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Stress Management Strategies in Esports: An Exploratory Online Survey on Applied Practice

Stress Management Strategies in Esports: An Exploratory Online Survey on Applied Practice

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Given the competitive nature of esports (e.g., maintaining focus, adaptive coping (e.g., Leis et al., 2022; Nagorsky & Wiemeyer, 2020; Poulus et al., 2022b) and the increasing interest from practitioners in addressing stress management issues (Watson et al., 2021), empirical evidence on stress management strategies are needed that are tailored to the unique demands of esports (e.g., Cottrell et al., 2019; Leis et al., 2021). To ensure that ethical and professional standards are being met (e.g., Association for Applied Sport Psychology, 2011), it is important to first explore the factors that practitioners perceive to negatively impact the performance of esports players, and the stress management strategies that are currently being used to support these players. Therefore, an online survey of 25 practitioners was conducted with results highlighting a variety of factors that were perceived to negatively impact players' performance such as players' ability to cope and lack of self-confidence. In addition, stress management strategies used before and after competition most frequently included strategies such as imagery, breathing techniques, and social support. Future research directions, limitations, and practical implications are discussed.

Keywords: sport psychology, applied practice, stress, coping, cognition, performance

With emerging evidence suggesting that professional esports players experience a range of psychological demands relating to their performance (e.g., Leis et al., 2022; Poulus et al., 2020, 2022b; Smith et al., 2019), there is a need for evidence-based stress management strategies in esports (e.g., Cottrell et al., 2019; Leis & Lautenbach, 2020). Esports can be defined as an individual or team-based gaming activity that includes competition and ranking systems across amateur and professional levels (Pedraza-Ramirez et al., 2020). Given the competitive demands of esports (e.g., maintaining focus, adaptive coping; Himmelstein et al., 2017; Nagorsky & Wiemeyer, 2020) and the increasing interest from practitioners working on these issues (e.g., Watson et al., 2021), empirical evidence on applied practice in esports is needed (e.g., Leis et al., 2021). This knowledge could help to inform stress management strategies that are oriented on the specific demands of esports (e.g., Cottrell et al., 2019; Leis et al., 2021; Leis & Lautenbach, 2020) and ensure that ethical and professional standards, including competent and conscientious behavior, are being met (e.g., Association for Applied Sport Psychology, 2011; German Society for Sport Psychology, 2003). A pertinent first step to obtain this knowledge is 1) to explore the factors perceived by practitioners to negatively impact the performance of esports players and 2) the stress management strategies these practitioners use to support esports players.

Sport Management Strategies

Although some athletes are able to cope effectively with the demands of the competitive environment, stress management interventions are an important approach to optimize performers' stress experience and performance (e.g., Rumbold et al., 2012; Thomas & Mellalieu, 2008). In other words, stress management interventions can be used to optimize different aspects of the transactional stress process (e.g., appraisal, coping; Rumbold et al., 2012). While these interventions can be applied before, during, and after performance (e.g., Hardy et al., 1996), the athletes' optimal activation and emotional states should play an important role when informing stress management interventions (e.g., Rumbold et al., 2012). Given the dynamic nature of the stress response over time (e.g., in the time to competition; Hanton & Connaughton, 2002; Thomas et al., 2007), different time-frames (i.e., macro-, meso-, micro-level) should also be taken into account when applying these strategies (e.g., Thomas & Mellalieu, 2008). Examples of commonly used stress management interventions by sport psychologists refer to self-talk and pre-performance routines (see meta-analysis by

Brown & Fletcher, 2017). For instance, the use of self-talk (e.g., Fritsch et al., 2020; Walter et al., 2019) and pre-performance routines (e.g., Gröpel & Beckmann, 2017; Lautenbach et al., 2015) have been found to increase performance and decrease stress levels.

In the context of esports, stress management strategies are provided by sport psychologists and/or performance coaches[1]. To best of our knowledge, however, no study has provided insights on stress management strategies in esports. The necessity to close this gap in literature is indicated by research on the demands (e.g., Himmelstein et al., 2017; Nagorsky & Wiemeyer, 2020) as well as stress and coping in the esports environment (Hong & Connelly, 2022; Leis et al., 2022; Poulus et al., 2021, 2022b). For instance, studies with professional players reported stressors such as performance pressure, team issues, and social media (Leis et al., 2022; Poulus et al., 2022a, 2022b; Smith et al., 2019). Whereas Poulus et al. (2022a) indicate that esports players use coping strategies such as mindfulness and emotional regulation (Poulus et al., 2022a), other studies less frequently show the use of stress management strategies such as self-talk and pre-performance routines (Leis et al., 2022; Smith et al., 2019; Trotter et al., 2021). Although sport and esports performance share several similarities (e.g., decision making, reaction time, eye-hand coordination: Nagorsky & Wiemeyer, 2020; Pedraza-Ramirez et al., 2020), key differences such as the reliance on technology and the competitive structure of esports (e.g., constant game updates and changing team rotations; Hollist, 2015) indicate the need to investigate the esports environment. This would allow practitioners to inform evidence-based stress management strategies that are tailored to the specific esports environment.

The Present Study

In contrast to previous research that focused on the perspective of esports players (e.g., Poulus et al., 2021, 2022b; Smith et al., 2019), this study investigates the perspectives of practitioners in esports (i.e., sport psychologists and performance coaches). Although esports research provides first insights into stress and coping, taking this additional perspective into account would advance the understanding and inform evidence-based interventions on a more holistic body of research (Leis et al., 2022). To identify potential factors that could inform the use of stress management strategies, the first aim of this study was to investigate internal and external factors perceived by practitioners to negatively impact esports players' performance. In addition, this study aimed to explore stress management strategies used before and after competition (e.g., Fletcher & Hanton, 2004).

Method

An online survey was created and distributed to gain an overview of factors perceived to negatively impact players' performance and support strategies currently used by sport psychologists and performance coaches working in esports worldwide. The study adopted the quality of survey studies in sport psychology checklist (Q-SSP; Protogerou & Hagger, 2020) and was pre-registered through the Open Science Framework: link blinded for submission.

Participants

To be eligible to participate, participants were required to be (1) currently working as a sport psychologist or performance coach with individual esports players and/or esports teams, (2) over 18 years of age, and (3) able to speak English. A total of 25 participants (7 female) met the inclusion criteria. This sample size was deemed to be acceptable given the sample sizes of similar survey studies of sport psychology practitioners (e.g., $N = 28$, Winter & Collins, 2015a) and considering the relative infancy of these roles in esports[2].

The demographic characteristics of the participants are shown in Table 1. In terms of role titles, eight participants referred to themselves as performance coaches and three as sport psychologists. Other titles were provided, namely performance psychologist ($n = 2$), psychologist ($n = 1$), mental coach ($n = 2$), mental performance coach ($n = 2$), performance manager ($n = 2$), head of player development ($n = 2$), coach ($n = 2$), esports coach ($n = 1$), esports performance coach ($n = 1$), performance specialist ($n = 1$), mental performance

[1] According to Watson et al. (2021) an esports performance coach is not a protected title and the role has no formal definition. The work of a performance coach typically often encompasses mental skills, sport and exercise science, personal training, nutrition, group dynamics, and communication. In contrast, the role of a sport psychologist is a protected title in some regions such as the USA and UK (e.g., Morris et al., 2003). Applied sport psychology has two main functions: diagnostic and assessment (e.g., need evaluation) and intervention (e.g., consulting in special problem situations; (FEPSAC, 1995).

