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## **Self-efficacy in volleyball: What has been evaluated? A systematic review**

## **Autoeficacia en voleibol: ¿Qué se ha evaluado? Una revisión sistemática**

## **Autoeficácia no voleibol: O que se tem avaliado? Uma revisão sistemática**

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### **ABSTRACT**

Self-efficacy in sport has been the object of study in different modalities, including volleyball. The aim of the present study was to verify, by means of a systematic review, what has been evaluated in volleyball self-efficacy studies. The APA, PsycInfo, Bireme, Eric, Science Direct, Pubmed and Scopus databases were used to carry out the search. After the search, the articles were selected using the inclusion and exclusion criteria, resulting in 7 articles. The results point to a lack of clarity in the instruments for assessing self-efficacy in volleyball, with regard to the technical, tactical, physical or psychological attributes they are designed to measure. Few articles have described the psychometric properties of the instruments used, which imply, in practical terms, inaccurate results. It is suggested that specific instruments for the modality should be developed that present the statistical procedures used in order to obtain reliable results.

**Palabras clave:** performance, sport, athletes.

### **RESUMEN**

La autoeficacia en el deporte ha sido motivo de estudio en diferentes modalidades, entre las que figura el voleibol. El objetivo del presente estudio fue realizar una revisión sistemática para conocer lo que se ha evaluado en los estudios sobre autoeficacia en voleibol. Las bases de datos utilizadas fueron APA PsycInfo, Bireme Eric, Science Direct, PubMed y Scopus. A partir de esta búsqueda, siguiendo los criterios de inclusión y exclusión se seleccionaron 7 artículos. Los resultados apuntan a la falta de claridad en los instrumentos de evaluación de la autoeficacia en el voleibol en lo referente a lo que pretenden medir de los atributos técnicos, tácticos, físicos o psicológicos. Además, pocos artículos indicaron las propiedades psicométricas de los instrumentos utilizados, lo que conduce, en términos prácticos, a resultados imprecisos. Se sugiere que se desarrollen instrumentos específicos para el voleibol y que en los artículos se presenten los procedimientos estadísticos utilizados.

**Keywords:** rendimiento, deporte, atletas.

### **RESUMO**

A autoeficácia no esporte tem sido propósito de estudo com diferentes modalidades, entre elas o voleibol. O objetivo deste estudo de revisão sistemática foi verificar o que se tem avaliado sobre autoeficácia do voleibol. Utilizaram-se as bases de dados APA PsycInfo, Bireme, Eric, Science Direct, Pubmed e Scopus para efetuar as buscas. Após a pesquisa, os artigos foram selecionados, utilizando-se dos critérios de inclusão e exclusão, resultando em 7 artigos. Os resultados apontam falta de clareza nos instrumentos de avaliação da autoeficácia no voleibol quanto ao que pretendem medir em relação aos atributos técnicos, tácticos, físicos ou psicológicos. Além disso, poucos artigos apresentaram propriedades psicométricas dos instrumentos utilizados, o que implica, em termos práticos, em resultados imprecisos. Sugere-se a construção de instrumentos específicos para a modalidade que apresentem procedimentos estatísticos utilizados a fim de obter resultados fidedignos.

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**Palavras chave:** desempenho, esporte e atletas.

### INTRODUCTION

Since the first article published by Bandura on self-efficacy in 1977 within the framework of social cognitive theory, there has been great acceptance of this construct in different contexts, including the sport context. Specifically, although the self-efficacy construct was proposed by Bandura (1977) to address the treatment of anxiety in clinical psychology, self-efficacy has been an important research topic in the sport context (Balaguer, Escarti, & Villamarín, 1995; Machado, Paes, Berbetz, & Stefanello, 2014) with athletes from different competitive levels and modalities, such as free-diving (Baretta, Greco, & Steca, 2017), taekwondo (Estevan, Álvarez, & Castillo, 2016), basketball (Lázaro & Villamarín, 1993; Ortega, Olmedilla, Sainz de Baranda, & Gómez, 2009; Ortega, Olmedilla, & Cárdenas, 2007), golf (Irazusta & Arruza, 2006; Rodríguez, López, Gómez, & Rodríguez, 2015), tennis (González, 2017), and football (García-Naveira, 2018; Leo, García-Calvo, Sanchez-Miguel, & Parejo, 2008; Leo, García-Calvo, Sánchez-Miguel, & de la Vega, 2011).

