

Impact of motivation on anxiety and tactical knowledge of young soccer players

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Abstract:

Decision-making in sports is influenced by several cognitive processes. Motivation is a behavioral variable, which consists of regulations that may be associated with sports performance. Study aimed to measure and evaluate the impact of motivation on anxiety and tactical knowledge of young soccer players. 103 regional players aged 10- to 17-years participated in the study. To assess motivation and anxiety, the Sport Motivation Scale II and Competitive State Anxiety Inventory 2 were applied. The tactical indicator was quantified by the Declarative Tactical Knowledge test. Cluster analysis was used to group individuals according to the dimensions of anxiety and tactical knowledge. A multinomial logistic regression identified the level of significance of motivation on the other variables and groups evaluated. Somatic anxiety was positively influenced by the increase in levels of integrated regulation (OR = 0.31) and negatively influenced by the increase in levels of identified regulation (OR = 4.02). Self-confidence was significantly affected by the increase in integrated regulation (OR = 4.64). In relation to tactical knowledge, it was positively influenced by integrated regulation (OR = 2.02) and by the decrease in levels of amotivation, being that the more amotivated individuals had a lower probability of presenting high tactical knowledge (OR = 0.45). Motivation has a significant impact on anxiety and tactical performance indicators, thus indicating the importance of the insertion of this variable in training programs.

Key words: adolescents, sports psychology, declarative tactical knowledge, youth sports.

Introduction

Athletes need to master physical, technical, tactical, and psychological skills to succeed in sports such as soccer. Moreover, soccer has a context with high levels of unpredictability and uncertainty that leads players to require a permanent tactical-strategic attitude and make quick decisions to solve problems throughout the game (Matias and Greco, 2010). This decision-making ability is based on cognitive processes, which may be affected by low levels of self-determined motivation or high levels of cognitive anxiety.

Fernandes et al. (2013) reported a negative relationship between performance and cognitive anxiety in sports, similar to the study by Patel et al. (2010), which showed that somatic anxiety negatively affects the performance of athletes. On the other hand, increasing the athletes' self-confidence may maximize their performance (Millet et al., 2005). In other words, anxiety is a construct that deals with the tendency that athletes have to perceive stressful situations and their disposition to respond to stress (Fernandes et al., 2010).

Mastering tactical skills requires a better understanding of the sport and training, which becomes more efficient as the athlete's engagement and motivation to practice increase. Studies have shown that affective decision-making can influence the tactical behavior of under-15 soccer players (Gonzaga et al., 2014), in order to achieve high performance in sports, for example tactical skills, that is knowing "what to do" in a certain situation (Garganta, 1998), athletes should not exceed the optimum level of anxiety, especially cognitive anxiety, and should be driven by self-determined motivation, which helps to keep the athlete engaged in the sport.

Intrinsic motivation (IM) and extrinsic motivation (EM) are also central concepts from the self-determination theory (SDT) (Deci and Ryan, 1985), for understanding the process of motivation in sport settings, the former being related to a high level of self-determined motivation (Deci and Ryan, 2012), which in turn has a positive association with self-esteem (Kosmidou, 2013). Furthermore, motivation is directly related to performance and success in sports (Jowett et al., 2012). The self-determination theory provides tools to understand human behavior in many life situations and has often been used to study the motivation for sports practice and its influence on other psychological and performance conditioning variables (Woodman and Hardy, 2003). Although there are studies on motivation, anxiety, and tactical knowledge, the aim of this study is to measure and evaluate the impact of motivation on anxiety and tactical knowledge in young soccer players.

Material & methods

Participants

One hundred and three soccer players enrolled and attending a regional soccer-training project from the northwest of Parana state – Brazil, aged 10- to 17-years, were recruited for the study. All players were selected through a non-probabilistic and intentional technique according to availability, and based on the inclusion criteria of training twice a week and presenting the consent form signed by a parent or guardian. Players who misunderstood or were incapable of answering the questionnaires and tests in an appropriate manner were excluded.