[2] As an illustration, only half of the 10 teams competing in the highest-level League of Legends league in Europe (i.e., the League of Legends European Championship) reported employing a sport psychologist or performance-related role (Fandom, 2023).

coach (*n* = 1), and team development coach (*n* = 1). A number of participants provided multiple role titles. Five participants were affiliated with a sport psychology governing body (i.e., Association for Applied Sport Psychology, British Psychological Society, European Federation of Sport Psychology, German Association of Sport Psychology) and three participants reported being in training to become a sport psychologist.

Four participants were located in Germany, three in France, three in the United States, two in Spain, two in England, and one each in Belgium, Canada, Colombia, Finland, Israel, the Netherlands, Portugal, Slovenia, Spain, Switzerland, and Turkey. Participants reported working with players in esports such as League of Legends (*n* = 19), Counter-Strike: Global Offensive (*n* = 9), *FIFA* (*n* = 7), Valorant (*n* = 6), Fortnite (*n* = 5), Rainbow Six: Siege (*n* = 5), and Overwatch (*n* = 5). Seven participants (28 %) consulted in one esport only and 18 participants (72 %) consulted in multiple esports. A number of participants worked in different leagues within the same esport, for example the top-tier of League of Legends competition in Europe, North America and Germany. Finally, 20 of the 25 practitioners worked with athletes in traditional sports such as soccer (*n* = 7), basketball (*n* = 5), and hockey (*n* = 3).

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Table 1

Participant Demographics (*N* = 25)

Characteristic	
Gender (*n*)	
Female	7 (18%)
Male	18 (72%)
Age (years)	
M	28.84 (*SD* = 5.93)
Range	23 to 52 years
Experience (years) in …	
given role (e.g., psychologist)	4.91 (*SD* = 5.46)
coaching an esport	2.88 (*SD* = 2.60)
working with athletes in traditional sports	2.96 (*SD* = 3.54)
Payment as practitioners	
Yes	92% (*n* = 23)
No	8% (*n* = 2)

Data Collection

Following ethical approval from the institutional ethics committee (name of university blinded for submission), an invitation to the online survey was sent to practitioners, shared with members of the Esports Research Network, and posted on the personal twitter accounts of three members of the authorial team. After providing their consent, participants completed the online survey, which lasted 16.25 minutes on average. Data collection lasted 15 weeks and took place between March and June 2021 with an average 143 individuals accessing the online survey each week (*N* = 2,142). Of these, 93 individuals continued with the online survey after the first page (i.e., general information and consent) with further participants withdrawing on the following pages: demographic data (page 2; *n* = 23), perceived performance factors and stress management strategies (page 3; *n* = 33), and personal data (page 4; *n* = 1). Eleven out of 36 participants were excluded as they were not sport psychologists or performance coaches.

Instrument

The initial draft of the online survey was developed by A and E; two researchers with a scientific background in stress (management). The survey was then discussed with B and D (i.e., both performance coaches and esports researchers), with an additional esports researcher and sport psychologist invited to provide feedback on the survey. After creating the final version using the software questback, EFS Fall 2020, the survey was piloted with two sport psychologists (one working in traditional sports and one working in esports). Based on the feedback provided, one question out of 20 questions was modified (see final version: link blinded for submission).

Demographic Data

Questions on demographic data covered the following 13 aspects: age, gender, nationality, country of residence, activity as sport psychologist or performance coach in esports (i.e., yes/no), role title in esports (e.g., performance coach), supported esports games, years of working as a practitioner in esports, highest level of competition, payment as practionier (i.e., yes/no), current/valid license of certificate as sport psychologist or performance coach, years of working as a practitioner overall, experience in working with athletes (i.e., type of sport and duration in years).

Factors Negatively Impacting Performance

The survey included two open questions on internal and external factors that were perceived to negatively impact players' performance and stress management strategies. While internal factors referred to personal factors (i.e., "*What do you think are the three main personal (internal) factors that negatively influence the performance of esports players?"*), external factors referred to the competitive environment of esports (i.e., "*What do you think are the three main external factors that negatively influence the performance of esports players?"*).

Stress Management Strategies

.Four open questions on stress management referred to strategies used (1) 1–2 hours before competition, (2) immediately before competition, (3) immediately after competition, and (4) 1–2 hours after competition (e.g., "Which three strategies do you most frequently use to support players experiencing stress 1–2 hours prior to the start of a competitive match?"). These different time periods were discussed with two esports practitioners and provided the opportunity to explore differences in practitioners use of stress management strategies relating to players' possible anticipatory stress response and post-competition stress response. Although all practitioners were asked what strategies they would provide immediately before competition, one additional question was used to understand whether practitioners can provide players with support immediately before competition (i.e., "Do you usually have access to players to provide support in the 20 minutes before a competitive match?").

Data Analysis

Data were first extracted into an Excel spreadsheet and participants were checked for eligibility criteria. After becoming familiar with the data, demographic data, internal and external factors, and stress management strategies were analyzed by two researchers independently. During this process, empirical evidence on stress management strategies and sport psychological interventions was consulted (e.g., Brown et al., 2017; Rumbold et al., 2012). The frequency of equal responses regarding internal and external factors and stress management strategies (i.e., 1–2 hours before, immediately before, immediately after, and the hour after competition) was counted for each category. Given the anonym responses of the participants, it was not possible to clarify or ask for further details once the survey was completed. This resulted in an issue to know whether participants differentiated between mindfulness and meditation as strategies. Since both strategies were reported separately from one another, the results address both responses as individual – and not combined – strategies. Afterwards both researchers performed the analysis, data were compared and disagreements were resolved by discussion.

Results

Twenty-five eligible participants completed the online survey. In line with the aim of this study, the findings are presented in two main sections: factors perceived to negatively impact performance and stress management strategies.

Factors Negatively Impacting Performance

The majority of sport psychologists and performance coaches reported that a limited ability to cope with stress and emotions (n = 18) was an internal factor negatively impacting performance. Practitioners also reported the following factors: lack of self-confidence (n = 15), an unhealthy lifestyle (e.g., diet, sleep, exercise; n = 9), grinding mentality (i.e., playing as many games as possible; n = 7), lack of attention (n = 6), mental fatigue (n = 4), lack of motivation (n = 4), lack of self-awareness (n = 3), poor communication skills (n = 3), inadequate preparation (n = 2), lack of experience (n = 2), values (n = 1), empathy (n = 1), negative self-talk (n = 1), and outcome based expectations for performance (n = 1).

On the other hand, external factors impacting performance negatively included: schedule issues (e.g., lack of free time, late wake up time; n = 14), an unprofessional environment (n = 10), performance pressure (e.g., pressure from the audience; n = 7), communication issues (n = 5), team issues (n = 4), job insecurity (n = 3), lack of knowledge about the game (n = 2), external criticism (n = 2), social support (n = 1), and resources for personal development (n = 2), low psychological safety (n = 1), job insecurity (n = 1), and constant game changes (n = 1).

