




Relationships Between Self-Efficacy and High-Performance Sport: A Systematic Review

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Abstract: Self-efficacy is defined as people's beliefs in their own abilities to achieve something. This study aimed to systematically review the literature on psychological variables associated with self-efficacy in sport. Searches were conducted in six electronic databases: LILACS, PubMed, SciELO, SPORTDiscus, Web of Science, and Scopus, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Content analysis of 29 included articles allowed for the identification of three research groups: psychological variables ($n = 31$; 72.1%), performance variables ($n = 7$; 13.3%), and other variables ($n = 5$; 11, 6%). There was a predominance of cross-sectional quantitative studies (72.4%; $n = 21$). The most used instrument was the General Self-Efficacy Scale (GSE), with 13 (44.8%) articles. In seven (24.1%) articles, specific questions were developed for the study. It is concluded that self-efficacy is a widely studied variable, but there is a lack of specific instruments in the Brazilian context of high-performance sports.

Keywords: athletes, athletic performance, sport psychology

Relações Entre a Autoeficácia e o Esporte de Rendimento: Uma Revisão Sistemática

Resumo: A autoeficácia é definida como as crenças das pessoas em suas próprias capacidades para alcançar algo. O objetivo foi revisar sistematicamente a literatura sobre as variáveis psicológicas associadas a autoeficácia no esporte. As buscas foram conduzidas em seis bases eletrônicas: LILACS, PubMed, SciELO, SPORTDiscus, Web of Science e Scopus, considerando os pressupostos da *Preferred Reporting Items for Systematic Review and Meta-Analyses* (PRISMA). A análise de conteúdo dos 29 artigos incluídos, permitiu identificar 3 grupos de investigação: variáveis psicológicas ($n = 31$; 72,1%), desempenho ($n = 7$; 13,3%) e demais variáveis ($n = 5$; 11,6%). Houve uma predominância de estudos quantitativos transversais (72,4%; $n = 21$). O instrumento mais utilizado foi a Escala de Autoeficácia Geral Percebida (EAGP) com 13 (44,8%) artigos do total. Em 7 (24,1%) artigos foram desenvolvidas questões específicas para o estudo. Conclui-se que a autoeficácia é uma variável amplamente estudada, porém há uma escassez de instrumentos específicos no contexto brasileiro do esporte de rendimento.

Palavras-chave: atletas, desempenho atlético, psicologia do esporte

Relaciones entre la Autoeficacia y el Deporte de Rendimiento: Una Revisión Sistemática

Resumen: La autoeficacia se define como las creencias de las personas sobre sus propias capacidades para lograr algo. El objetivo de este estudio fue realizar una revisión sistemática de la literatura sobre variables psicológicas asociadas a la autoeficacia en el deporte. Se realizaron búsquedas en seis bases de datos electrónicas: LILACS, PubMed, SciELO, SPORTDiscus, Web of Science y Scopus, considerando los supuestos de *Preferred Reporting Items for Systematic Review and Meta-Análisis* (PRISMA). El análisis de contenido de los 29 artículos incluidos permitió identificar tres grupos de investigación: variables psicológicas ($n=31$; 72,1%), rendimiento ($n=7$; 13,3%) y otras variables ($n=5$; 11,6%). Hubo predominio de estudios cuantitativos transversales (72,4%; $n=21$). El instrumento más utilizado fue la Escala de Autoeficacia General Percibida (EAGP) con 13 (44,8%) artículos en el total. En 7 (24,1%) artículos se desarrollaron preguntas específicas para el estudio. Se concluye que la autoeficacia es una variable ampliamente estudiada, pero faltan instrumentos específicos en el contexto brasileño del deporte de rendimiento.

Palabras clave: atletas, rendimiento atlético, psicología del deporte

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The relation between psychological variables and their impact on sports and athletic performance has been the subject of studies in the field of Sports Psychology for many years (Nogueira et al., 2019). One of these variables is self-efficacy (SE), defined as people's beliefs in their own capabilities to achieve something (Bandura, 2012). It is a construct originally developed by Albert Bandura and is defined as the belief in one's ability to organize and

execute the courses of action necessary to achieve certain goals (Bandura, 1977, 1995).