Self-efficacy is defined as one's belief about being able to perform a specific task successfully in order to obtain a certain outcome (Bandura, 1986). This construct refers to

people's beliefs about what they think they can do with whatever skills they possess. These beliefs are not considered stable traits, but rather the product of a complex process of self-appraisal and self-persuasion originating from the cognitive processing of various sources of efficacy information. Specifically, the development of self-efficacy beliefs stems from four sources of information. Bandura (1997, 1986) referred to them as past performance accomplishments - which are related to previous experiences with tasks that require the same domain - vicarious experiences - which are related to the observation of tasks performed by others with a profile similar to that of the individual - verbal persuasion - which contemplates the feedback the individual receives, based on the conviction that s/he has the necessary abilities to perform this action - and physiological states - which can be an indicator of how the individual reacts to the expectation of accomplishing a task and his/her belief in the capacity to perform it -. These sources of information contribute to elaborating efficacy judgments, which have consequences on the levels of motivation (e.g., reflected in challenges, effort, and perseverance in the face of difficulties), thought patterns (e.g., causal

attributions), and emotional responses (e.g., pride, unhappiness).

To explain the relationship between self-efficacy beliefs and behavior, Bandura (1977, 1986) distinguished between self-efficacy expectations and outcome expectations. Outcome expectations are defined by Bandura as beliefs about the probability that this specific course of action will lead to certain consequences or outcomes, whereas self-efficacy expectations refer to beliefs about one's ability to execute a specific course of action. The former are related to one's environment (e.g., earning money), and the latter have to do with beliefs about one's competence (feeling capable). Although both self-efficacy expectations and outcome expectations can influence behavior in sport situations, Bandura (1986) argues that outcome expectations are highly dependent on self-efficacy judgments and, thus, do not add much to what is already predicted by self-efficacy expectations. Thus, self-efficacy expectations are postulated to have a more powerful influence on behavior (Bandura, 1977).

In the literature, self-efficacy expectations have been found to be robust, positive, and consistent predictors of sport performance (e.g., Balaguer et al., 1995; Feltz & Magyar, 2006; Garcia-Naveira, 2018; Gilson, Chow, & Feltz, 2012). As a predictor of athletes'

performance, self-efficacy, when positive, may be a key driver in improving the performance of motor practice; when negative, it may raise doubts about one's capacity to perform. In addition, high self-efficacy indicates how persistent athletes will deal with obstacles, how motivated they will be when faced with adversities they may encounter, and the degree of effort they will make to achieve their goals (Feltz, Short, & Sullivan, 2008).

Another important contribution of the theory of self-efficacy, central to the present study, is the measurement of self-efficacy proposed by Bandura (1977, 1997). Since the initial formulation of his theory, Bandura has defended the use of specific self-efficacy measures, rather than evaluations of overall performance expectations. The microanalytic approach proposed by Bandura (1977, 2006) requires the assessment of the level or magnitude, strength, and generality of self-efficacy beliefs. The level of self-efficacy refers to the number of activities individuals judge themselves to be capable of performing above a selected cutoff value of efficacy strength (Bandura, 1977, 1982). The strength of the belief in self-efficacy reflects how convinced a person is of his/her ability to perform a given task, and generality represents how self-efficacy beliefs are positively related, even when they lie in different domains (Bandura, 1977). In sum,

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self-efficacy is not an overall trait, but rather a distinct group of self-beliefs related to different domains of functioning. There is no general measure of self-efficacy that encompasses all goals; instead, there are multidimensional measures capable of revealing the pattern and level of generalization of a person's self-efficacy (Vieira, 2012). A measure that addresses everything loses predictive and explanatory value, due to the lack of expression for the performance domain in question. Therefore, self-efficacy scales must be elaborated for the specific domain of the research area (Bandura, 1997).

Because Bandura argues that self-efficacy measurements must be specific to the task at hand, we consider that is important to review how self-efficacy has been evaluated in volleyball studies.

