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ANALYSIS OF THE RESULTS OF RESEARCH ON THE MENTAL RELIABILITY OF HIGHLY QUALIFIED SHOOTERS ON A MOVING TARGET

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Abstract:

The ability to focus as much as possible, to concentrate on the upcoming start contributes to the full use of the athlete's physical and technical capabilities. In modern sports, in a highly competitive environment, this ability is crucial in achieving victory. Concentration is especially important in shooting sports. Without it, even the best preparation is worthless. Of the two shooters with equal technical skill, the winner is the one who has developed a greater ability to concentrate. The hidden, seemingly invisible ability to concentrate is one of the most important "secrets" of the champion shooter. What thoughts should the athlete's mind be occupied with? What should his attention be directed to? A survey of a large group of representatives of various sports allowed us to identify the main types of orientation of their consciousness before the start. Gymnasts, acrobats, weightlifters and representatives of rhythmic gymnastics during the "tuning" period focus their attention on the technique of performing the upcoming action. And basketball players, football players and boxers – on technical actions and movement techniques. The attention of most rowers is focused on the opponent, weather conditions, and the quality of equipment. Many rowers, weightlifters, swimmers, boxers, and a much smaller number of basketball players, soccer players, and gymnasts think about the final result.1 How does the shooter concentrate? What is he thinking about when he takes the shot? The first and most important thing that characterizes concentration during shooting is that it should be aimed at action: at controlling the body and executing the shot.

Keywords: *analysis, mental reliability, shooting, sport, athlete, weapons, medicine.*

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INTRODUCTION:

The shooter should not focus on how many points he can or cannot knock out, or on the actions of another participant who can win, or on anything else that is not related to his own actions.

Second, all mental processes must be positive. Don't think about what you can't do. For example, if a shooter after a series of successful shots is afraid to get into the eight, and constantly thinks that he should not do this in any case, then he will definitely make a mistake and get into this "long-awaited" eight, or make a hole of even less dignity.

Even academician I. P. Pavlov wrote that if a person thinks about a certain movement, he involuntarily, without noticing it, produces it.
Thus, concentration should be directed to the management of the body and be positive.

The focus of concentration is in the "restless zone", where additional effort is required to force the muscle to be stationary. In other cases, the focus of concentration may shift to the trigger release, as is always the case with a very stable lying position, or some other elements of the shot.

However, many shooters choose to concentrate only one part (zone) of the body, even if during shooting in this zone there is no difficulty in executing the shot.

Shooters have only one object of concentration, which helps them not to be distracted when performing an action by various undesirable thoughts.

The ability to repeat a successful action during a competition requires long-term concentration. And the ability to concentrate for a long time in a competitive environment is not an innate quality; it needs to be learned.

PURPOSE OF THE STUDY:

The shooter should increase the stability of attention by training as well as by training he improves his physical and technical form. And the rule here is that he must train to ensure that his stability of attention exceeds the time required to perform the exercise.

If the shooter trains himself to 80 shots, then performing an exercise of 40-60 shots will not tire him. This will significantly improve his fitness and increase his self-confidence. A good shooter does the same with steady attention. He increases it so that he can concentrate 30-50 shots. As a result, his mental form and self-confidence improves.

In addition to concentration, there is another property of attention – this is its switching. It defines the ability to intentionally move attention from one action object to another.

Switching attention is in a warring – antagonistic relationship with concentration. This is due to the fact that good attention switching is due to the mobility of the processes of excitation and inhibition. And those athletes who show inertia of nervous processes are able to concentrate their attention well.

Research methods:

In this regard, no one person can equally well concentrate attention and at the same time switch and redistribute it. The severity and good development of the properties of attention is due to the innate typological characteristics of a person.

Analysis of the study of indicators of mental reliability of highly qualified shooters

The average arithmetic data of indicators of mental reliability of shooters of various qualifications are presented in table 1.