In the search for scientific literature, we found an increasing number of investigations on this theme over recent years, both in national and international literature. However, to the best of our knowledge, few studies have proposed to synthesize the variables associated with perceived self-efficacy (PSE) using a systematic review design. Studies by Moritz et al. (2000) and Sitzmann and Yeo (2013) were the last studies found by the research team, to date, that sought to investigate the relationship between SE in sport and sports performance.

PSE development and sports practice have been found to hold a relationship (Leonardi et al., 2019), in which SE is essential for the good performance of athletes as it favors motivation and stress control (Castro et al., 2018). Increased PSE seems to be associated with improvements in pain perception, psychological status, and general well-being (Guillén Rojas, 2007). SE has been studied in practitioners of basketball (Ortega et al., 2009), athletics (Vieira et al., 2011), golf (Rodríguez Salazar et al., 2015), taekwondo (Estevan et al., 2016), soccer (Naveira, 2018), and more recently in volleyball (Machado et al., 2021).

Bandura (1995) mentioned that efficacy expectations influence the beginning of a behavior, such as how much effort must be made to achieve a certain result (as in sports competitions, for example) and the level of persistence that is applied to the task when facing difficulties.

In this sense, the SE beliefs aid the athlete in decision-making within activities and the means to achieve their goals, as well as the effort to be expended, the persistence in the task and the emotional reactions when facing obstacles (Vieira et al., 2011). Thus, it is inferred that the relation between SE and sports performance is reciprocal. When this relation is positive, SE is important, as it is considered a key trigger for the good performance of athletes. On the other hand, when negative, it can generate doubts, especially if positive beliefs are not yet established (Machado et al., 2014).

The magnitude and direction of the relation between PSE and performance vary considerably. In this sense, considering the importance of PSE for sports performance, this study aimed to systematically review the literature on psychological variables associated with SE in sports.

Methods

This systematic review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Galvão et al., 2015), focusing on the literature on self-efficacy (SE) and high-performance sports. Eligibility criteria for selecting studies: articles presenting SE, athletes, and/or sports in the title and/or abstract; original research with SE instruments for general

sports and/or developed for a specific sport modality; articles written in Brazilian Portuguese, English, or Spanish; no date limits; and open-access articles. Articles in other languages; those that did not include athletes and/or sports and did not assess the PSE; research on Physical Activity or Physical Exercise; and those articles under restricted access were excluded.

The searches were conducted in January 2020, using six electronic databases: LILACS, PubMed, SciELO, SPORTDiscus, Web of Science, and Scopus, with no date limit, based on three blocks of terms and their respective associated synonyms (self-efficacy and athletes or sport), using Boolean operators AND, OR, and NOT.

When possible, the following filters were used: *pesquisa com humanos*, free full text, *revistas acadêmicas*, *revistas*, *texto completo*, *questionários*, *estatística*, *idioma*, sports, sports psychology, athletes, physical education, psychology, sports sciences, athletic ability, psychology of athletes, elite athletes, sports teams, team sports, professional sports, sports competitions, sports — research, performance, *artigos*, open access, sport sciences or psychology or psychology multidisciplinary or rehabilitation or physiology.

In total, four independent reviewers with experience in systematic reviews, with knowledge on the field of sports psychology, were invited to participate in the study. The searches were conducted in the following stages: Stage (1) analysis of the titles and abstracts of the articles (peer reviewed); Stage (2) detailed evaluation of full papers; Stage (3) re-evaluation of articles that generated disagreements and/or indecisiveness.

The studies were characterized and classified based on the following data: authors, year, journal of publication, objective, design, sample, location, age, gender, modality, collection instruments, theoretical framework, data analysis, and main results.

