Key structure and processes in esports teams: a systematic review

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Abstract

Why are there numerous cases of esports teams with superstar rosters that have failed? This question highlights that having top professional players with extraordinary individual skills may not be enough to achieve success. Since winning is a primary goal, it is crucial to understand all the variables that positively influence performance. While individual performance is critical to success as part of an esports team, team dynamics, structures, and processes also foster group functioning and performance. Thus, this research aims to conduct a systematic review of the team variables involved in the performance of esports teams. For this purpose, we conducted a literature search following the PRISMA guidelines in Science Direct, Web of Science, and PsycInfo databases since 2023. This search resulted in 371 articles, and after applying the inclusion and exclusion criteria, a total of twenty-three scientific articles were analyzed. The results were grouped under seven main topics: 1) Organigram, 2) Stages of a team, 3) Team structure, 4) Team variables and processes, 5) Leadership, 6) Lack of experience in team integration, and 7) Holistic and integral perspective. To conclude, more research is needed to study the effect of team dynamics in esports, as well as to highlight the role of the psychologist in fostering group dynamics to improve team cohesion, coordination, motivation, performance, and synergy.

Keywords Esports · Team variables · Team dynamics · Performance · Psychology

Introduction

The rapid development of esports competitions presents new challenges for all esports professionals. The search for success and the optimization of variables that lead to it are increasingly the focus of coaches and technical staff of teams. As a result, it opens a new opportunity for study within esports and psychology, being interesting both at the academic and applied levels.

Esports, also known as electronic sports, are the competitive and organized gameplay of specific video games that meet the criteria of competitive structure, media, and the principle of competitive equality (Asociación Española del Videojuego – AEVI, 2019; Antón, 2019; Mendoza et al., 2023). They involve casual or organized competitive activity in which players compete through electronic platforms with competitive systems governed by professional or amateur leagues (Pedraza-Ramirez et al., 2020). The esports industry is growing rapidly, expecting revenues of nearly $1.38 billion worldwide by the end of 2022 (Newzoo, 2022). Currently, the esports industry has grown in popularity in recent years, with many gamers, teams, fans, and sponsors worldwide, with a high social, media, and economic impact (Rosell Llorens, 2017). In 2022, the global e-sports audience is growing by + 8.7% year-on-year, reaching 532 million viewers, and the number of e-sports fans is expected to grow to 318 million by 2025, at a rate of + 8.1% (Newzoo, 2022). Esports will generate revenues of nearly $1.38 billion worldwide by the end of 2022.

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As esports have become increasingly popular, there has been an upsurge of esports teams competing in national and international tournaments, leagues, and events (Newzoo, 2022; Statista, 2023). Among the most popular team esports are League of Legends (LoL), Counter-Strike: Global Offensive (CSGO), DOTA 2, Rainbow Six, and Valorant (Esports Charts, 2023; Thavamuni et al., 2023).

Performance in esports

Aligned with the esports industry, the scientific community has become increasingly interested in investigating the functioning of gamers and teams to improve their performance (Pizzo et al., 2022; Pluss et al., 2019. According to Sharpe et al. (2023), performance can be conceptualized as a function of outcome or as a function of action. Outcome performance can be operationally defined as the result of actions (Campbell et al., 1993), i.e., to win or to lose. Action performance may refer to the steps that are required to achieve success (Ilgen & Schneider, 1991), such as abilities. Two types of action performance can be distinguished: task performance (reaction time, response time, etc.) and contextual performance (behaviors that indirectly influence the performance outcome such as sportsmanship, motivation, etc.). However, action performance does not necessarily imply outcome performance. While at the academic level action performance variables are of inherent interest, the primary interest in practice lies in fostering successful outcome performance (Sharpe et al., 2023).

Psychological research focuses on both action and outcome performance factors. Nagorsky and Wiemeyer (2020) conducted an exploratory factor analysis that revealed a 6-factor solution, including physical, sensorimotor-coordinative, strategic-cognitive, physical, social and media-related competencies. Cognitive and neurocognitive aspects (working memory, inhibitory control, cognitive flexibility, higher order functions; Campbell et al., 2018; Pedraza-Ramirez et al., 2020), psychological aspects (motivation, self-regulation, coping strategies, emotion management, etc., Bányai et al., 2019; Behnke et al., 2022; García-Naveira et al., 2018; García-Naveira & León-Zarceño, 2022; Leis & Lautenbach, 2020; Pedraza-Ramirez et al., 2020; Poulus et al., 2022), game aspects (expertise, strategies, training, etc.; García-Naveira & León-Zarceño, 2022; Pedraza-Ramirez et al., 2020; Poulus et al., 2022) and team processes (García-Naveira & León-Zarceño, 2022) have been pointed out as key factors in performance. However, previous research has focused more on individual and game-related factors (Campbell et al., 2018; Pedraza-Ramirez et al., 2020; Reitman et al., 2020) rather than team processes and dynamics (Tang, 2018). Given this specific gap in the study of group variables, it is important to examine the role of team dynamics in esports success. The present systematic review seeks to complement existing research by specifically examining group variables and dynamics in esports.

Team processes and group dynamics in esports

There are numerous cases of esports superstar teams that have failed, as has been the case in League of Legends in recent years, to even qualify for Worlds (League of Legends World Championship). This was the case for some esports organizations, such as G2 in 2021 (players roster: Wunder, Jankos, Caps, Rekkles and Mikyx), Team Vitality in 2022 (players roster: Alphari, Selfmade, Perkz, Carzyy and Labrov) or Team Liquid in 2022 (players roster: Bwipo, Santorin, Bjergsen, Hans Sama and CoreJJ). At the same time, there are cases of successful teams with rookies or lesser-known players, as was the case with G2 in 2022 (who traded Wunder, Rekkles and Mikyx for Brokenblade and two rookies, Flakked and Targamas). In fact, one of the G2 players mentioned during an interview that the roster change was made to improve team synergy, demonstrating the importance of group synergy over individual prowess (Mukherjee, 2022). Likewise, group dynamics support synergy formation (Araújo & Davids, 2016).

In this study, group dynamics refers to the actions, processes and changes that occur within and between groups during a given period (Forsyth, 2010). Group dynamics include aspects such as social roles, norms, communication, social influence, need for belonging or relationships (Macedo & Falcão, 2020). Group psychology has extensively addressed these variables (Huici et al., 2012), especially in human performance activities such as team sports (Buceta, 2020). The study of team variables in sports is extensive because of its 2,800-year tradition from Ancient Greece until nowadays (Tamayo & Esquivel, 2019). However, the analysis of team variables is insufficient in the context of esports, possibly of its young tradition of 53 years (Antón, 2019).

