



# Attention, pre-competitive state and mental reliability of billiard players depending on the level of sports qualification

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## Abstract

**Objective of the study** was to compare the development of the psychological characteristics of billiard players.

**Methods and structure of the study.** The study involved 18 athletes - billiard players from the Republic of Kazakhstan, who were divided into two groups depending on the level of sports qualifications. For psychodiagnostics, three methods were used: Bourdon's attention test, the "Athlete's Mental Reliability" method (V.E. Milman), and the method of athletes' precompetitive state (D.N. Volkov).

**Results and conclusions.** The results obtained in the course of the study prove the important role of concentration and stability of attention in achieving sports results in billiards. It was revealed that the cognitive component of the precompetitive state, which is closely related to the development of attention, and the emotional component of the precompetitive state, which is determined by the level of self-regulation, have a greater impact on the results of billiard players.

The results of the study confirm significant differences between the indicators of attention, pre-start state (in terms of cognitive and emotional components) and mental reliability of billiard players, depending on the level of sports qualification.

The study revealed that external uncertainty is the most powerful stress factor in the competitive activity of billiard players, while personal stability is the most significant indicator of mental reliability of billiard players. The new data obtained can be used as the basis for the development of a program for the psychological support of billiard players.

**Keywords:** *billiards, billiard-players, attention, precompetitive state, mental reliability.*

**Introduction.** Attention, pre-competitive state and mental reliability are considered as important psychological indicators of the success of athletes in various sports [3, 5, 8, 9]. At the same time, almost no researches devoted to the study of the above psychological characteristics were carried out on a sample of billiard players [2]. It seems that the lack of objective information about the psychological resources of billiard players does not allow to effectively build a purposeful psychological work with them.

**Objective of the study** was to assess the development of attention, precompetitive states and mental reliability of billiard players depending on different levels of sports qualification.

**Methods and structure of the study.** In total, 18 billiard players from Kazakhstan aged 18 to 34 years old took part in the experiment, who were divided into

two groups (athletes without a category and I category (w/c) and athletes of the master of sports and candidates for the master of sports (ms/cms), nine people in each group). When conducting a psychodiagnostic study, three methods were used: the Bourdon attention test [1, 107–111], the method of the pre-competitive state of athletes, which is based on the three-component structure of the mental state: physical state, emotional state and cognitive (mental) state [7], the method of "Mental reliability of an athlete", developed by V.E. Milman [6].

**Results of the study and their discussion.** Evaluation of attention indicators according to the Bourdon test, such as volume (working capacity), concentration and stability, significantly differ depending on the level of sports qualification of billiard players (Table 1).

**Table 1.** Comparison of average values in terms of attention of billiard players

Attention metrics	Average values		Student's t-test
Volume (operability)	ms/cms	1113±15,4	p≤0,01
	w/c	817±74,5	
Concentration	ms/cms	5,77±2,3	p≤0,01
	w/c	11,8±3,4	
Stability	ms/cms	0,0021±0,004	p≤0,01
	w/c	0,006±0,002	

The difficulty of maintaining concentration and stability of attention in billiards is due to the fact that during the game, billiard players need to concentrate for a long time (up to 2-5 hours) on objects that are uniform in shape, size and color, and also perform monotonous actions during the competition.

A lower level of attention concentration is characterized by the fact that athletes are not always able to keep their concentration on any object or activity in general, which can negatively affect sports success. In turn, the lower stability of attention leads to the fact that billiard players are distracted and cannot focus on a particular object for a long time. The data obtained prove that attention plays a significant role in the effectiveness of the activities of billiard players.

The study of the pre-competitive state of billiard

players in three components (physical, emotional, cognitive (mental) is presented in Table 2.

It was revealed that there are no significant differences in the physical (bodily) component in the groups of billiard players of different levels of sports qualification, while there are significant differences in the emotional (energy) and cognitive (mental) components.

This fact can be associated with the specifics of billiards, in which the physical and functional training of an athlete is not dominant in order to achieve a sports result.