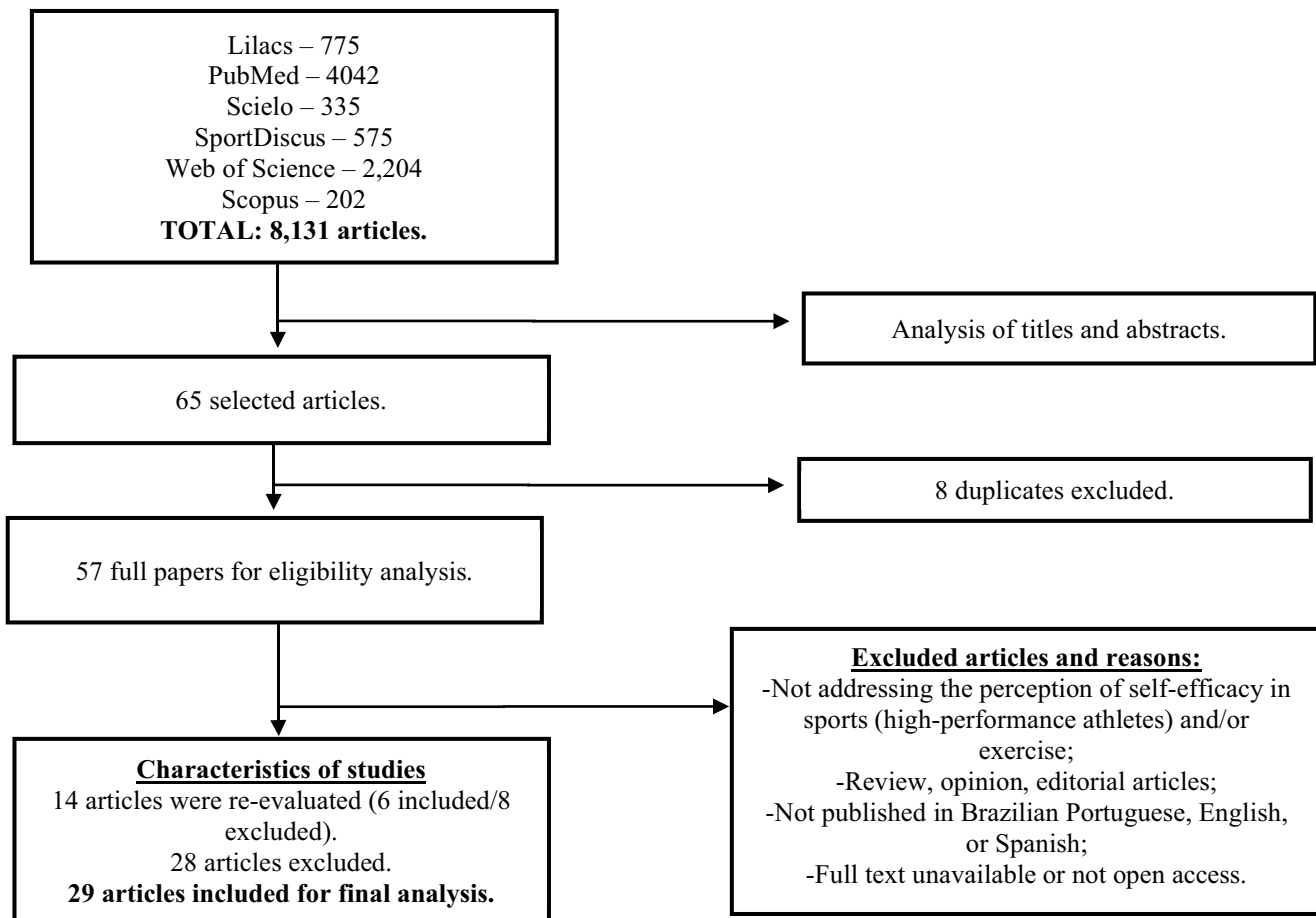
The data were analyzed via meta-summarization, which involves extraction, clustering, and formatting of the results, in addition to estimating the frequency and intensity of the effect size. This method synthesizes qualitative and quantitative research (Sandelowski et al., 2007), if it is possible to be conducted. The most commonly used parameters are: 95% confidence interval (95%CI), Odds Ratio (OR), relative risk reduction (RRR), multivariate analysis, meta-regressions, among others (van Houwelingen et al., 2002).

Results

With the aid of the search strategies, 8,131 citations related to the subject of this research were found. Figure 1 shows that 29 articles were included for full analysis and data extraction after reviewing the references and applying the eligibility criteria.

Figure 1

Flowchart of the articles selected for the final analysis of the systematic review. Prepared by the author.