The International Volleyball Federation considers volleyball to be a competitive sport that requires high physical and technical performance, and it has been posited that the dynamism of this sport modality means that athletes have to adapt constantly to the new realities and train for better performance on the court (Fivb, 2017). Therefore, it is important to examine how these characteristics have been explored in the research. Specifically, it is important to discover which attributes (physical, technical, tactical, or psychological) have been

included in the items of instruments designed to assess self-efficacy in volleyball studies.

In previous studies exploring the instruments used to measure self-efficacy related to sports performance, Machado et al. (2014) found that self-efficacy beliefs in volleyball were related to certain technical foundations (for example, the serve in volleyball), without duly clarifying how these aspects were evaluated. Although the objective of some of these studies was to analyze technical, tactical, physical, and psychological aspects, they did not offer satisfactory information about the self-efficacy approach used in the measurement of self-efficacy beliefs.

Thus, the present systematic review study aims to investigate how self-efficacy has been evaluated in the context of volleyball, and what indicators and attributes have been contemplated in the instruments used to evaluate this construct.

## MATERIAL AND METHODS

### *Sources*

We searched for articles in the following electronic databases: Scopus, Eric, APA PsycInfo, PubMed, Science Direct, and Bireme. The rationale for using these databases was that they include articles in the areas of health, psychology, and sport.

The search by keywords was carried out independently by the researchers, using the Boolean operator and the combination of the three following descriptors “self-efficacy” AND “volleyball” AND “performance. The search was conducted in English, Portuguese, and Spanish (although no article was found in the Spanish language that met the criteria). For the search, the descriptors were contemplated in the title, abstract, or keywords in the databases.

#### *Inclusion and exclusion criteria*

As inclusion criteria, we considered only articles with volleyball athletes from different competitive levels (athletes from child categories to elite athletes) that assessed self-efficacy beliefs related to performance indicators.

As exclusion criteria, articles that included recreational athletes (sporadically practicing the modality), articles that referred to self-efficacy, but did not evaluate it properly in the study, articles from systematic reviews, theses, dissertations, letters to the reader, books, book chapters, notes, abstracts, and non-original articles were not included.

#### *Procedure*

Figure 1 shows the steps followed in the systematic review performed in the present study. In the initial search, a total of 339 articles were found. In this search, the period of

publication of these studies was not defined, in order to analyze how this construct has been evaluated over time. After searching in the six databases previously mentioned, and introducing the exclusion criteria, the following articles were removed: non-original articles (87), articles repeated in more than one database (13), articles that did not evaluate athletes from volleyball or included recreational athletes who sporadically played volleyball (32). After this first exclusion phase, other studies were excluded after reading the title (42) and abstract (109). Then, the 56 full-text articles were read, identifying 50 studies that did not specifically evaluate self-efficacy, but rather other psychological skills. The first search was conducted in January 2017, and it was updated in April 2018. In this time interval, only one study met the established criteria, and therefore it was added to the previous 6 articles in this systematic review. Thus, seven studies were maintained for analysis in the present systematic review.

## **RESULTS**

The results for aspects related to the articles included in this review are presented in Table 1. Specifically, they are presented in terms of the article reference (number of paper identification, authorship, year of publication,

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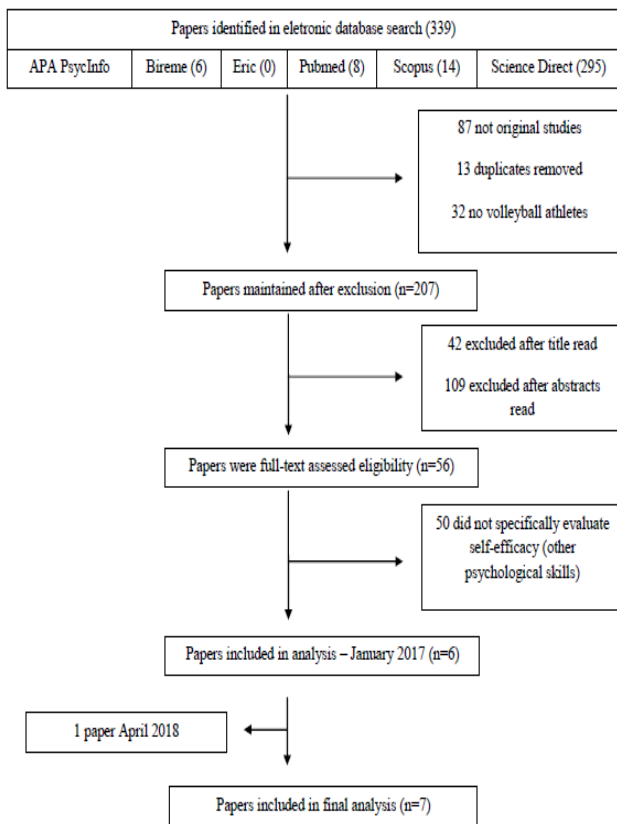