Similar to traditional sports, the performance of esports teams is influenced by team dynamics (Tang, 2018). The study of team variables related to esports, such as effective communication, coordination, cooperation, leadership, cohesion, team trust, decision-making, and conflict resolution, appear relevant to team performance and well-being (Bonny et al., 2020; Sabtan et al., 2022; Tang, 2018). Considering the similarities with traditional sports and the importance of team variables and dynamics for success in this context, it is relevant to deepen the current knowledge in esports to support and promote high performance.

Aim of the study

To deepen and update knowledge on this subject, this paper aims to conduct a systematic review of studies that analyze the most relevant team variables in esports. The research

question focuses on analyzing the key team variables and processes for the proper performance of esports teams. The scope of this study mainly examines team dynamics (communication, coordination, and collaboration), cohesion and leadership on team performance. Initially, we proposed several hypotheses to support the review. In particular:

- H1. There is an established organizational and functional structure in esports.
- H2. Working on group dynamics improves team performance.
- H3. Fostering cohesion has a positive impact on performance.
- H4. Adequate coach leadership influences team success.
- H5. External factors, such as lack of experience or playing at a distance, affect team cohesion.

This approach will be based on qualitative and quantitative empirical studies, as well as professional experiences and reviews. Among the potential impacts of this purpose of the study are the improvement of the performance and team environment and the well-being of the players, encouraging the use of training programs to improve team dynamics. As a result, this study will provide information on team variables to foster high performance, serving as a basis for further academic research and knowledge for practitioners in this field. No systematic review on group dynamics in esports was found, and one study provided an overview of esports from group dynamics (Tang, 2018).

Method

Protocol and eligibility criteria

After not identifying a systematic review or meta-analysis similar to the one proposed, a systematic review was carried out following the PRISMA 2020 guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses; Page et al., 2021). Since the study's main objective was to explore group variables in esports, the literature search only focused on team esports.

The article screening process was established based on previous inclusion and exclusion criteria to select those papers that fit the study objectives. Inclusion criteria were 1) scientific articles (empirical, professional experiences and review articles); 2) the focus of the study is on esports team variables and processes; 3) explores the situation of esports teams within the field of study; 4) available in digital format; 5) papers written in English or Spanish. Exclusion criteria were 1) studies focusing on individual esports; 2) other literature typology (e.g., chapters, books, dissertations); 3)

studies not conducted with humans. The study and protocol were pre-registered through PROSPERO.

Information sources and search criteria

The search included ScienceDirect, Web of Science, PubMed and PsycINFO databases with no restriction on publication date. The search equation used was: (esports OR e-sports OR electronic gaming OR competitive gaming OR online gaming OR professional video gaming) AND (team OR role OR cohesion OR cooperation OR coordination OR communication OR rules OR leadership OR group dynamics). The search was carried out in August 2023. The references of the selected studies in the first search were reviewed to identify other studies that met the defined criteria. The reference lists of the included studies were reviewed, and an additional search was performed in Google Scholar to check the gray literature on the subject.

Selection process, data analysis and extraction

At first, duplicates were identified and removed using the RefWorks bibliographic manager. To minimize bias and reduce errors, the first and second researcher independently screened all titles, abstracts, and full texts that met inclusion criteria for full eligibility screening using Covidence. Covidence software allows blind peer review in three stages: by title, by abstract and by full text. After having established the inclusion and exclusion criteria, the reviewers selected those studies that meet the criteria. Disagreements reached consensus through discussion or the involvement of a third researcher.

Data analysis and extraction

Covidence also facilitates the systematic extraction of data from selected studies. Reviewers defined data fields and extract relevant information in a standardized way. The first researcher extracted the data in an Excel spreadsheet, including: title, authors, year published, methodology used, sample characteristics, esport, and main outcomes regarding variables and team concerns. After data extraction, a second reviewer checked the accuracy of the extraction. Subsequently, the first and second authors conducted an examination of the main outcomes to extract higher-order topics related to team processes and group dynamics in esports. This process consisted of several phases: 1) reading the studies included in the sample, 2) identifying the central themes of the study in reference to team processes in esports (see Table 1., Main Topics), 3) sharing and resolving disagreements with a third researcher, 4) individually grouping the consensual central themes into higher categories, 5) sharing and final definition of the higher-order categories.

Table 1 Summary of papers from the systematic review on team structure and processes in esports ($n=23$)

Authors (year)	Title	Method	Sample	Results	Main Topics
Acebes et al. (2023)	Training factors in sports: a systematic review	Systematic review	8 articles	Very few studies have been found on training for the performance of the different variables and they are not conclusive. There is a need to develop longitudinal studies with intervention that show causal relationships between the proposals and the improvement in performance obtained	Team performance coach
Algesheimer et al. (2011)	Virtual Team Performance in a Highly Competitive Environment	Questionnaires validation of the input-mediator-output-input (IMOI) model adapted to virtual team performance	606 professional gaming teams of the European Electronic Sports League	Positive impact of team pertinence on team cohesion. Positive impact of team heterogeneity on team processes. Need of stablish protocols to enhance effective communication. Past performance is crucial to actual team processes, expected and actual team performance. The direct influence of anticipated emotions on shared desire to perform provides a good explanation of the motivating factors to perform in highly competitive environments	Team processes. Team cohesion. Team performance
Lopes Angelo et al. (2022)	Basic psychological need satisfaction and thwarting: A study with Brazilian professional players of League of Legends	Questionnaires EDMCQ-Q, BNSS, PNTS, SMS-II, IKPS, SWL	75 professional LoL players	Positive relationships between the perception of an empowering climate and the satisfaction of competence, autonomy and relationship needs. Task orientation is essential	Climate work empowerment
Bonilla et al. (2022)	Psychological skills in esports: Qualitative study of individual and team players	Semi-structured interview	10 gamers (individual and team, LoL, Heartstone and FIFA)	Three main dimensions that underpin the optimal performance of players are: (a) technical-tactical skills, (b) psychological skills and (c) healthy habits	Team performance. Tactical skills. Communication. Team cohesion. Healthy habits

Table 1 (continued)