Research Methods

Table 1 shows the synthesis of research designs and sample characteristics of the most recent studies involving SE in sports that were selected for the final analysis.

In total, seven studies (24.1%) were published from 2007 to 2012; seven studies (24.1%) from 2013 to 2016; and 15 studies (51.7%) were published from 2017 to 2019. There was a predominance of cross-sectional quantitative studies, with 21 studies (72.4%). Additionally, six articles (20.7%) adopted a mixed qualitative/quantitative cross-sectional design. Only one study was quantitative cross-sectional, and another was quantitative longitudinal.

Various instruments were employed in the included articles. In the assessment of SE, the most used instrument

was the General Self-Efficacy Scale (GSE), developed by Schwarzer and Jerusalem (1995), with 13 (44.8%) articles employing it. Specific questions were developed in seven studies (24.1%), based on the Self-Efficacy Theory (Bandura, 1977), ranging from open-ended questions to semi-structured interviews.

In total, five (17.2%) instruments were found to assess specific self-efficacy in each sport: one for basketball, soccer, and endurance and two for volleyball. The use of four (13.8%) instruments related to self-efficacy was observed. Of these, only in the study by Ibragim and Almoslim (2016) the use of a self-efficacy instrument for sport was found, the Sport Self-Efficacy Scale (SSES). To date, however, the publication of this instrument has not been found.

Table 1

Synthesis of research designs and sample characteristics of the most recent studies involving self-efficacy in sports

Study	Instruments	Sample	Sport
Zoljanahi et al. (2018)	Sport confidence questionnaire; Creativity questionnaire; sport attributional style scale	2,853 elite athletes (863 women and 1,990 men)	Basketball, soccer, and handball
Castro et al. (2018)	General Self-Efficacy Scale (GSE); Competitive State Anxiety Inventory-2 Revised (CSAI-2R); Self-efficacy in soccer; Performance perception	32 athletes	Soccer
Anstiss et al. (2018)	Endurance Sport Self-Efficacy Scale (ESSES) (validation); General Self-Efficacy Scale (GSE); Coping Self-Efficacy Scale (CSES); Barriers to Training Self-Efficacy Scale (BTSES); Athletic Coping Skills Inventory-28 (ACSI-28)	343 endurance athletes (233 men and 108 women)	Running, rowing, cycling, triathlon, swimmers, cross country skiing, and race walking
Walter et al. (2019)	Competitive Anxiety Inventory State (WAI-S); Competitive Anxiety Inventory Trait scales (WAI-T); Volitional Components Questionnaire Sport (VCQ-Sport); General Self-Efficacy Scale (GSE); Performance analysis	117 athletes (55 women and 62 men)	Canoeing, rhythmic gymnastics, swimming, wrestling, ice hockey, handball, and volleyball
Reigal et al. (2019)	Sport Performance Psychological Inventory (SPPI); Competitive State Anxiety Inventory-2 (CSAI-2); Profile of Mood States Questionnaire (POMS); General Self-Efficacy Scale (GSE)	181 athletes (95 men and 86 women)	Beach handball
Nogueira et al. (2019)	CSAI-2R; Individual Self-Efficacy Scale for Volleyball; Scouts evaluating performance; Optimal Operating Zone (OOZ)	7 athletes	Volleyball
Dirmanchi e Khanjani (2019)	Connor-Davidson Resilience Scale (CD-Risc); General Self-efficacy questionnaire	60 athletes with spinal cord injury and 200 non-athletes, patients who developed the injury	Unspecified
Chen et al. (2019)	Self-efficacy scale; Self-Control Questionnaire for Athletes; Buss-Perry Aggression Questionnaire	414 boxers (243 men and 171 women)	Boxing
Leonardi et al. (2019)	Self-Efficacy General Scale; Game Performance Assessment Instrument (GPAl); Team Sport Assessment Procedure (TSAP)	30 athletes	Basketball

Note. Prepared by the author.