Figure 1. Phases of the research to carry out the systematic review study.

journal in which the study was published, and a quality criterion), participants' characteristics (age, gender, and level), self-efficacy evaluation form (characteristics of the instrument and psychometric properties), type of self-efficacy measured (efficacy expectations and outcome expectations), and type of scale.

Considering the search period for this systematic review, the first article found was published in 1992, with no other publication on volleyball self-efficacy until 2008 (sixteen years later). As for the frequency of publication, 2012

is the year with the highest number of publications on the subject (three articles).

Regarding the quality criteria of the journals where the articles were published, six of them (1, 3, 4, 5 and 6) were published in journals in which it is possible to identify the journal impact factor (JCR) or classification according to the proposal in Qualis Capes (2013 - 2016). In only one of the studies (2), the quality criteria (JCR or Qualis) of the journal in which the article was published were not found. In addition, among the publications found, only two articles (2 and 3) had the same author.

Regarding the participants' characteristics, in two studies the participants were female (1 and 3), one study was carried out with male athletes (4), two with both sexes (2 and 7), and two did not report the participants' sex (5 and 6). Regarding the participants age, the mean was 21.16 years. With regard to the participants' months or years of experience in the modality of volleyball, two studies did not report this information (1 and 5). In the other studies, however, it ranged from 1.3 to 13.9 years, with an average of 10.34 years of experience.

When analyzing the way self-efficacy in volleyball athletes was evaluated, the results show that all seven of the studies reviewed used



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Table 1. Article reference (number, authors, year of publication, journal, and quality criterion), participants' characteristics (age, gender, and level), evaluation form, type of self-efficacy expectations, and type of scale.

Number of paper identification	Authors, Year, Journal and Quality Criterion	Participants Age, Gender, Level, Months or Years of Experience	Evaluation Form	Type of Self-efficacy Expectations	Type of Scale
1	Lox (1992) Perceptual and Motor Skills (A2)	Volleyball female players ( $n= 52$ ) $M_{Age} = 19.60$ years (***) The study does not show SD) Experience not reported	An instrument developed by the authors to evaluate self-efficacy in volleyball. Scale with six items to measure athletes' perception of competence in relation to volleyball fundamentals, using a 9-point Likert scale. The scores were then averaged to yield a total self-efficacy score, with a possible range from 1 to 9.	Efficacy Expectations	Likert Scale 9 points
2	Zetou, Kourtesis, Getsiou, Michalopoulou, & Kioumourtzoglo (2008) Athletic Insight: The Online Journal of Sport Psychology (Quality criterion was not found)	New Beach Volleyball Players ( $n = 32$ ) $M_{Age} = 12.80$ ; $SD = 0.53$ Months of experience= $M_{Age} = 13.2$ ; $SD = 0.20$ National level (20 men and 30 women) Student level (30 men and 24 women)	Specific instrument for evaluation of self-efficacy in sports (Theodorakis, 1996), composed of five items to assess the basic volleyball skills of "setting" and "passing" Following pre-testing for each skill, the participants were informed of their score, and they were asked to fill out the self-efficacy questionnaire, stating the possible score they would try to reach. The questionnaire included five questions, and the participants had to answer using a 10-point scale.	Efficacy Expectations	Likert Scale 10 points

