

ANALYSIS OF SOMATOTYPOLOGICAL CHARACTERISTICS IN ADOLESCENTS AGED 15–17 FROM BUKHARA AND TASHKENT REGIONS IN RELATION TO CARDIOVASCULAR AND RESPIRATORY INDICATORS

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Abstract

This study analyzes somatotypological characteristics in adolescents aged 15–17 years from the Bukhara and Tashkent regions of Uzbekistan and examines their relationship with cardiovascular and respiratory system indicators. The findings demonstrate that climatic, environmental, and lifestyle factors significantly influence body composition and functional status. The asthenic somatotype was more prevalent in Bukhara, while the normosthenic type predominated in the Tashkent region. The hypersthenic type was observed in both regions, with a higher frequency in urban populations. Adolescents with the asthenic type showed higher heart rate and lower vital lung capacity, whereas hypersthenic individuals exhibited a tendency toward increased blood pressure. The most balanced physiological indicators were observed in normosthenic adolescents. These findings highlight the importance of considering regional and somatotypological differences in adolescent health assessment.

Keywords: adolescents, somatotype, cardiovascular system, respiratory system, Uzbekistan

INTRODUCTION

Adolescent health is a key indicator of population well-being. The age period of 15–17 years is characterized by intensive growth and the final stages of physiological maturation, especially in the cardiovascular and respiratory systems.

Somatotype represents a combination of morphological and functional characteristics of the human body and is commonly classified into asthenic, normosthenic, and hypersthenic types. Each somatotype is associated with specific structural and physiological features that influence functional capacity and adaptation mechanisms.

Uzbekistan is characterized by diverse climatic and environmental conditions. The Bukhara region has a hot and arid climate, while the Tashkent region has more moderate conditions. These differences may affect growth patterns and physiological development in adolescents.

MATERIALS AND METHODS

The study included adolescents aged 15–17 years from the Bukhara and Tashkent regions. Participants were selected from both urban and rural areas. Anthropometric measurements included height, body mass, and chest circumference. Based on these parameters, adolescents were classified into asthenic, normosthenic, and hypersthenic somatotypes.

Functional indicators included heart rate, arterial blood pressure, vital lung capacity, and respiratory rate. Comparative analysis was performed using standard descriptive methods.

Results and Discussion

The results revealed significant regional differences.

In the Bukhara region, the asthenic somatotype was more prevalent. Adolescents of this type demonstrated higher heart rate and lower vital lung capacity, indicating reduced functional reserves.

In contrast, the Tashkent region showed a predominance of normosthenic adolescents, who demonstrated more stable cardiovascular indicators and higher lung capacity.

The hypersthenic somatotype was observed in both regions, especially in urban populations. These adolescents showed a tendency toward increased blood pressure and slightly reduced respiratory efficiency.

Overall, adolescents from the Tashkent region demonstrated better functional indicators compared to those from the Bukhara region.

Conclusion

Somatotypological characteristics in adolescents aged 15–17 years vary between regions.

The asthenic type is more common in Bukhara and is associated with lower functional reserves. The normosthenic type predominates in the Tashkent region and is associated with optimal physiological indicators. The hypersthenic type is associated with potential cardiovascular risks.

Regional and somatotypological factors should be considered in adolescent health assessment and preventive strategies.

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