Table 1: Comparative characteristics of components of mental reliability in shooters of various qualifications

Components	SEU	SR	ME	CP
ZMS	0.6	1.5	1	0.6
MSMC	-0.4	1.25	0.6	1
MS	-2	1.01	-1	-1.6
CMC	-8.6	-1.2	-2.2	-0.8

Criteria:>1 – high degree of manifested component
0 –average degree
<1 –low degree of manifestation of the component.

RESULTS AND DISCUSSION:

Analyzing the components of mental reliability of shooters, we can draw the following conclusions:

1. The level of competitive and emotional stability (SEU) indicates a reduced level, which naturally increases with the growth of sports skills. For shooters whose rank is equal to -8.6 CMC, for masters of sports is equal to -2,for masters of sports of international class is equal to -0.4,but for honored shooters it is 0.6, which indicates that the training and competitive period of emotional arousal is lower than for highly qualified shooters.

2. Indicators related to the ability of self-regulation (CP) in shooters are higher than the average level, respectively,ZMS 1.5 points and MSMC 1.25,MS is equal to 1.01, but the CMC this picture is worse than -1.2. according to the CP indicators, there is also a clear pattern that with the growth of sports skill, the ability of CP increases. Obviously, ZMS and MSMC are quite accurately able to assess their emotional state, are able to influence it, in particular through verbal self-indications (taking PMT), are able to adjust during sports, and have a very clear control over their actions.

3. Motivational – energy (me) level indicates love and dedication to your sport activity, commitment to training and competitions, as well as the desire to conduct competitive wrestling in any form. The me level of shooters with the title of ZMS and MSMC are above the average level (ZMS is equal to 1,and MSMC is equal to 0.6). Shooters whose rank is MS and CMC of the me category have a lower-than-average level. Apparently, athletes of these ranks have not yet fully imbued with a sense of loyalty and responsibility to their sport, they most likely do not train with full dedication and do not want to achieve something. There is no desire to compete at a high level.

4. in terms of stability and noise immunity (St-P), MSMC has advantages not only over CMC and MS, but also over ZMS (ZMS 0.6,MS -1.6, CMC -0.8). This means that the ZMS has achieved the level of sports training that it can control its own stability, and the MSMC makes every effort to achieve certain goals in sports. It turns out to be above the average level, indicates the stability of the internal functional state, stability of motor skills and sports equipment, immunity to the effects of various kinds of interference when conducting competitive wrestling.

The manifestation of the basic properties of attention concentration and switching of the shooters at a moving target

We have studied the concentration and switching of attention in highly skilled shooters on a moving target.

Table 2.: Comparative characteristics of concentration and switching of attention of highly qualified athletes

	K	A	E	N	Switching of attention(sec)
ZMS	96,4*	0,98	1258	1288	68,5*
MSMC	97,2	0,98	1174	1220	73
MS	93,7	0,963	1199	1221	84,5
CMC	93,3	0,97	1135	1159	98,3

designation: * - significance of differences p□0.05;
K – coefficient of concentration of attention (determined in %);
A – accuracy coefficient (defined in conventional units);
E – productivity coefficient (determined in the number of characters viewed);
N is the Total number of viewed characters;
Attention switching was determined in seconds according to the Schulte table.

We studied the indicators of attention concentration, which include the following coefficients: concentration, accuracy and productivity, as well as indicators of attention switching.

It was found that ZMS have a great advantage over other qualified athletes in terms of concentration (96.4%) and accuracy of attention (0.98 units). Presumably, this is due to the long duration of a sports and professional career, performing some exercises with the highest level of results and, in this regard, the high cost of error, which requires high concentration of attention. And in productivity (1288) they are not inferior to other athletes. This is due to the fact that the time allotted for the production of a shot is strictly limited – only 2.5 seconds - "fast running" of the target; and 5 seconds – "slow running". These athletes do not have the opportunity to postpone the shot, so high productivity of attention during the entire time of the exercise is an essential condition for shooting at a high level.