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Number of paper identification	Authors, Year, Journal and Quality Criterion	Participants Age, Gender, Level, Months or Years of Experience	Evaluation Form	Type of Self-efficacy Expectations	Type of Scale
3	Zetou, Vernadakis, Bebetos, & Makraki (2012)  Journal of Human Sport and exercise (B1)	Volleyball female athletes (n= 57). $M_{Age}=12.83$ ; $SD = 0.97$ years. Years of experience $M_{Age} = 1.99$ ; $SD = 0.67$	Specific instrument for evaluating self-efficacy in sports (Theodorakis, 1996). Service Performance - three times. Participants were informed of their performance scores on the service test, and then they indicated their expectation of self-efficacy by responding to question such as “ <i>On this specific service test, I can achieve a score of...</i> ”. they indicated the magnitude of self-efficacy by replying to the question “ <i>How certain you are?</i> ” on a 10-point scale anchored by “ <i>absolutely certain</i> ” (10) and “ <i>uncertain</i> ” (1). Subject rated their self-efficacy estimations for performance levels ranging from 10 to 40. Cronbach's alpha values of .76; .89, and .81 for the three times measured, respectively.	Efficacy Expectations	<i>Likert Scale 10 points</i>
4	Gomes, Miranda, Filho, & Brandão (2012)  Journal of Physical Education/UEM (B1)	- 1st stage = 9 athletes mean age = 23.78; $SD = 3.86$ and years of experience: $M_{Age} = 10$ years; $SD = 6.21$ - 2nd stage = 11 athletes $M_{Age} = 24.36$ ; $SD = 3.13$ and years of experience: $M_{Age} = 11$ years, $SD = 5.34$ - 3rd stage 10 athletes $M_{Age} = 22.80$ ; $SD = 3.58$ and years of experience: $M_{Age} = 11.1$ years; $SD = 5.99$ . All male athletes competed at varying levels (regional, national and international).	Self-efficacy Scale for Volleyball (EAIV) (Carmo, 2006), adapted from “Hockey Team Confidence Survey” (Feltz & Lirgg, 1998). Questionnaire composed of eight items, rated on a 11-point <i>Likert</i> scale. The athlete is asked about the degree of confidence in his/her ability to perform important skills in the game.	Efficacy Expectations	<i>Likert Scale 11 points</i>



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Number of paper identification	Authors, Year, Journal and Quality Criterion	Participants Age, Gender, Level, Months or Years of Experience	Evaluation Form	Type of Self-efficacy Expectations	Type of Scale
5	Gilson, Reyes, & Curnock (2012)  Journal of Strength and Conditioning Research (A1; IF: 2.060)	99 athletes from several sports - 9 volleyball players $M_{Age} = 20.00$ ; $SD = 1.20$ years. Gender not reported Division I athletes Experience not reported	The Self-efficacy Effort Questionnaire (SEEQ). Instrument composed of eleven items. Assess athletes' degree of confidence in their strength training effort by comparing their self-assessment and their coach's assessment.  SEEQ was constructed by following appropriate guidelines established by past researchers (Bandura, 2006; Feltz, Short, & Sullivan, 2008).  Each item has a Likert scale with 11 points, ranging from 0 to 100%.	Efficacy Expectations	Likert Scale 11 points
6	Blecharz, Luszczynska, Tenenbaum, Scholz, & Cieslak (2014)  Applied Psychology: Health and Well-being (IF: 2.722)	56 athletes - 31% volleyball players $M_{Age} = 22.70$ , $SD = 3.43$ Years of experience: $M_{Age} = 11.23$ ; $SD = 3.94$ years (Study 1 only) $M_{Age} = 27.4$ ; $SD = 4.9$ Specific gender of volleyball athletes in the sample not reported	The General Self-Efficacy Scale (GSE; Luszczynska, Scholz, & Schwarzer, 2005) "individuals' beliefs about their ability to deal with a wide variety of challenging demands", consists of ten items, such as "I can always solve difficult problems if I try hard." Response scale from 1 to 4 points.  Cronbach's Alpha value of 0.89 for the study.	Efficacy Expectations	Likert Scale 4 points

