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Attention and emotional distress in junior athletes practicing judo and alpine skiing

Atenția și distresul emoțional la sportivii juniori de judo și schi alpin

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Abstract

Background. This is an interesting topic and we aimed to approach it from the perspective of the Olympic judo team who has achieved very good results worldwide compared to the Romanian skiers who have poorer results due to the conditions of training (there are only 3-4 months with snow in Romania). The groups who were applied tests were athletes aged between 11 ± 5 and 15 ± 3 years. The athletes are members of the Romanian Olympic Judo Team and members of ski groups from sports clubs in: Gheorgheni (HR), Baia-Sprie (MM), Toplița (HR), Sibiu (SB), Petroșani (HD).

Aims. This study is part of a larger work where we aimed to analyze correlations between the psychological cognitive processes: emotional distress and attention.

Methods. We applied the following tests: AM - concentration of attention, AD - distributive attention, AP - perception of attention, EMAS - emotional distress, PDE - anxiety. These initial tests were used as starting points in our research with the aim of increasing sports performance through the application of mental training techniques.

Results. The nonparametric Mann-Whitney test (U) for unpaired samples was used to compare scores/ranks on cognitive tests applied to the two groups of athletes. Materiality was $\alpha = 0.05$ (5%), $\alpha = 0.01$ (1%) or $\alpha = 0.001$. To detect the correlation between two continuous quantitative variables, the Spearman rank correlation coefficient (ρ) was used. Analysis of correlation coefficients was performed using Colton's rule.

Conclusions. In the comparative analysis of cognitive test scores in the studied groups and regarding statistical significance, there were positive values for all correlations, apart from one exception in the ski group, where the EMAS test values were negative.

Keywords: attention, emotional distress, junior athletes, alpine skiing, judo.

Rezumat

Premize. Această temă este interesantă și am dorit să o abordăm din perspectiva Lotului olimpic de judo, care are rezultate foarte bune pe plan mondial și lotul de schiori alpini cu rezultate mai slabe din cauza condițiilor de pregătire (doar 3 - 4 luni cu zăpadă în România). Loturile pe care s-au aplicat testele au vârsta cuprinsă între 11±5 și 15±3 ani. Sportivii sunt componenți ale Lotul Olimpic al României de Judo și componenți ale grupelor de schi de la Cluburile sportive școlare din: Gheorgheni (HR), Baia-Sprie (MM), Toplița (HR), Sibiu (SB), Petroșani (HD).

Obiective. Acest studiu face parte dintr-o lucrare mai vastă prin care dorim să analizăm legătura dintre cele două procese psihice: distresul emoțional și atenția. Testările inițiale au fost folosite ca puncte de plecare în cercetarea noastră. Prin aplicarea tehnicilor de antrenament mental dorim să creștem performanța sportivă.

Metode. Am aplicat următoarele teste: AM - concentrarea atenției, AD - atenție distributivă, AP - spiritul de observație, percepția atenției, EMAS - distress emoțional, PDE - anxietate.

Rezultate. Pentru compararea scorurilor/rangurilor la testele cognitive aplicate celor două loturi de sportivi a fost utilizat testul neparametric Mann-Whitney (U) pentru probe neperechi. Pragul de semnificaţie a fost $\alpha = 0,05$ (5%), $\alpha = 0,01$ (1%) sau $\alpha = 0,001$. Pentru decelarea corelației dintre două variabile cantitative continue s-a utilizat coeficientul de corelație al rangurilor Spearman (ρ). Analiza coeficienților de corelație s-a efectuat utilizând regula lui Colton.

Concluzii. Prin analiza comparativă a scorurile testelor cognitive, în cazul loturilor studiate și semnificația statistică putem spune că s-au înregistrat valori pozitive la toate corelațiile, o singură excepție există la lotul de schi, unde la testul EMAS se înregistrează valori negative.

Cuvinte cheie: atenție, distres emoțional, sportivi juniori, schiul alpin, judo.

