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STUDY OF ADAPTATION PSYCHOMETRIC INSTRUMENTS THAT MEASURE ANXIETY, SELF-EFFICACY AND MOTIVATION FOR SPORT PERFORMANCE

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ABSTRACT. Research has shown that human intelligence was encouraged thinkers since antiquity. Since Plato (428 IH), Aristotle (384 IH), Augustine (354 IH) and until today. Numerous studies have been published with the aim to verify the effectiveness of psychological intervention programs to increase athletic performance (Greenspan and Felz, 1989 Vealey, 1994; Weinberg and Comar, 1994). From a total of 45 trials, 38 of them, then 85% were found positive effects on performance. Psychological methods, techniques and strategies refer to practices which lead to psychological skills. Each of psychological methods, if properly learned and applied, leading to psychological skills. Examples of psychological skills: intrinsic motivation, self-confidence, attention control, activation control, control anxiety. (Christmas M. 2005).

The main objective of this study is to adapt and check psychometric properties of the scales chosen to measure motivation, anxiety and self-efficacy.

Key words: psychometric instruments, anxiety, self-efficacy, motivation

REZUMAT. ***Studiu de adaptare a instrumentelor psihometrice ce măsoară anxietatea, autoeficacitatea şi motivaţia pentru sport de performanţă*.** Cercetările au demonstrat faptul că inteligenţa umană a stârnit interesul gânditorilor încă din Antichitate. Începând cu Platon (428 I.H.), Aristotel (384 I.H.), Augustin (354 I.H.) şi până în zilele noastre. Numeroase studii au fost publicate cu scopul declarat de a verifica eficacitatea programelor de intervenţie psihologică în creşterea performanţei sportive (Greenspan şi Felz, 1989; Vealey, 1994; Weinberg şi Comar, 1994). Dintr-un număr de 45 de studii, 38 dintre ele, deci 85%, au găsit efecte pozitive asupra performanţei. Metodele psihologice, tehnicile sau strategiile, se referă la practicile care conduc la dezvoltarea abilităţilor psihologice. Fiecare din metodele psihologice, dacă sunt învăţate şi aplicate corect, duc la dezvoltarea abilităţilor psihologice. Exemple de abilităţi psihologice: motivaţia intrinsecă, încrederea în sine, controlul atenţional, controlul activării, controlul anxietăţii. (Crăciun M. 2005). Obiectivul principal al acestui studiu este de adaptare şi verificarea proprietăţilor psihometrice ale scalelor alese pentru a măsura motivaţia, anxietatea şi autoeficacitatea.

Cuvinte cheie: instrumente psihometrice, anxietate, autoeficacitate, motivaţie

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In this study we chose to focus on three psychological factors, anxiety sports performance, sports performance motivation and self-efficacy. We chose these three factors from the theoretical principles of cognitive behavioral psychology that explain achievement behavior through behavioral ABC model. ABC model of behavior is based on Skinner's original model (1974), but is supplemented with information derived from modern research (Albert Bandura and Julian Rotter) on information processing that each individual derives the stimuli. This model argues that stimuli, either internal or external causes in terms of information processing at which they are subject, performing a certain behavior.

Self-efficacy, anxiety and motivation are important antecedents that may affect the realization of behavior. Thus, a high level of anxiety could adversely affect the performance of the athlete, while a high level of efficiency and self-motivation positively influence the performance of an athlete.

Regarding the feeling of self-efficacy, studies suggest that it has a positive role in perseverance and athletic performance, being associated with lower levels of competitive anxiety (Pajares, 2005; Parks, 2005).

Bandura (1977, 1986, 1997) defines the concept of self-efficacy as the belief of being able to successfully execute a specific task in order to achieve a particular outcome (egg, self-recognition or recognition of the coach). Since the first publication of the concept of self-efficacy (Bandura, 1977) were published over 60 research articles specifically related to sports performance (Moritz, Feltz, Mack and Fahrbach, in press).

The self-efficacy developed by Bandura checks the powerful and sporty.

Perceived self-efficacy is a strong and consistent predictor of athletic performance (Schunk, 1995). As a general rule, compared to people who doubt their capabilities, those with a sense of high self-efficacy work harder, persist in the task and reach a higher level of performance (Christmas,2008).

Dzewaltowski (1989) report a positive relationship between behaviors associated with exercise, intention, attitude and self-efficacy.

