	Proportion Ratio	Qualitative Inference
How often do you give/receive the following types of VERBAL feedback to/from your coach/performance staff?					
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
How often do you give/receive the following types of VISUAL feedback to/from your coach/performance staff?					
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
How often do you give/receive the following types of WRITTEN feedback to/from your coach/performance staff?					
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
	Every 3-6 Months	12 (4)	6 (4)	0.51	Moderate

478

479 **Table 3.** Proportion of performance staff and player's responses to the frequency of delivery and reception of verbal, visual, and written forms of

480 feedback along with ratio of proportion and qualitative inference for the ratio.

481

		Perf Staff % (no.)	Players % (no.)	Proportion Ratio	Qualitative Inference
How often do you give/receive the following types of VERBAL feedback to/from your players/performance staff?					
Informal Chats or	*Never*	5 (3)	3 (1)	1.77	Moderate
Conversations	*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	*Never*	26 (17)	8 (3)	3.35	Very Large
Training/Match	*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
How often do you give/receive the following types of VISUAL feedback to/from your players/performance staff?					
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
How often do you give/receive the following types of WRITTEN feedback to/from your players/performance staff?					
Reports on a Computer	*Never*	17 (11)	13 (5)	1.30	Small
Screen	*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

482

483 **Table 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

484 ratio of proportion and qualitative inference for the ratio.

485

		Coaches % (no.)	Players % (no.)	Proportion Ratio	Qualitative Inference
How often do you give/receive the following types of VERBAL feedback to/from your players/coaches?					
Informal Chats or	*Never*	0 (0)	3 (1)	0.00	Extremely Large
Conversations	*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	*Never*	0 (0)	3 (1)	0.00	Extremely Large
Training/Game	*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
How often do you give/receive the following types of VISUAL feedback to/from your players/coaches?					
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
How often do you give/receive the following types of WRITTEN feedback to/from your players/coaches?					
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

486

487 **Table 5.** Survey questions and possible responses for Coaches.

Question	Type of Question	Possible Responses
What is your current main role at your club?	Multiple Choice	Manager Assistant Manager Coach Assistant Coach Head of Coaching Academy Manager Other (please specify)
How many years experience do you have in your current role?	Multiple Choice	0-1 year 1-3 years 3-6 years 6-9 years 10-12 years 12+ years
Which team/age group do you currently mainly work with? Please indicate all that apply	Multiple Choice	1st Team Professional Development Phase (Under 18s - Under 23s) Youth Development Phase (Under 12s - Under 16s) Foundation Phase (Under 9s - Under 11s) Other (please specify)
Which league does your clubs' 1st team currently play in?	Multiple Choice	Premier League Championship League 1 League 2 Other (please specify)
What is your club's current academy status?	Multiple Choice	Category 1 Category 2 Category 3 Category 4 Other (please specify)
HOW OFTEN do you receive the following types of VERBAL feedback from your performance staff? Informal Chats Formal Meetings Phone Calls Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you receive the following types of VISUAL feedback from your performance staff? Video Demonstrations i.e. technical information	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months

Graph Based Data Other (please specify and describe how often)		Every 3-6 Months
HOW OFTEN do you receive the following types of WRITTEN feedback from your performance staff? Paper Based Print Outs Report on a Computer Screen i.e. laptop shown to you E-Mail/Text Message Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
Do you receive feedback from your performance staff at the following times? Please indicate yes or no. Before Training During Training After Training Before Match During Match After Match Other (please specify)	Binary	Yes No
Do you receive feedback from your performance staff in the following places? Please indicate yes or no. Training Pitch Phone Call E-mail/Text Office Notice Board Gym/Treatment Room Canteen Dressing Room Other (please specify)	Binary	Yes No
HOW OFTEN do you give the following types of VERBAL feedback to your players? Talking to Players Instructions during training/match Phone Calls Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you give the following types of VISUAL feedback to your players? Video Demonstrations i.e. technical information Tactics Board Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you give the following types of WRITTEN feedback to your players? Paper Based Print Outs Report on a Computer Screen i.e. laptop you show them E-Mail/Text Message Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months