Masters of sports, in contrast to masters of sports of international class, have lower indicators of concentration (93.7%) and accuracy of attention (0.963 units). This means that athletes have not yet reached their peak form, and they have to focus on one thing, although they need to focus on all the actions performed by the athlete.

The coefficient of productivity among candidates for master of sports was the lowest in relation to others (93.3),but accuracy is a competition for other athletes. Since the CMC did not achieve the sportsmanship, and the most training that would show their maximum results. They strive to improve their technique and performance, but they lack confidence in their actions.

Comparing the indicators of attention properties of qualified athletes, we found that MSMC on a moving target is much better at concentrating attention (97.2%) than ZMS (96.4%). Presumably, this is due to increased motivation to achieve higher sports results. That is why MSMC shoot more focused and accurately. But we do not see such a relationship in CMC and MS.

Performing a targeted shot requires a very quick and timely shift of attention from aiming to firing the trigger. This property is most pronounced in the ZMS – 68.5 seconds according to the Schulte table. Presumably, this is due to the fact that each time performing a shot, these athletes train switching attention not only at the moment of pressing the trigger, but also carefully checking the preparation: controlling the starting preparation, the pressure of the hand on the handle, muscle tone, smooth jump, etc.

However, in this case, MSMC (73 seconds) were able to develop attention switching in a way that did not affect their ability to concentrate. Probably, these athletes have developed stronger conditioned reflex

connections in the Central nervous system, in which switching attention during the production of a shot from aiming to the movement of the index finger occurs more easily and automatically, at the level of a dynamic stereotype. And switching attention in MS (84.5) and CMS (98.3 sec) is at a fairly low level compared to the ZMS (68.5 sec.). Probably, the higher-class shooters managed to increase the switching of attention due to a certain reduction in concentration and accuracy of work to an acceptable level.

As a result of our research, we were able to establish that shooting sports make the highest demands on the development of mental abilities of athletes. To succeed, the shooter needs to learn to concentrate his attention enormously. This property of attention is especially pronounced in ZMS and MSMC. These athletes are able to maintain a high concentration of attention during a fairly long time of competitive shooting, in a state of strong mental tension.

They also showed the ability to switch attention better than others, although it is known that this property of attention is in a warring, antagonistic relationship with concentration. This is due to the fact that good switching of attention is due to the mobility of the processes of excitation and inhibition, and concentration requires their inertia.

In this regard, the severity and good development of the properties of attention depends on the innate typological characteristics of a person. Thus, it is believed that no one person can equally well concentrate and switch their attention. However, ZMS and MSMC managed to challenge nature, they were able to develop this unique ability, combine two contradictory properties in their minds and make them work simultaneously.

Tough competition places very high demands on the mental abilities of an athlete. Therefore, they need to be able not only to focus on a high level, but also to switch it as best as possible. This is confirmed by the significantly significant differences that are found in their coefficient of concentration and attention switching.

Directed formation of the mental component reliability using system AGIM

When conducting a pedagogical experiment, we assumed that the indicators of mental reliability determine the quality and effectiveness of highly qualified shooters and change depending on the qualification, the level of preparation of the athlete and the ability to set yourself up with self-regulation for the upcoming competition.

The aim of the experimental work was to find out the influence of the AGIM system on the factors of mental reliability of highly qualified shooters on a moving target.

The training of the AGIM system was conducted on the basis of the sports school of the Department of physical culture and shvsm of the city of Belgorod.

The organization of the research was consistent, including scientific and theoretical analysis and experimental work.

The experiment was conducted under the direct supervision of the honored coach of Russia S. M. Krivtsov. training in the AGIM system was conducted 7 classes by Professor, honored worker of physical culture of Russia E. V. Voronin.

The development of the AGIM system took place within the framework of twenty classes, which were conducted over three months under the guidance of the author of the MSMC thesis, O. Y. Danilenko (September 2007).- November 2007) During the next three months (December 2007-February 2008), athletes independently used the techniques of the AGIM system in training and competitions.

The subjects were 12 shooters of various qualifications. They were divided into experimental and control groups. For six months, the techniques of the AGIM system were used, which helped to increase the mental reliability of shooters.

