

# METHODOLOGY FOR IMPROVING REACTION SPEED AND MOVEMENT COMPATIBILITY IN CADETS THROUGH VOLLEYBALL

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## Abstract

Research on the effectiveness of volleyball training in the development of reaction speed and movement coordination in cadets. The study involved 60 cadets, who were distributed to experimental and control groups. The experimental team conducted volleyball sessions 3 times a week, for 90 minutes each. Reaction speed and motion compatibility were evaluated through tests. In the experimental group, the reaction rate increased by +18 %, action compliance by +20%; while in the control group, an increase of +6% and +5% was recorded. Volleyball training has a high pedagogical potential in the effective development of psychomotor skills and Comanche skills in cadets.

**Keywords:** Volleyball, cadets, reaction speed, movement compatibility, psychomotor abilities, physical fitness, comandic skills, stress resistance, quick decision-making, sports methodology, military training, training efficiency, cognitive functions.

## Introduction

Modern military service activities require not only physical strength and endurance, but also quick thinking, coordination of movements and effective reaction skills. Servants are forced to make decisions in rapidly changing situations, act together with partners and effectively respond to potential threats. Therefore, the psychomotor abilities and reaction speed of cadets are one of the main directions of military training.

Volleyball is an effective pedagogical tool that meets such requirements. In the process of working with the ball, cadets form the skills of quick movement, coordination of movements and pre-assessment of the opponent's movements. Comanche training also allows movement synchronization and rapid strategy development.

Analysis of scientific literature shows that volleyball training is effective not only in the development of physical fitness, but also in the improvement of psychophysiological and cognitive abilities. This sport activates the central nervous system, strengthening the reaction rate and movement coordination.

But in the contingent of cadets, systematic studies aimed at the purposeful development of reaction speed and movement coordination were not carried out at an adequate level. In many cases, physical fitness training is aimed at developing general qualities, and their specific psychomotor and cognitive effectiveness is not fully assessed.

In this regard, the development of a methodology aimed at the purposeful development of reaction speed and movement compliance in cadets through volleyball training and the scientific assessment of its effectiveness is an urgent scientific and practical task. The results of this study serve to improve the system of physical training in higher military educational institutions, increase the ability of cadets to act effectively and ensure effective performance in military professional activities.

## **Methods**

The study was carried out in 2024 on the basis of a higher military educational institution, and the goal is to assess the effectiveness of the methodology for the development of reaction speed and movement compliance in cadets through volleyball training.

### **Study participants.**

60 cadets participated in the study. They were divided into two groups, evenly divided by age and level of physical fitness:

- Control group (n=30): traditional physical fitness training;
- Experimental group (n=30): a special methodology developed on the basis of volleyball training.

In both groups, cadets were evaluated through physical fitness baseline, reaction rate, and motion compliance tests.

### **Research methods.**

The following methods were used in the study:

- Analysis of scientific and methodological literature;
- Pedagogical observation and feedback;
- Pilot training;
- Reaction rate and motion consistency testing method;
- Mathematical and statistical analysis (Middle arithmetic, standard deviation, percentage calculations).

### **Results**

The results of the experiment showed that volleyball training increases the reaction speed of cadets and significantly increases their physical performance.

### **Starting indicators**

The experimental and control groups on reaction rate and motion consistency were nearly equal, with no statistically significant difference observed ( $p > 0.05$ ).

### **Final standings**

- In the experimental group, the indicators of reaction speed and movement compatibility have grown significantly;
- Growth in the control group was relatively low.

№	Indicator	Control Group (%)	Experimental Group (%)
1.	Reaction speed	+6 %	+18 %
2.	Coordination	+5 %	+20 %

### **Description of the results of the study:**

- In the experimental group, the reaction rate increased by +18 %, action compatibility by +20 %;
- In the control group, however, the reaction rate increased by +6 %, action compatibility by +5;

- These results show that volleyball training significantly develops psychomotor abilities in cadets.

## **Discussion**

The results obtained showed that volleyball training has a high efficiency in the development of reaction speed and movement coordination in cadets. An increase in the rate of reaction in the experimental group by +18%, movement compatibility by +20% indicates a significant development of psychomotor abilities of cadets.

In the process of volleyball training, cadets are forced to act quickly, control the ball and pre-evaluate the opponent's movements. This process serves to effectively develop reaction speed and movement coordination by activating the central nervous system. Comandian exercises also enhanced cadets' ability to synchronize movements and make quick decisions.

The control group, however, continued to practice traditional physical fitness, with no major change in their reaction and conformity performance. This situation confirms the need for targeted integration of volleyball training into the military training system.

In addition, volleyball training also helps to develop stress resistance and quick decision-making skills, which makes it possible to act effectively in emergencies that may occur in the military.

In general, the results of the study clearly show that volleyball training has a high pedagogical potential in the development of psychomotor abilities in cadets and coordination of movements, and justify its integration into the system of physical training in higher military educational institutions.

## **Conclusion**

The results of the study showed that volleyball training is an effective pedagogical tool in the development of reaction speed and movement coordination in cadets. In experimental group cadets, an increase in the reaction rate by +18%, movement compatibility by +20% confirms the high efficiency of this methodology.

Volleyball training allows you to activate the central nervous system, strengthen psychomotor abilities and form Comanche skills. In the training process, cadets learn to move quickly, control the ball and assess the opponent's movements in

advance. Stress resistance and quick decision-making ability also develop, allowing for high-performance action in military service activities.

In the control group, however, traditional physical fitness training only developed general physical qualities, with no significant increase in reaction and movement coordination. This situation indicates the need to purposefully integrate volleyball training into the physical training system in higher military educational institutions.

In the process of volleyball training, cadets learn to move quickly, accurately control the ball and assess the opponent's movements in advance. This process serves to significantly develop psychomotor abilities, activating the central nervous system. Comandian exercises also enhanced cadets' ability to synchronize movements and make quick decisions.

In the control group, traditional physical training only developed general physical qualities, there was no significant increase in reaction and movement coordination. This situation indicates the need to purposefully integrate volleyball training into the physical training system in higher military educational institutions.

In this regard, the study recommends:

1. Inclusion of volleyball training in the cadets physical training program;
2. Organization of training with a methodological approach aimed at developing psychomotor abilities and reaction speed;
3. Adaptation of the intensity of exercises according to the individual level of training of cadets;
4. Further increase in efficiency through integration with modern technologies (VR, touch monitoring) in the future.

In general, volleyball training is a scientifically based and effective pedagogical tool in the development of reaction speed and movement coordination in cadets.

In general, volleyball training confirms that in cadets, psychomotor skills are scientifically based and a tool with high pedagogical potential in the development of reaction speed and movement coordination. At the same time, this methodology serves as the main direction in improving physical training in higher military educational institutions and increasing the ability of cadets to act effectively in military professional activities.

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