Do you give feedback to your players at the following times? Please indicate yes or no. Before Training During Training After Training Before Match During Match After Match Other (please specify)	Binary	Yes No
Do you give feedback to your players in the following places? Please indicate yes or no. Training Pitch Meeting – group or individual Phone Call Dressing Room Notice Boards Gym/Treatment Room Other (please specify)	Binary	Yes No
GIVE any form of feedback (verbal, visual, written, other) to your performance staff? For example, you may tell the sports scientist that the players are looking fit and strong during the last 15 minutes of games at the moment.	Binary	Yes No
GIVE any form of feedback (verbal, visual, written, other) to other coaches?For example, you may sit down for lunch with another coach and tell him what you thought of his session, and what he could improve upon for next time.	Binary	Yes No
RECEIVE any form of feedback (verbal, visual, written, other) from other coaches?For example, you may ask a more experienced coach to observe you coaching and provide you with some examples of how you could improve.	Binary	Yes No
RECEIVE any form of feedback (verbal, visual, written, other) from your players? For example, you may ask the players at the end of the session what they thought of the session and what could be done differently next time.	Binary	Yes No

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494   **Table 6.** Survey questions and possible responses for Performance Staff.

Question	Type of Question	Possible Responses
Please indicate which category best represents your current main role?	Multiple Choice	Sports Scientist Strength & Conditioning Coach Performance Analyst Physiotherapist Doctor Nutritionist Psychologist Head of Sports Science and Medicine Other (please specify)
How many years' experience, in total, do you have in this role?	Multiple Choice	0-1 year 1-3 years 3-6 years 6-9 years 10-12 years 12+ years
Which team/age group do you currently mainly work with? Please indicate all that apply	Multiple Choice	1st Team Professional Development Phase (Under 18s - Under 23s) Youth Development Phase (Under 12s - Under 16s) Foundation Phase (Under 9s - Under 11s) Other (please specify)
Which league does your club currently play in?	Multiple Choice	Premier League Championship League 1 League 2 Other (please specify)
What is your club's current academy status?	Multiple Choice	Category 1 Category 2 Category 3 Category 4 Other (please specify)
HOW OFTEN do you give the following types of VERBAL feedback to your coaches? Informal Chats Formal Meetings Phone Calls Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you give the following types of VISUAL feedback to your coach(s)? Video	Multiple Choice	Never Every Day/Session

Demonstrations i.e. technical information		Every Week/Game
Graph Based Data		Every 1-2 Months
Other (please specify and describe how often)		Every 3-6 Months
HOW OFTEN do you give the following types of WRITTEN feedback to your coach(s)?	Multiple Choice	Never
Paper Based Print Outs		Every Day/Session
Report on a Computer Screen i.e. show them a laptop		Every Week/Game
E-Mail/Text Message		Every 1-2 Months
Other (please specify and describe how often)		Every 3-6 Months
Do you give feedback to your coach(s) at the following times? Please indicate yes or no.	Binary	Yes
Before Training		No
During Training		
After Training		
Before Match		
During Match		
After Match		
Other (please specify)		
Do you give feedback to your coach(s) in the following places? Please indicate yes or no.	Binary	Yes
Training Pitch		No
Phone Call		
E-mail/Text		
Office		
Notice Board		
Gym/Treatment Room		
Canteen		
Dressing Room		
Other (please specify)		
HOW OFTEN do you give the following types of VERBAL feedback to your players?	Multiple Choice	Never
Talking to Players		Every Day/Session
Instructions during training/match		Every Week/Game
Phone Calls		Every 1-2 Months
Other (please specify and describe how often)		Every 3-6 Months
HOW OFTEN do you give the following types of VISUAL feedback to your players?	Multiple Choice	Never
Video		Every Day/Session
Demonstrations i.e. technical information		Every Week/Game
Graph Based Data		Every 1-2 Months
Other (please specify and describe how often)		Every 3-6 Months
HOW OFTEN do you give the following types of WRITTEN feedback to your players?	Multiple Choice	Never
Paper Based Print Outs		Every Day/Session
Report on a Computer Screen i.e. laptop you show them		Every Week/Game
E-Mail/Text Message		Every 1-2 Months
Other (please specify and describe how often)		Every 3-6 Months
Do you give feedback to your players at the following times? Please indicate yes or no.	Binary	Yes
Before Training		No