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Number of paper identification	Authors, Year, Journal and Quality Criterion	Participants Age, Gender, Level, Months or Years of Experience	Evaluation Form	Type of Self-efficacy Expectations	Type of Scale
7	Guicciardi, Fadda, & Delitala (2016)  International Journal of Sport Psychology (A2) (IF: 0.871)	133 volleyball players 64 males and 69 females $M_{Age} = 25.34$ ; $SD = 5.48$ Years of experience: $M_{Age} = 13.9$ ; $SD = 5.22$ years	The Volleyball Multidimensional Self-efficacy Scale (V-MSES; Guicciardi, Fadda, & Delitala, 2016) investigates self-efficacy, asking players to assess the degree of confidence they have in their ability to perform a specific task.  Questionnaire composed of 10 items, on a 5-point <i>Likert</i> scale. (from 1 = not confident to 5 = completely confident).  Cronbach's Alpha value of 0.86 for the Regulation of emotions and 0.69 for Communication.  Confirmatory Factor Analyses V-MSES discriminates between elite and non-elite athletes  Correlations between the V-MSES and task and ego orientation		<i>Likert Scale</i> <i>5 points</i>

questionnaires. One of the studies (1) used a questionnaire to assess the perception of competence in order to measure self-efficacy; three studies (1, 4 and 7) used specific instruments for volleyball, although only one of them was designed specifically for this modality (7); and three (5, 2 and 3) used questionnaires for the sports context. Only one study used a questionnaire to assess overall self-efficacy (6).

Regarding the evaluation form of the instruments used to measure self-efficacy, all were standardized questionnaires. Three studies reported Cronbach's alphas (3, 6 and 7), considered one of the most important psychometric properties for the reliability of the instrument. It should be noted that the other four studies (1, 2, 4 and 5) did not indicate the use of statistical procedures that reported psychometric properties of the instruments used to measure self-efficacy, and they did not present the instruments in their entirety.

With regard to the type of self-efficacy, that is, Bandura's distinction between self-efficacy expectations (the person's belief in his or her self-confidence to carry out a specific behavior) and outcome expectations (the belief that carrying out a specific behavior will lead to a given outcome), all the studies included in the review evaluated self-efficacy expectations.

In terms of the inclusion of the three microanalytic dimensions designed by Bandura

(2006) in the studies, that is, the level or magnitude (number of tasks you think you can perform), strength (degree of certainty with which you expect to achieve success at each level), or generality (number of domains in which the individual is considered effective), these characteristics were not clearly specified in the articles reviewed. Only the articles by Zetou et al. (2008, 2012), which used the Theodorakis questionnaire (1996), seemed to evaluate both magnitude and strength, although this aspect is not clearly defined.

Regarding the type of scale used to assess self-efficacy, only two articles (5 and 7) take into account the recommendations of Bandura (2006). What is evident in the articles is the need to specify the modality evaluated in the construction of the instrument (7) and use an 11-point scale, ranging from 0 to 100% (5). The other 5 articles (1, 2, 3, 4 and 6) used Likert scales to assess self-efficacy, varying the number of points on the scale (Table 1).

In the reviewed articles, we also tried to identify indicators and attributes contemplated in the instruments used to evaluate self-efficacy in the specific context of volleyball. The first two columns of table 2 include the identification of the paper (identification number of the paper and authors and year of publication), followed by correlates of self-efficacy and intervention strategies, self-efficacy indicators, and attributes

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of self-efficacy (technical, tactical, physical, and psychological).

Regarding the attributes related to self-efficacy, it was observed that in the volleyball modality, psychological aspects (one study, 6), physical aspects (one study, 5), technical aspects (four studies, 1, 2, 3, and 4) and (one study, 7) technical/tactical, regulation of emotions and motivation to practice and communication were evaluated. The main indicators of the skills related to the practice of volleyball (reception, digging, service, attack, block, defense) were also observed.

With regard to the methodologies used to evaluate self-efficacy in volleyball, four studies (1, 4, 5 and 6) used a cross-sectional research method to evaluate self-efficacy related to other psychological constructs (anxiety, self-confidence, motivational climate, among others); two studies (2 and 3) were longitudinal studies with interventions (self-report and self-modeling); and one study (7) presented the validation of an instrument to assess volleyball self-efficacy.