Stress Management Strategies

As shown in Table 2, the most frequently utilized strategies 1–2 hours before competition were breathing techniques (*n* = 10), imagery (*n* = 9), pre-performance routines (*n* = 6), physical exercise (*n* = 6), meditation (*n* = 6), mindfulness (*n* = 4), and self-talk (*n* = 3). Eight participants reported to have access to players to provide support immediately before a competitive match, nine participants sometimes had access to players, and

Table 2

Top 15 Stress Management Strategies Reported by the Practitioners

Stress management strategy	A	B	C	D	Brief definition	Further readings
Breathing techniques	10	11	6	0	… techniques "to affect specific physical and psychological states, such as relaxation or activation, that might benefit physical performance. Techniques include slow-paced breathing, fast-paced breathing, voluntary hyperventilation, breath holding, and alternate- and uni-nostril breathing." (Laborde et al., 2022, p. 1)	T: Borges et al. (2021) A: Laborde et al. (2022)
Imagery	9	8	0	1	… "the creation and re-creation of an experience generated from memorial information, involving quasi-sensorial, quasi-perceptual, and quasi-affective characteristics, that is under the volitional control of the imager, and which may occur in the absence of the real stimulus antecedents normally associated with the actual experience." (Morris et al., 2005, p. 19)	T: Simonsmeier et al. (2021) A: Williams & Cumming (2012); Koehn & Díaz-Ocejo (2022)
Pre-performance routines	6	2	0	0	… a set of cognitive and behavioral elements executed before performance execution. (Cotterill, 2010)	T: Cotterill (2010) A: Faggiani et al. (2012)
Physical exercise	6	5	0	3	… "any bodily movement produced by skeletal muscles that results in energy expenditure." (Caspersen et al., 1985, p. 126)	T: Toth et al. (2020) A: Rio et al. (2022)
Meditation	6	3	4	1	… "a form of mental training that aims to improve an individual's core psychological capacities, such as attentional and emotional self-regulation. Meditation encompasses a family of complex practices that include mindfulness meditation, mantra meditation, yoga, tai chi and chi gong." (Tang et al., 2015, p. 213)	T: Sedlmeier et al. (2012) A: De Petrillo et al. (2009)
Self-talk	3	5	0	0	… (somewhat) dynamic, multidimensional, verbalizations/statements to the self, that fulfill at least two functions: instructional and motivational (Hardy, 2006)	T: Tod et al. (2011) A: Van Raalte et al. (2017)
Journaling	0	0	6	5	e.g., a form of reflection-on-action which may be used to review past experiences, plan for the future, or to log training and development	T: Frentz et al. (2020) A: Tan et al. (2016)

Social support	0	0	6	8	…"an exchange of resources between at least two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient." (Shumaker & Brownell, 1984, p. 13).	T: Gabana et al. (2017); Rees & Hardy (2000) A: Freeman et al. (2009)
Walking	1	0	5	1	e.g., a form of physical activity known to confer physical and mental health benefits	T: Marselle et al. (2013) A: Kelly et al. (2018); Korpela et al. (2016)
Providing space	0	0	3	4	e.g., being available (e.g., hanging out; Andersen, 2000), but letting players have time on their own to process their thoughts and emotions, setting clear boundaries with the player and giving them opportunities to practice psychological skills independently from the practitioner.	T: Sharp & Hodge (2014) A: -
Progressive muscle relaxation	1	2	0	0	… first identified by Jacobson in 1934 as tensing and releasing of 16 muscle groups. Wolpe adapted it for use with systematic desensitization in 1948 and Bernstein and Borkovec in 1973 studied adjustments to the technique to fit cognitive behavioral stress management. (McCallie et al., 2006)	T: Pelka et al. (2016) A: Hashim et al. (2011); Navaneethan & Rajan (2010)
Attention regulation	2	0	3	1	e.g., shift of focus, attentional focus manipulation, having set methods to distract them	T: Yamada et al. (2022) A: (Hansen & Haberl (2019, p. 47–58)
Mindfulness	4	2	0	1	… "paying attention in a particular way: on purpose, in the present moment and non-judgementally." (Kabat-Zinn, 1994, p. 8) "Formal practice refers to meditation of which there are several forms, while informal practice refers to being mindful outside of meditation while undertaking daily activities such as eating and walking". (Kakoschke et al., 2021, p. 3)	T: Bühlmayer et al. (2017) A: Henriksen et al. (2020)
Music listening	2	0	1	0	e.g., listening to music as a relaxation or activation strategy	T: Terry et al. (2020) A: Elliott et al. (2014)

Note. A = 1–2 hours before competition; B = immediately before competition; C = immediately after competition; D = 1–2 hours after competition; T = theoretical reference; A = applied reference

eight participants indicated that they did not have access. Responses regarding stress management strategies utilized immediately before competition most frequently included breathing techniques (n = 11) , imagery (n = 8), physical exercise (n = 5), and self-talk (n = 5). Immediately after competition, participants reported stress management strategies such as breathing techniques (n = 6), social support (n = 6), journaling (n = 6), and walking (n = 5). The most frequently utilized strategies 1–2 hours after competition included social support (n = 8), journaling (n = 5), and providing space (n = 4). Strategies less frequently reported over the course of a competition ($n \leq 2$) and not illustrated in Table 2 included aspects such as massage, psychoeducation, stretching, goal-setting, and sleep optimization.

Discussion

The purpose of this work was to provide initial insights into the internal and external performance factors perceived by sport psychological practitioners to impact esports performance and the stress management strategies used by these practitioners before and after competition.

Factors Negatively Impacting Performance

This study identified a range of internal and external factors that practitioners believed impacted players' performance. In line with our assumption on the relevance of stress and previous esports research, external factors most frequently related to schedule issues, an unprofessional environment, and external pressure (e.g., audience), while internal factors most frequently related to stress, emotions and coping (e.g., anxiety and emotional regulation), self-confidence, attention, and an unhealthy lifestyle (e.g., poor sleep habits; Leis et al., 2022; Poulus et al., 2022b; Smith et al., 2019). Similarly, empirical studies from traditional sport have shown that performance is positively impacted by group cohesion (see meta-analysis by Carron et al., 2002), effective emotional regulation (e.g., Martinent & Ferrand, 2015; Wagstaff, 2014), self-confidence (see meta-analysis by Woodman & Hardy, 2003), and sleep (see review by Fullagar et al., 2015). However, Trotter et al. (2021) reported less social support, self-regulation, and psychological skill use in esports players compared to traditional athletes. Addressing aspects such as an unhealthy lifestyle, coping strategies, and schedule issues seems to be of significant importance in esports due to short- and long-term effects associated with prolonged game play including lower levels of general and mental health (e.g., Credeur et al., 2019; Kocadağ, 2020; Yin et al., 2020). Overall, it is necessary to also investigate performance (e.g., Sharpe et al., 2022) and health related aspects in esports (e.g., Leis et al., 2021) such as sleep and self-confidence, and provide players with evidence-based interventions in the future (e.g., Brown & Fletcher, 2017; Rumbold et al., 2012).

Stress Management Strategies

Breathing techniques, imagery, and physical exercise were the most frequently reported strategies both 1–2 hours and immediately before competition. In contrast, practitioners more often acknowledged to utilize pre-performance routines and meditation 1–2 hours before a competitive match. While previous research primarily provided insights into players coping strategies such as imagery and physical exercise (e.g., Leis et al., 2022; Smith et al., 2019), the present study demonstrates additional techniques being used before competition by practitioners such as breathing, music, walking, and progressive muscle relaxation. In general, practitioners most frequently provided interventions that can be used to modify players psychophysiological responses before competition and/or direct their attention (e.g., Eberth & Sedlmeier, 2012; Laborde et al., 2021). In comparison, motivating or activating techniques (e.g., self-talk and physical exercise) were used less often by our sample. An explanation for this result might be related to the fact that fewer practitioners were trained as sport psychologists and had more generic sport-science backgrounds. However, additional research is needed to examine players' arousal level before competition and practitioners' decision making behind selecting relevant strategies in order to move beyond speculation.