Authors (year)	Title	Method	Sample	Results	Main Topics
Falkenthal and Byrne (2021)	Distributed leadership in collegiate esports	Focus Group	14 esports players from collegiate teams DOTA 2, LoL, Overwatch	The nature of certain esports requires distributed leadership, which can appear for various reasons: for a certain situation, for the need to adapt to changes in the game, for the exchange of knowledge. Credibility seemed to mediate between communication and behavior	Leadership
Fanfarelli (2018)	Expertise in Professional Overwatch Play	Interviews	11 professional Overwatch players	Sense of the game: knowledge of the current state of the game, ability to anticipate and predict, effective communication, and reflection as a basis for teamwork. Mechanics: It is not only about individual mastery, but also about synergy with the team	Communication synergy
Freeman and Wohn (2019)	Understanding esports team formation and coordination	Semi-structured interviews	26 players (6 professionals and 20 amateurs) of different esports	The importance in professional teams of shared mental models, commitment, and situational awareness in working together. The presence of a leader as such does not stand out, but each of the players has his or her functions. Communication and group relations influence coordination. In the formation of amateur and professional teams, they differ in identification of teammates, recruitment, and selection criteria	Team formation Team coordination Teamwork Leadership

Table 1 (continued)

Authors (year)	Title	Method	Sample	Results	Main Topics
García-Naveira and León-Zarceño (2022)	Psychological factors and performance crisis in a professional esports team	Semi-structured interviews	5 players and 1 Rainbow Six coach	The crisis of results negatively affects group processes (communication, competitive anxiety, having tactical discipline and taking advantage of situations of numerical superiority within the video game, as well as having the perception that one trains better than one competes). It also limits the coach's leadership of the team	Tactical skills Communication Coach Leadership Team performance
García-Naveira (2019)	MAD Lions Esports Club: Professional experience of the sports psychologist	Professional experience	LoL, CSGO, Clash Royale, FIFA y COD teams	The integrated team in the club, different stages of a team, team variables and processes, the importance of cohesion, standard setting, values, and leadership (coach). Team confidence, lack of experience of being in a team, holistic perspective of high performance. Psychological coaching of these issues	Organigram Team formation Team processes Cohesion Leadership Holistic perspective
García-Naveira et al. (2021)	Psychology and professional gamers in esports: thematic analysis and research agenda	Review	24 articles	8 main topics: psychological training, personality characteristics, team processes, negative consequences of esports, career, benefits of esports, psychological skills and processes and invisible training	Team processes Healthy habits

Table 1 (continued)

Authors (year)	Title	Method	Sample	Results	Main Topics
Macedo and Falcão (2020)	Like a pro: Communication, camaraderie and group cohesion in the Amazonian esports scenario	Observation	7 semi-professional LoL players	The process of cohesion goes through a series of stages, such as the understanding that a group is a dynamic, that they share a common interest and clear objectives to be achieved. They are formed as a unit, which generates group identity and thus a clash between individual and group interests. It is important to achieve effective interaction between members, assigning roles and fostering communication, which is key to coordination and camaraderie	Team formation Team structure Cohesion Communication Coordination Group identity
Mendoza (2019)	Online psychological work with esports teams: experiences at Vodafone Giants	Professional experience	LoL	Communication training and online intervention. Psychological work with staff	Team communication Psychological intervention
Mora-Cantallops and Sicilia (2019)	Team efficiency and network structure: The case of professional League of Legends	Data analysis	7582 LoL professional game data	Player interaction (network intensity) is crucial for performance, and it is best to distribute resources among players as evenly as possible while avoiding centralization but considering roles	Teamwork
Musick et al. (2021)	Leveling up teamwork in esports: Understanding team cognition in a dynamic virtual environment	Interviews	20 amateur (16), professional (1) and casual (4) gamers	Team cognition is created through shared knowledge of the game, understanding of the peers' skills and personalities, and effective communication. Team cognition can be facilitated through experience, working with game reviews or replays, and clear, fast and accurate communication	Team cognition Communication

Table 1 (continued)

Authors (year)	Title	Method	Sample	Results	Main Topics
Nagorsky and Wiemeyer (2020)	The structure of performance and training in esports	Questionnaires and an exploratory factor model	1,835 esport players (Starcraft II, LoL, Rocket League, FIFA, CS:GO)	Performance structure of esports–theory: physical, sensorimotor and coordinative, strategic-cognitive, physical, social and media-related competencies. Team performance include team cohesion, communication, non-verbal communication and team dynamics	Team performance Team cohesion Team dynamics Communication
Parshakov et al. (2018)	Is diversity good or bad? Evidence from esports teams analysis	Data analysis	Data on the top 100 professional CSGO teams from 2013 to 2015	The absence of cultural diversity is detrimental to performance. Not all types of cultural diversity have the same impact: it is important to be aware of the particular culture and the linguistic costs involved. Skill diversity appears to be negative initially and positive in the long run. Linguistic and skill diversity in team building is more crucial than cultural diversity	Team composition Diversity
Pedraza-Ramirez (2019)	Generation LoL: psychological training through a holistic approach with a professional esports team	Professional experience	LoL	Developing holistic high-performance cultures and structures. In addition, the appropriate assessment of psychological and behavioral characteristics of players and subsequent education of psychological strategies is fundamental to the success of high-performance psychological interventions in esports	Holistic perspective Healthy habits
Pereira et al. (2016)	Contributions of Sport Psychology to the Competitive Gaming: An Experience Report with a Professional Team of LoL	Routine protocol and interviews	5 professional LoL players	Importance of interaction in and out of the game and perform team dynamics frequently to promote team cohesion. Improvement of cognitive and group skills to better follow the routine	Team interaction Team dynamics Team cohesion Team time

Table 1 (continued)

Authors (year)	Title	Method	Sample	Results	Main Topics
Poulus et al. (2022)	A qualitative analysis of the perceived determinants of success in elite esports athletes	Semi-structured interviews	7 professional LoL, CSGO, R6, and Overwatch players	Three main aspects necessary for success are pointed out: the experience of playing well, training and teamwork, highlighting in the latter the challenges of playing in an esports team and the player-coach relationship. The importance of developing effective communication in the game and in interpersonal relationships is highlighted, both to improve performance and to prevent interpersonal rifts between players	Training Teamwork Coach Communication Social cohesion
Reitman (2018)	Distributed cognition and temporal knowledge in League of Legends	Observation (12 weeks)	11 players LoL collegiate teams and staff	The communication structure in LoL combines voice and chat. The voice channel is mainly used for teamfights, long communications, accurate real-time information and warning of dangers, and the chat for cooldowns of enemy skills and spells. Each role has its own responsibilities, more rigid at the beginning, and emphasizes the importance of estimations and predictions as the game progresses (information flow) and trust in the team	Communication Teamwork Distributed cognition

Table 1 (continued)