Instruments

Psychological evaluation procedures were performed prior to training sessions. Self-determined motivation was assessed by the Sport Motivation Scale II (Pelletier et al., 2013), adapted to the Brazilian context by Nascimento Junior et al. (2014). The scale consists of 18 items divided into six dimensions: Intrinsic Regulation, Integrated Regulation, Identified Regulation, Introjected Regulation, External Regulation, and Amotivation. The SMS II contains a 7-point Likert scale where 1 represents “does not correspond at all” and 7 “corresponds completely”. To measure anxiety, the Competitive State Anxiety Inventory-2 (Martens et al., 1990) was used, validated for the Portuguese language by Santos and Serpa (1991). The CSAI-2 consists of 27 items divided into three dimensions: Cognitive Anxiety, Somatic Anxiety, and Self-confidence. These dimensions are classified by a 4-point Likert scale, where 1 represents “not at all” and 4 “very much”. Declarative tactical knowledge (DTK) was evaluated through the test proposed by Mangas (1999). The test comprises 11 soccer video scenes that are shown to the player one at a time, and at the decision-making moment the video stops and the player is required to choose the best alternative from four options. The test consists of 11 scenes and for each best answer, 1 point is awarded; the total values are transformed into a scale of up to 10 points.

Data collection and analysis

Study subjects were evaluated inside of university campus, close to their training site. Tests and protocols were applied by a experienced group of professors. Ethics approval was given by the Maringa State University Human Being Research Committee. Descriptive statistics were used to verify the mean, standard deviation, odds ratio and confidence interval of all variables of the study. Non-hierarchical K-means cluster analysis was performed to create groups in each domain of Anxiety and DTK variables. This multivariate method classifies players with similar performance into three levels (high, moderate, and low). Multinomial Logistic Regression was performed to analyze the level of significance of motivation on anxiety and tactical declarative knowledge. All procedures followed the recommendations proposed by Maroco (2014) and were performed in SPSS software (v.23).

Results

Fig.1 presents the sample characterization according to descriptive values of mean and standard deviation for each of the motivation regulations, anxiety dimensions, and declarative tactical knowledge.

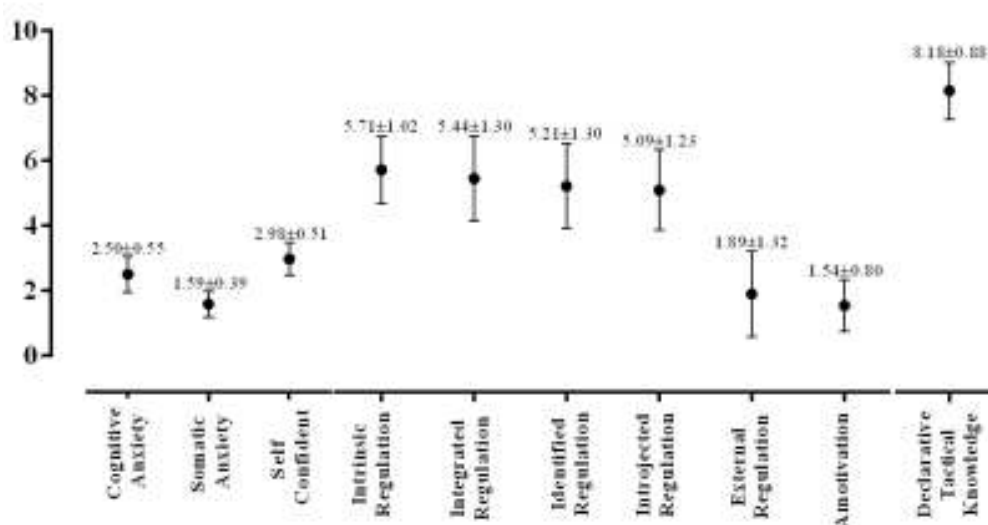


Fig. 1. Descriptive analysis of motivation, anxiety and declarative tactical knowledge.

Table 1 presents the results of the multinomial logistic regression, adopting as independent variables the regulations of motivation and as dependent variables, DTK and anxiety dimensions. A significant result was

found between integrated regulation and DTK, with an odds ratio value of 2.02, that is, there are two times more chances that a player will be classified in the high DTK group when compared to the low DTK. Another significant variable was amotivation, with an odds ratio of 0.45, indicating that the chances of being classified as high DTK, relative to the low DTK group decreased 55% per unit of amotivation.

Table 1. Impact of each sport motivation regulation on anxiety and declarative tactical knowledge.