Thus, it can be argued that the precompetitive state of billiard players largely depends on the cognitive component, which is closely related to the development of attention, and the emotional component, which is closely related to self-regulation.

**Table 2.** Pre-competitive conditions of billiard-players depending on sports qualification

Pre-competitive state	Average values		Student's t-test
Physical (body) component	ms/cms	20,66±3,02	-
	w/c	19,0±3,0	
Emotional (energy) component	ms/cms	20,6±3,02	p≤0,05
	w/c	21,6±3,02	
Cognitive (mental) component	ms/cms	23±3,02	p≤0,01
	б/р	20,5±3,02	

**Table 3.** Comparison of average values for indicators of special personality traits depending on sports qualification

Indicators of special personality traits	Average values		Student's t-test
Competitive emotional stability	ms/cms	1,8±0,2	p≤0,01
	w/c	-2±0,2	
Sports self-regulation	ms/cms	-1,8±0,2	p≤0,01
	w/c	-3±0,2	
Competitive motivation	ms/cms	3,8±1,2	p≤0,01
	w/c	-1±0,2	
Stability-noise immunity	ms/cms	1,8±0,2	p≤0,01
	w/c	0±0,2	



This conclusion is also confirmed by the study of the mental reliability of billiard players, the data are presented in Table 3-4.

As can be seen from Table 3, billiard-players without a sports category are characterized by reduced sports emotional stability, reduced competitive motivation and moderate stability, while billiard-players with ms/cms categories have moderate motivation, stability, and emotional regulation gets above-average values.

Sportsmen-billiard-players, having the qualification of ms/cms, give a more objective assessment of the situation and their emotional reactions are more adequate in the conditions of competitive performance. Our data are confirmed by the results of studies made on samples of athletes from other sports [4].

According to our data (Table 4), we can conclude that for billiard-players of both groups, the greatest sensitivity is found precisely to the stress factors of external uncertainty, it is moderate in athletes of ms/cms and high among athletes without a category. This fact can be explained by the high degree of complexity of the combination game in billiards.

When establishing the interdependence between the indicators of mental reliability and the components of the pre-competitive state of billiard players, it was revealed that there are significant direct relationships between personal stability and physical ( $p \leq 0.05$ ), emotional and cognitive components ( $p \leq 0.01$ ) of the pre-competitive state. This fact indicates that personal stability contributes to the creation of an optimal pre-start state of billiard players.

A significant inverse relationship between sensitivity to stress factors of external uncertainty and the cognitive precompetitive component ( $p \leq 0.05$ ) indicates that an increase in sensitivity to stress factors of

external uncertainty will reduce the cognitive component of the precompetitive state, and will also be accompanied by a decrease in concentration and stability of attention.

At the same time, a significant inverse relationship between sensitivity to a stress factor of internal significance and emotional and cognitive components ( $p \leq 0.05$ ) of the pre-launch state suggests that with high sensitivity to a stress factor of internal significance (desire to win, high significance competition, high rank of competition, etc.) the emotional and cognitive components of the pre-start state may decrease.

The data obtained in the course of the study indicate that mental reliability has a strong influence on the pre-competitive state, on which the sports result largely depends.

**Conclusions.** In our opinion, the revealed patterns should be taken into account in the process of organizing psychological work with billiard players. The development of psychological support programs for billiard players should be focused, first of all, on increasing the stability of attention and the formation of personal stability, which to a greater extent have a positive impact on the pre-competitive psychological state of athletes.

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**Table 4.** Comparison of average values in terms of sensitivity to stress factors depending on sports qualification

Indicators of sensitivity to stress factors	Average values		Student's t-test
	ms/cms	w/c	
Internal uncertainty	ms/cms	3±1,2	p≤0,01
	w/c	2,5±0,2	
External uncertainty	ms/cms	4±0,2	p≤0,05
	w/c	4,8±0,2	
Internal significance	ms/cms	1,8±1,2	p≤0,01
	w/c	1,1±0,2	
External significance	ms/cms	1,8±0,2	p≤0,01
	w/c	0±0,2	



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