The numerical composition of the control and experimental groups is shown in table 3.

Table 3.: Contingent of control and experimental groups

Groups / Discharge	Control (n)	Experimental (n)
ZMS	1	1
MSMC	1	1
MS	1	1
CMC	3	3

The control group included members of the Russian national team with qualifications from ZMS to KMS.
The level of mental reliability for all components before the pedagogical experiment (in the control and experimental groups) is approximately the same.
Methods of teaching techniques of the AGIM system.
The AGIM session consisted of two parts:

- soothing (the same for all athletes);
- mobilising (various options were used depending on the tasks set).

Before and after the experiment, we conducted background testing, which included the results of testing mental reliability. The data was entered in table 4.

Table 4.:Directed development of mental reliability shooters of various qualifications

Groups / Discharge	Control group								The experimental group							
	before the experiment				After experiment's				before the experiment				After experiment's			
	SEU	SR	ME	CP	SEU	SR	ME	CP	SEU	SR	ME	CP	SEU	SR	ME	CP
ZMS	00,6	11,5	1	00,6	00,6	11,5	11	00,7	00,6	11,5	11	00,6	00,9	11,5	11	00,5
MSMC	-0,4	11,25	0,6	11	0-0,3	11,2	0,65	11,1	-0,4	11,25	0,6	11	0,1	11,32	0.8	11,24
MS	-2	11,01	-1	-1,6	-1.9	11,01	-0.9	-1,4	-2	11,01	-1	-1,6	-1,5	11.21	-0,1	0,2
CMC	-8,6	-1,2	-2,2	-0,8	-8,4	-0,6	0-1,9	0,6	-8,6	-1,2	-2.2	-0,8	-6,2	0,02	-0,5	00,8

The method of the AGIM system allowed to improve the level of indicators of components of mental reliability.

The main task of AGIM is to teach athletes to consciously manage their mental States, in particular, to regulate the tone of their nervous system.

Analyzing the data obtained for the components of mental reliability, it is possible to draw the following conclusions:

1. ZMS slightly improved their competitive and emotional stability (before the experiment 0.6, after the experiment 0.9), as well as stability and noise immunity (from 0.6 to 0.85), self-Regulation (1.5) and motivational energy level remained the same (1). all this is due to the fact that Over the years of training they have developed their own tactics of preparation for competitions. In their training system, it is very difficult to make any changes. Due to their life and sports experience, they adhere to a strictly established system of training and psychological adjustment for upcoming competitions.

2. only two components of mental reliability have increased at a significantly significant level: self-Regulation (from 1.25 to 1.32) and stability of noise immunity (from 1 to 1.24). Other components have increased slightly, but this is due to targeted training. The AGIM system improved self-regulation and helped increase the stability of noise immunity, which indicates the shooter's desire to achieve maximum results and top places.

3. in MS, the development of the AGIM system allowed to increase their mental reliability in almost all components. We should highlight the indicator of the motivational and energy component, which emphasizes the ability to fully give them in training and competitions and the desire to compete in any situation ($p<0,1$):

-SEU – from -2 to -1.5
-WED – from 1.01 to 1.21
-Stability to noise immunity improved by 2 times (from -1.6 to 0.2) $p<0.05$, which indicates an increase in the stability of the internal functional state, the stability of motor skills of sports equipment and immunity to various kinds of confusing and distracting interference.

4. the components of mental Reliability were significantly increased in the CMC due to targeted training sessions using the AGIM system:

-SEU – from -8.6 to -6.2
-CP – from -1.2 to 0.02
-Me – from -2.2 to -0.5
-St.P –s -0.8 to 0.8

There was a clear improvement in indicators, because before the experiment, the difference was 2 points, which suggests a significant stabilization of the psychological state of athletes using the AGIM system.

In addition, the performance of athletes has also increased.

The effectiveness of the use of the AGIM system can also be judged by the subjective report of the athlete himself on his psychological readiness for training and competitions.

