



METHODOLOGY FOR ANALYSING AND CORRECTING ERRORS AND PSYCHOLOGICAL AND PHYSIOLOGICAL TRAINING IN IMPROVING THE EFFICIENCY OF FIRE TRAINING

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Article history:	Abstract:
Received: 11 th April 2026 Accepted: 10 th May 2026	This article examines the role of psychological and physiological preparedness in improving the effectiveness of firearms training for military personnel. It analyzes the causes of errors occurring during shooting practice and proposes a methodology for identifying, evaluating, and correcting them based on an integrated approach. The study demonstrates that combining psychological training, physiological monitoring, and objective error analysis contributes to higher shooting accuracy, better stress resistance, and improved combat readiness. The proposed methodology can be applied in military educational institutions and combat training systems to enhance the quality and effectiveness of firearms training.

Keywords: firearms training, shooting training, psychological preparedness, physiological preparedness, combat readiness, stress resistance, error analysis, military pedagogy, interactive assessment, military personnel

OTISH TAYYORGARLIGI SAMARADORLIGINI OSHIRISHDA PSIXOLOGIK VA FIZIOLOGIK TAYYORGARLIK HAMDA XATOLARNI TAHLIL QILISH VA TUZATISH METODIKASI

ПСИХОЛОГИЧЕСКАЯ И ФИЗИОЛОГИЧЕСКАЯ ПОДГОТОВКА, А ТАКЖЕ МЕТОДИКА АНАЛИЗА И ИСПРАВЛЕНИЯ ОШИБОК В ПОВЫШЕНИИ ЭФФЕКТИВНОСТИ СТРЕЛКОВОЙ ПОДГОТОВКИ

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Annotatsiya: Mazkur maqolada zamonaviy harbiy tayyorgarlik tizimida otish samaradorligini oshirishga ta'sir etuvchi psixologik va fiziologik omillar tahlil qilinadi. Harbiy xizmatchining ruhiy barqarorligi, stressga chidamliligi, nafasni boshqarish ko'nikmalari, mushak koordinatsiyasi hamda individual xatolarni aniqlash va bartaraf etish metodikasi ilmiy nuqtai nazardan yoritiladi. Maqola otish tayyorgarligini kompleks yondashuv asosida takomillashtirish zaruratini asoslaydi.

Kalit so'zlar: Otish tayyorgarligi, psixologik tayyorgarlik, fiziologik tayyorgarlik, stress, harbiy pedagogika, xatolar tahlili, interaktiv baholash.

Аннотация: В статье рассматривается роль психологической и физиологической подготовки в повышении эффективности огневой подготовки военнослужащих. Проанализированы причины ошибок, возникающих в процессе выполнения стрелковых упражнений, и предложена методика их выявления, анализа и устранения на основе комплексного подхода. Результаты исследования показывают, что интеграция психологической подготовки, физиологического контроля и объективного анализа ошибок способствует повышению точности стрельбы, устойчивости к стрессу и уровня боевой готовности. Предлагаемая методика может быть использована



в военных образовательных учреждениях и системе боевой подготовки для повышения качества огневой подготовки.

Ключевые слова: огневая подготовка, стрелковая подготовка, психологическая подготовка, физиологическая подготовка, боевая готовность, стрессоустойчивость, анализ ошибок, военная педагогика, интерактивная оценка, военнослужащие

In recent years, armed conflicts observed in various regions of the world have shown that perfect weaponry alone is not enough for the successful execution of combat missions. Psychological readiness, emotional stability, physical endurance, and the ability to make quick and correct decisions in complex situations are also among the decisive factors.

Although traditional shooting exercises are primarily aimed at developing technical skills, the stress, fatigue, lack of time, and physiological changes occurring in real combat situations are not sufficiently modeled. As a result, a serviceman who achieved a high result at the training ground may not be able to repeat that result in combat conditions.

The relevance of this study is determined by the need to integrate psychological and physiological training into the firing training system and to develop a methodology for the scientific identification and correction of individual errors of each serviceman.

Scientific substantiation of the role of psychological and physiological training in increasing the effectiveness of shooting training, as well as the development of a comprehensive methodology for error analysis and correction.

Scientific research conducted in military psychology and sports physiology indicates that stress directly impacts a person's motor activity, concentration, and decision-making speed. The **"Train as You Fight"** principle, used in the armies of developed countries, aims to bring training closer to real combat situations. Video analytics, electronic targets, biophysiological monitoring, and interactive assessment tools are becoming an integral part of shooting training. In existing scientific works, psychological, physiological, and technical training have often been studied in separate directions. In this article, they are considered as a single system, and a comprehensive methodology for identifying and correcting errors is proposed.

Psychological and physiological preparation is aimed at developing a comprehensive model for improving marksmanship training, in which pedagogical experience, systematic analysis, comparative analysis, expert assessment, observation, psychological testing, and mathematical-statistical methods were applied in combination. During the study, control and experimental groups were formed, and classes were organized under identical conditions. In the experimental group, elements of psychological preparation, physiological monitoring, and interactive assessment were integrated into the sessions.