Social support, walking, and journaling were the most frequently reported strategies used immediately after competition. Previous research has primarily highlighted the importance of social support and communication in esports (Himmelstein et al., 2017; Leis et al., 2022; Smith et al., 2019; Trotter et al., 2021). Although Trotter et al. (2021) reported a positive correlation between in-game rank and higher scores in social support, self-regulation, and psychological skill use, esports players demonstrated lower levels of social support than traditional athletes. Reviews suggest that the age of athletes positively relates to the repertoire of coping strategies and effective coping (Compas et al., 2001; Holt et al., 2005; Nicholls & Polman, 2007). This

seems important as comparisons between athletes in traditional sports and esports players have demonstrated differences in the average age. In detail, athletes in major league baseball, the national hockey league, and national basketball association league show an average age between 26.01 and 29.70 years (Baseball Reference, 2022; NBA, 2022; Sorensen, 2022). In contrast, players in League of Legends, StarCraft II, and Counter-Strike: Global Offensive reported an average age between 21.20 and 23.04 years (ESPN, 2017). The importance of social support and communication with others represent available coping resources that could influence their appraisal of a competitive situation (Arnold et al., 2018; Lazarus, 1999).

This is supported by evidence that highlights the importance of social support (e.g., Hayward et al., 2017; Kristiansen & Roberts, 2010) as well communication (e.g., Falconier & Kuhn, 2019; Leis et al., 2022) on coping. Walking, on the other hand, been associated with various health benefits and improved processing speed and executive function in competitive gamers (DiFrancisco-Donoghue et al., 2021), although evidence for the relationship between walking and anxiety, psychological stress, and well-being is limited (e.g., Kelly et al., 2018). By contrast, stress management strategies such as journaling (e.g., Smyth, 1998) have not been reported in previous qualitative research on esports to date. While these strategies are usually introduced by sport psychologists and/or performance coaches, these professional roles are not yet present in all esports teams. Thus, players may have limited knowledge of these strategies or how to use them.

Limitations

A primary limitation of the present study is the sample size of 25 practitioners. Specifically, it is noteworthy that only eight participants (32%) were licensed or in training as sport psychologists. Beside country specific differences in certification and licensure (e.g., Morris et al., 2003), licensed sport psychologists might have not entered esports due to reasons such as its novelty as a profession, issues of recognizing esports as a domain of sport and exercise psychology (e.g., Leis et al., 2021), lack of (evidence-based) knowledge on the specific environment (e.g., Pedraza-Ramirez et al., 2020; Reitman et al., 2020), and being established as practitioners in traditional sports. While training or contact hours of practitioners were not recorded in the present study, the average experience of practitioners was also low at 2.88 years of experience in esports (*SD* = 2.60). Both the training and experience levels are especially striking when compared to, for example, the "experienced practitioner" sample of Winter and Collins (2015a) that had an average of 18 years' (*SD* = 5.02) practice in sport psychology and were all accredited to a representative body for (sport) psychology in the United Kingdom. Although no differences for age, gender, experience, and qualification were indicated for stress management strategies being reported in posterior explorative analyses, future research should investigate possible differences to inform appropriate support strategies. Furthermore, no information on practitioners' educational background beside license or certificate as sport psychologist or performance coach was collected. However, research on the relationship between practitioner and selection and effectiveness of treatments also seem to be missing in the field of clinical psychology (e.g., 1 out of 39 studies reported therapist-treatment allegiance; Falkenström et al., 2012).

Moreover, this study was a cross-sectional and closed survey-based study of practitioners' stress management strategies. As such, this study does not allow to make claims about the effectiveness of identified stress management strategies. The findings also offer limited explanation of the decision-making process that led to practitioners choosing these strategies over others, their respective professional philosophies, or their intervention plan and delivery methods. This seems crucial because a practitioner's choice of theoretical paradigm, intervention techniques and methods is determined by their professional philosophy (see Poczwardowski et al., 2004). It is also important to examine why practitioners select a certain support strategy over others (Winter & Collins, 2015b), how support is carried out (face-to-face vs. online, individual vs. group setting), and how much practitioners know about their clients. Given the study design, however, this could not be controlled in sufficient detail. Illuminating this would advance the level of support for novice trainees, who will require considerable training in the application and practice of sport psychology (Fletcher & Maher, 2014), and ultimately benefit the recipients of their support.

Future Research

Although this study provided insights into perceived performance factors and the stress management strategies applied by practitioners in esports, knowledge about specific esports games (e.g., League of Legends), specific situations (e.g., competitive or cooperative activities), settings (e.g., individual or team

based), the decision-making process behind stress management strategy selection, and the effectiveness of those strategies is still needed. In other words, moderators such as personal and situational characteristics need to be included when assessing stress management strategies in future studies.

Research has suggested that the outcome of stress management interventions is moderated by several aspects such as age, stress appraisal, competitive level, specific demands played on performers, and the period of time that strategies are provided (Moore et al., 2015; Nagorsky & Wiemeyer, 2020; Rumbold et al., 2012, 2018). Therefore, future studies should investigate how practitioners in esports assess players' psychological needs (i.e., need analysis), create a working model that guides future decisions (i.e., case formulation; Keegan, 2020), and assess the effects of identified strategies in more detail to inform evidence-based interventions (e.g., Fletcher & Hanton, 2004). In other words, research should investigate how the applied sport psychology process works in esports (see model by Beckmann & Elbe, 2008). For instance, studies could investigate individual esports (e.g., League of Legends) and the relative efficacy of strategies according to gender, competitive setting, long-term effects, and objective performance outcomes (e.g., Brown & Fletcher, 2017). In order to investigate the effects of stress management strategies on performance outcomes, however, a greater understanding of performance indicators within specific esports is needed (Sharpe et al., 2022). Future research that adopts qualitative approaches should investigate the decision-making processes of practitioners in esports who use stress management strategies, particularly those identified in the current study (e.g., breathing and imagery). Similarly, understanding the characteristics of helpful practitioners in esports can inform training, supervision, and continued professional development of trainees and practioners (see review by Tod et al., 2022).

Practical Implications

In line with previous research (e.g., Leis et al., 2022; Poulus et al., 2022b), the present study suggests that practitioners should consider a variety of internal (e.g., attention and emotional regulation) and external factors (e.g., schedules and performance pressure) when planning intervention strategies. However, the way these results will be used is dependent upon the practitioners' philosophical assumptions that inform aspects such as their philosophy of practice (e.g., practitioner-led and client-led), specific role/s (e.g., expert and supporter), and need analysis methods (e.g., qualitative and quantitative methods; Keegan, 2020). The strategies shared by the participants in the current study reflect elements of the cognitive behavioural branch of sport psychology practice (e.g., cognitive behavioural therapy, mindfulness and acceptance approaches, psychological skills training), which is traditionally more practitioner-led. It's important to note that other approaches to sport psychology may be utilized by qualified practitioners, for example psychodynamic, person centered, and existential (Holt & Strean, 2001). Further research is needed to explore the varying approaches to sport psychology within esports.