Sample Characteristics

The selected articles were conducted exclusively with athletes. In total, there were 8,095 participants, and the samples included from seven to 2,853 subjects (Table 1). There was a prevalence of studies with up to 100 athletes in the sample ($n = 14$; 48.3%); six studies (20.7%) included a sample ranging from 221 to 300 subjects; 13.8% ($n = 4$) of the articles included 117 to 193 subjects; three studies (10.3%) included 343 to 416 participants; and two articles (6.9%) included from 1,200 to 2,853 athletes.

A total of 15 studies (51.7%) investigated both sexes; nine studies (31%) investigated men, and two studies (6.9%) investigated women. Moreover, three studies (10.3%) did not specify the sex of the athletes. Regarding athletes' age, Table 1 shows that some studies presented mean and standard deviations and others the age range. The mean age of athletes was 23.2 years (± 6.9) and ranged from 12.8 to 43 years. There was a prevalence of studies with athletes aged over 18 years ($n = 19$; 65.5%), while 31% ($n = 9$) of the studies addressed athletes aged under 18 years. Only one study (3.4%) did not specify athletes' age.

When analyzing the location of the studies, there was a predominance of studies in the European continent, with 15 studies (51.7%), including countries such as: Germany, Spain, France, Italy, Norway, Poland, Portugal, and the United Kingdom; six studies (20.7%) conducted in South America (Brazil and Chile); four studies (13.8%) belonging to the Asian continent (Saudi Arabia, China and Iran); two studies (6.9%) from Türkiye, considered a Eurasian country; an Australian study; and a study conducted in Central America (Costa Rica).

We observed a prevalence of studies with team sports, accounting for 12 articles (41.4%). Moreover, 10 studies (34.5%) focused on individual sports and six (20.7%) analyzed both team and individual sports. Only one article did not specify which modalities were investigated. Regarding the competitive level of the athletes investigated, there was a prevalence of 65.5% (19) of studies with national level athletes (Table 1).

Variables Associated with Self-Efficacy

Table 2 shows the variables associated with the perception of self-efficacy in the studies ($n = 29$). After extracting the

selected studies, we sought to identify the main variables associated with the perception of self-efficacy. With the aid of the content analysis, 43 different variables were observed, which were grouped into three groups: psychological variables (Group 1; $n = 31$; 72.1%), performance variables (Group 2; $n = 7$; 13.3%), and other variables (Group 3; $n = 5$; 11.6%). The frequency in which each variable was identified within each group was also analyzed. As some variables appeared more than once, a total of 65 (100%) investigations associated with self-efficacy were observed.

Table 2

Variables associated with the perception of self-efficacy in the studies ($n=29$)

INDICATORS ASSOCIATED WITH PERCEIVED SELF-EFFICACY		Frequency of variables in studies f (%)
Group 1 (Psychological)	Anxiety	10 (15.4)
	Motivation	3 (4.6)
	Coping	3 (4.6)
	Attribution	2 (3.1)
	Self-esteem	2 (3.1)
	Flow	2 (3.1)
	Resilience	2 (3.1)
	Affection	2 (3.1)
	Other variables*	27 (40.5)
Group 2 (Physical)	Performance Assessment/Analysis	4 (6.2)
	Self-efficacy of physical abilities	1 (1.5)
	Expected result	1 (1.5)
	Physiological and anthropometric measurements	1 (1.5)
	Performance Perception	1 (1.5)
	Skill Test	1 (1.5)
Group 3	Demographics	3 (4.6)
	(Other variables)	1 (1.5)
TOTAL		65 (100)

Note. *Other variables – aggressiveness, group environment, self-control, coping self-efficacy, training self-efficacy, physical self-perception, cohesion, competitiveness, confidence, creativity, mood states, psychological skills, leadership, fear of injury, basic psychological needs, ego-task orientation, optimism, perseverance, positivity, worry, goal achievement, recovery, emotional regulation, social support, theory of planned behavior, volition, optimal operating zone (OOZ) with one study each; Source: prepared by the author.

We highlight that anxiety was the most investigated variable in Group 1, appearing in 10 studies (15.4%), followed by motivation and coping with three (4.6%) each. The variables attribution, self-esteem, flow, resilience,

and affection are the next with a frequency of two (3.1%) each. The other 27 variables appeared once (1.5%) in the articles analyzed.

