

## RELATION BETWEEN EMOTIONS AND VISUAL-MOVEMENT ABILITY OF ELITE ATHLETES

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**Abstract.** The study is about relation between emotions and visual-movement ability of elite athletes. It was studied the peculiarities of visual perception in information processing conditions with connection of emotions in elite athletes. There were examined 19 elite athletes, 19-22 aged Greco-Roman wrestlers. The sequence of the study methods: simple visual-motor reaction; reaction to the moving object; perception speed; scale of emotion excitability. Consents for research in writing form were given by the athletes according to the recommendations to Ethics Committees for Biomedical Research. The received results indicate the significant links between anger and peculiarities of visual perception in elite athletes. Probably, the emotional factor as anger is the hindrance in concentration of attention on object in athletes. This results to ineffective information processing and lead to deterioration of visual perception, effectiveness of competitive activity. Thus, the anger as an affective emotion is a negative characteristic and affect to general functional state and possibilities of competition performance of wrestlers.

One of the important parts of preparation of elite athletes is information processing ability in competition or training practical. That is why, the changes of accuracy and speed of reaction of moving skill with the time limit are characterised for modern sport activity [1, 2]. One of the main ways of this approaches is use of personality peculiarities of athletes including the individual-typological characteristics of higher nervous activity [3, 4].

The motor realisation of skills of athletes links with different hierarchic levels of nervous system: afferent, analytic and efferent part [5, 6].

In modern combat sport the most meaning sign for coordinate movements, determine the position of the rival, level of anticipation in athletes is coordinate movements and capability of visual information processing [7, 8].

Thus we can assume that visual-movement ability and effectiveness of competitive activity of wrwestlers has connection with the emotions [9, 10].

The purpose is the study of relation between emotions and visual-movement ability of elite athletes.

### Methods

There were examined 19 elite Greco-Roman wrestlers, their age: 19-22 years old. The experimental study was approved by the Ethics Committees for Biomedical Research with accordance the ethical standards of the Helsinki Declaration. Consents for research in writing form were given

by the athletes according to the recommendations to Ethics Committees for Biomedical Research.

There were used hardware and software complex for psychophysiological diagnostics «Multisuchometer-05». The sequence of the study methods: simple visual-motor reaction; reaction to the moving object; perception speed; scale of emotion excitability.

The simple visual-motor reaction represented elementary response on the visual stimuli. For determining the balance between acceleration and deceleration of the nervous system, was used "Reaction to the Moving Object" as a complex sensory-motor reaction. The method "perception speed" evaluates the speed and accuracy of identifying geometric figures, comparing the given fragments with the set-up targets. The "Scale of emotion excitability" is aimed at defining the individual's emotional excitability. It was presented a list of questions aimed at determining the characteristics of the studied emotional response. For the results of test are determined parameters: general emotionality, anger, anxiety, control emotions. Statistical analysis was performed with the help of programming package Statistica 6.1. The data obtained in research correspond to the normal distribution of studied data; it were applied the methods of parametric statistics of Fisher test criterion.

### Results

As criterion of efficiency of visual perception we have used the parameters of latent period of

visual-motor reaction [10, 11].

According to the level of visual speed response, all of athletes were divided into two groups.

First group – wrestlers who have high level of speed response: latent period from 120 ms to 240 ms (7 subjects).

Second group – wrestlers who have average level of speed response: latent period from 240 ms and over (12 subjects).

A comparative analysis between two groups of athletes by meanings of simple visual-motor reaction, reaction to the moving object and perception speed are presented in Table 1.

The results indicate that first group of athletes in comparison to the second group has significant lower meanings of parameters of latent period of visual-motor reaction. This fact shows the more

high speed of information processing of athletes of the first group.

Th the moving object testifies that for each parameter there are no differences between both groups of athletes (Table 1). Probably, this result is characterized by the absence among athletes of persons who has lower level of speed response.

omparison analyses among athletes with different level of visual responses indicate the significant differences for perception speed method between parameters: productivity, accuracy and efficiency (Table 1). It testifies about more high level of information processing in athletes of first group and indicates the best possibilities of sensory-motor functions of persons of this group.

*Table 1. Meanings of perception and emotional parameters of athletes (n=19)*

	(n=7)	(n=12)
Simple visual-motor reaction		
Latent period (ms)	$\pm 3,79$	$\pm 7,25^*$
Stability (%)	$\pm 1,03$	$\pm$
Reaction to the moving object		
Accuracy (secret unit)	$16,86 \pm 0,27$	$15,0 \pm 0,15$
Stability (secret unit)	$3,07 \pm 0,27$	$3,97 \pm 0,36$
Excitability (secret unit)	$-0,71 \pm 0,48$	$-0,40 \pm 0,24$
Perception speed		
Productivity (secret unit)	$59,71 \pm 4,03$	$45,33 \pm 4,49^*$
Speed (bit/min)	$16,49 \pm 0,95$	$13,01 \pm 1,21$
Accuracy (secret unit)	$0,90 \pm 0,01$	$0,86 \pm 0,01^*$
Efficiency (secret unit)	$43,55 \pm 3,70$	$31,45 \pm 3,56^*$

Note: \* -  $p < 0,05$ , comparing with the first group athletes

The data of meaning of emotion excitability in athletes with different level of visual motor reaction are presented in Figure 1.

According to results which are received for "Scale of emotion excitability" the significant difference between first and second groups of athletes on parameters of anger are observed.

Summarizing, we can indicate that the first group of athletes are characterized by lower meanings of latent time of visual reaction, high meanings perception speed (productively, accuracy and efficiency) and lower meanings of anger. The second groups of athletes are characterized by average meanings of latent time of visual re-

action, average perception speed and significant high meanings of anger for concerning of persons of first group.

According to existing concepts [10] the functional mobility, force and balance of nervous process is genetically determined by characteristics of highest nervous system of human.

Based on the above, it can be argued that the primary link of forming of emotional reactions submitted the balance of nervous process which inherent in athletes with high level of speed of sensory-motor response.

The manifestation of emotional arousal affects the feasibility of perception and perceptual pro-

cessing information. This characteristic is very important for realization of competition activity in combat sport.

Thus the programs of regulation of emotional states in elite athletes must include individual-typological characteristics of highest nervous system.

### Conclusion

The received results indicate the significant links between anger and peculiarities of visual perception in elite athletes. It can be observed that the higher is the anger, the lower the rate of speed of response and the visual perception is in athletes. This link provides a basis about the affirm that one of the factors which influence on the parameters of visual-motor reaction of athletes is anger.

Probably, such emotional factor as anger is the hindrance in concentration of attention on object in athletes. This results to ineffective information processing and lead to deterioration of visual perception. Anger as an affective emotion is a negative characteristic and affect to general functional state of athletes. Apart from, anger provokes the deterioration of speed reaction, accuracy, productivity and efficiency of information processing and ineffective performance of coordination of movement in athletes. Thus we must circumstance that anger is not the mobilization of factor in sport activity.

But anger interferes with process of reasoning and choice: person is worried, emotionally excited and panics and as a result - loss of control of the situation.

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