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Research Article

PSYCH-PHYSIOLOGICAL FEATURES, BASIC TYPES AND PROPERTIES OF ATTENTION AS ONE OF THE COMPONENTS OF THE MENTAL RELIABILITY OF HIGH- QUALIFICATION SHOOTERS

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Abstract:

When the shooter focuses his attention, all efforts to achieve maximum immobility of the work, the corresponding motor centers of the brain come to an excited state, resulting in a flow of motor impulses to the muscles, ensuring the stability of the work. Bullet shooting is characterized by a well-defined sequence of specialized psychomotor actions. At the same time, they represent a holistic, dynamic process in which it is difficult to establish clear temporal and spatial boundaries of the main components of the shot execution technique. Therefore, in the theory and practice of bullet shooting, conditional division of the shooting technique into the components of the shot was adopted. Intentional activation of attention is associated with arbitrary mechanisms and, therefore, with the application of volitional efforts to direct attention to a particular object, to a change in the intensity of attention. The role of volitional effort becomes especially noticeable when difficulties arise in concentrating on the learning task.

Keywords: Attention, Volitional Effort, Attention Intensity, Internal Attention, Shooter, External Attention, Motor Center Of The Brain, Attention Property, Excited State, Visual Analyzer, Elbow Joint, Nervous System, Orienting Reaction.

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INTRODUCTION:

Attention is the focus and concentration of consciousness on something: an object, a phenomenon, an action, a thought. Orientation of consciousness is a collection of some objects that are of interest to a person at a given moment, out of a multitude concentration is a distraction from everything that has nothing to do with the selected object. Due to these two features, attention is always selective.

A feature of attention is that it does not exist by itself, outside of actions (perceptual, mental, motor). Therefore, attention can be characterized "as a working condition".

Attention ensures the clarity and clarity of students' perception of educational material, the speed and clarity of their thinking, control over the physical exercise performed. The attentive student notices in the demonstrated exercise and the explanation of the teacher such details that inattentive students miss.

Attention as a mental process is reflected in specific changes in the biocurrents of the brain, as well as vegetative - in respiration and the activity of the cardiovascular system.

There are two types of attention: unintentional (involuntary) and intentional (arbitrary).

PURPOSE OF THE STUDY:

The aim of our work is to study the psychophysiological characteristics, the main types and properties of attention on the components of mental reliability of skilled shooters at a moving target.

RESEARCH METHODS:

Research methods were analysis and synthesis of scientific and methodological literature, testing and pedagogical experiment.

RESULTS AND DISCUSSION:

Inadvertent activation of attention is associated with the impact on the senses of external stimuli, causing an orientation reaction. The ease of its occurrence depends on strength, novelty and contrast, irritable stimuli attract more attention than weak ones, and not only absolute strength matters, but relative oriental silence, orienting reaction can also occur to a weak sound (in contrast).

A new stimulus also attracts much attention than the one already familiar. The novelty is often in changing the characteristics of an already known stimulus. Reducing the volume of speech, up to its complete cessation, acts in the same way.

Changing the position of an object in space also gives the effect of novelty of perception; therefore, moving objects attract more attention to themselves than motionless ones.

Intentional activation of attention is associated with arbitrary mechanisms and, therefore, with the application of volitional efforts to direct attention to a particular object, to a change in the intensity of attention. The role of volitional effort becomes especially noticeable when difficulties arise in concentrating on the learning task.

Attention can be directed to external signals and to oneself — to one's thoughts, experiences, sensations, movements. In this regard, allocate external and internal attention.

External attention is expressed in alertness, vigilance, readiness for action. External attention is also called perceptual. Perceptual attention is associated with motor inhibition, with a decrease in sensitivity to extraneous stimuli. The state of operational rest can be seen by looking at the athletes who are preparing to start.

Internal attention is characterized by depth, focus on their feelings, on the subject of reflection. A typical example of this type of attention is the concentration of the arrow before the exercise, when he repeats the key points of the correct shot.

External and internal attention inhibit each other: it is impossible to be equally focused simultaneously on external signals and on internal sensations or thoughts. Therefore, it is difficult for schoolchildren to perform two tasks at once: monitor the exercise and explanation of the exercise by the teacher and immediately perform it, controlling movements.

