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POSTURAL DISORDERS PREVENTION IN ADOLESCENTS DURING MILITARY TRAINING PREPARATION

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Abstract
Maintaining proper posture is a crucial aspect of physical health, particularly in adolescents preparing for military service. This study explores the impact of pedagogical and psychological approaches on postural correction and physical readiness in young recruits. The research involved anthropometric measurements, physical fitness tests, and psychological assessments. The results indicate a significant improvement in postural stability, self-confidence, and motivation among participants who underwent targeted training programs. This study highlights the importance of integrating educational and psychological strategies in military training preparation to enhance physical endurance and psychological resilience.

Keywords: Postural disorders, military training, adolescents, physical fitness, psychological resilience.

INTRODUCTION

Adolescence is a critical period for postural development due to the rapid growth of the musculoskeletal system. During this phase, bones lengthen, muscles adapt, and the body undergoes structural changes that influence overall stability and movement efficiency. However, improper postural habits, such as prolonged sitting, incorrect gait, excessive screen time, and insufficient physical activity, can contribute to postural imbalances that, if uncorrected, may persist into adulthood. These imbalances can lead to musculoskeletal discomfort, reduced mobility, and an increased risk of chronic conditions such as scoliosis, kyphosis, and lordosis. Additionally, poor posture can negatively affect lung capacity, circulation, and neuromuscular coordination, ultimately diminishing physical readiness and endurance (Smith & Jones, 2020).

Beyond its physical implications, posture plays a crucial role in psychological stability and cognitive function. Research indicates that individuals with upright posture exhibit greater confidence, improved mood, and reduced stress levels, while slouched posture is associated with fatigue, low self-esteem, and impaired concentration. Studies have also shown that postural

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alignment directly affects endurance and cognitive performance, as efficient posture reduces unnecessary energy expenditure and allows for better oxygenation, which is essential for sustained physical effort and mental alertness (Brown et al., 2018). In the context of military preparation, where both physical and mental resilience are vital, ensuring proper postural development is critical for optimizing overall performance.

Implementing structured pedagogical and psychological interventions can mitigate postural issues and enhance physical fitness among adolescents preparing for military service. A combination of targeted physical exercises, ergonomic education, and psychological support can help adolescents develop proper postural habits early, reducing the likelihood of long-term musculoskeletal problems. Pedagogical approaches, such as integrating postural training into physical education programs, teaching correct movement mechanics, and incorporating posture-awareness activities into daily routines, can significantly improve musculoskeletal health. Simultaneously, psychological interventions, including motivation-building exercises, stress management techniques, and self-confidence training, can reinforce the importance of maintaining proper posture in both physical and mental well-being (Johnson & Lee, 2019).

By adopting a multidisciplinary approach that combines education, structured physical training, and psychological reinforcement, military training programs can ensure that young recruits develop strong, resilient bodies capable of withstanding the demands of service. Early intervention and consistent reinforcement of postural awareness can significantly enhance military readiness by improving endurance, reducing injury risk, and fostering mental resilience. Consequently, investing in adolescent postural health is not only a preventive measure but also a strategic approach to developing physically and psychologically robust individuals prepared for military service and beyond.

Research Objective

The primary aim of this study is to evaluate the effectiveness of pedagogical and psychological interventions in maintaining correct posture and improving physical readiness in adolescents undergoing military training preparation.

Research Methods

The study was conducted in 2024-2025 across selected schools in Tashkent, focusing on evaluating the impact of structured postural training on the physical and psychological well-being of adolescents preparing for military service. A total of 4019 male students, born between 2008 and 2010, participated in the research. These students were carefully selected to represent a broad demographic of adolescents undergoing rapid musculoskeletal development, a critical period in which improper postural habits can have long-term consequences. The study aimed to assess the effectiveness of targeted physical and psychological interventions designed to improve postural alignment, physical endurance, and mental resilience.

Data collection involved a comprehensive set of assessments to ensure a thorough analysis of the participants' physical and psychological conditions. Anthropometric measurements, including height, weight, body mass index (BMI), and waist-to-hip ratio, were recorded to evaluate overall

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growth patterns and musculoskeletal balance. These measurements provided essential baseline data for assessing postural stability and potential risk factors for musculoskeletal imbalances.