Authors (year)	Title	Method	Sample	Results	Main Topics
Sanz-Matesanz et al. (2023)	Physical and psychological factors related to player's health and performance in esports: A scoping review	Review	49 articles	While esports players engage in a good level of daily physical activity, there is a clear abuse in the hours spent on the computer, leading to the appearance of various physical and psychological pathologies. Skills related to collective strategy and tactics, communication skills, improved accuracy and technique, self-perception of competence, pressure control and decision making stand out as key elements in performance and improve as the level of the player increases	Tactical skills Communication Team performance
Tang (2018)	Understanding esports from the perspective of team dynamics	Review	-	Characteristics of successful esports teams: a variety of resources and team composition, the conceptualization of team cohesion in different dimensions, and the functions of communication and social support within a high-performance team	Team formation Team structure Team dynamics Team cohesion Communication Leadership
Trotter et al. (2021)	Social Support, Self-Regulation, and Psychological skill use in E-Athletes	Questionnaires	1,444 adult e-athletes (CS:GO, LoL, Overwatch, DOTA, Rocket League)	Esports players received the same information support as traditional athletes, but the levels of emotional and tangible social support were lower than in traditional athletes. The importance of having an organizational structure, which can positively influence social support and other individual variables, is highlighted	Social Support Informational support

CS:GO Counter-Strike: Global Offensive; *LoL* League of Legends; *R6* Rainbow Six: Siege; *PUBG* PlayerUnknown's Battlegrounds; *CoD* Call of Duty

Risk of bias assessment

Bias was assessed using a checklist adapted from the Standard Quality Assessment Criteria for Evaluating Primary Research Papers (Kmet et al., 2004) by Leis and Lautenbach (2020). Each study was rated based on nine items concerning its methodological quality, statistical analysis, results, and discussion (for the items, see Table 2). The studies were evaluated using a rating scale of 1 for "yes," 0 for "not clear," and 0 for "no". We also used the PRISMA 2020 checklist (Page et al., 2021) during and after the study to verify that all necessary steps have been followed (see Supplementary Table A.1).

Results

Study selection

The search in electronic and manual databases yielded 371 articles, including 5 potential articles from the manual search. After removing the 51 duplicates, 320 articles were screened. A total of 289 articles were excluded as they did not meet the pre-defined criteria. Of the remaining 31 articles, 10 were excluded because they focused on aspects other than the study objective. The review of the reference lists yielded 2 more articles to be included in the sample. As a result, 23 articles formed the sample, as described in Fig. 1.

Study characteristics

Table 1 includes the descriptive characteristics of the articles included in the systematic review ($n=23$). The sample of articles includes studies from 2011 to 2023, with 2019 as the peak publication year for this topic ($n=5$). Most of these studies used qualitative methodology ($n=10$), followed by quantitative studies ($n=6$), different reviews ($n=4$) and reports of professional experiences ($n=3$). Among the qualitative studies, the most used methodology was interviews ($n=7$), observation ($n=2$) and focus groups ($n=1$). Quantitative studies mainly used questionnaires ($n=4$), two of which subsequently developed structural models, and analysis of existing data such as wins, or gold won in-game

Table 2 Risk of bias assessment

Author	1	2	3	4	5	6	7	8	9	Yes ratings	No ratings	Unclear ratings
Acebes et al. (2023)	+	+	?	?	?	?	+	?	?	3	0	5
Algesheimer et al. (2011)	+	+	-	+	+	+	+	-	+	7	2	0
Lopes Angelo et al. (2022)	+	+	-	-	+	+	+	-	+	6	3	0
Bonilla et al. (2022)	+	?	-	-	+	-	+	-	+	4	4	1
Falkenthal and Byrne (2021)	+	+	-	-	+	-	+	-	+	5	4	0
Fanfarelli (2018)	+	-	?	-	+	?	+	-	+	4	3	2
Freeman and Wohn (2019)	+	?	-	-	+	?	+	-	+	4	3	2
García-Naveira and León-Zarceño (2022)	+	?	-	-	+	-	+	-	+	4	4	1
García-Naveira (2019)	-	-	-	-	-	-	+	-	+	2	7	0
García-Naveira et al. (2021)	+	+	?	?	?	?	+	?	+	4	0	5
Macedo and Falcão (2020)	+	+	-	-	+	-	+	-	+	5	4	0
Mendoza (2019)	-	-	-	-	-	-	+	-	+	2	7	0
Mora-Cantallops and Sicilia (2019)	+	-	-	-	+	+	+	-	+	5	4	0
Musick et al. (2021)	+	?	?	-	+	-	+	-	+	4	3	2
Nagorsky and Wiemeyer (2020)	+	?	-	?	+	+	+	-	+	5	2	2
Parshakov et al. (2018)	?	-	?	-	+	+	+	-	-	3	4	2
Pedraza-Ramirez (2019)	-	-	-	-	-	-	+	-	+	2	7	0
Pereira et al. (2016)	+	-	?	?	+	?	+	-	-	3	3	3
Poulus et al. (2022)	+	+	-	-	+	-	+	-	+	5	4	0
Reitman (2018)	+	+	-	-	+	?	+	-	+	5	3	1
Sanz-Matesanz et al. (2023)	+	+	?	?	?	?	+	?	-	2	1	5
Tang (2018)	-	-	?	?	?	?	+	?	-	1	3	5
Trotter et al. (2021)	+	+	-	+	+	+	+	-	+	7	2	0

1 = Subject characteristics sufficiently described?; 2 = Specified eligibility criteria?; 3 = If interventional and random allocation was possible, was it described?; 4 = Withdrawals reported and explained?; 5 = Clear description of measurement instruments?; 6 = Analysis described and appropriate?; 7 = Complete outcome data?; 8 = Controlled for confounding?; 9 = Limitations and acknowledged?. + = yes; — = no; ? = unclear