At the initial stage of training, the unintended activation of attention associated with the effect on the sense organs of external stimuli causing an oriented reaction is of greater importance. For example, when studying the elements of shooting technique, the trainer uses the following techniques: alternating the story and practical implementation, studying the element, applying visual aids. In addition, when studying the material part of a weapon, it is useful to accompany the explanation with a demonstration of the operation of parts and mechanisms, since moving objects attract much attention to themselves than motionless ones.

However, if the trainer uses only involuntary attention

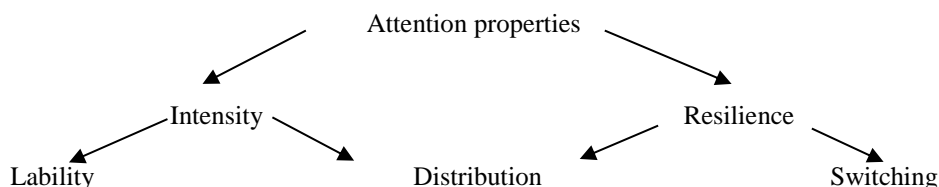
during training, the students will not be able to hold deliberate attention for a long time, and the lesson will turn from a student into an entertaining one. For example, when studying the same elements of firing techniques, the coach convincingly proves the importance of the material being studied, the students propose a volitional effort to direct attention to one or another aspect of the topic being studied.

In addition, attention is allocated to focus. External and internal attention is actualized during training, depending on the arising tasks. As a rule, these types of attention alternate. For example, when learning a new position for shooting, students receive the

necessary information from the coach, creating an indicative basis for the activity. At the same time, they have external attention.

When students, reinforcing their skills, do the exercises independently, they mentally plan it, repeat it, or control its implementation by a proprioceptive sensation. In this case, internal attention prevails.

Properties of attention of their manifestation when performing a shot (exercise). Attention is characterized by many properties that can be grouped depending on whether it is directed to one or several objects.



The properties characterizing the attention directed to a single object include concentration (intensity), stability and mobility (lability). Properties that characterize attention directed to several objects include switchability and distributability.

Concentration of attention. Concentration is characterized by focus on the object. In this property, the dominant mechanism is most clearly manifested: the moment of concentration by inhibition of others. This reduces the sensitivity to extraneous stimuli, which are relegated to the background.

There are several degrees of intense attention: full preoccupation with activity, moderate concentration, weak concentration with short distractions, superficial concentration, weak concentration with an unstable focus of attention. For example, when performing an exercise, the rifleman must be completely absorbed in his activities, and performing familiar exercises in a physical education class often does not require students to concentrate on their attention.

Stability attention. The ability to consciously maintain a high intensity of attention for a long time with the help of a volitional effort is called its stability. In general, the constant long-term retention of concentrated attention is almost impossible: the intensity of attention fluctuates within a small range, and also switches to other objects for 2-3 seconds. However, these spontaneous attention cuts are not taken into account when it comes to the sustainability of voluntary attention.

During the exercise, it is not possible to constantly maintain a high intensity of attention, and this is not necessary. Attention is maintained at a high level during the execution of each shot individually, and during the reloading of the weapon and the change of target, the intensity of attention temporarily decreases. Mobility (lability) attention. The ability to deliberately change the intensity of attention is called attention mobility. The need to increase or decrease the intensity of attention occurs quite often. For example, when performing the exercise VP-11a (mixed run), the intensity of attention increases when shooting and decreases after the 1st half.

The one who quickly increases or decreases the intensity of attention, has a labile attention, the one who does this is hardly inert.

Switching attention. The ability to deliberately move attention from one object or action to another characterizes the switchability (flexibility) of attention. Switching attention makes it possible to keep several objects under observation at once, to orient oneself in a situation and to form an indicative basis of activity. It provides ongoing monitoring of activities when several actions are performed simultaneously or one after another.

An example of switching attention can serve as a high-speed pistol shooting at five targets, during which the shooter must switch attention from one target to another in a limited time, while controlling the aiming devices.

At the same time, switching attention as a characteristic of intentional attention should not be confused with distractibility, which characterizes the ease of occurrence of unintentional attention.