Physical fitness assessments were conducted to measure endurance, flexibility, and muscular strength. Endurance tests, such as long-distance running and cardiovascular assessments, were used to determine the participants' stamina and aerobic capacity. Flexibility assessments, including the sit-and-reach test and spinal mobility evaluations, helped identify limitations in range of motion that could contribute to postural dysfunction. Muscular strength evaluations, focusing on core stability and upper and lower body strength, were essential in determining the effectiveness of intervention programs aimed at reinforcing postural integrity.

Psychological tests were included to explore the relationship between posture, self-confidence, motivation, and mental health. The Rosenberg Self-Esteem Scale was administered to assess participants' self-perception and confidence levels, providing insights into the psychological impact of postural training. The Deci & Ryan Intrinsic Motivation Inventory measured internal motivation levels, examining how physical fitness and posture-related interventions influenced participants' drive and engagement in physical activities. Additionally, the Beck Depression Inventory was utilized to evaluate emotional well-being and identify potential links between posture, psychological resilience, and stress management.

To assess the impact of postural training, participants were divided into two groups: one receiving targeted interventions, including postural education, physical training programs, and psychological support strategies, while the other served as a control group, following the standard school curriculum without specialized postural training. This comparative approach allowed for an objective analysis of the effectiveness of the interventions, enabling researchers to determine whether structured postural correction strategies significantly contributed to improvements in physical performance, psychological resilience, and overall readiness for military service. By integrating a multidisciplinary evaluation framework, the study provided valuable insights into the importance of addressing postural health as part of comprehensive adolescent development and military preparedness programs.

Research Results

The findings revealed notable improvements in postural stability and physical endurance among students who engaged in structured training programs, highlighting the effectiveness of targeted interventions in optimizing physical and psychological preparedness for military service. The anthropometric results demonstrated a 3.3% decrease in waist-to-hip ratio, indicating a positive shift in body composition and overall musculoskeletal balance. This reduction suggests that participants developed better core stability and muscular distribution, essential for maintaining proper posture and preventing long-term spinal and joint issues. Additionally, BMI scores showed improvements, reflecting healthier weight distribution and enhanced physical conditioning, which are critical factors in ensuring endurance and resilience in physically demanding environments.

The physical fitness assessments further validated the benefits of structured postural training. Students who participated in targeted intervention programs exhibited a 27.6% increase in squat repetitions, signifying improved lower body strength, muscular endurance, and postural control—key attributes for military tasks requiring prolonged standing, running, and load-bearing activities.

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The 29.5% improvement in plank endurance emphasized the effectiveness of core-strengthening exercises in enhancing spinal alignment, stability, and injury prevention, while the 25.8% enhancement in sprint performance demonstrated that better posture directly contributes to greater agility, speed, and overall mobility. These physical enhancements suggest that integrating postural exercises into training regimens can lead to substantial gains in endurance, strength, and flexibility, ultimately reducing fatigue and the risk of musculoskeletal injuries.

Beyond the physical benefits, psychological assessments highlighted significant improvements in mental resilience and motivation, reinforcing the connection between postural alignment and psychological well-being. The results showed a 13.9% increase in self-confidence, indicating that students who maintained proper posture felt more assertive, focused, and prepared for physical challenges. Motivation levels also rose by 33.3%, suggesting that structured training programs enhanced students' engagement and enthusiasm for physical activities, leading to greater discipline and commitment to maintaining an active lifestyle. Furthermore, depression indicators decreased by 5.7%, demonstrating that physical training and postural improvement positively influenced emotional stability, stress management, and overall mental health. These psychological benefits are particularly crucial for young military recruits, as confidence, motivation, and emotional resilience play essential roles in coping with the physical and mental demands of military training. Collectively, these results confirm that integrating pedagogical and psychological strategies significantly enhances postural alignment and overall physical fitness in young military recruits. The combination of structured postural training, strength and flexibility exercises, and psychological support fosters a holistic approach to military preparation, ensuring that recruits develop both the physical endurance and mental resilience necessary for optimal performance in military environments. These findings emphasize the need for military training programs to incorporate postural education and psychological reinforcement as fundamental components of physical conditioning, ultimately leading to healthier, stronger, and more resilient soldiers.

Conclusion Addressing postural disorders through structured pedagogical and psychological interventions improves both physical and psychological well-being. This study demonstrates that tailored training programs positively impact posture, endurance, and self-perception. Future military training curricula should incorporate such holistic approaches to optimize physical preparedness and resilience among adolescents.

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