Motivation and psychological states in elite wrestlers

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ABSTRACT
PURPOSE: The study of motivation and psychological states in elite wrestlers. METHODS: Twenty-six athletes, members of the national team of Ukraine of Greco-Roman wrestling were studied. For the study of motivation, the questionnaire (by Mehrabian A.) was used. The athletes were divided into three groups by the level of corresponding motivation. The psychological states were studied using several methods: sensory-movement reaction, color test of Lusher and stress-test (stress resistance). RESULTS: The results show a significant decrease in the latent time of sensory-movement reaction and stability in wrestlers with average level of achievement motivation. In wrestlers with a high level of achievement motivation a significant increase in stability of sensory-movement reaction was observed. This fact idicates absence of rigid organization of the nervous system in athletes with a high level of achievement motivation. The psychological states of athletes with achievement motivation were linked with a high level of capability, eccentricity and heteronomy. The increased levels of eccentricity and heteronomy reflects on the activity and search for ways to compensate for the problem with the ability to compromise in the wrestlers with a high level of achievement motivation. Lower values of stress resistance and throughput of visual analyzer were found in the wrestlers with avoidance motivation. Higher values of throughput of visual analyzer were found in the athletes with an average level of achievement motivation. CONCLUSION: The states of relative comfort, desire to act, advance and find support were found in wrestlers with a high level of achievement motivation. A low level of achievement motivation was found to relate with decline in capability and occurrence of discomfort.

Key words: athletes, sensory-movement reaction, capability, psychological comfort
Introduction
Among different factors which influence effectiveness of sports activities, the most characteristic are neurodynamics and psychological functioning of athletes. These functions may be used in selection and orientation in sport activity (Lopatenko, et al., 2015; Iermakov, et al., 2016).
In addition, among these characteristics are properties of higher neural activity: strength, mobility and balance of neural processes. The combination of different abilities characterizes higher neural activity and differentially determines types of persons in different activity (Makarenko, et al., 2001; Allen, et al., 2011).
The properties of the nervous system are manifested not so much in productive as in the neurodynamic and cognitive characteristics of activity. These characteristics of the activity are largely determined by the individual and typological properties of the individual (Korobeynikov, et al., 2013).
In sport activity the individual style of activity performance is formed depending on various factors: the ratio of basic and specific abilities; typological properties; anthropometric data; morphological features. But, the formation of individual strategies of sport activity performance corresponds to motivational process (Duda, 2005; Podrigalo, et al., 2013).
According to the theory of motivation there are two types of motivation: achievement motivation and avoidance motivation. Both types of motivation are related to personal-typological characteristics of the nervous system (Salamone, 2010; Korobeynikov, et al., 2011).
Achievement motivation, oriented to success, is one of the most important factors of sport activity and relates with athletes' capabilities to adapt to environmental condition and internal psychological states (Kerr, 2013; Domuschieva-Rogleva, 2015).
In modern wrestling, achievement motivation is crucial for psychological and tactical preparation during training process. But under the stressful psycho-emotional conditions of competition, efficacy of technical, tactical and psychological components of sport activity links with the capability to perceive and process external information (Korobeynikov, et al., 2017).
Purpose of the paper is to study motivation and psychological states in elite wrestlers.

Methods
Twenty-six athletes, members of the national Greco-Roman wrestling team of Ukraine were studied. The study complied with Ethical Principles for Medical Research according to the Declaration of Helsinki. All athletes agreed to participate in the study by signing consent form upon detailed information about the study has been delivered and its scientific purpose has been explained.
To study achievement motivation, a questionnaire (Mehrabian, 1968) was used the. The aim of the test was diagnostics of both personality motives: motivation to achieve success and motivation to avoid failures. The structure of test is based on the J. Atkinson's theory. The participants were divided into three groups according level of corresponding motivation: first group – wrestlers with a high level of achievement motivation (9 athletes), second group – wrestlers with an average level of achievement motivation (10 athletes), and third group – wrestlers with a low level of achievement motivation and a high level of avoidance (7 athletes).
The psychological states of wrestlers were studied using several methods: sensory-movement reaction, color test of Luscher (1990) and stress test (stress resistance). All the methods are included in the psychological study software package “Multypsychometer-05”.
The statistical analysis was executed using program “Statistica 6.0”. Non-parametric statistics was used by Wilcoxon criterion to process medians and low (25%) and upper (75%) quartiles.
Results
In Fig. 1 average sensory-movement reactions of wrestlers with different types of motivation are presented. The results show a decreased average latent time of sensory-movement reaction and stability in wrestlers with an average level of achievement motivation in comparison to other wrestlers. The finding indicates a high speed of information processing and stability of reaction in this group of athletes. Increased stability of sensory-movement reaction in wrestlers with a high level of achievement motivation testifies about the absence of rigid organization of the nervous system.

Figure 1. Group average values of sensory-movement reactions of wrestlers with different types of motivation, *p<0.05.

This creates favourable conditions for a more flexible and variable organization of neural activity and points to many possibilities of the mechanisms for compensating the nervous system.

In Tab. 1 the medians of group average values are presented of psychological states assessed by Color Test of Lusher in wrestlers with different types of motivation.