Distribution of attention. The ability to perform under the control of consciousness simultaneously several operations and actions characterizes the distribution of attention. The success of the distribution of attention depends on the degree of automation of action. Automated actions are performed with less control, low intensity of attention, so it is possible to direct the main focus to the more important action at the moment.

For example, when firing a shot, its individual elements are performed with less control due to the high degree of automation, and the main focus of attention is on the control of the "gunner-weapon" system.

In addition, if the actions performed are linked into the system, attention distribution is facilitated.

The opposite characteristic of distributed attention is narrowness of attention. A person with a narrow focus of attention cannot fix many objects at the same time. Properties of attention in different people manifest themselves in different ways. The degree of manifestation of these properties depends both on the experience of the learners and on the innate instincts, in particular, the properties of the nervous system. The trainees, with a strong nervous system and inertness of the nervous processes, concentrate attention better. Trainees, with a weak nervous system and mobility of nervous processes, switch attention better.

Psycho-physiological features of the execution of an aimed shot at a moving target.

Start making. In shooting at a moving target, the starting position of the shooter's body (starting construction) acquires essential significance. It creates optimal conditions for the effectiveness of subsequent movements and should provide:

- a) the greatest resistance of the body
- b) perhaps a shorter rise of the rifle to the shoulder
- c) sufficiently accurate spatial orientation of the system "body of an arrow-weapon" in relation to the place of appearance of the target due to shelter
- d) to a certain extent the free movement of the rifle synchronously to the movement of the target
- e) minimal fatigue while holding a weapon

Subsequent actions of the shooter to implement an accurate shot depend on the starting construction. The

position of the rifle in the starting production is determined by the rules of the competition, namely: when the target starts moving, the rifle must be held by the athlete so that his butt is half visible from under the lowered elbow. Thus, the choice by the shooter of the initial production should be subject to the fulfillment of the specified conditions.

Workmanship. Fabrication for shooting at a moving target is characterized by kinetic and dynamic structures.

Under the kinematic structure means - the spatial form of the specialized movements of the arrow and their changes over time without taking into account the acting forces. It gives as a whole only an external picture of movements.

The dynamic structure of the fabrication is determined by the inertial characteristics (features of the body of the shooter and the weapon moved by it), power characteristics (features of the interaction of the links of the body and the weapon) and energy characteristics (state and changes in the performance of biomechanical systems).

In the practice of shooting, the manufacture of any shooter is unique in its own way. That is why it is not necessary to copy the manufacturer of another athlete who has superiority in technical results.

Depending on the anatomical possibilities, each shooter needs to select, first of all, such a fabrication that does not cause significant body energy in the process of firing and provides a high degree of stability of the "shooter-weapon" system.

The position of the legs. In the production for shooting, the center of gravity of the rifle is located at a considerable distance from the projection of the center of gravity of the body of the shooter. Therefore, maintaining a stable body position arrow with a weapon requires an increase in the area of support. To do this, it is advisable to arrange the feet so that they create a support area in the form of a trapezium, and the distance between them corresponds approximately to the width of the shoulders. When standing, when the foot of the left leg is to the left of the plane of shooting, and the foot of the right foot is crossed by the plane of shooting approximately in the middle or one third closer to the heel, a rather large support area is created (Fig. 1.2.).

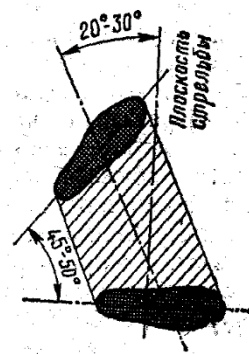


Fig.1. Interposition supporting body surfaces- feet of both feet when ready



Fig.2. The projection of the supporting surfaces of the body feet of both feet.

Hand position In the ready for shooting, the athlete's left hand, supporting the rifle at the forearm, should be bent at the elbow joint so that the shoulder and forearm form an angle of approximately 90-100°. In this case, the elbow should be moved away from the body forward and slightly to the left of the firing plane so that the forearm rests not on the fingers, but on the palm.

In searching for the most optimal position of the left hand while holding the weapon in weight, it is necessary not only to ensure that most of the palm surface is used, but also for the correct position of the left hand, in which the athlete does not experience excessive tension in the wrist and elbow joints.