Discussion

To the best of our knowledge, this is the first study that aimed to systematically review existing research on perceived self-efficacy (PSE) in sports. To date, only two studies have been found that sought to investigate the relations between SE in sport and sports performance via meta-analyses. Moritz et al. (2000) analyzed 45 studies with univariate and multivariate moderating analyses, whereas Sitzmann and Yeo (2013) reviewed 38 studies with the main propositions of self-efficacy and control theories on the relations between self-efficacy and performance, as well as past performance and self-efficacy, considering the effects of covariates and moderators on these relationships. The authors highlighted the importance of the relationship between self-efficacy (SE) and performance; however, many studies were excluded from the analyses due to possible inadequacies in the investigations.

Notably, among the most recent studies, some have systematically reviewed specific situations of SE in the sports context: we found a study that investigated the instruments used to assess the PSE (Machado et al., 2014), studies on self-efficacy in volleyball (Machado et al., 2019), and another study that reviewed collective efficacy in soccer (Alves et al., 2021).

The study by Naveira (2018) proposed an investigation of the relationship between SE, optimism, and competitiveness in young athletes. It found that men had higher scores for motivation to succeed, while women had significantly higher values for motivation to avoid failure, indicating the importance of the role of SE in the development of psychological skills that favor sports performance.

Similarly, Zoljanahi et al. (2018) investigated the relationship between SE and attribution styles in elite athletes. Their findings also suggested that internal, stable, and global attributions were related to moments of success; whereas external, unstable, and specific attributions were associated with failure and defeats. These conclusions allowed us to note that the mechanism of external attribution served as a protective factor for self-confidence. Success increases SE, so there is a positive relationship between sport attribution style (after success) and sports SE (Zoljanahi et al., 2018).

Other findings from the study by Zoljanahi et al. (2018) were related to SE, motivation, and creativity. High levels of motivation for the success of an action are related to attributions to stable internal reasons (such as skill, for example), which in turn reinforce the PSE, as well as positively influence the athlete's creativity.

A psychological variable that contributes to the facilitation of the perception of self-efficacy is

the experience of flow. The study by Gomes et al. (2012) proposed the investigation of the relationship between individual SE and flow, contextualizing the possibility of the occurrence of the flow state as a highly confident person can maintain full focus on the task or experience, becoming less apprehensive about the outcome or others' evaluation. Conversely, athletes with a low confidence could experience more concerns about their performance, resulting in blocking behavior that could disrupt the flow experience (Cziksztentmihalyi, 1990).

Considering that the Flow Theory proposes a positive correlation between the balance between the challenge a task demands and the skills of the practitioner, confident athletes have a greater perception that their abilities are in line with the demands of the situation than people with low self-confidence, thus resulting in a greater perception of self-efficacy and consequently of flow. The research by Gomes et al. (2012), confirmed the aforementioned hypothesis, in which significant and positive relationships were found between flow and SE.

Sklett et al. (2018) investigated the relation between self-efficacy, flow, positive and negative affect, worry, and ski jumping performance. The authors suggest that efficacy beliefs are responsible for impacting positive and negative affectivity. More specifically, athletes with high levels of SE have a greater extent of positive emotions, such as happiness, pleasure, and satisfaction, than athletes with low levels of SE who are presumed to have higher levels of negative emotions, such as sadness, anxiety, and depression, which impact final performance. Regarding self-efficacy and flow, it was possible to notice that there are moderate correlations between the general classification of the competition, self-efficacy, and flow.

Similarly, self-efficacy and flow appeared as significant predictors of elite ski jumping performance. The authors also concluded that in individual events, in which the performance is evaluated by a single presentation (maneuver), the sum of the previous presentations acts to build future SE for the next competition, and thus the perception remains throughout the rest of the season. Thus, previous performance achievements (or lack of) can be considered to have an effect on future SE and future athletic achievements and vice versa (Sklett et al., 2018).

Within the team sports modalities, some studies have related some psychological variables with SE. The research by Marcos et al. (2010) addressed the relationship between SE and cohesion in sports teams. The findings of that research showed a positive and significant relationship that the effectiveness perceived by the team coach is related to the confidence they have in the skills of their players to perform certain tasks. Similarly, in the relationship between the athletes of the same group, the perceived effectiveness of the peers was also positive and significant, based on the belief that each player had about the skills of their teammates.