Mindfulness and meditation strategies were utilized by nine out of 25 practitioners. Benefits of meditation are frequently relayed in the media (Van Dam et al., 2018), even though potential side effects are important to consider. Van Dam et al. (2018) reported that more than 20 case reports or observational studies found meditation-related experiences to be distressing enough to require additional treatment due to instances such as psychosis, anxiety, or panic. Although esports players discussed the benefits of mindfulness for performance (Poulus et al., 2022a), it is vital to also consider the negative impact some strategies may have upon esports players in order to reduce harm. This is particularly pertinent as recent studies have found a high prevalence of ill mental health within professional esports players (Smith et al., 2022).

In our view, interventions should be built on an appropriate evidence base, coherent with an established professional philosophy, and tailored to individual players and specific esports games (e.g., Cottrell et al., 2019). This includes informing coaches and staff about the aims and content of the (sport psychology) intervention (e.g., Henriksen et al., 2014; Watson et al., 2021). Indeed, involving key actors within the players' environment (e.g., coaches, parents) seems important in order to influence their development, individual and team performance, and establish open lines of communication within that environment (e.g., Henriksen et al., 2014). Consequently, team building could be used to increase the availability of social support and help players with communication issues (e.g., teammates not listening, not following instructions; Smith et al., 2019) and overall team functioning (e.g., Leis et al., 2022).

In addition, promoting physical exercise in esports seems promising in order to impact psychological and physiological stress and performance given that this aspect was highlighted in both previous research (e.g., Belk et al., 2021; Leis et al., 2022; Smith et al., 2019)

and again in the present study. Furthermore, emotional regulation strategies such as breathing techniques (e.g., Laborde et al., 2021, 2022; Zaccaro et al., 2018) and self-talk (see review by Hatzigeorgiadis et al., 2014) could be effective methods to support players before and during competition. Moreover, it seems appropriate to combine psychological strategies (e.g., imagery and breathing techniques) as well as social support (e.g., provided by sport psychologists/performance coaches) to achieve greater benefits than only providing one stress management strategy (Brown & Fletcher, 2017; Rumbold et al., 2012).

Nevertheless, sport psychologists and performance coaches especially should be aware of the limitations of the present study as well as the functions and limitations of their role (Watson et al., 2021). For instance, sport psychologists could provide support such as team building strategies, performance coaches could coordinate and optimize group activities (Watson et al., 2021). Watson et al. (2021) also suggest that qualified sport psychologists are to be responsible for individual, one-to-one consultations, with performance coaches and unliscened practitioners working at a group or organisational level. Delivering support strategies with a long-term focus would enhance success (e.g., Henriksen et al., 2019), however, esports players currently experience frequent and constant changes in teams, members, and coaching staff, perhaps due to the relatively short competitive seasons (e.g., a single League of Legends split might last three months).

Conclusion

This is, to the best of our knowledge, the first study that sought to gain insights into sport psychologists' and performance coaches' perceptions of factors that negatively impact performance and their use of applied stress management strategies in esports. Further research build on the provided insights and investigate aspects such as the effectiveness of certain stress management strategies, moderating factors, and the case form formulation process that led to certain strategies being selected. From a practical perspective, this study suggests that practitioners should consider involving players' whole environment, provide team building suited to esports quickly changing environment, constant social support, and emotion regulation strategies. Importantly, sport psychologists or performance coaches should be aware of the functions and limitations of their role (e.g., Watson et al., 2021).

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author A, upon reasonable request.

Author Contributions

Oliver Leis: Conceptualization, software, formal analysis, writing original draft; **Matthew Watson:** Writing, reviewing and editing, english editing; **Laura Swettenham:** Writing, reviewing and editing, visualization; **Ismael Pedraza-Ramirez:** Writing, reviewing and editing; **Franziska Lautenbach:** Conceptualization, writing, reviewing and editing.

References

Andersen, M. B. (2000). Beginnings: Intakes and the initiation of relationships. In M. B. Andersen (Ed.), Doing sport psychology (pp. 3–16). *Human Kinetics*.

Arnold, R., Edwards, T., & Rees, T. (2018). Organizational stressors, social support, and implications for subjective performance in high-level sport. *Psychology of Sport and Exercise, 39*, 204–212.

Association for Applied Sport Psychology. (2011). *Ethics code: AASP ethical principles and standards.* https://appliedsportpsych.org/about/ethics/ethics-code/

Baseball Reference. (2022). 2022 Major League Baseball Attendance & Team Age. https://www.baseball-reference.com/leagues/majors/2022-misc.shtml

Beckmann, J., & Elbe, A.-M. (2008). *Praxis der Sportpsychologie im Wettkampf-und Leistungssport.* Spitta Balingen.

Borges, U., Lobinger, B., Javelle, F., Watson, M., Mosley, E., & Laborde, S. (2021). Using slow-paced breathing to foster endurance, well-being, and sleep quality in athletes during the COVID-19 pandemic. Fr*ontiers in Psychology, 12*, 624655.

Brown, D. J., & Fletcher, D. (2017). Effects of Psychological and Psychosocial Interventions on Sport Performance: A Meta-

Analysis. *Sports Medicine*, *47*(1), 77–99. https://doi.org/10.1007/s40279-016-0552-7

Bühlmayer, L., Birrer, D., Röthlin, P., Faude, O., & Donath, L. (2017). Effects of mindfulness practice on performance-relevant parameters and performance outcomes in sports: A meta-analytical review. *Sports Medicine*, *47*(11), 2309–2321.

Carron, A. V, Colman, M. M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A *meta analysis. Journal of Sport and Exercise Psychology*, *24*, 168–188. https://doi.org/https://doi.org/10.1123/jsep.24.2.168

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. P*ublic Health Reports*, *100*(2), 126.

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: problems, progress, and potential in theory and research. *Psychological Bulletin*, *127*(1), 87. https://doi.org/https://doi.org/dqdvhh

Cotterill, S. (2010). Pre-performance routines in sport: Current understanding and future directions. International Review of Sport and Exercise Psychology, 3(2), 132–153.

Cottrell, C., McMillen, N., & Harris, B. S. (2019). Sport psychology in a virtual world: Considerations for practitioners working in eSports. *Journal of Sport Psychology in Action*, *10*(2), 73–81. https://doi.org/10.1080/21520704.2018.1518280

Credeur, D. P., Miller, S. M., Jones, R., Stoner, L., Dolbow, D. R., Fryer, S. M., Stone, K., & McCoy, S. M. (2019). Impact of prolonged sitting on peripheral and central vascular health. T*he American Journal of Cardiology*, *123*(2), 260–266. https://doi.org/10.1016/j.amjcard.2018.10.014

De Petrillo, L. A., Kaufman, K. A., Glass, C. R., & Arnkoff, D. B. (2009). Mindfulness for long-distance runners: an open trial using Mindful Sport Performance Enhancement (MSPE). J*ournal of Clinical Sport Psychology*, *3*(4).

Eberth, J., & Sedlmeier, P. (2012). The Effects of mindfulness meditation: A meta-analysis. *Mindfulness*, *3*(3), 174–189. https://doi.org/10.1007/s12671-012-0101-x

Elliott, D., Polman, R., & Taylor, J. (2014). The effects of relaxing music for anxiety control on competitive sport anxiety. European Journal of Sport Science, 14(1), 296–301.