Fig. 1 PRISMA flowchart of article screening and selection
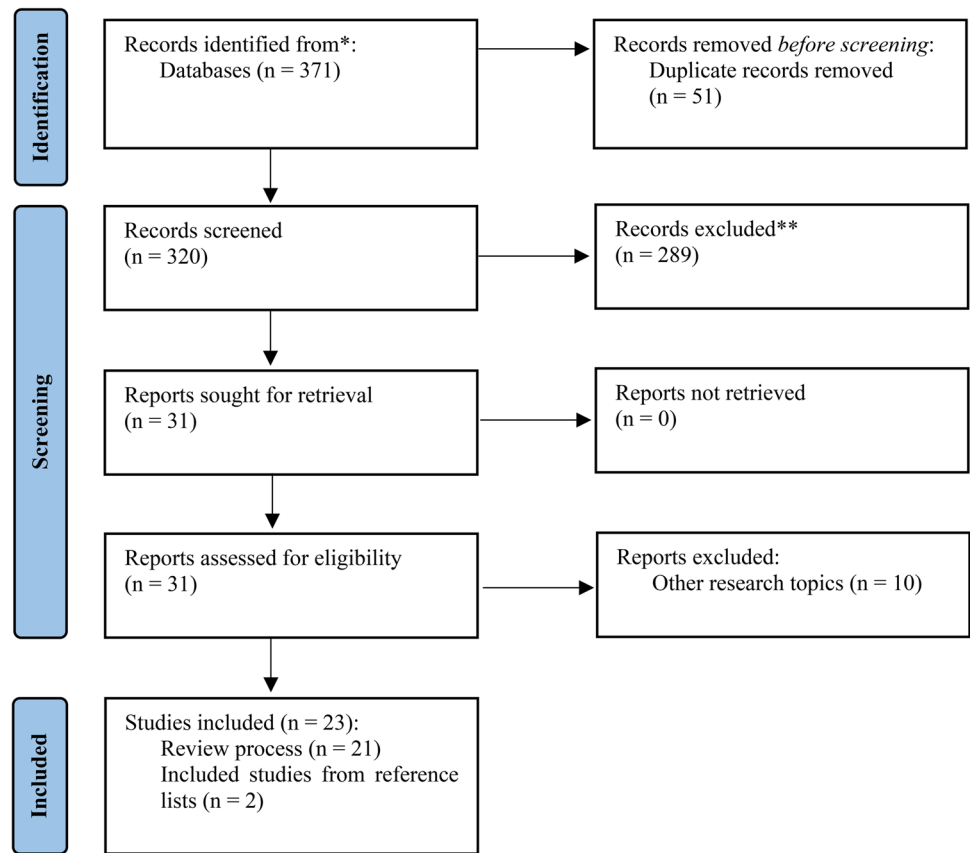
(*n* = 2). Only one of the reviews was a systematic review (*n* = 1; Acebes et al., 2023)

Regarding the esports analyzed in the empirical studies, we mainly use samples of different esports (*n* = 8), samples of League of Legends players (*n* = 1) and samples of Overwatch, Rainbow 6 and Counter Strike: Global Offensive (*n* = 1, respectively). Regarding reports of professional experiences, they were League of Legends-specific (*n* = 2) and mixed (*n* = 1).

The heterogeneous characteristics of the studies reflected in the results, so the qualitative review organized according to the main topics extracted from the sample on team processes and dynamics. The results of the present review have been grouped into 7 main topics: 1) Organigram, 2) Stages of a team, 3) Team structure, 4) Team variables and processes, 5) Leadership, 6) Lack of experience in team integration, and 7) Holistic and comprehensive perspective. The following are descriptions of these results (see Table 1).

Organigram

From a broad perspective of organizational structure, esports clubs are composed of different competitive gaming teams (LOL, CSGO, VALORANT, etc.), along with their corresponding technical staff (coach, assistant coach, analyst,

etc.), manager (general or esports-specific), and departments such as management and administration (president, CEO, etc.), performance and health (psychologists, fitness trainers, nutritionists, physiotherapists, etc.), content generation (YouTubers and gamers), marketing and communication, among others (García-Naveira, 2019). Depending on the club's competitive level and financial resources, this structure may vary, as well as the services offered to the teams.

Stages of a team

Esports teams can go through various stages, including the process of evaluation and selection of members, team building, crisis, dissolution, or changes.

The first step in building an esports team is its constitution (Freeman & Wohn, 2019; García-Naveira, 2019; Macedo & Falcão, 2020; Tang, 2018). The process of creating a successful esports team includes a process of selection and evaluation of gamers and coaches (face-to-face or online, also applicable to other positions within the team or organization), starting with the identification of the position to fill (demands, needs, conditions, etc.), definition of the desired profile of the candidate (personality characteristics, technical skills, etc.), dissemination and search for talent (offering the position, profile and working conditions),

evaluation (interviews, battery of questionnaires, try out, etc.) and selection of interested parties. During the process, the coach, sport director, and psychologist, among others, may be involved.

Another relevant aspect is defining the profile of the future candidate, which goes beyond their level in the video game. It includes certain personality traits (emotional management and control, frustration tolerance, teamwork, commitment, attitudes, etc.), healthy habits, previous experiences in teams, hours of dedication, leisure activities, personal/family situation, availability, employment status, number of followers on social media, etc. (Freeman & Wohn, 2019; García-Naveira, 2019).

Team building is the second step. Building an esports team requires establishing and developing internal structures and processes encompassing roles, functions, values, cohesion, leadership, communication, and more. These elements directly impact the team's performance and well-being (García-Naveira, 2019; Macedo & Falcão, 2020). Furthermore, teams that train and compete remotely (online) may encounter team-building obstacles because of the physical distance and limited personal interaction between players (Mendoza, 2019).

The third stage is usually crisis. Esports teams can go through different phases during a season or split (e.g., over five months). For instance, when faced with a crisis of results (after several consecutive defeats), teams and their members are affected by this stressful situation in terms of their lifestyles and healthy habits (rest, exercise, etc.), emotional self-management (anxiety and stress), and team functioning (teamwork, communication, etc.) (García-Naveira & León-Zarceño, 2022). Furthermore, it is usual that after a few months of operation, there may be reproaches, conflicts, and toxicity within and outside the game among team members, even leading to suggestions of a player or coach's departure (García-Naveira, 2019).

Finally, the fourth stage refers to team change or dissolution. Another challenge is the high player turnover or team dissolution (García-Naveira, 2019). As players become more popular or successful in tournaments, they may receive offers from other teams offering higher salaries and benefits. Additionally, there can be changes in the roster due to underperformance, conflicts, or the pursuit of improvement. As a result, esports teams may find it challenging to maintain a stable roster of players due to low profitability for the organization, low popularity of video games, or poor performance.

Team structure

Within the structure of esports teams, it is essential to highlight roles, status, and functions, the establishment of values, the establishment of norms, and cohesion.

The first team structural element refers to roles, status, and functions. Within the team, there is a notable presence of a hierarchical distribution of formal roles (positions and responsibilities that each team member fulfills within the game), status (hierarchical position of each team member within the team based on their experience, skill, seniority, etc.), and functions (specific tasks that each team member must perform in the game to achieve common objectives) (Macedo & Falcão, 2020; Tang, 2018). These aspects may vary across different video games, but they should be well-established to enhance performance and increase the likelihood of success. They form the foundation of teamwork, cooperation, coordination, and communication.