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Introduction

We aimed to approach this topic from the perspective of the Olympic judo team who has achieved very good international results compared to a group of Romanian skiers with poorer results due to the training conditions (there are only 3-4 months with snow in Romania). The groups on which the tests were applied were aged between 11 ± 5 and 15 ± 3 years. The athletes were members of the Romanian Olympic Judo Team and members of ski groups from the sports clubs: Gheorgheni (HR), Baia-Sprie (MM), Toplița (HR), Sibiu (SB), Petroșani (HD). In skiing down a slope in dynamic balance (Fellows, 2011) or in judo practice, athletes coordinate their movements by making continuous and efficient adjustments and by precisely executed techniques.

Focusing on the idea that energy is generated using the same method as in the above exercise, athletes are asked to try and feel the energy and strength pulsing through their own body, by remembering the occasions when they were really energetic (Vittoz & Godefroy, 2001).

Emotions are therefore dependent variables or labels that describe a series of changes occurring at several levels (David, 2006). Thus, after several studies, Watson & Tellegen (1985) concluded that emotion has a structure comprising two unrelated dimensions: positive emotions and negative emotions (psychological distress). Compared to other scales, PDE contains a relatively small number of items formulated in an accessible language and is easy to administer and quote (David et al., 2005). Ellis (1962, 1994) (quoted by David et al., 2007) developed a binary model of distress (David et al., 2002), dividing negative emotions into two categories - functional negative emotions and dysfunctional negative emotions.

Emotional distress profile (PDE) is a tool developed to help in assessing the subjective dimension of functional and dysfunctional negative emotions. Emotional distress profile (PDE) is a 26-item scale that measures dysfunctional negative emotions and functional negative emotions such as "fear" and "sadness/ depression" (David, et al., 2002).

The scale was developed (Opriş & Macavei, 2007) starting from the short version of emotional distress profile (DiLorenzo et al., 1999 quoted by David, 2005). To these items, words that describe emotions identified by a dictionary of synonyms were added. The 26 items form the final version of the scale resulting from a validation with experts and several experimental studies designed to determine their relevance and subscales in which it fits.

In both sports, skiing and judo, the focus is on coordinating muscle groups that create the movement patterns needed for successful skiing and judo. These can be further broken down into categories of stability and mobility (Fellows, 2011). Dynamic balance plays a reinforcement role in the world of functional movement.

The relationship between individual psychological factors and performance will be described in a few sentences below. In the case of sportsmen, who have difficulties staying motivated while they are not competing, strategies of goal assessment can be used, to give them a certain direction or a goal for training (Grosu, 2012). Especially when the sportsman fails to achieve a certain level of competition, mental imagery is used to focus on an image of desired reality, which can develop attention. Results of research (Unsworth et al., 2012) show that elite and successful sportsmen are more dedicated, motivated, more self-trusting, are focusing more on what is essential, are capable to deal with obstacles and show maximum efficiency under pressure. Following the line of previous studies, other researchers have developed specific questionnaires for sportsmen, in order to test their mental abilities taking into account different competitionl and sports standards (Schack & Hackfort, 2007). In the opinion of Filho et al. (2015), psychological variables and abilities that underlie top performance were examined mostly through qualitative interviews or through a combination of questionnaires and interviews. Specialists can use such information for planning, implementing and optimizing psychological interventions, helping in this way expert sportsmen and also novices to achieve the highest possible level (Sadeghi et al., 2010).

Researchers (Burton & Raedeke, 2008; Vealey, 2007; Williams, 2001) have focused on individual psychological factors (setting goals, relaxation, imagery and self-talk) and on their influence on performance. Recently, researchers have used a more holistic aproach, which focuses on the whole and the interdependence of its parts (Hall, 2001; Gucciardi et al., 2009).

Hypothesis

This study is part of a larger work in which we aim to analyze correlations between the psychological cognitive processes: emotional distress and attention. The focus is on the idea of control – this exercise is the natural progression of the two proceedings, and requires a simple process of deduction. In fact, as soon as patients are able to remain calm or summon their energy at will, they are capable of self-control. Therefore, they will not have much difficulty in defining the sensation of control.

Material and methods

This study received the approval of the Ethics Committee of the University. The informed opinion of the subjects participating in the research was also obtained. In the case of underage subjects, the parents gave their consent.