ESPN. (2017). Average age in esports vs. major sports. https://www.espn.com/esports/story/_/id/20733853/the-average-age-esports-versus-nfl-nba-mlb-nhl

Faggiani, F., McRobert, A. P., & Knowles, Z. (2012). Developing pre-performance routines for acrobatic gymnastics: a case study with a youth tumbling gymnast. *Science of Gymnastics Journal*, *4*(2).

Falconier, M. K., & Kuhn, R. (2019). Dyadic coping in couples: A conceptual integration and a review of the empirical literature. *Frontiers in Psychology*, *10*, 571.

Falkenström, F., Markowitz, J. C., Jonker, H., Philips, B., & Holmqvist, R. (2012). Can psychotherapists function as their own controls? Meta-analysis of the crossed therapist design in comparative psychotherapy trials. T*he Journal of Clinical Psychiatry*, *73*(5), 16281. https://doi.org/https://doi.org/f223rw

Fandom. (2023). *League of Legends Wiki. LCS 2023 Spring Season*. https://lol.fandom.com/wiki/League_of_Legends_Esports_Wiki

FEPSAC. (1995). *Position statements - 1 . Definition of sport psychology*. https://www.fepsac.com/wp-content/%0Auploads/2019/02/sport-psychology.pdf

Fletcher, D., & Hanton, S. (2004). A meta-model of stress, emotions and performance: Practical implications for applied sport psychologists. A*nnual Meeting of the British Association of Sport and Exercise Sciences.*

Fletcher, D., & Maher, J. (2014). Professional competence in sport psychology: Clarifying some misunderstandings and making future progress. J*ournal of Sport Psychology in Action*, *5*(3), 170–185. https://doi.org/https://doi.org/10.1080/21520704.2014.965944

Freeman, P., Rees, T., & Hardy, L. (2009). An intervention to increase social support and improve performance. *Journal of Applied Sport Psychology*, *21*(2), 186–200.

Frentz, D. M., McHugh, T.-L. F., & Mosewich, A. D. (2020). Athletes' experiences of shifting from self-critical to self-compassionate approaches within high-performance sport. *Journal of Applied Sport Psychology*, *32*(6), 565–584.

Fritsch, J., Jekauc, D., Elsborg, P., Latinjak, A. T., Reichert, M., & Hatzigeorgiadis, A. (2022). Self-talk and emotions in tennis players during competitive matches. J*ournal of Applied Sport Psychology*, *34*(3), 518–538. https://doi.org/10.1080/10413200.2020.1821406

Fullagar, H. H. K., Skorski, S., Duffield, R., Hammes, D., Coutts, A. J., & Meyer, T. (2015). Sleep and athletic performance: The effects of sleep loss on exercise performance, and physiological and cognitive responses to exercise. *Sports Medicine*, *45*(2), 161–186. https://doi.org/10.1007/s40279-014-0260-0

Gabana, N. T., Steinfeldt, J. A., Wong, Y. J., & Chung, Y. B. (2017). Gratitude, burnout, and sport satisfaction among college student-athletes: The mediating role of perceived social support. *Journal of Clinical Sport Psychology*, *11*(1), 14–33.

German Society for Sport Psychology. (2003). asp Statement I. Zum Selbstverständnis der Sportpsychologin/des Sportpsychologen in der Bundesrepublik Deutschland. https://www.asp-sportpsychologie.org/content.php?cont=173

Gröpel, P., & Beckmann, J. (2017). A pre-performance routine to optimize competition performance in artistic gymnastics. T*he Sport Psychologist*, *31*(2), 199–207.

Hansen, J., & Haberl, P. (2019). Helping athletes be present when performing under pressure. In *Mindfulness and acceptance in sport* (pp. 47–58). Routledge.

Hanton, S., & Connaughton, D. (2002). Perceived control of anxiety and its relationship to self-confidence and performance. R*esearch Quarterly for Exercise and Sport*, *73*(1), 87–97.

Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. P*sychology of Sport and Exercise*, *7*(1), 81–97.

Hardy, L., Jones, J. G., & Gould, D. (1996). *Understanding psychological preparation for sport: Theory and practice of elite performers.* John Wiley and Sons.

Hashim, H. A., Hanafi, H., & Yusof, A. (2011). The effects of progressive muscle relaxation and autogenic relaxation on

young soccer players' mood states. *Asian Journal of Sports Medicine, 2*(2), 99.

Hayward, F. P. I., Knight, C. J., & Mellalieu, S. D. (2017). A longitudinal examination of stressors, appraisals, and coping in youth swimming. Psychology of Sport and Exercise, 29, 56–68. https://doi.org/10.1016/j.psychsport.2016.12.002

Henriksen, K, Hansen, J., & Larsen, C. H. (2020). *Mindfulness and acceptance in sport: How to help athletes perform and thrive under pressure*. Routledge.

Henriksen, Kristoffer, Larsen, C. H., Storm, L. K., & Ryom, K. (2014). Sport psychology interventions with young athletes: The perspective of the sport psychology practitioner. J*ournal of Clinical Sport Psychology, 8*(3), 245–260. https://doi.org/10.1123/jcsp.2014-0033

Henriksen, Kristoffer, Storm, L. K., Stambulova, N., Pyrdol, N., & Larsen, C. H. (2019). Successful and less successful interventions with youth and senior athletes: Insights from expert sport psychology practitioners. *Journal of Clinical Sport Psychology, 13*(1), 72–94. https://doi.org/10.1123/jcsp.2017-0005

Himmelstein, D., Liu, Y., & Shapiro, J. L. (2017). An exploration of mental skills among competitive League of Legend players. *International Journal of Gaming and Computer-Mediated Simulations, 9*(2), 1–21. https://doi.org/10.4018/IJGCMS.2017040101

Hindman, R. K., Glass, C. R., Arnkoff, D. B., & Maron, D. D. (2014). A comparison of formal and informal mindfulness programs for stress reduction in university students. *Mindfulness, 6*(4), 873–884.

Hollist, K. (2015). Time to be grown-ups about video gaming: The rising esports industry and the need for regulation. A*rizona Law Review, 57*(3), 823–848.

Holt, N. L., Hoar, S., & Fraser, S. N. (2005). How does coping change with development? A review of childhood and adolescence sport coping research. *European Journal of Sport Science, 5*(1), 25–39. https://doi.org/https://doi.org/gz9x

Holt, N. L., & Strean, W. B. (2001). Reflecting on initiating sport psychology consultation: A self-narrative of neophyte practice. T*he Sport Psychologist, 15*(2), 188–204.

Hong, H. J., & Connelly, J. (2022). High e-performance: esports players' coping skills and strategies. International Journal of Esports, 2(2).

Kabat-Zinn. (1994). Whereever you go there you are. Delta.

Kakoschke, N., Hassed, C., Chambers, R., & Lee, K. (2021). The importance of formal versus informal mindfulness practice for enhancing psychological wellbeing and study engagement in a medical student cohort with a 5-week mindfulness-based lifestyle program. PloS One, 16(10), e0258999.

Keegan, R. (2020). *Being a sport psychologist*. Bloomsbury Publishing.