Before the experiment, athletes expressed their readiness to overcome difficulties, to perform loads (at competitions and training), to participate in competitions. They also expressed the mood for good shooting and optimal results.

The coach, for his part, based on the results of observations, determined the condition of athletes as follows: they are quite well prepared, have a desire to participate in competitions, but are somewhat concerned about the future result, and also have some tension as a result of waiting for the upcoming start.

After the experiment, athletes began to Express their desire to fight to the end and win with full effort.

The data of the experiment on concentration and attention switching are included in table 5.

Table 5.

Groups / Discharge	Change of concentration and switching of attention with the use of AGIM			
	before the experiment		After experiment's	
	Concentration of attention	Switching attention	Concentration of attention	Switching attention
ZMS	96.4	68.5	97.2	66.5
MSMC	97.2	73	98.5	69
MS	93.7	84.5	95.6	75.5
CMC	93.3	98.3	95.4	96.5

It was found that before the experiment, the PMN concentration was 96.4%, and a shift 68.5 sec. but after working with the system AGIM these figures are not much improved: the concentration of 97.2% and a shift of 66.5 sec. that speaks about stability of the results and the actions they perform throughout their career.

MSMC's concentration is 97.2%, after 98.5%,the indicator increased by 1%, more than that of the ZMS, and attention switching improved from 73sec to 69sec. this shows that athletes using the AGIM system want to improve their psychological state at the start, before the start and after the start, which indicates a desire for maximum results and high places without stress.

In MS,the concentration of attention before the experiment was 93.7%, and after it was 95.6%. Switching attention before the experiment was 84.5 seconds, and after 75.5 seconds.

In CMC, the concentration of attention before the experiment is 93.3%,after 95.4%,and the switching of attention before the experiment is 98.3 seconds, then after it it began to be 96.5 seconds.

The lowest concentration index after using the AGIM system increased by 2.1%. in our opinion, this is due to the fact that each time performing exercises from the AGIM system, these athletes train their psychological state, and at the time of the shot, concentration and switching attention.

Comparing MS and CMC after the experiment with ZMS and MSMC, they significantly improved their performance. Presumably, this is due to their increased motivation to achieve higher sports results. That is why they are shooting more focused and accurate. As a result, attention switching is at a low level compared to ZMS and MSMC. It is likely that the shooters of a higher class with the help of long-term training managed to increase the switching of attention due to the reduction of concentration and accuracy of work to an acceptable level.

We have recorded the following indicators that served as criteria for evaluating the effectiveness of the AGIM system:

- subjective report of the athlete on his psychological readiness for training and competitions;
- objective report of the coach on the athlete's condition (based on the results of observation);
- stability of results in training and competitions (points scored);
- performance of performances (ranked).

Before and after the experiment, we carried out a background test which included the above-mentioned criteria.

Indicators before the experiment after the experiment

control group experimental group control group experimental group

Subjective report of the athlete readiness to overcome difficulties, mood for optimal results self-confidence, desire to win

Objective report of the coach tension before the start, concern for the future result Calmness, concentration, "withdrawal"

Stability of results in training (points) 377.8 376 378 379

Stability of results in competitions (points) 374 374 374 376

The performance of the competition (the place) 7 7 5 3-2

Heart rate (BPM) 84-96 84-96 84-96 84-86

CONCLUSION:

Thus, as a result of our research, we found that using the AGIM system, the components of mental reliability, switching and concentration of attention significantly improved. The effectiveness of their performances in competitions has increased, i.e. the average group place occupied by the shooter.

The use of the AGIM system in the training of athletes has significantly improved the indicators of mental reliability components.

The shooters ' own feelings indicate that the AGIM system allows them not only to manage their attention and mental reliability components, but also to easily and quickly enter the state of optimal combat readiness, maintaining it throughout the entire time of the exercise.

Based on the above data, we can conclude that the proposed AGIM system is an effective means of regulating the attention of components of mental reliability and the properties of attention of shooters during training and competitions.

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