In addition, in the search for feasible left-handed positions in the manufacture, it is necessary to take into account the fact that with an increase in the articular angle formed by the shoulder and forearm, when the rifle is held down, the demands on muscle strength increase. This must be remembered, first of all, for those athletes who are either not physically prepared enough or do not have appropriate muscle differentiation.

Essential when shooting acquires such a position of the right hand in the manufacture, which provides: first, the minimum possible in the work of the muscles to hold the weapon; secondly, optimal conditions for local and to a certain extent autonomous speed-power contraction of the index finger with fixed shoulder, forearm and hand.

Lead From the kinematic point of view, when shooting at a moving target, the trajectory and speed of the aiming hemp should coincide for some time with the corresponding characteristics of the aiming area. In other words, to perform an accurate shot, the athlete must ensure the accuracy of the movement of the aiming hemp in any part of the trajectory of the aiming area.

Such a motor task is solved by horizontal movement of the weapon synchronously with the movement of the target. In practice, shooting this technique is called a leash.

The leash of the weapon is carried out by smooth rotation of the body in the direction of movement of the target, with this position of the rifle fixed against the retaining links of the body (when the leash should

be eliminated any hand movements in the horizontal plane to avoid a significant violation of the stability of the weapon)

Smooth rotational movement of the body is possible only if the muscles performing the rotation, will be reduced freely, without encountering excessive resistance and inhibition. When driving a rifle you need to keep the torso straight, with the least bend in the back.

Aiming. Aiming is that the shooter positions the sight and aiming point (target) on the same line and thus gives the weapon the appropriate direction in relation to the target.

However, since the manufacture cannot ensure the absolute immobility of the weapon, it is practically necessary to take aim in the conditions of continuous more or less oscillation of the weapon. Therefore, aiming, aiming weapons, is a very complex visual-motor process, requiring high visual-motor coordination of the shooter, in which he, in time of aiming, must not only perceive the violation in the interposition of the aiming devices in the target, but also move the weapon and restore it with appropriate

movements direction relative to the goal.

Obviously, when firing a pistol, characterized by significant oscillations of a hand with a weapon, the aiming process is dominated by a motor-order process, in which the visual analyzer acts mainly as a kind of corrector, signaling a deviation of the hand with a weapon in one direction or another. This is followed by impulses from the relevant departments of the central nervous system to the muscle groups, aimed at restoring the position of the arm with the weapon relative to the target.

When firing a rifle from positions that ensure maximum stability of the weapon, the main role is played not by the motor, but by the visual side of the aiming process - the clarity of the eye's perception of the contours of the aiming devices and their relative position relative to the target, the distinctive ability of the visual analyzer.

An indispensable condition for correct aiming should be such an interposition of aiming devices (regardless of all types of sights), at which a "level" front sight is maintained.



Fig.3.The interposition of sights, called "flat front sight" (optical sight, is used when shooting at a moving target)

When aiming with an optical sight, the condition of observance of the "straight fly" will correspond to the passage of the eye ray line strictly along the main optical axis of the sight; for this it is necessary to ensure that when aiming the eyepiece of the sight is not obscured. The optical sight device provides for aiming without the use of the front sight and the slot of the sight mounted on the rifle barrel, since in this case the line of sight is the optical axis passing through the center of the lens and the tip of the aiming hemp. Consequently, the role of a fly in an optical sight is performed by sighting threads (hemp).

During aiming, it is necessary to carefully monitor that

there are no blackouts in sight; it must be completely clean. If the eye is shifted relative to the main optical axis, at the edges of the eyepiece, during aiming, moon-shaped shadows can be observed, which can be located on either side, depending on the eye shift relative to the optical axis of the sight. As a result, when fired, the bullets will deviate to the opposite side of these shadows. Therefore, in order to ensure accurate aiming with an optical sight, the arrow needs to focus all attention on keeping the eye on the optical axis of the sight and accurately aligning the point of the hemp with the point of aiming (Figure 4).