Kelly, P., Williamson, C., Niven, A. G., Hunter, R., Mutrie, N., & Richards, J. (2018). Walking on sunshine: Scoping review of the evidence for walking and mental health. *British Journal of Sports Medicine, 52*(12), 800–806. https://doi.org/10.1136/bjsports-2017-098827

Kocadağ, M. (2020). An eSport research: psychological well-being differences of teenagers in terms of several variables. *Psychology Research on Education and Social Sciences, 1*(1), 31–39.

Koehn, S., & Díaz-Ocejo, J. (2022). Imagery intervention to increase flow state: A single-case study with middle-distance runners in the state of Qatar. *International Journal of Sport and Exercise Psychology, 20*(3), 729–742.

Korpela, K. M., Stengård, E., & Jussila, P. (2016). Nature walks as a part of therapeutic intervention for depression. *Ecopsychology, 8*(1), 8–15.

Kristiansen, E., & Roberts, G. C. (2010). Young elite athletes and social support: Coping with competitive and organizational stress in "Olympic" competition. *Scandinavian Journal of Medicine and Science in Sports, 20*(4), 686–695. https://doi.org/https://doi.org/10.1111/j.1600-0838.2009.00950.x

Laborde, S., Allen, M. S., Borges, U., Hosang, T. J., Furley, P., Mosley, E., & Dosseville, F. (2021). The influence of slow-paced breathing on executive function. *Journal of Psychophysiology*, 1–15. https://doi.org/10.1027/0269-8803/a000279

Laborde, S., Zammit, N., Iskra, M., Mosley, E., Borges, U., Allen, M. S., & Javelle, F. (2022). The influence of breathing techniques on physical sport performance: a systematic review and meta-analysis. *International Review of Sport and Exercise Psychology*, 1–56.

Latinjak, A. T., & Hatzigeorgiadis, A. (2020). *Self-talk in sport.* Routledge.

Lautenbach, F., Laborde, S., Mesagno, C., Lobinger, B. H., Achtzehn, S., & Arimond, F. (2015). Nonautomated pre-performance routine in tennis: An intervention study. *Journal of Applied Sport Psychology, 27*(2), 123–131. https://doi.org/10.1080/10413200.2014.957364

Lazarus, R. S. (1999). *Stress and emotion: A new synthesis.* Springer publishing company.

Leis, O., & Lautenbach, F. (2020). Psychological and physiological stress in non-competitive and competitive esports settings: A systematic review. *Psychology of Sport and Exercise, 51*, 101738. https://doi.org/10.1016/j.psychsport.2020.101738

Leis, O., Lautenbach, F., Birch, P. D. J., & Elbe, A.-M. (2022). Stressors, perceived stress responses, and coping strategies in professional esports players: A qualitative study. *International Journal of Esports, 3*(3).

Leis, O., Raue, C., Dreiskämper, D., & Lautenbach, F. (2021). To be or not to be (e)sports? That is not the question! Why and how sport and exercise psychology could research esports. *German Journal of Exercise and Sport Research, 51*(2), 241–247. https://doi.org/10.1007/s12662-021-00715-9

Marselle, M. R., Irvine, K. N., & Warber, S. L. (2013). Walking for well-being: are group walks in certain types of natural environments better for well-being than group walks in urban environments? *International Journal of Environmental Research and Public Health, 10*(11), 5603–5628.

Martinent, G., & Ferrand, C. (2015). A field study of discrete emotions: Athletes' cognitive appraisals during competition. *Research Quarterly for Exercise and Sport, 86*(1), 51–62. https://doi.org/10.1080/02701367.2014.975176

McCallie, M. S., Blum, C. M., & Hood, C. J. (2006). Progressive muscle relaxation. *Journal of Human Behavior in the Social Environment, 13*(3), 51–66.

Moore, L. J., Vine, S. J., Wilson, M. R., & Freeman, P. (2015). Reappraising threat: How to optimize performance under

pressure. *Journal of Sport and Exercise Psychology, 37*(3), 339–343.

Morris, T., Alfermann, D., Lintunen, T., & Hall, H. (2003). Training and selection of sport psychologists: An international review. *International Journal of Sport and Exercise Psychology, 1*(2), 139–154.

Morris, T., Spittle, M., & Watt, A. P. (2005). *Imagery in sport.* Human Kinetics.

Nagorsky, E., & Wiemeyer, J. (2020). The structure of performance and training in esports. *PLOS ONE, 15*(8), 1–39. https://doi.org/10.1371/journal.pone.0237584

Navaneethan, B., & Rajan, R. S. (2010). Effect of progressive muscle relaxation training on competitive anxiety of male inter-collegiate volleyball players. *The Shield-Research Journal of Physical Education and Sports Science, 5*.

NBA. (2022). *NBA Roster Survey: Facts to know for the 2022-23 season.* https://www.nba.com/news/nba-roster-survey-facts-to-know-for-the-2022-23-season

Nicholls, A. R., & Polman, R. C. J. (2007). Coping in sport: A systematic review. *Journal of Sports Sciences, 25*(1), 11–31. https://doi.org/10.1080/02640410600630654

Pedraza-Ramirez, I., Musculus, L., Raab, M., & Laborde, S. (2020). Setting the scientific stage for esports psychology: a systematic review. *International Review of Sport and Exercise Psychology, 13*(1), 319–352. https://doi.org/10.1080/1750984X.2020.1723122

Pelka, M., Heidari, J., Ferrauti, A., Meyer, T., Pfeiffer, M., & Kellmann, M. (2016). Relaxation techniques in sports: A systematic review on acute effects on performance. *Performance Enhancement and Health, 5*(2), 47–59.

Poczwardowski, A., Sherman, C. P., & Ravizza, K. (2004). Professional philosophy in the sport psychology service delivery: Building on theory and practice. *Sport Psychologist, 18*(4), 445–463. https://doi.org/10.1123/tsp.18.4.445

Poulus, D. R., Coulter, T. J., Trotter, M. G., & Polman, R. (2020). Stress and coping in esports and the influence of mental toughness. *Frontiers in Psychology, 11*, 628. https://doi.org/10.3389/fpsyg.2020.00628

Poulus, D. R., Coulter, T. J., Trotter, M. G., & Polman, R. (2022a). A qualitative analysis of the perceived determinants of success in elite esports athletes. *Journal of Sports Sciences, 40*(7), 742–753.

Poulus, D. R., Coulter, T. J., Trotter, M. G., & Polman, R. (2022b). Longitudinal analysis of stressors, stress, coping and coping effectiveness in elite esports athletes. *Psychology of Sport and Exercise, 60*, 102093. https://doi.org/https://doi.org/10.1016/j.psychsport.2021.102093

Poulus, D. R., Coulter, T., Trotter, M., & Polman, R. (2021). Perceived stressors experienced by competitive esports athletes. *International Journal of Esports, 1*(1).

Protogerou, C., & Hagger, M. S. (2020). A checklist to assess the quality of survey studies in psychology. Methods in Psychology, 3, 100031.

Rees, T., & Hardy, L. (2000). An investigation of the social support experiences of high-level sports performers. *The Sport Psychologist, 14*(4), 327–347.

Reitman, J. G., Anderson-Coto, M. J., Wu, M., Lee, J. S., & Steinkuehler, C. (2020). Esports research: A literature review. *Games and Culture, 15*(1), 32–50. https://doi.org/10.1177/1555412019840892

Rio, X., Sáez, I., González, J., Besga, Á., Santano, E., Ruiz, N., Solabarrieta, J., & Coca, A. (2022). Effects of a physical exercise intervention on pain in workplaces: A case study. I*nternational Journal of Environmental Research and Public Health, 19*(3), 1331.