Table 1. Results of Color Test of Lusher in wrestlers with different types of motivation

<table>
<thead>
<tr>
<th>Values</th>
<th>High motivation to achieve success (Median, Lower Quarter, Upper Quarter)</th>
<th>Average motivation to achieve success (Median, Lower Quarter, Upper Quarter)</th>
<th>High motivation to avoid failures (Median, Lower Quarter, Upper Quarter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability, secret unit</td>
<td>14,00; 12,00;14,00</td>
<td>10,00*; 9,00;11,00</td>
<td>9,00*; 9,00;10,00</td>
</tr>
<tr>
<td>Fatigue, secret unit</td>
<td>2,00; 1,00;3,00</td>
<td>2,00; 1,00;3,00</td>
<td>2,00; 2,00;3,00</td>
</tr>
<tr>
<td>Anxiety, secret unit</td>
<td>0,50; 0,00;1,50</td>
<td>1,00; 0,00;3,00</td>
<td>2,00; 1,00;3,00</td>
</tr>
<tr>
<td>Concentricity-Eccentricity, secret unit</td>
<td>11,00; 9,00;12,00</td>
<td>8,00*; 8,00;10,00</td>
<td>7,00***; 5,00; 10,00</td>
</tr>
<tr>
<td>Autonomy-Heteronomy, secret unit</td>
<td>9,00; 7,00;10,00</td>
<td>6,00; 6,00;7,00</td>
<td>6,00***; 5,00;7,00</td>
</tr>
</tbody>
</table>

Notes: *p<0.05 significantly different from the high-level motivation group; **p<0.05 significantly different from the average-level motivation group.
The results show that the wrestlers with a high level of achievement motivation have increased average values of capability, eccentricity and heteronomy. A low level of these parameters has been revealed in the wrestlers with a high level of avoidance motivation. The obtained results indicate better psychological states of the wrestlers with a high level of achievement motivation in comparison with other athletes with different types of motivation. The increased level of eccentricity and heteronomy reflects on the activity and search for ways to compensate for the problem with the ability to compromise in the wrestlers with a high level of achievement motivation.

<table>
<thead>
<tr>
<th>Values</th>
<th>High motivation to achieve success (Median, Lower Quarter, Upper Quarter)</th>
<th>Average motivation to achieve success (Median, Lower Quarter, Upper Quarter)</th>
<th>High motivation to avoid failures (Median, Lower Quarter, Upper Quarter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress resistance, secret unit</td>
<td>101.18; 87.84;114.90</td>
<td>93.09; 65.29;103.50</td>
<td>88.79*; 88.11;128.20</td>
</tr>
<tr>
<td>Throughput of visual analyzer, secret unit</td>
<td>1.10; 1.00;1.14</td>
<td>1.47*; 1.00;1.55</td>
<td>0.92***; 0.86;1.13</td>
</tr>
<tr>
<td>Impulsiveness, secret unit</td>
<td>(-0.01); (-0.04);0.02</td>
<td>(-0.06); (-0.24);(-0.01)</td>
<td>(-0.03); (-0.06);0.02</td>
</tr>
</tbody>
</table>

Table 2. Results of Stress Test in wrestlers with different types of motivation

Notes: *p<0.05 significantly different from the high-level motivation group; **p<0.05 significantly different from the average-level motivation group.

The results of Stress Test in wrestlers with different types of motivation are presented in Tab. 2. The data in Table 2 indicate significant differences in stress resistance between the wrestlers with different levels of achievement motivation. Much lower values of stress resistance and throughput of visual analyzer in the wrestlers with avoidance motivation are results of the reduced stress tolerance. Much higher average values of throughput of visual analyzer were registered in the athletes with an average level of achievement motivation.

Discussion

Our previous studies manifested that a high level of achievement motivation links with the activation of neurdynamic and cognitive functions in elite athletes (Korobeynikov, 2011; 2013). The data obtained here indicated the decreased time of sensory-movement reaction and increased reaction stability in the wrestlers with achievement motivation, probably due to the optimal organizing strategy of information processing in this group of wrestlers. The psychological states of wrestlers of different types of motivation demonstrated peculiarities in relation with Greco-Roman wrestling. The parameter of capability is significantly higher in the wrestlers with a high level of achievement motivation than in the wrestlers with other types of motivation. Also, the condition of relative comfort, desire to act, advance and seek support was also observed in the wrestlers with a high level of achievement motivation, which is in line with the findings of some previous studies that found relations between psychological comfort and achievement motivation being favourable to the efficacy of sport activity performance (Filaire, 2001; Dalwinder & Saini, 2013). A low level of achievement motivation provokes a decline in capability and occurrence of discomfort like demonstrated by the reduced averages capability and increased averages of discomfort condition in the athletes with avoidance motivation. Stress resistance is higher in the wrestlers with a high level of achievement motivation. This corresponds to a higher throughput of visual analyzer found in the athletes with an average
level of achievement motivation. The findings link with our previous study where the obtained level of stress resistance in achievement motivated elite athletes related with tension of the regulatory systems (Korobeynikov et al., 2016). However, in the wrestlers with avoidance motivation a low level of stress resistance was observed.

**Conclusion**

1. Decreased averages of latent time of sensory-movement reactions and stability in the wrestlers with an average level of achievement motivation were observed. In athletes with other types of motivation the time of sensory-movement reaction and stability of reaction were increased.
2. Increased averages of capability, eccentricity and heteronomy (by Test Lusher) were observed in the athletes with a high level of achievement motivation.
3. A high level of stress resistance in the athletes with achievement motivation was observed. Reduced stress tolerance was observed in the athletes with avoidance motivation.

**References**


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