	Intrinsic R.	Integrated R.	Identified R.	Introjected R.	External R.	Amotivation
	OR (CI 95%)	OR (CI 95%)	OR (CI 95%)	OR (CI 95%)	OR (CI 95%)	OR (CI 95%)
Cognitive Anxiety						
High (n=31)	1.15(0.59-2.24)	0.90(0.53-1.55)	1.19(0.67-2.09)	1.15(0.69-1.91)	1.00(0.62-1.62)	0.67(0.30-1.50)
Moderate (n=31)	1.61(0.81-3.21)	0.99(0.58-1.69)	0.81(0.47-1.40)	1.29(0.77-2.18)	0.91(0.56-1.47)	1.11(0.52-2.36)
Low (n=41)	Reference	Reference	Reference	Reference	Reference	Reference
Somatic Anxiety						
High (n=8)	1.41(0.45-4.39)	0.31(0.12-0.82)	4.02(1.09-14.84)	0.75(0.32-1.75)	1.47(0.67-3.24)	0.73(0.20-2.62)
Moderate (n=46)	1.12(0.63-2.01)	1.04(0.65-1.68)	0.94(0.59-1.49)	1.21(0.78-1.89)	1.32(0.85-2.03)	0.99(0.52-1.88)
Low (n=49)	Reference	Reference	Reference	Reference	Reference	Reference
Self-Confidence						
High (n=23)	0.89(0.32-2.41)	4.64(1.75-12.27)	0.53(0.21-1.32)	0.99(0.44-2.21)	0.85(0.43-1.68)	0.92(0.31-2.70)
Moderate (n=64)	1.33(0.58-3.07)	2.28(1.15-4.52)	0.74(0.32-1.71)	1.01(0.50-2.06)	0.60(0.31-1.15)	0.88(0.33-2.33)
Low (n=16)	Reference	Reference	Reference	Reference	Reference	Reference
DTK						
High (n=38)	0.60(0.26-1.37)	2.02(1.01-4.01)	0.85(0.40-1.78)	1.47(0.81-2.67)	0.66(0.38-1.15)	0.45(0.21-0.97)
Moderate (n=59)	1.04(0.50-2.14)	1.22(0.70-2.13)	0.98(0.49-1.96)	1.06(0.64-1.76)	0.87(0.58-1.30)	0.72(0.44-1.19)
Low (n=20)	Reference	Reference	Reference	Reference	Reference	Reference

With regard to self-confidence, it was observed that an increase of one unit of integrated regulation increased a player's chances of being in the high self-confidence group by about 4.5 and being in the moderate group by about 2.3 times in relation to low DTK. Regarding somatic anxiety (SA), the chances of being in the high SA group relative to the low SA group decreased 69% per unit of integrated regulation, while changes in the identified regulation increased by 4 times the chances of being in the high SA group compared to the low SA group. Finally, a multinomial logistic regression did not identify significant odds of motivational variables predicting cognitive anxiety.

Discussion

The aim of this study was to measure and evaluate the impact of sports motivation on anxiety and tactical knowledge of young soccer players, considering the relevant influence of psychological aspects in the sports field. Results show that motivation had a significant impact on anxiety state and tactical knowledge. Somatic anxiety was positively influenced by integrated regulation and negatively influenced by identified regulation. Self-confidence was shown to be highly impacted by integrated regulation, in a directly proportional relationship and DTK was evidenced to receive a negative impact from amotivation. Psychosomatic variables and protocols have been widely used in the evaluation of young soccer players (Vieira et al., 2013; Garcia-Mas et al., 2010; Babkes and Weiss, 1999; Reilly et al., 2000), however, only one study aimed to analyze the relationship between these aspects and the specific tactical knowledge of the modality (Borges et al., 2015).

According to figure 1, evaluated players demonstrate high levels of intrinsic regulation (5.71 ± 1.02), which reflects in their inherent human will to practice soccer, as this is seen as an interesting and enjoyable activity²⁴. In addition, the findings showed very low levels of amotivation (1.54 ± 0.80), indicating that subjects present favorable behavior to practice the modality, this being conditioned by internal or external influences; both findings corroborate with Vieira et al. (2013).