Fig.4 The interposition of sights, (pointing "flat fly" under the lower edge of the "apple" target)

At first glance, the aiming scheme outlined above seems simple and straightforward. But when the shooter wants to put it into practice, he will face many difficulties during the shooting. The main ones are due to the peculiarities of the structure of the eye and its operation as an optical device in the process of aiming. It must be said that with enhanced work, the eyes lower their working capacity and the motor and light-receiving apparatus of it. With the continuous fixation of the eye on any object, the eye has the greatest visual acuity for a few seconds, after which the clarity of the image of the object on the retina, its clear vision gradually decrease.

Therefore, in any case should not "aim". Long, but uniform shooting so the vision is not tiring, as one "aiming" shot. In a minute of aiming without blinking, visual acuity deteriorates twice. Research conducted by I.G. Medvedeva (1964), showed that the moment of alternate aiming causes fatigue of the eye, manifested as a temporary loss of certain areas of the visual field. Moreover, shooters should especially beware of "targeting" in bright light: it contributes to the rapid formation of "blind spots" (disappearing in 5-10 minutes after the cessation of active training).

Consequently, the shooter should not be carried away by an excessively long aiming, since when the expiration of 15-20 seconds the eye ceases to notice inaccuracies in the aiming.

Relying on imaginary well-being with aiming, the shooter imperceptibly makes gross mistakes. If we consider the time from the moment of vision focusing on specifying the amount of clearance between the top of the front sight and the lower edge of the apple (or the annular clearance - when shooting with the front sight), then the aiming process should not exceed 5-6 seconds.

Pushing the trigger. Trigger technique is of great, and sometimes crucial in the production of the shot. First of all, the descent of the hook should not displace the weapon aimed at the target, i.e. shoot down a tip. To do this, the shooter must be able to gently press the trigger. In addition, the descent of the hook must be made in full accordance with visual perception, i.e. to coincide with a certain moment when the "smooth front sight" is under the bottom edge of the target's "apple".

Consequently, in order to achieve a well-aimed shot, the shooter must hold the weapon, smooth the leash, aim and smoothly pull the trigger inseparably, not isolated from each other, but strictly coordinated with

each other.

The production of an aimed shot is a very complicated process, requiring the shooter to have complex visual-motor coordination, as well as a great mobility of the nervous processes, otherwise the response of the shooter to the visual perception will be delayed and lose their usefulness, since the shot will not be made on time, but hence inaccurate. At the same time, pressing the trigger finger on the trigger should not only be made in a timely manner, but also be an isolated and precise movement in which the weapon does not move, otherwise the shot will also be inaccurate.

When the shooter focuses his attention, all efforts to achieve maximum immobility of the work, the corresponding motor centers of the brain come to an excited state, resulting in a stream of motor impulses to the muscles, ensuring the stability of the work. At the same time, other motor nerve centers, including those that know the movement of the index finger, find themselves in an excessively inhibited state; those who are still weak, strong-willed efforts that the shooter is trying to put them cannot take from him, because his attention and will are still focused on performing the action — preserving the maximum immobility of the finished.

This period is characterized by the fact that the shooter, out of time, with a delay and inadvertently completes the trigger pull. If an athlete with such a level of fitness of his central nervous system tries to excessively abuse volitional efforts aimed at the timely inclusion of the index finger in the work, then this usually leads to a violation of the stability of the weapon, since bringing into a state of a previously deeply inhibited nerve cells of the motor center, which controls the movement of the finger, is accompanied by inhibition of the nerve cells of other motor centers of the brain, responsible for the work of the muscle group, ensuring the immobility of manufacture. And this entails a violation of the stability of the manufacture at the time of the finger when you press the trigger.

CONCLUSION:

Thus, when performing a concerted action of aiming and timely pressing the trigger, the shooter should strive to achieve as a result of the workout that the central nervous system creates such strong conditioned reflex connections, in which the movement of the index finger, when the trigger is pressed, acquired the character of automated stereotyped movements, and these actions did not require enhanced control by the

mind, releasing it to control the implementation of other actions during by (to follow the wind gusts, the duration of the shot processing, etc.). And indeed, the shooter in good sports form, when he is good at shooting, does not think about whether to pull the trigger or not when handling a shot. As soon as the oscillations of the weapon are reduced, and the most opportune moment for firing a shot comes, the finger, as it were, presses the trigger itself, and, as a rule, performs such work in a timely manner. The shooter should strive for this state of fitness of his nervous system.

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