Dzewaltowski et al. (1990), Courtney & McAuley (1993), Dishman (2001), and Hagger et al. (2002) shows that there is a moderate correlation between self-efficacy and participation in physical activities both young adults and the older ones, and Yordy & Lent (1993) and Armitage & Conner (1999) argue that self-efficacy is an important predictor for physical activity. According to the study by Brawley & Martin (1995), self-efficacy cover between 3 and 25% of the variance in behaviors associated with activity and exercise (Chiu & Kayat, 2010).

Regarding motivation, Brasile and Hedrick (1991) showed that motivational factors are paramount: integration into a group with social interaction, recognition, respect and sense of belonging. This type of sports

participation and strengthen factors are often encouraged by friends, family and health professionals.

Motivation is the center of many of the most interesting sports both as a result of the development of social media, such as competition and behavior of coaches, and the influence of development on behavioral variables such as persistence, learning, and performance (Duda, 1989; Vallerand, So & Ryan, 1987). Given the importance of these consequences for athletes, can easily understand the interest of researchers linked to motivation as it relates to sport. Several conceptual perspectives have been proposed to better understand the motivation of athletes (Roberts, 1992). One view has been shown to be useful in this field posit that behavior can be intrinsically motivated, extrinsically motivated, or unmotivated (So, 1975, So & Ryan, 1985, 1991). This theoretical approach has generated a considerable amount of studies that are relevant to sport (Bribri, Vallerand, Blais and Pelletier, in press, So & Ryan, 1985, ch. 1, Fortier, Vallerand, Brikre and Provencher, in press, Vallerand, So Ryan, 1987).

Unmotivation form of motivation is similar to the concept of "learned helplessness" (Abramson, Seligman & Teasdale, 1978). There is no intrinsic motivation, but extrinsic. When athletes are in such a state, they no longer identify good reasons for them to continue training. Eventually they may even decide not to practice their sport.

In the anxiety this is a concept that is widely discussed by athletes and sports professionals. People involved in competitive sports should be aware of the symptoms related to anxiety. Once aware of the situation, it would be prudent to deal with anxiety issues.

According to Kremer and Moran (2008) a reason to have a tendency to be tense before the competition could be related to the pressure of being noticed. Spectators at any sport constantly evaluates the abilities of athletes, looked, and this can be extremely daunting for those who are not prepared to deal effectively with this pressure. Not wanting to fail can strain bunch more on a player when they are aware of being observed and the stress continues to increase.

For a lot of athletes anxiety can be a very unpleasant feeling, physiological symptoms, including increased heart rate, sweaty palms and muscle tension. In fact, Ray and Weise-Bjornstal (1999) highlighted seven possible categories in which an athlete can experience stress, including emotional, cognitive and behavioral.

Anxiety stems from concern over the lack of control over circumstances (Mind, 1999). During a competition, the adrenaline can be released. Liberation of adrenaline may have positive and negative effects. Among the positive effects include alertness, physiological arousal that the body is prepared for

explosive activity (Mind, 1999). Athletes and their support system should identify stressors and then formulate an individualized plan to manage stressors. Shame and embarrassment are constant threats in sports because the game is usually played in front of people (Ferraro, 1999).

Given the influence of these factors, as shown above, we pursue the research project to measure these three concepts and to influence them in a psychological intervention on athletes. In this respect, this study aims to examine the psychometric qualities of the instruments selected to measure these concepts.

Objectives

The primary objective of this study is the adaptation and evaluation of the properties selected psychometric scales to measure motivation, self-efficacy, and anxiety.

Method

The first step was to adapt the scales from English into Romanian. For translation into Romanian were recruited two independent translators. Translators were one year master's students in clinical psychology with Cambridge Advanced Certificate in English.

There were some differences between the two versions. Differences were not significant for the purposes of item. Some items were hard to understand. These were discussed by coordinating with an independent expert (psychologist), decided which version is the best.

Back translation was done by two psychologists who speak Romanian; with very good English skills (I could not locate native English speakers who are experts in Romanian).

There were some differences between the two translations. A native English speaker (an exchange student came from a university in Europe, the Faculty of Psychology) was asked to examine the two versions and see if there were significant differences that affect meaning elements. Graduate student concluded that there were no such differences - some differences were probably due to our translators use limited vocabulary but did not affect the meaning. There were some minor adjustments made to the pilot version of the questionnaire.