Ferreira et al. (2011) conducted a study with a sample of Portuguese male and female basketball players, with and

without physical disabilities. The findings showed that female athletes without motor disabilities have higher mean values in the dimensions of physical confidence, physical strength, global self-esteem, and PSE when compared to their male peers without and with motor disabilities, contrary to the trend usually described in the literature review.

Still in this relation between sexes and self-perception, the authors identified that men are excessively demanding with the evaluation they make of their own body and performance, perceiving their performance as poorer than it actually is. A mechanism that the authors present as capable of justifying the underestimation of this self-perception is that many basketball teams in Portugal show a large number of foreign athletes, who usually are part of the starting lineup. This context contributes to the decrease of self-perception and, consequently, SE of Portuguese athletes.

SE was also related to coping strategies and the ability to maintain a state of "suffering" in endurance sports. Corrion et al. (2018) investigated ultra-distance runners on trails to identify levels of SE and motivation and coping strategies to contribute to the prevention of abandonment in long runs. Athletes who finished the events scored significantly higher on SE and intent to finish the race than non-finishers. The latter, on the other hand, reported higher scores of avoidance coping strategies. In addition, SE, intention, mastery approach goals, and seeking social support to finish the race were associated with a lower risk of abandonment.

The experience aspect is another comparison that deserves to be highlighted between athletes who finished the event and athletes who abandoned it. Although the weekly training volume was similar between groups, previous positive experiences were considered as the main source for the development of SE. Therefore, the accumulation of previous successful experiences is crucial to the consolidation of SE in athletes participating in ultra-endurance events.

Anstiss et al. (2018) proposed the development and validation of a SE scale for endurance sports. For the authors, SE is a powerful positive predictor of performance in endurance sports due to the fact that the perception of pain and exertion felt by the endurance athlete is the most determinant aspect for good sports performance, particularly of endurance sports. Most of the time, considering that many athletes have remarkably similar anthropometric, biomechanical, and physiological characteristics, what defines a winner in an endurance event is how much more a given athlete is willing to suffer compared to their opponent, as well as to tolerate pain.

Dealing with the paradigm between individual and collective sports modalities, Laborde et al. (2016) investigated positive personality traits as individual differences in the comparison between non-athletes and athletes practicing individual and collective sports. These personality traits were composed of the interaction between five psychological variables: perseverance, positivity, resilience, self-esteem, and self-efficacy. The results of this study showed that athletes consistently scored higher

than non-athletes. We also found that athletes of individual sports scored higher than athletes of team sports. This can be explained by the individual responsibility that comes with acting alone and the need to possess a more enduring personal disposition to succeed.

Still in the relationship between resilience and SE, Dirmanchi and Khanjani (2019) conducted an investigation in athletes with physical disabilities. In the comparison of athletes with non-athletes, the findings showed that athletes with disabilities are significantly more resilient than non-athletes, although both groups had a high score for the resilience measure. When self-efficacy was analyzed, it was also noted that athletes have significantly higher scores compared to the group of non-athletes. Finally, the study showed a moderate correlation between resilience and self-efficacy and physical exercise.

Regarding how the leadership profiles of coaches can affect the SE of athletes, Sari and Bayazit (2017) suggested that training and instructional behavior, along with autocratic behavior and social support behavior, explained the athletes' PSE by 10%. The perceived training and instruction behavior was beneficial for the athletes' SE. It is possible that when a coach demonstrates training and instructional behaviors, and tries to eliminate the athletes' flaws, the athletes realize and understand that the coach holds some expectations about the athletes' performance, which can positively affect the PSE. However, perceived autocratic behaviors and social support behavior seemed to be detrimental to SE.

The relationship between SE, aggressiveness, and self-control was observed in the study proposed by Chen et al. (2019) with a sample of Chinese boxers. The results showed that male boxers exhibited more aggressive behaviors than females. On the other hand, regarding SE and self-control, such behaviors became more evident with increasing age. Within the same perspective, competitive level and experience were also indicators of increased SE and optimized self-control. Finally, SE was negatively correlated with aggressive behavior and positively correlated with self-control.