In addition, the characteristics of video games and the interaction between gamers within the game naturally promote the emergence of informal roles within the team, distributed leadership among members, and the decentralization of functions, while considering the role of each gamer (Falkenthal & Byrne, 2021; Mora-Cantallops & Sicilia, 2019).

The second team structural element is the establishment of norms and values. Establishing norms in an esports team is crucial for the success of projects and group tasks (García-Naveira, 2019). Norms consist of rules established by the club and agreed upon by all team members. These norms provide clear expectations regarding the conduct of team activities, decision-making processes, conflict resolution, and other important aspects.

Establishing values in an esports team is essential to foster a positive and productive working environment, and these values should be consistent with the club's or organization's values (García-Naveira, 2019). Values are the fundamental principles that guide the team's decisions and behavior and can help define its culture and identity. It is a continuous process that requires the participation and commitment of all team members (e.g., responsibility, sportsmanship, teamwork).

Having common and representative elements of the team contributes to cohesion and group identity (García-Naveira, 2019; Macedo & Falcão, 2020). Among these elements, establishing a set of values to which the team is committed (such as respect and discipline), wearing uniforms, sharing training and competition spaces, establishing rules of operation, and having a team logo and social media presence are relevant.

Culture is the esports team's shared knowledge, values, beliefs, customs, norms, and traditions. It is considered an ongoing process of learning and growth that is constructed and transformed over time, defining the identity and lifestyle of players, including a healthy culture (Bonilla et al., 2022; Pereira et al., 2016). This culture includes healthy habits (adequate sleep, healthy diet, physical activity, etc.) and sportsmanship, teamwork, learning, respectful

communication, and motivation within the team (Musick et al., 2021).

The third team structural element refers to team cohesion. Within team cohesion, two key elements stand out: social cohesion and motivational cohesion. These elements, as other related factors such as work climate, team pertinence, group size, synergy, diversity, and gamer interaction, contribute to team cohesion (Algesheimer et al., 2011; Macedo & Falcão, 2020).

Social cohesion refers to the sense of unity and connectedness among team members, fostered by social relationships and the team's working environment. While most teammates may start as strangers when entering or forming a new team, the context of esports facilitates interactions both within and outside the game, fostering social relationships (Macedo & Falcão, 2020; Poulus et al., 2022; Tang, 2018). Motivational cohesion refers to the extent to which members of an esports team share common goals and objectives and are motivated to work together to achieve them (Bonilla et al., 2022; García-Naveira, 2019; Macedo & Falcão, 2020; Poulus et al., 2022; Tang, 2018). Motivational cohesion is important in any team, as it directly affects productivity, performance, and member satisfaction. The shared desire to perform offers a good explanation of the motivational factors for performance in highly competitive environments (Algesheimer et al., 2011). These factors combined with effective communication and collaboration contribute to a strong and united team.

There are also other relevant variables that relate to team cohesion. On the one hand, work climate within an esports team refers to the overall atmosphere, attitudes, and perceptions that exist among team members (García-Naveira, 2019; Macedo & Falcão, 2020; Poulus et al., 2022). It encompasses the collective feelings, behaviors, and interactions within the team, including the level of trust, communication, support, and collaboration. A positive work climate promotes cooperation, open communication, and a sense of belonging, fostering team cohesion and enhancing overall team performance.

Trotter et al. (2021) conducted an online survey with esports players and compared their results with previous studies done with traditional athletes. They reported that esports players received information support just like traditional athletes, being one of the most influential ways of receiving social support in esports. However, the levels of emotional and tangible social support were much lower among esports players than traditional athletes.

A positive work climate (a friendly, cooperative, and collaborative environment in which team members feel valued and respected) can improve the performance and well-being of gamers (García-Naveira, 2019). Lopes Angelo et al. (2022) found that an empowering climate (task-oriented, with high levels of autonomy support,

social support, and participation) predicted satisfaction of basic psychological needs (autonomy, competence, and relatedness based on self-determination theory; Ryan & Deci, 2000) and indirectly influenced autonomous motivation, which related to well-being and the intention to continue playing. Conversely, a disempowering climate (ego-oriented, involving comparison with others and a focus on outcomes) is associated with dissatisfaction and frustration. In addition, a positive social climate (relationship-oriented) promotes both communication and learning (Falkenthal & Byrne, 2021).

On the other hand, the size of the team in esports refers to the number of members it comprises and can vary depending on the game and competition format. The team size can influence internal dynamics, communication, and decision-making. In general, smaller teams may have more direct and agile communication, which facilitates coordination and cohesion, as is the case in esports, where teams typically consist of 5 gamers (Macedo & Falcão, 2020; Thavamuni et al., 2023). On the other hand, larger teams may have more resources and specialized skills but can also face challenges in terms of coordination and alignment of goals.

Synergy in an esports team refers to the ability of members to work together efficiently and collaboratively, generating results that are greater than the sum of individual contributions. Synergy is achieved through a combination of complementary skills, mutual trust, effective communication, and a shared common goal, which can either emerge instantly or be part of a collaborative process and time spent together in the team (Freeman & Wohn, 2019). It is essential to have a team with compatible characteristics and develop effective communication to promote its emergence and to find a balance between appropriate team size and strong synergy to achieve maximum performance and competitive success.

Diversity is another component that can affect team cohesion positively or negatively. Diversity in terms of gender, race and language within esports teams, which are international and have no geographical barriers, can increase performance in the medium- and long-term while being aspects to consider when building the team in the short term (Freeman & Wohn, 2019; García-Naveira, 2019; Parshakov et al., 2018). Language barriers can be seen as a disadvantage, as speaking the same language can facilitate team processes, with English being the reference language. However, cultural diversity within teams can be desirable when cultures are compatible and when there is no extreme diversity that exacerbates language barriers.

Finally, interaction between players can promote team cohesion. Spending more time together in and out of the game enhances team cohesion in esports (Pereira et al., 2016). Furthermore, due to the frequency and intensity of matches during competition, cohesion, and performance may

improve over time as the number of games played increases (Bonny et al., 2020).

Team variables and processes

Some of the main team-related factors highlighted in esports are communication, cooperation and coordination, tactical discipline, decision-making, conflict resolution, and team trust (Nagorsky & Wiemeyer, 2020).