Institutional ethical approval was obtained prior to the commencement of the study, in agreement with the Helsinki Declaration.

Research protocol

a) Period and place of the research

The research took place in Cluj-Napoca, Gheorgheni and Baia-Sprie in the period October- December 2014.

b) Subjects and groups

One group was formed by junior alpine ski athletes aged 11 ± 5 and 15 ± 3 years, from the following sports clubs: CSS Baia-Sprie, Maramureș county, CSS Gheorgheni, Harghita county. The other group was formed by judo athletes of the National Olympic Team, who trained in Cluj-Napoca.

c) Tests applied

We applied the following tests: AM – concentration of attention, AD - distributive attention, AP - perception of attention, PDE - emotional distress. These initial tests were

used as starting points in our research, aimed at increasing sports performance through the application of mental training techniques.

d) Statistical processing

Statistical indicators: Elements of descriptive statistics were calculated; the data are presented using indicators of centrality, location and distribution.

In order to compare the scores/ranks on the cognitive tests applied to the two groups of athletes, the nonparametric Mann-Whitney test (U) for unpaired samples was used. Materiality was $\alpha = 0.05$ (5%), $\alpha = 0.01$ (1%) or $\alpha = 0.001$. To detect the correlation between two continuous quantitative variables, the Spearman rank correlation coefficient (ρ) was used. Analysis of correlation coefficients was performed using Colton's rule. Polynomial regression was the method used to derive the mathematical equation of dependence of a continuous variable by another variable. Statistical processing was performed with Excel (Microsoft Office 2007) and the Stats Direct v.2.7.2 software. The results were graphically represented using Excel (Microsoft Office 2007).

Results

The statistical analysis of scores on the cognitive tests applied to the two groups (unpaired samples) evidenced the following (Table I):

- for MA - lack of statistically significant differences between the two groups ($p > 0.05$)
- for AP2 - lack of statistically significant differences between the two groups ($p > 0.05$)
- for AD - highly statistically significant differences between the two groups ($p < 0.001$)
- for PDE - highly statistically significant differences between the two groups ($p < 0.05$)

Table I
Statistical correlation analysis between the scores for the two groups.

Tests	Judo group		Ski group	
MA – PDE	0.3194	**	0.2440	*
AP2 – PDE	0.1514	*	- 0.2799	**
AD – PDE	0.3540	**	- 0.2652	**

For the judo group**,** statistical correlation analysis between the scores/ranks showed:

- an acceptable positive correlation between MA - PDE (Fig. 1) and AD - PDE (Fig. 2);
- a weak positive correlation between AP2 (perception of attention) - PDE (emotional distress).

For the ski group**,** statistical correlation analysis between the scores/ranks showed:

- an acceptable negative correlation between AP2 - PDE (Fig. 3) and AD - PDE (Fig. 4);
- a weak positive correlation between MA - PDE.

The athletes should learn to feel effective center of mass movement. When one starts moving one's body mass from turn to turn across the skis, it should feel the way a snowboarder looks: like a metronome (Elling, 2003).

In Fig. 1, an acceptable positive correlation between MA (concentration of attention) and PDE (emotional distress) can be seen, which means that concentration of attention will lead to an increase in emotional distress for judo athletes. Judo athletes have very good results, being European, World and Olympic champions.

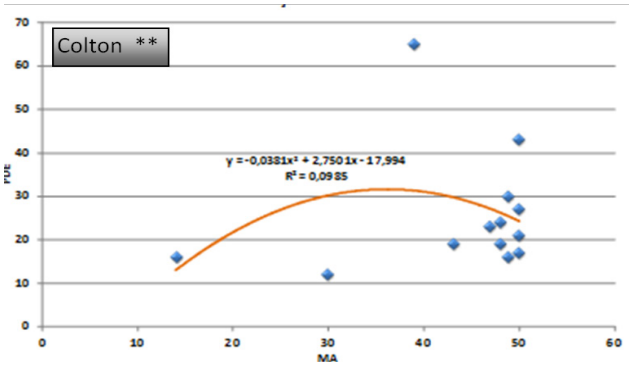

Fig. 1 – Acceptable positive correlations between MA - PDE on cognitive tests in judo athletes.