In addition we added a question on each questionnaire exercise. This question does not enter the final score of the test; its purpose is to familiarize children with the look questionnaire and how to answer the question. They helped to answer the questions we added to each a visual landmark

Subjects

Final versions translated the scales were applied on a sample of 110 athletes from nine sports specialties. Some sports such practices are both individual sports and team (gymnastics, martial arts, athletics, swimming, football, volleyball, table tennis, dance sport, judo.).

Athletes were 44 boys and 66 girls aged 6-12 years (mean 8 years) (descriptive data).

Table 1.

Descriptive data about the subjects included in the study representing the age and sex

N=110			
Age	M=8	Min.=6	**Sex** f=66
	Max.=12		m=44

Sports Practiced	**Number of subjects**	**Sex f**	**m**	**Retest subjects**

Table 2.

Descriptive data about the subjects included in the study representing disciplines practiced

Gimnastics	21	18	3	15
Dance	14	14	0	7
Judo	9	6	3	5
Ping – pong	10	5		5
Swimming	10	5	5	4
Athletics	10	4	6	4
Football	12	0	12	5
Basketball	6	6	0	0
Karate	18	8	10	12

Instruments

1. Thus, performance anxiety in sport have chosen to measure the scale Sport Anxiety Scale-2 (SAS-2) (SAS-2 Smith, R.E., Smoll, F.L., Cumming, S.P. and Grossbard, J.R., 2006). The gauge contains a number of 15 questions (items), which allows measurement of multidimensional sport performance anxiety by measuring individual differences in somatic anxiety, care and concentration disturbance, to be studied antecedents and consequences of cognitive and somatic anxiety performance in children.

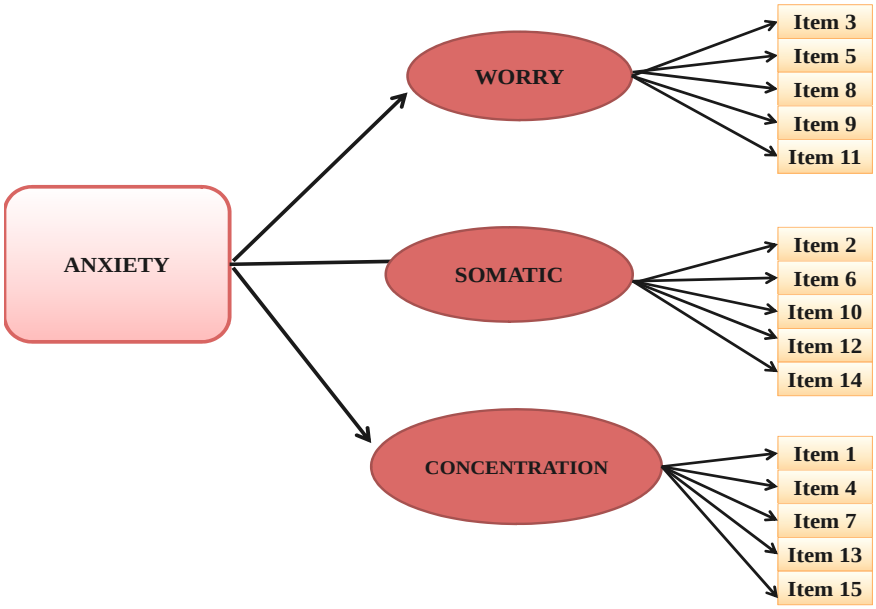

Figure 1. Confirmatory factor analysis of the SAS-2 items

Each question has 4 possible answers, choose one option that fits. The first option means at all (not afraid at all), the second option means little (afraid least) the third variance means pretty much (you're pretty much afraid) and latter means a lot (and very scared).

2. Motivation for sports performance we chose to measure the scale The Sport Motivation Scale (SMS-28) (Pelletier, L.G., Fortier, M.S., Vallerand, R.J., Tuson, K.M., Briere, N.M. and Blais, M.R., 1995). The scale comprises 28 questions (items), which measures the intrinsic motivation (to know, to succeed, to be stimulated), extrinsic motivation (identification, introjections, external regulation) and unmotivation. On this scale, loose I added a subscale measuring desire to obtain performance in sports.

The motivation scale original version built for adults allows the calculation of scores on the subscales to identify different types of motivation (ie, to know, to succeed, to be stimulated, and so on). Applying this scale in children aged 6-12 years questions have been modified either to structure or content as to be applicable to children. So as not to affect the validity of the subscales we will use in the research project only the total score.