Communication is another frequent topic of study in esports teams. Studies have found that effective communication can significantly improve team performance, while poor communication can be detrimental (Bonilla et al., 2022; Falkenthal & Byrne, 2021; Fanfarelli, 2018; Freeman & Wohn, 2019; Macedo & Falcão, 2020; Musick et al., 2021; Sanz-Matesanz et al., 2023; Tang, 2018). For example, in some esports games, such as LoL or CSGO, players only have vision or information about a specific map area, and information from other teammates can be crucial (Reitman, 2018). Communication is thus a critical factor in macrogaming, where decisions have repercussions on the entire game.

Furthermore, when communicating or giving instructions, it is sought to use abbreviations or keywords to avoid saturating the channel. Communication should follow a structured hierarchy during gameplay so that communication does not become an additional stressor. Certain behaviors, such as not listening, lack of communication, not following instructions, aggression, or criticism, can negatively impact performance (García-Naveira, 2019; Mendoza, 2019; Poulus, 2022).

Cooperation (collaboration in team actions) and coordination (of individual and collective movements) in esports are closely linked to the establishment of roles and functions and communication, as they promote effective team dynamics in planning, execution, and tactical discipline (Mora-Cantallops & Sicilia, 2019). These aspects manifest in matches through tasks such as assisting teammates (throwing bombs, killing enemies, helping for jumping, covering someone, etc.) and coordinating strategies and plays (combining actions and avatar abilities).

A key element in cooperation and coordination is building team cognition, which refers to the shared knowledge and understanding of individual and team tasks to perform effectively (Musick et al., 2021). Team self-awareness, previous team experience (similarities with previous teammates), training through match reviews or repetitions (sharing and discussing perspectives) and learning to communicate precisely are necessary components.

It is worth noting that mutual assistance and communication form the foundation for developing trust and camaraderie within the team, which are crucial aspects of

performance (Macedo & Falcão, 2020; Poulus et al., 2022; Reitman, 2018).

Moreover, understanding the current state of the video game (Fanfarelli, 2018; García-Naveira, 2019) and collective strategy and tactics (Sanz-Matesanz et al., 2023) are central elements in team performance in esports. Tactical discipline represents the adherence to the team's established strategy to achieve specific objectives within the video game or to secure victory. This may be the case, for example, when players have equal or numeric advantages following the elimination of one of their opponents (García-Naveira & León-Zarceño, 2022). Moreover, in team performance crises, players tend to deviate from the established strategy, probably because competitive stress affects their behaviour and decisions.

Decision-making and conflict resolution, both within and outside the video game, are also necessary processes in esports teams (García-Naveira, 2019; Himmelstein et al., 2017; Sanz-Matesanz et al., 2023). For example, resolving different situations and making decisions during a match enables the team to respond quickly to game changes or address the various situations that arise throughout the stages esports teams go through.

Finally, players who trust in their abilities and the abilities of their teammates can make faster and more effective decisions in high-pressure situations, which is associated with better performance in esports (García-Naveira, 2019; Himmelstein et al., 2017; Reitman, 2018).

Leadership

Leadership in esports teams is crucial for the success of any project or group task (García-Naveira, 2019). A good leader can inspire and motivate team members to work together and achieve their goals. In esports teams, leadership can be internal (In-Game Leader or IGL) or external (coach). In some video games like LoL, gamers lead the match, and the coach can only listen to the players' audio communication without intervening. However, the coach has other responsibilities, such as pre-match drafting or managing the team between matches or after the game. In other games like CSGO or COD, the coach has a more active role during the gameplay, providing support and guidance to the team to help them make informed and strategic decisions in real-time.

The coach is an essential role in esports, who are less studied than gamers. Coaches dedicate many hours to their responsibilities, experience stress (psychological health), and face numerous challenges for which they may not be adequately prepared, lacking official training and necessary experience (often being former gamers or analysts). These challenges include organizing and planning training sessions, managing competitions, studying the video game, and leading the gamers (García-Naveira, 2019; García-Naveira &

León-Zarceño, 2022; Pedraza-Ramirez, 2019). Coaches play a crucial role in creating healthy and productive work environments and in players' personal and professional development (Lopes Angelo et al., 2022).

Another relevant issue related to coach leadership is the absence of a proven training method to implement in their daily practices, supporting the development of gamer talent and enhancing their performance (Acebes et al., 2023; Bonilla et al., 2022; García-Naveira & León-Zarceño, 2022; García-Naveira et al., 2021; Tang, 2018). Training in esports is still in its early stages, with the need to develop standards for training. Coaches face many challenges, such as long training sessions, dealing with players' attitudes, and mental stress.

Lack of experience in team building

Players are perceived to lack experience in integrating into esports teams, which difficultes team integration and development in regular and crisis situations (Bonilla et al., 2022; Bonny et al., 2020; García-Naveira, 2019; García-Naveira & León-Zarceño, 2022; Himmelstein et al., 2017; Pedraza-Ramirez, 2019). It is possible that the gamer, not having integrated a team from the early stages, lacks those experiences, combined with the youth and inexperience of the coach, among other factors. It is common for the gamer to start playing from home and join a team at a later age, initially remotely and then in-person, for example, a situation commonly seen in grassroots sports (e.g., a child joining a soccer team at the age of 5). Furthermore, some teams play/compete online, each from their own homes, which can hinder cohesion in some cases (Mendoza, 2019).

Holistic and integral perspective

Lastly, the context of esports involves numerous group factors, as described in this study. However, at the same time, players are exposed to and interact with various individual, situational, and contextual variables. Therefore, success or failure will depend on the work of these levels from a holistic and comprehensive perspective of high performance and the well-being of gamers (García-Naveira, 2019; Pedraza-Ramirez, 2019).

Risk of bias assessment

The results of the bias assessment showed that the average Yes ratings was 4, No Ratings was 3.47, and 1.60 for Unclear Ratings. This is mainly due to the methodological variety of the sample and the use of mainly qualitative techniques in the primary studies. The mean score per study was 3.91 (min. = 1; max. = 7).

Discussion

Esports represent a new field of high-performance study for psychology. Previously, some authors have reviewed individual variables related to performance (Pedraza-Ramirez, 2019), but no current study has systematically reviewed group variables that may influence performance. Only one review on team dynamics in performance has been found (Tang, 2018), but it focuses on summarizing the research without defining or describing the review process. The present review has identified seven high-order topics: organigram, stages of a team, team structure, team variables and processes, leadership, lack of experience in team integration, and holistic and integral perspective. These team processes are not unique to esports, showing similarities to other groups in high-performance contexts, such as sports teams.

A reference point for analyzing esports teams is Group psychology, which has a long history of studying human behavior at a group level. Group psychology provides the necessary psychological theories, models, and strategies. Furthermore, Sports psychology and its professional practice have a sufficient degree of delimitation and consistency to integrate work with esports. Possible differences include the job and its requirements, the individual's profile, and the interaction between the two, among other factors that require further research.