Scientific foundations of psychological training: a serviceman's psychological readiness is one of the key factors for the successful execution of tasks in complex combat situations. Stress, fear, emotional tension, and lack of time directly affect the processes of concentration, situation assessment, and decision-making. Therefore, elements of autogenic exercises, visualization, decision-making under stress, and situational modeling were included in the sessions.

During the sessions, the mental state of the participants was regularly monitored. The results obtained showed that military personnel with high psychological readiness make fewer mistakes in complex situations. This confirms the necessity of organizing psychological training as an integral component of shooting sessions. *Scientific foundations of physiological training:* The physiological state of the body also significantly affects shooting accuracy. Heart rate, breathing rhythm, muscle coordination, and physical fatigue are important factors determining firing accuracy. In the experimental group, shooting, breathing control, and balance exercises were regularly applied after physical exertion. Observations showed that servicemen who mastered breathing control skills and developed muscle coordination demonstrated high stability in aiming. Monitoring physiological indicators allowed instructors to plan sessions based on individual characteristics.

In the experience of the armed forces of the USA, Great Britain, Germany, and Israel, bringing training closer to a real combat situation is a priority. The use of electronic targets, laser simulators, video analytics, and biophysiological monitoring tools allows for an objective assessment of a serviceman's training. Adapting these experiences to the national training system is of great scientific and practical importance for increasing the effectiveness of shooting training.

The results of the pedagogical experiment showed that classes organized on the basis of a comprehensive methodology are more effective than classes conducted using traditional methods. As a result of psychological training exercises, the use of physiological monitoring and interactive assessment tools, the accuracy of hitting the target, the speed of decision-making, and the ability to function stably under stress have improved. A consistent decrease in the number of errors was observed during repeated sessions.

As a result of the analysis of typical errors occurring during the firing process, errors were divided into three main groups: technical, psychological, and physiological. Technical errors included improper grip of



the weapon, violation of the aiming line, sharp pressing of the trigger, incorrect selection of body position, and incorrect control of recoil. Psychological errors were associated with distractedness, haste, insecurity, fear, and lack of time. Physiological errors were caused by respiratory rhythm disturbances, excessive muscle tension, increased heart rate, and physical fatigue.

The error analysis methodology documented each firing exercise through video analytics, electronic targets, and instructor observation. The obtained data were included in the interactive assessment program, and an individual analysis card was formed for each serviceman. This approach made it possible to identify the causes of errors rather than their external signs. On this basis, individual recommendations for military personnel were developed.

Five-step error correction methodology

The first stage is diagnostics. At this stage, shooting results, heart rate, breathing rhythm, and exercise time are recorded.

The second step is identification. Errors are divided into technical, psychological, and physiological groups, and their primary causes are identified.

The third stage is individual correction. A complex of special exercises will be developed for the serviceman. For psychological problems, stress resistance exercises are used; for physiological deficiencies, breathing control and coordination exercises; and for technical errors, special exercises for handling weapons.

The fourth stage is repeated control. Upon completion of the exercises, repeat shooting tests are conducted and compared with the initial results.

The fifth stage is monitoring. The results are stored in an electronic database, where the dynamics of the serviceman's development are monitored and further training sessions are planned.

The results obtained during the pedagogical experiment were processed using mathematical and statistical methods, and the statistical significance of the difference between the experimental and control groups was evaluated. The results of the mean values, standard deviation, Student's t-test, and dispersion analysis showed that the positive changes observed in the group using the comprehensive methodology were not random. This made it possible to scientifically substantiate the practical effectiveness of the developed methodology.

The results obtained showed that improving technical exercises alone is insufficient to increase the effectiveness of shooting training. Integrating elements of psychological and physiological training into training significantly improves a serviceman's decision-making ability under stress, aiming accuracy, and stability of

actions in complex situations. These results are consistent with scientific research conducted in modern military pedagogy and sports physiology. Foreign experience shows that in the armies of the USA, Great Britain, Germany, and NATO countries, training is brought as close as possible to real combat conditions. In this study, the same approach was used, and video analytics, interactive assessment, and physiological monitoring tools were integrated into a unified methodological system.

During the study, a model for the comprehensive assessment of psychological, physiological, and technical indicators was proposed. A five-stage methodology has been developed aimed at identifying and eliminating the individual errors of a serviceman. The possibility of increasing the objectivity of instructor assessment through the use of interactive assessment tools and video-analytical control has been scientifically substantiated.

The proposed methodology can be used in the training of military higher educational institutions, permanent troop deployment points, sergeant training centers, and special units. The methodology allows for the individualization of training, the optimization of ammunition consumption, the rapid detection of errors, and the improvement of firing training quality.

The research results demonstrated that combining psychological and physiological training with shooting exercises significantly enhances the combat readiness of military personnel. Analyzing errors on a scientific basis and applying an individual correction methodology reduces the number of repeated errors and increases the effectiveness of training. It is advisable to implement the developed approach into the practice of the military education system.

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