Rumbold, J. L., Fletcher, D., & Daniels, K. (2012). A systematic review of stress management interventions with sport performers. In *Sport, Exercise, and Performance Psychology* (Vol. 1, Issue 3). https://doi.org/10.1037/a0026628

Rumbold, J. L., Fletcher, D., & Daniels, K. (2018). Using a mixed method audit to inform organizational stress management interventions in sport. *Psychology of Sport and Exercise, 35*, 27–38.

Sedlmeier, P., Eberth, J., Schwarz, M., Zimmermann, D., Haarig, F., Jaeger, S., & Kunze, S. (2012). The psychological effects of meditation: a meta-analysis. *Psychological Bulletin, 138*(6), 1139.

Sharp, L.-A., & Hodge, K. (2014). Sport psychology consulting effectiveness: The athlete's perspective. *International Journal of Sport and Exercise Psychology, 12*(2), 91–105.

Sharpe, B. T., Besombes, N., Welsh, M. R., & Birch, P. D. J. (2022). Indexing esport performance. *Journal of Electronic Gaming and Esports, 1*(1).

Shumaker, S. A., & Brownell, A. (1984). Toward a theory of social support: Closing conceptual gaps. *Journal of Social Issues, 40*(4), 11–36.

Simonsmeier, B. A., Andronie, M., Buecker, S., & Frank, C. (2021). The effects of imagery interventions in sports: A meta-analysis. *International Review of Sport and Exercise Psychology, 14*(1), 186–207.

Smith, M. J., Birch, P. D. J., & Bright, D. (2019). Identifying stressors and coping strategies of elite esports competitors. *International Journal of Gaming and Computer-Mediated Simulations, 11*(2), 22–39. https://doi.org/10.4018/IJGCMS.2019040102

Smyth, J. M. (1998). Written emotional expression: effect sizes, outcome types, and moderating variables. *Journal of Consulting and Clinical Psychology, 66*(1), 174. https://doi.org/https://doi.org/10.1037/0022-006X.66.1.174

Sorensen, J. (2022). *Average Ages For All 32 Opening Night Rosters For 2022-23 Season.* https://nova-capsfans.com/2022/10/11/average-ages-for-all-32-opening-night-rosters-for-2022-23-season/

Tan, S. L., Koh, K. T., & Kokkonen, M. (2016). The perception of elite athletes' guided self-reflection and performance in archery. *Reflective Practice, 17*(2), 207–220.

Tang, Y.-Y., Hölzel, B. K., & Posner, M. I. (2015). The neuroscience of mindfulness meditation. *Nature Reviews Neuroscience, 16*(4), 213–225.

Terry, P. C., Karageorghis, C. I., Curran, M. L., Martin, O. V, & Parsons-Smith, R. L. (2020). Effects of music in exercise and sport: A meta-analytic review. *Psychological Bulletin, 146*(2), 91.

Thomas, O., Hanton, S., & Maynard, I. (2007). Anxiety responses and psychological skill use during the time leading up to competition: Theory to practice I. *Journal of Applied Sport Psychology, 19*(4), 379–397.

Thomas, O., & Mellalieu, S. D. (2008). Stress management in applied sport psychology. In S. D. Mellalieu & S. Hanton

(Eds.), *Advances in applied sport psychology* (pp. 134–171). Routledge.

Tod, D., Hardy, J., & Oliver, E. (2011). Effects of self-talk: A systematic review. *Journal of Sport and Exercise Psychology, 33*(5), 666–687.

Tod, D., Pullinger, S., & Lafferty, M. (2022). A systematic review of the qualitative research examining stakeholders' perceptions of the characteristics of helpful sport and exercise psychology practitioners. *International Review of Sport and Exercise Psychology*, 1–25.

Toth, A. J., Ramsbottom, N., Kowal, M., & Campbell, M. J. (2020). Converging evidence supporting the cognitive link between exercise and esport performance: A dual systematic review. *Brain Sciences, 10*(11), 1–36. https://doi.org/10.3390/brainsci10110859

Trotter, M. G., Coulter, T., Poulus, D. R., Davis, P., & Polman, R. (2021). Social support, self-regulation, and psychological skill use in e-athletes. *Frontiers in Psychology*, *12*, 772030. https://doi.org/https://doi.org/10.3389/fpsyg.2021.722030

Van Dam, N. T., Van Vugt, M. K., Vago, D. R., Schmalzl, L., Saron, C. D., Olendzki, A., Meissner, T., Lazar, S. W., Kerr, C. E., Gorchov, J., & others. (2018). Mind the hype: A critical evaluation and prescriptive agenda for research on mindfulness and meditation. *Perspectives on Psychological Science, 13*(1), 36–61.

Van Raalte, J. L., Vincent, A., & Brewer, B. W. (2017). Self-talk interventions for athletes: A theoretically grounded approach. *Journal of Sport Psychology in Action*, *8*(3), 141–151.

Wagstaff, C. R. D. (2014). Emotion regulation and sport performance. *Journal of Sport and Exercise Psychology, 36*(4), 401–412.

Walter, N., Nikoleizig, L., & Alfermann, D. (2019). Effects of self-talk training on competitive anxiety, self-efficacy, volitional skills, and performance: An intervention study with junior sub-elite athletes. *Sports, 7*(6), 148.

Watson, M., Abbott, C., & Pedraza-Ramirez, I. (2021). A parallel approach to performance and sport psychology work in esports teams. *International Journal of Esports, 1*(1).

Williams, S. E., & Cumming, J. (2012). Challenge vs. threat: Investigating the effect of using imagery to manipulate stress appraisal of a dart throwing task. *Sport and Exercise Psychology Review*, *8*(1), 4–21.

Winter, S., & Collins, D. (2015a). Where is the evidence in our sport psychology practice? A United Kingdom perspective on the underpinnings of action. *Professional Psychology: Research and Practice, 46*(3), 175. https://doi.org/https://doi.org/10.1037/pro0000014

Winter, S., & Collins, D. (2015b). Why do we do, what we do? *Journal of Applied Sport Psychology, 27*(1), 35–51. https://doi.org/10.1080/10413200.2014.941511

Woodman, T. I. M., & Hardy, L. E. W. (2003). The relative impact of cognitive anxiety and self-confidence upon sport performance: A meta-analysis. *Journal of Sports Sciences, 21*(6), 443–457. https://doi.org/https://doi.org/10.1080/0264041031000101809

Yamada, M., Higgins, L. Q., & Raisbeck, L. (2022). How external and internal focus are used in the field: A review. *International Journal of Sports Science and Coaching, 17*(3), 647–654.

Yin, K., Zi, Y., Zhuang, W., Gao, Y., Tong, Y., Song, L., & Liu, Y. (2020). Linking esports to health risks and benefits: Current knowledge and future research needs. *Journal of Sport and Health Science*, *9*(6), 485–488. https://doi.org/10.1016/j.jshs.2020.04.006

Zaccaro, A., Piarulli, A., Laurino, M., Garbella, E., Menicucci, D., Neri, B., & Gemignani, A. (2018). How Breath-Control Can Change Your Life: A Systematic Review on Psycho-Physiological Correlates of Slow Breathing. *Frontiers in Human Neuroscience, 12*(9), 1–16. https://doi.org/10.3389/fnhum.2018.00353