Regarding the impacts of motivation on tactical knowledge, table 1 demonstrates that the elevation of one unit in integrated regulation, which is the most autonomous form of extrinsic motivation, increases by 102% the chances of the subject being classified in the high DTK group when compared to the low DTK. Thus, results suggest that players are inclined to be tactically smarter when they are motivated by the way sport practice is able to reflect its individual essence, as well as its personal life principles (Pelletier et al., 2013). Still with respect to tactical knowledge, the results evidence that the same increase in amotivation symbolizes a 55% reduction in the chances of this same individual being in the high DTK group compared to the low DTK, showing that less amotivated players tend to display more effective tactical performance. Differing from Borges

et al. (2015), this study did not find a significant relation between intrinsic regulation and overall tactical performance, which is perhaps explained by the fact that the previous study evaluated procedural tactical knowledge as opposed to declarative.

When checking the impact of sports motivation on anxiety state, it was observed that the increase of an integrated regulation unit raised a player's chances of being in the high self-confidence group by 364% and by 128% in the moderate group, in relation to the low group. Thus, findings suggest a positive influence of sports practice motivation on self-confidence, which comes from the interaction with the essence of the individual and their more personal needs (Ryan and Deci, 2000). Pujals and Vieira (2002), evaluating young soccer players, found that anxiety and self-confidence have an inversely proportional relationship, that is, when there is an increase in anxiety, there is a decrease in self-confidence. In addition, the study also concluded that these two factors were influenced on a large scale by the pressure of the coach and relatives.

Krane (1993) reveals that high levels of anxiety can distract individuals from important tasks while low levels of anxiety may indicate that the individual is poorly motivated and needs to find an adequate zone of stimulation. Also in this sense, according to Reilly et al. (2000), sub-elite players are less self-confident and do not perceive the importance of anxiety levels as facilitators of performance with the same intensity as elite players.

Regarding somatic anxiety (SA), changes in the identified regulation correspond to a chance variation percentage increase of 302% of being in the high SA group. This result demonstrates that players who have high levels of identified regulation, which is one of the most self-determined forms of extrinsic motivation, only behind integrated regulation (Ryan and Deci, 2000), have more chance of presenting high levels of somatic anxiety. These findings may suggest that players with greater levels in this dimension see soccer practice as a way to achieve other personal goals and objectives (Pelletier et al., 2013), resulting in a possible increase in internal pressure as a result of the need to achieve these goals.

In contrast, regarding the negative impact of identified regulation, which influences the growth of SA, an increase of one unit of integrated regulation reflects in a chance decrease of 69% of being in the high SA group when compared to the low SA. According to Ryan and Deci (p. 62, 2000) "Integration occurs when identified regulations have been fully assimilated to the self", that is, integrated regulation is the most autonomous form of extrinsic motivation that occurs when personal objectives and goals are in congruence with an individual's essence and values. In this way, the more the player perceives the motives of the actions in a more autonomous way, the more these extrinsically motivated actions become self-determined, thus possibly explaining the positive impact of the integrated regulation on SA.

The impact of motivation regulations on tactical knowledge and anxiety evidenced in this study highlight the importance of follow-up and intervention of this variable, by coaches and professionals related to the modality, since this is one of the main factors to exert influence on the development of training and competitions (Paim, 2011). Thus, it is suggested that for better sports performance, not only in soccer but also in other sports modalities, it is of extreme importance that the level of motivation is high, especially when dealing with its most intrinsic manifestations.

Conclusions

Athletes with higher levels of autonomous motivation (i.e., integrated regulation) are more likely to be classified in the high declarative tactical knowledge and the low somatic anxiety groups than athletes that are more extrinsically motivated. Likewise, the higher the integrated regulation level, the higher the self-determined levels. Moreover, soccer players demonstrated high levels of intrinsic motivation as well as high self-confidence, and low levels of amotivation, demonstrating self-determined behavior. These results provide some practical implications for those who work with young soccer players. First, coaches should create a stimulating environment to guide athletes to a higher level of self-determination. In addition, it seems important for coaches to be aware of the impact of motivation on anxiety and tactical knowledge of young soccer players, since high levels of autonomous motivation lead athletes to be more self-confident and less anxious.

Conflicts of interest - No conflicts of interest to declare.

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