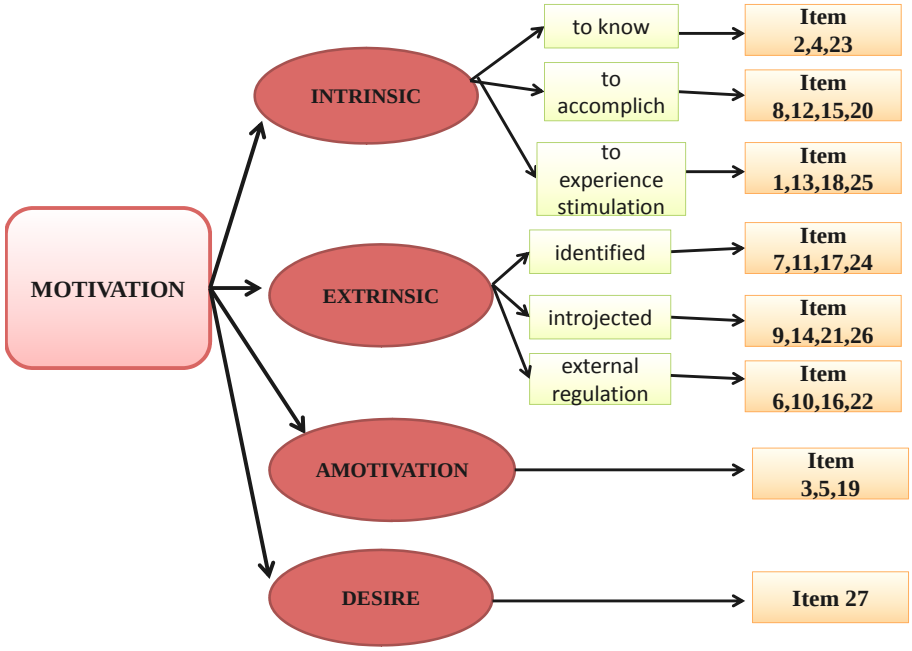

Figure 2. Confirmatory factor analysis of the SMS items

Each question has 4 possible answers, choose one option that fits. The first option is not a reason (not that doing sports), the second version is little reason (this is one reason for coming to the sport, but one small), the third option is good reason (this is a good reason for coming to the sport) and latter very important reason (this is a very important reason).

3. For self-efficacy for sports performance, we chose to measure the scale Physical Activity Self-Efficacy Scale (PASES) (Bartholomew, J.B., Loukas A.E., Jowers, M. and Allu, S., 2006). Version adapted and calibrated for the Romanian population was adapted to assess self-efficacy in relation to sports. In this study, we used the items as they were translated and presented.

Self-efficacy scale includes 8 items that can be ranked from 1 to 4 (1 - scarcely 2 - Not so good 3 - may well, 4 - may very well).

Although a number of investigations since the self-effective approach as a general rule self-efficacy is conceptualized as being specific.

The self-efficacy scale in addition to the 8 questions of scale we added four questions specific to each sport. Self-efficacy is a construct specific area; the more accurate question is relevant both measured construct (Bandura). The four questions were constructed for nine sports that were included in this

study to have a variety of results for validity many sports. Pt. each subject three experienced coaches were asked to define and describe four essential skills for performance in that sport. Based on discussions of these experts were selected 4 questions containing those features on which there was anonymous.