Subsequently, in Group 2, investigations that sought to associate PSE with sports performance were observed, with emphasis on articles that used tests and/or performance analyses (Table 2). To Kanthack et al. (2014), self-efficacy was not considered a predictor of performance. The authors highlighted that further research is needed on PSE in sports, especially with specific instruments. Walter et al. (2019) observed improvements in SE with long-term interventions, finding impacts on performance.

Leonardi et al. (2019) examined changes in the tactical performance and SE of young female basketball players during four months of competitive season training. In that study, they found that only the SE effort scale improved after four months of a basketball training program, but did not point to a direct relationship with performance. In this sense, it is noteworthy that several factors can affect the relationship between SE and sports performance, such as

the type of SE and performance evaluation, agreement between measurements, nature of the task researched in each sport modality, the moment in which the data were collected, and biological and environmental factors. These factors should be considered to better evaluate such relationships (Moritz et al., 2000; Nogueira et al., 2019).

Table 2 shows studies that related SE with the following variables: outcome expectancy (Vieira et al., 2011), physiological and anthropometric measurements (Heazlewood & Burke, 2011), skill test (Zetou et al., 2012), self-efficacy of physical abilities (De Pero et al., 2013), performance perception (Castro et al., 2018), and optimal operating zone (OOZ) (Nogueira et al., 2019).

Finally, Group 3 included the other variables observed. The most cited variable was demographic data, although the authors did not establish direct relationships with SE, considering only as descriptive data (Corrion et al., 2018; Gomes et al., 2012; Ibrahim & Almoslim, 2016).

Ferreira et al. (2011) observed the existence of a hierarchical organization between perceived efficacy and physical competence, in which physical self-perception can be a moderator or a predictor of PSE. In a study with Polish youth football athletes, it was possible to observe relationships between perceived general self-efficacy and the use of ergogenic aids. According to Gacek (2016), the types of supplements used are directly linked to the perception of self-efficacy. Specifically, athletes with lower self-efficacy tend to use such resources the most.

De Pero et al. (2013) investigated possible associations between PSE and fear of injury in European professional gymnasts. The authors observed that PSE and fear of injury are correlated variables, and were considered mediators of the athletes' anxiety level. Athletes with higher PSE had less fear of injury, as well as lower anxiety levels. Finally, in a study conducted with athletes from various sports, Olmedilla et al. (2018) did not find direct relationships between self-efficacy and social support. However, they did find that both variables together can influence other factors such as the occurrence of injuries and anxiety. The authors also emphasized the need to advance studies on SE and its relationship with other variables (Table 2).

With the methods adopted for this systematic review, the results obtained from both quantitative and qualitative research allowed for the observation that the perception of self-efficacy (PSE) is an intervening factor in performance sports. The theoretical assumptions of Albert Bandura's Social Cognitive Theory (SCT) and the Triadic Reciprocal Causation (TRC) model underpin the various investigations into PSE, which has been extensively studied over time.

It was observed that the most commonly used instrument for such investigations was the General Perceived Self-Efficacy Scale (GSE). Additionally, studies were found that used questionnaires specifically developed for a particular research, but without scientific validity, as well as questionnaires that assess PSE tailored to specific sports or specific functions within each sport. In this sense, we found a

scarcity of instruments that assess sports PSE, especially for the context of Brazilian sports.

Nevertheless, this research sought to meticulously synthesize the relevant results of studies on PSE and associated factors. These findings are valuable for the scientific community and for the practices of physical education professionals, coaches, and sports and exercise psychologists engaged in sports training programs and the athletes themselves. A good understanding of PSE, considering the particularities and specificities of each sport and each athlete, can allow better training planning and how to manage athletes on a daily basis, in order to achieve optimal performance.

This research has some limitations: only articles published in three languages (Brazilian Portuguese, English, and Spanish) were considered; only open-access articles were included; the data were collected during a specific period from six databases, limiting the findings to articles available within this specific period. For future research, it is suggested to search for articles published in other languages and to conduct an update on possible studies published after the search period of the present article, aiming to investigate additional databases.

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