During Training After Training Before Match During Match After Match Other (please specify)		
Do you give feedback to your players in the following places? Please indicate yes or no. Training Pitch Meeting – group or individual Phone Call Dressing Room Notice Boards Gym/Treatment Room Other (please specify)	Binary	Yes No
GIVE any form of feedback (verbal, visual, written, other) to other members of the performance staff? Yes/No For example, you (the sports scientist) send a report to the physiotherapist with the physical data for an injured player who has been doing rehab.	Binary	Yes No
RECEIVE any form of feedback (verbal, visual, written, other) from other members of the performance staff? Yes/No For example, you (the physiotherapist) are carrying out a rehab session, the sports science staff are monitoring your session live and they tell you how much high intensity distance the player has covered and what percentage of his maximum speed he has achieved.	Binary	Yes No
RECEIVE any form of feedback (verbal, visual, written, other) from your coach(s)? Yes/NoFor example, you (the performance analyst) may sit down with the coach after a game and he may give you his opinion on the game. This will be the information you use to put the post match meeting together.	Binary	Yes No
RECEIVE any form of feedback (verbal, visual, written, other) from your players? Yes/NoFor example, you (the strength & conditioning coach) have a conversation with a player at the end of a gym session. He explains why he avoids doing upper body weights during the session, it makes him feel "top-heavy" and the manager/coach has already told him he is looking heavy and should lose weight.	Binary	Yes No

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500   **Table 7.** Survey questions and possible responses for Players.

Question	Type of Question	Possible Responses
Which team/age group do you currently mainly play for?	Multiple Choice	1st Team Under 23's Under 18's Other (please specify)
What is your club's current academy status?	Multiple Choice	Category 1 Category 2 Category 3 Category 4 Other (please specify)
Which league does your club currently play in?	Multiple Choice	Premier League Championship League 1 League 2 Other (please specify)
HOW OFTEN do you receive the following types of VERBAL feedback from your soccer coach(s)? Talking to coach(s) Instruction during training/match Phone Calls Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you receive the following types of VISUAL feedback from your soccer coach(s)? Video Demonstrations i.e. technical information Tactics Board Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you receive the following types of WRITTEN feedback from your soccer coach(s)? Paper Based Print Outs Report on a Computer Screen i.e. laptop shown to you E-Mail/Text Message Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
Do you receive feedback from your soccer coach(s) at the following times? Please indicate yes or no. Before Training During Training After Training Before Match	Binary	Yes No

During Match After Match Other (please specify)		
Do you receive feedback from your soccer coach(s) in the following places? Please indicate yes or no. Training Pitch Meeting – group or individual Phone Call Dressing Room Notice Board Gym/Treatment Room Canteen Other (please specify)	Binary	Yes No
HOW OFTEN do you receive the following types of VERBAL feedback from your performance staff? Talking to Performance Staff Instructions during training/match Phone Calls Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you receive the following types of VISUAL feedback from your performance staff? Video Demonstrations i.e. technical information Graph Based Data Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
HOW OFTEN do you receive the following types of WRITTEN feedback from your performance staff? Paper Based Print Outs Report on a Computer Screen i.e. laptop shown to you E-Mail/Text Message Other (please specify and describe how often)	Multiple Choice	Never Every Day/Session Every Week/Game Every 1-2 Months Every 3-6 Months
Do you receive feedback from your performance staff at the following times? Please indicate yes or no. Before Training During Training After Training Before Match During Match After Match Other (please specify)	Binary	Yes No
Do you receive feedback from your performance staff in the following places? Please indicate yes or no. Training Pitch	Binary	Yes No

Meeting – group or individual Phone Call Dressing Room Notice Boards Gym/Treatment Room Other (please specify)		
GIVE any form of feedback (verbal, visual, written, other) to your soccer coach(s)? Yes/No For example, at the end of the game the coach asks everyone what their thoughts were on the game and what we could do better next time. You say that you think we could be more aggressive in our individual battles.	Binary	Yes No
GIVE any form of feedback (verbal, visual, written, other) to your performance staff? Yes/No For example, you fill in your wellness questionnaire in the morning before training and say how heavy and sore your legs are feeling, and also you had a really bad sleep last night.	Binary	Yes No
GIVE any form of feedback (verbal, visual, written, other) to your team mates? Yes/No For example, during an analysis session you are asked to give 3 good and 3 bad things that a different unit did during a game (i.e. defenders tell midfielders what they thought).	Binary	Yes No
RECEIVE any form of feedback (verbal, visual, written, other) from your team mates? Yes/No For example, you are playing in a game during training and you play a good ball which opens up an attack for the team, one of the players on your team shouts "what a ball, you're on fire".	Binary	Yes No

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