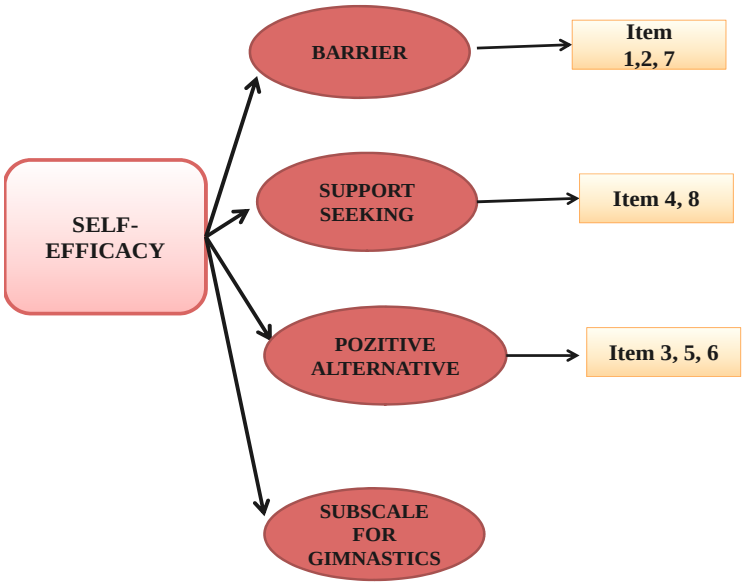

Figure 3. Confirmatory factor analysis of the PASES items

Procedure

Individuals were contacted through various ways and in various places.

Athletes were contacted by coaches and parents, who were asked to sign an agreement that has been specified for research and deployment algorithm.

Questionnaires were given a code number, so that participants can respond anonymously, and were offered for completing the A4 envelope so that submissions remain confidential and at the same time facilitate the collection of questionnaires.

The 3 scales were applied athletes translated by an assessor who read the questions and answer surrounded by sports. The questionnaires were applied individually, without time limit. Given the age of the children have chosen this to maximize the reliability of the data collected. Out of the tested athletes I reapplied the same questionnaires after 6 weeks to measure the stability of the results.

Results

Data were processed with SPSS 18 (Statistical Package for the Social Sciences).

We analyzed scales adapted in terms of their fidelity. Fidelity refers to a psychological test scores obtained expresses the extent to which the actual values of the construct that the test is measuring. Test translation, adaptation of another language can lead to some changes in the perception and understanding of the construct measured. It is therefore important to measure fidelity. This has two aspects: internal consistency and stability over time results.

Internal consistency is the extent to which items measure the same variable. We analyzed the internal consistency alpha Crombach method.

Table 3.

A coefficient for internal consistency
Crombach Anxiety Scale Performance in Sports

SAPS	α Crombach
Total	0.892
Subscale Somatic	0.687
Concern	0.761
Impaired concentration	0.826

For **Anxiety Scale Sport Performance** Crombach α value is 0.892, indicating a high reliability of the scale (Murphy and Davidshoper 1998). The analysis shows loyalty subscale indices for 0.687 worth subscale somatic subscale value of 0.761 to 0.826 for anxiety and impaired concentration subscale. These indices indicate medium and high fidelity.

Table 4.

Coefficient for internal consistency
Crombach Anxiety Scale Performance in Sports

SAPS	α Crombach
Total	0.892
Subscale Somatic	0.687
Concern	0.761
Impaired concentration	0.826

For **Motivation Scale for Sport Performance** Crombach α value is 0.850, indicating a high reliability of the scale (Murphy and Davidshoper 1998).

Table 5.

Coefficient for internal consistency
Crombach Motivation Scale for Sport Performance

SMSP	α Crombach
Total	0.850

For **Self-Efficacy Scale** for sports performance for the 8 questions that show self-efficacy for physical condition score is 0.769 which indicates a fairly large scale. For the 4 questions we built examined the internal consistency for the 9 sports. Thus gymnastics internal consistency coefficient is 0.831 which indicates a high fidelity. Dance coefficient is 0.789 which indicates a high fidelity. For judo coefficient is 0.772 which indicates a high fidelity. Table tennis coefficient is 0.108 which indicates a very low fidelity. For swimming coefficient is 0.194 which indicates a very low fidelity. For athletics coefficient is 0.481 which indicates a low fidelity. For soccer coefficient is 0.348 which indicates a very low fidelity. Basketball coefficient is 0.789 which indicates a high fidelity. For karate coefficient is 0.626 which indicates a moderate to low fidelity.

Outside subscales for swimming, table tennis, athletics and soccer subscales have good internal consistency indicating that the questions measure the same construct. Of interest to us is the great value of the subscale for the gym that will be used later in the research project.

Table 6.

Crombach α coefficient for internal consistency of
self-efficacy Scale for Sports Performance

SASP		α Crombach
Total		0.769
Subscale	Gimnastics	0.831
	Dance	0.789
	Judo	0.772
	Ping-pong	0.108
	Swimming	0.194
	Athletics	0.481
	Footbal	0.384
	Basketball	0.789
	Karate	0.626

Stability of the results indicates the extent to which different applications as subject similar results. For constructs that do not vary over time stability is an indicator of loyalty construct. Anxiety, motivation, self-efficacy in the absence of an intervention on athletes should not vary within a short time. To check the stability of time we calculated the correlation coefficients between the first and second application of the subscales. For this analysis we have a lot of 57 athletes were reapplied to the same scale. The results show very high correlation between the first and the second application.