### DISCUSSION

The aim of the present study was to investigate how self-efficacy has been evaluated in the context of volleyball, and what indicators and attributes have been contemplated in the instruments used to evaluate this construct.

The predominance of studies with female athletes can be highlighted, indicating that women have become the focus of research in recent years (Devide et al., 2011). This prevalence can be explained by the fact that women's participation in sports competitions has increased, as can be seen in the last Olympic Games, Rio 2016, where 45% of the athletes were female, revealing the balanced participation between the sexes (Ioc, 2016).

It was also observed a predominance of studies performed with experienced athletes (average of 10 years of experience). It is worth noting that the perception of self-efficacy is influenced by the previous experiences of the athletes and by their vicarious experiences (Bandura, 1997). Therefore, it has been suggested that this belief is stronger in more experienced athletes. A study with high-performance volleyball teams of both sexes (Machado, 2018) found that the most experienced athletes ( $12.55 \pm 2.71$  years of experience in the sport) had strong self-efficacy before, during, and after the competition.

Regarding the instruments, only one validation study of a self-efficacy assessment instrument for elite and non-elite volleyball athletes was found, presenting some psychometric properties (Guicciardi et al., 2016).

Table 2. Evaluation, intervention strategies, indicators, and attributes of self-efficacy in volleyball.

Number of paper identification	Authors, year	Self-efficacy correlates/ intervention strategies	Self-efficacy indicators	Attributes of self-efficacy
1	Lox, 1992	Analysis of the relationship between perceived competence, anxiety, self-confidence and self-efficacy.	Perception of competence for execution of blocking, defense, reception, digging, attack, and service.	Technician (Block, defense, reception, digging, attack, and service)
2	Zetou et al., 2008	Intervention study (pre and post-test model) to evaluate the effect of self-modeling on self-efficacy of reception and digging.	Should indicate what score they would achieve and then whether or not they are sure about their answer.	Technical (digging and reception skills)
3	Zetou et al. 2012	Intervention study (pre and post-test model) to evaluate the effect of the self-report on the self-efficacy of the service.	Self-confidence in performing the service execution technique.	Technical (Execution of the service); Psychological (Cognitive, due to the technique of self-modeling used)
4	Gomes et al., 2012	Analysis of the relationship between flow, motivational orientation, Self-efficacy, and perceived ability.	Degree of confidence that the athlete is able to perform skills that are important for the game.	Technicians (service, digger, reception, defense, attack, block). Tactics (force opponent errors) Psychological (recover from bad performances, defeat opponents)
5	Gilson et al., 2012	Relationship between self-efficacy and effort in strength training	The degree of confidence the athlete has in his/her strength training effort, comparing his/her self-assessment and the coach's assessment.	Physical
6	Blecharz et al., 2014	Analysis of the relationship between general self-efficacy and motivational climate	Generalized perception of self-efficacy. Example item: "I can always solve difficult problems if I work hard enough."	Psychological
7	Guicciardi et al., 2016	Validate the volleyball self-efficacy scale in elite and non-elite volleyball athletes using a confirmative approach. To verify with confirmatory factor analyses the multidimensional structure. To verify that the scale discriminates between elite and non-elite athletes. To explore correlations of the scale with task and ego orientation	Assess the degree of confidence they have in their ability to perform a specific task.	Technical/Tactical Regulation of emotions Communication Motivation to practice

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Two studies reported the Cronbach's alpha values, and these values are specific to the studies in question (Zetou et al., 2012), whereas no values were included from the validation study of the instrument used (Blecharz et al., 2014). This is a recurrent factor in several studies, and the authors end up presenting only the validity of the data obtained with the measurement instrument specifically in their study, but not the value originally obtained in the study on the elaboration and validation of the instrument, thus affecting reproducibility and comparisons between studies (Machado et al., 2014).

A possible explanation for the few studies found in this review may be associated with the year in which the Guide for the **Construction of Self-efficacy**

**Scales** was published (Bandura, 2006).

The Guide presents parameters that support the conceptual and empirical analysis of the construct in question, highlighting the need to consider different domains of self-efficacy functionality and the context in which this construct will be evaluated (Bandura, 2012). Therefore, the lack of these parameters in publications prior to this date can be understood.