In terms of results, we observe that different esports clubs have consciously referred to the organizational structures of sports clubs (e.g., football clubs), aiming to replicate specific areas (e.g., the sports performance structure), while considering their unique sector needs, such as the content creation department (YouTubers, influencers, gamers, etc.). Therefore, the professionalization of esports club structures (organigram) and the integration of various professions within each area of work (e.g., psychologists in the performance and health domain) are necessary to contribute to the maturity of the esports industry (García-Naveira & Cantón, 2020). Furthermore, it is crucial to address the possible differences between amateur and professional clubs (Macedo & Falcão, 2020), as amateurs usually operate with limited resources and may collaborate with other entities to compensate for their limitations (professional associations, public and private companies, etc.). The type of esport also influences structurally, as certain structural characteristics are pre-established in the game (e.g., roles, number of players). Smaller teams are usually more easily energized (Macedo & Falcão, 2020; Thavamuni et al., 2023).

Regarding stages, esports teams are not static entities, as they evolve from their formation to, in some cases, their disintegration and reconstruction, as well as the

relationships between the group and its members. Thus, optimizing each stage (evaluation and selection, team formation, crisis, change, or dissolution) is mandatory to ensure the performance and well-being of the players.

Establishing and developing the internal structure of the team is crucial to becoming an efficient and collaborative esports team. As a result, team productivity and club goals can be achieved faster and more effectively. Healthy team routines (physical activity, free time and outdoor group activities, esports training, etc.) promote cognitive enhancement and interaction. Thus, team routines can benefit cohesion, synergy, and in-game team cognition.

Training in group processes (such as communication, cooperation, coordination, decision-making, tactical discipline, and leadership) can optimize resources and performance in esports (Tang, 2018). Team members must effectively interact to achieve team goals. Nevertheless, further practical research is needed to provide techniques and forms of implementation adapted to the esports context.

Lack of experience in teamwork can be a challenge for gamers, but it can be trained. Having teamwork experiences from an early age can facilitate learning in esports and sports. Furthermore, in the selection of gamers, the ability to work well in a team can be a determining factor. Thus, the study of personality characteristics, psychological and social skills, and past experiences associated with better team performance might be integrated into future research.

Esports coaches' leadership is essential for the team's success. An effective coach must be an expert in video games, strategy, and tactics, but also lead and motivate the team. The main obstacles for coaches are player youth, little previous management experience, specific training (beyond practice, as many are retired players) and leadership, as well as stress and the lack of effective training methods that demonstrate performance improvement.

Finally, fostering team processes can be complex if not approached from this holistic perspective. On the one hand, this implies that all professionals working in esports teams must coordinate their objectives and work strategies with team values. On the other hand, psychological work in teams must encompass individual, team, social, and contextual variables to improve the performance and well-being of the group.

Limitations

Future research should address the limitations of this study. Among the limitations are the number of databases examined and the limitation of the language of the papers, including only articles in Spanish and English (leaving out potential articles in other languages such as Chinese or Japanese), resulting in a small sample size ($n = 23$). The limitations of the sample studies at the methodological level (small sample

sizes, different procedures, instruments, lack of control over certain variables, etc.), the absence of gender differences, the lack of comparative analyses based on competitive level (professional, semi-professional and amateur) and country (America, Europe, Asia, or USA), and a limited number of longitudinal studies should also be considered. It is therefore important that future empirical studies focus on analyzing team and dynamic variables, since only 16 of the 23 articles in the sample are empirical. Low scientific production in this field makes it challenging to address certain research questions raised in the present review. Given the limited bibliography found in the current review on the topic and the inclusion of scientific articles integrating empirical studies and professional practice, a distinction between the two has not been made in the discussion. This is an aspect to be considered in future work to achieve higher quality in the results obtained. Despite this limitation, the richness of qualitative information from professional practice works significantly contributes to a more holistic and profound understanding of the phenomena in question. Moreover, it provides a valuable insight into real practices and challenges faced in the field. This practical and contextualized perspective enriches existing literature, offering readers practical and applicable information that can be directly transferred to real situations in the realm of esports.

For future work, it is necessary to increase empirical studies regarding group variables in esports and to specify which results are based on empirical studies and which are based on 'professional experience,' scientific articles, or reviews. Additionally, it is suggested to make a distinction between qualitative and quantitative research results. Although this study addresses various stages of team evolution, there is a lack of in-depth exploration of the specific implications or challenges of each stage. Furthermore, while numerous studies in the sample highlight the role of traditional sports in the realm of esports, there is a lack of specific comparisons between traditional sports and esports in the reported findings. Future perspectives should explore these topics further.

Future research could also investigate the roles, functions, and needs of club presidents, sports directors, and coaches. Additionally, specific procedures should be established to evaluate cohesion, internal communication, coordination, and cooperation between players. Regarding stages in esports teams, how can they be managed and what steps are necessary for good development? These and other questions could emerge from the work applied within the sector and/or the contributions of social psychology and/or sport psychology as a basis for understanding.

Implications for practice

Deepening the theoretical knowledge of the structure and processes of teams in esports can be valuable as a basis for

developing specific psychosocial intervention programs from an interdisciplinary perspective. This review highlights the need to know the organization, the team stage, and its structure, as well as the fundamental role of psychologists in teams (team variables and processes, leadership, and team integration, performing a rigorous analysis of the group and its dynamics and providing strategies, training, and support to players and coach) to conduct effective psychological teamwork. The final objective is to enhance the performance and success of the teams.

To improve the performance and psychological well-being of esport teams, several strategies have been proposed to address different psychological aspects and promote both the overall development of the players and the collective success of the esport team. For example, setting clear goals to improve motivation and evaluating team progress. Establishing structure, hierarchy, and content in internal communication between players, clarifying roles and expectations, and strengthening team cohesion and effectiveness, both in interpersonal and motivational terms. The introduction of pre-competition rituals helps to focus players, while emotional management and the promotion of resilience contribute to a stronger team environment. Managing successes and defeats increases motivation and personal satisfaction, contributing to a positive environment.

Finally, the psychological training of the coach is essential to improve his leadership, individual and group management of the players, as well as his own emotional self-management and professional development. It is also important to work with the sporting director to develop an organizational structure that is in line with the club's objectives. It would also be important to develop problem-solving and decision-making techniques to deal with the different stages that teams can go through.

Declarations

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Articles included in the systematic review and/or meta-analysis are marked with (*)

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