Anxiety score is 0.998

Motivation score is 0.995

Self-efficacy score is 0.997

To be specific subscale self-efficacy sport whose long-term stability is very high (0.999).

Table 7.

Correlation coefficients (Pearson) between the first and second application of the scales Anxiety Scale Performance in Sport (SAPS)

CORRELATION			
		Score SAPS	Scor SAPS 2
Score SAPS	Pearson Correlation	1	0.998
	Sig. (2-tailed)		0.01
	N	57	57
Score SAPS 2	Pearson Correlation	0.998	1
	Sig. (2-tailed)	0.01	
	N	57	57
Correlation is significant at 0.01 (2-tailed)			

Table 8.

Correlation coefficients (Pearson) between the first and second application of the scales Motivation Scale for Sport Performance (SMSP)

CORRELATION			
		Score SMSP	Score SMSP 2
Score SMSP	Pearson Correlation	1	0.996
	Sig. (2-tailed)		0.01
	N	57	57
Scor SMSP 2	Pearson Correlation	0.995	1
	Sig. (2-tailed)	0.01	
	N	57	57
Correlation is significant at 0.01 (2-tailed)			

Table 9.

Correlation coefficients (Pearson) between the first and second application of self-efficacy scales Scale for Sport Performance (SASP) specific to each sport

CORRELATION			
		Score SASP specific	Scoer SASP 2 specific
Score SASP specific	Pearson Correlation	1	0.999
	Sig. (2-tailed)		0.01
	N	57	57
Score SASP 2 specific	Pearson Correlation	0.999	1
	Sig. (2-tailed)	0.01	
	N	57	57
Correlation is significant at 0.01 (2-tailed)			

With these results in a relatively broad group of athletes we calculated for each scale range part that fits a low score, medium and large to enable us to report the results of future studies that will include smaller samples and size. Thus we calculated average scores range considering the mean and standard deviation of scores obtained. A low score is below average - one standard deviation and a high score is above the mean + 1 standard deviation. The range of mean ± 1 standard deviation indicates an average score.

To lower anxiety score is <17, higher than 30, medium 17-30

For low motivation score is 68, high is 92 and 69-91 is medium

For small sub self-efficacy score <25 (0-24) and the high score is> 33, between 25-32 average.

Specific self-efficacy small <10, high 18, average 10 to 18

Table 10.

Mean and standard deviation for the 3 scales

Media	Standard deviation		
Scale	Score low	Score medium	Score high
SAPS	≤ 17	18-29	≥ 30
SMSP	68	69-91	92
SASP	≤ 25	26-32	≥ 33
SASP specific	≤10	11-17	≥18

Discussions

Our main objective was to adapt three scales that measure three psychological factors relevant to sport performance. I also wanted to check the psychometric properties of the variants in Romanian. To this end we analyzed the feature fidelity tests. Being an adaptation we examined the validity of the

test as it is not affected by the scale and adapt its translation into another language. Our results showed that the performance Anxiety Scale translated into Romanian sport version has a very good fidelity first expressed both internal consistency coefficients and the time stability analysis results.

For Motivation Scale for Sport Performance Our results again show good psychometric properties with a very high coefficient of internal consistency and good stability over time. The self-efficacy scale for athletes to physical activity is a high internal consistency and stability of the very good results.

The sport -specific self-efficacy subscale had results that showed good stability while the results for each of the nine sports , but the internal consistency analysis results are good only for subjects gymnast, dance, karate, judo and basketball, these subscales can be used to further study the ability of self-efficacy measure specific sport. Subscales for swimming, table tennis, football and athletics should be resumed and analyzed composition of items to have adequate psychometric properties is before being used in other studies. Relevant research project is the result obtained for the subscale of the gym, so we can use this to measure the self-efficacy subscale of the gymnasts' performance to be included in the research project. The application of these scales in a group of athletes spread allowed us guidance and calculation rules that we use in future studies.

Conclusions

In conclusion the three scales adapted subscale built new gym have good psychometric properties that will allow us to adequately measure the level and evolution of these three constructs in an intervention project to increase sports performance and emotional adjustment in performance gymnasts.

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