In addition, most of the studies reviewed (1, 2, 3, 4, 6, 7) used, as a priority,

measures that indicate the degree of efficacy evaluated on a Likert scale. Only one of these articles (5) evaluated the magnitude of self-efficacy. Bandura (2012) strongly criticizes the use of Likert scales to evaluate self-efficacy because this type of scale is appropriate for phenomena that have positive and negative valences, such as attitudes, opinions, and likes and dislikes, but not self-efficacy because a complete disability judgment (0) does not have a negative gradation. Bipolar self-efficacy scales with negative gradations below zero do not make sense. For the discontinuous bipolar scale score, there are studies that convert partially ordered positive and negative segments separated by neutral ones (do not agree or disagree) as if they were a completely ordered unipolar graduation. It does not make sense to say that you have a neutral level of self-efficacy. When ratings on a bipolar scale are converted to a unipolar ordinal scale, the significance of the neutral midpoint is rebuilt as a moderate level of self-efficacy. Thus, bipolar Likert-type scales that have been used to measure self-efficacy have had a distorted meaning (Bandura, 2012).

Although the reviewed studies did not specify the type and measure of self-efficacy assessed, it can be assumed that the majority sought to assess expectations of personal effectiveness, which refers to the athlete's belief in his/her ability to take the necessary steps to



achieve a goal.

Regarding the attributes related to self-efficacy, only one study evaluated technical, tactical, psychological, and communication aspects in volleyball, and four studies evaluated only technical aspects, with an emphasis on skills related to volleyball practice (passing, arming, serving, setting, blocking, defense). Therefore, the evaluation of psychological aspects was hardly explored, which may be a limitation of the studies contemplated in this systematic review.

There is a common misconception that the theory of self-efficacy is confined to measures of "narrow" tasks, where individuals judge the effectiveness of their specific performance on a specific task. However, the task has been defined as "work" that encompasses a wide range of activities, and not just isolated work, so that the strength of self-efficacy must be measured in a wide range of performances within an area of activity, and not only related to specific item performance (Bandura, 2012).

Among the psychological aspects evaluated, cross-sectional studies that associate self-efficacy with self-confidence constructs, motivational climate, and anxiety are highlighted. Self-efficacy acts in a way that cognitively regulates anxiety because of the strong perceived efficacy in controlling one's

thoughts, and athletes may become less overwhelmed by negative thoughts and feel a lower level of anxiety (Bandura, 1982).

As for longitudinal studies with interventions, it is worth highlighting the studies in which self-report and self-report practices were used to improve and maintain athletes' sport self-efficacy, which can help athletes to have information not only in difficult times of practicing their modality, but also throughout their entire sport career.

It is important to mention, as a limitation of the study, that the low number of articles for analysis made it difficult to assess the self-efficacy attributes because most of the studies used non-specific tools to evaluate the construct in the context of the evaluated modality, especially with regard to the type of measurement scale used to measure self-efficacy (Likert 4 to 11 points), instead of a strength scale (0 to 100%), as recommended by Bandura (2006).

#### **PRACTICAL APPLICATION**

Based on the results of this study, it is clear that it is necessary to develop specific instruments to assess self-efficacy in volleyball. There is a need for the production and reproduction of studies with volleyball athletes of different categories and both sexes, in order to have greater scientific evidence about the role of self-efficacy in sports practice.

## Self-efficacy in volleyball

The importance of psychometrics in the sporting context should be emphasized, in terms of the elaboration of instruments that contemplate technical, physical, tactical, and psychological aspects, in order to have a holistic view of the self-efficacy beliefs that are relevant to the athlete's performance.

The lack of instruments specifically designed to measure self-efficacy in volleyball is a difficulty that makes the evaluation of this variable imprecise and hard to reproduce.

Because we already know how self-efficacy in volleyball has been evaluated, and that there are limitations in the evaluation of this construct, it is important to develop instruments to evaluate this construct in this modality. In practical terms, volleyball athletes need to self-regulate during matches because several cognitive, emotional, and behavioral reactions are produced during the game, and to be successful, the perception of self-efficacy can contribute significantly to adapted self-regulation.

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