In Fig. 2, there is an acceptable positive correlation between AD - distributive attention and PDE - emotional distress in the judo group. This means that if distributive attention increases, emotional distress also increases.

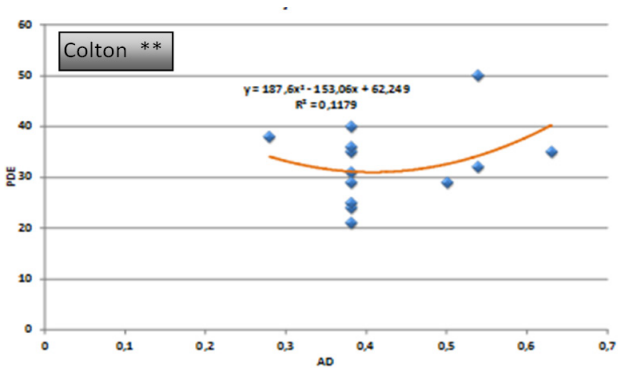

Fig. 2 – Acceptable positive correlations between AD - PDE on cognitive tests in judo athletes.

Fig. 3 shows an inversely proportional relationship between AP2 - perception of attention or spirit of observation and PDE - emotional distress. This relationship is characteristic of ski effort, expressed by the results (Grosu, 2015). In ski, one can only win by having a particular attention or an always activated spirit of observation; thus, the relation with emotional distress is inversely proportional.

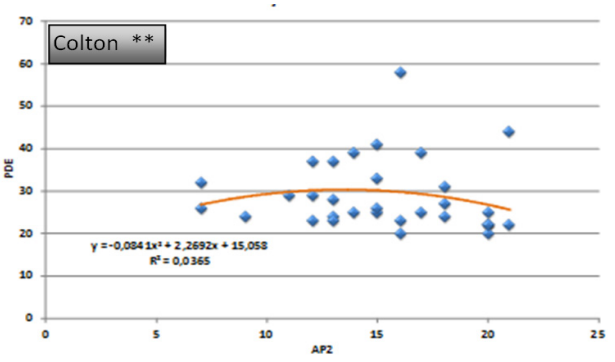

Fig. 3 – Acceptable negative correlations between AP2 - PDE on cognitive tests in ski athletes.

In Fig. 4, acceptable negative correlations between AD - distributive attention and PDE - emotional distress in skiers are evidenced. The same method can be used to establish other sensations (Vittoz & Godefroy, 2001), depending on what we want to change in the athlete's behavior, and in each individual athlete's characteristics.

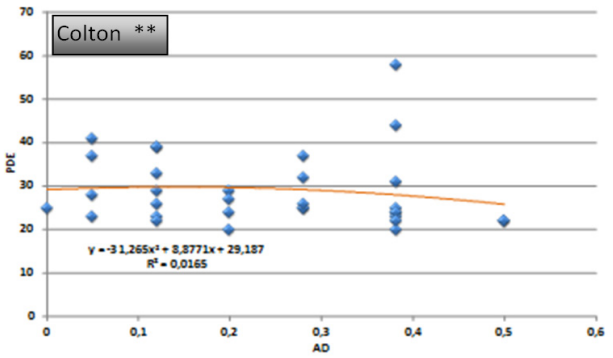

Fig. 4 – Acceptable negative correlations between AD - PDE on cognitive tests in ski athletes.

Conclusions

1. In the comparative analysis of cognitive tests in the studied groups and regarding statistical significance, there were positive values for all correlations, apart from one exception in skiers, where the EMAS test values were negative.

2. We can also conclude that judo athletes are loaded in terms of emotional distress, PDE having higher values in a direct proportional relation with all values of distributive attention (AD) and concentration of attention (MA).

Recommendations

It can be suggested to ski athletes to work harder in order to eliminate the weak correlation between MA - concentration of attention and PDE - emotional distress.

Conflicts of interests

We declare no conflicts of interest.

Acknowledgments

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