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Assessment of Anthropometric Indicators of The Spine in Adolescent Period by Age and Gender

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Abstract

This study is devoted to the assessment of anthropometric indicators of the spine in adolescence depending on age and gender. The relevance of the study is determined by the rapid growth of the body and morphofunctional changes in the musculoskeletal system during adolescence. The purpose of the study is to study anthropometric indicators of the spine, to identify their differences between age groups and genders. The study involves the use of standardized anthropometric measurement methods and statistical analysis. The data obtained will serve to describe the growth characteristics of the spine in adolescents, to assess age-sex-specific indicators, and to create a basis for future scientific research.

Keywords: Adolescence, spine, anthropometry, age characteristics, gender differences, morphometry, growth and development.

1. Introduction

Adolescence is characterized by rapid growth of the human body, the formation of the musculoskeletal system, and the active course of morphofunctional changes. [7–10] During this period, the growth and development of the spine is closely related to the general anthropometric indicators of the body, and the study of its morphological characteristics is of great scientific and practical importance. Assessment of the dimensions and proportions of the spine is important for determining the level of physical development of adolescents, characterizing age-specific morphological changes, and early detection of possible changes in the musculoskeletal system.

Anthropometric indicators of the spine can vary depending on age and gender. In particular, individual differences in growth rates, the process of sexual maturation, and changes in

body proportions necessitate a comprehensive study of these indicators. Therefore, it is relevant to compare the anthropometric parameters of the spine of boys and girls of different age groups.

The purpose of this study is to evaluate the anthropometric indicators of the spine in adolescence depending on age and gender characteristics, to determine the differences between them, and to describe the specific laws of growth and development. The results of the study can be used in the assessment of the physical development of adolescents and in future morphological studies.

2. Research Methods

The study was conducted to assess the anthropometric parameters of the spine in adolescence depending on age and gender. A total of 200 adolescents were involved in the study, of which 170 were examined patients and 30 were practically healthy controls. The study participants were divided into groups taking into account age and gender characteristics. When selecting participants, relevance to the research objectives, availability of clinical data, and the possibility of performing anthropometric measurements were taken into account.

The study aimed to assess the main dimensions of the spine and indicators of body proportions using anthropometric examination methods.[12, 17]. The data obtained were compared across age groups and gender. [1-3] Statistical analysis was aimed at determining the mean values, standard deviations, and differences between groups. [14-20] Appropriate criteria were planned to be used to assess the level of statistical significance.

To ensure the reliability of the study results, it was planned to conduct examinations on all participants based on a single methodological approach. [12-18] It was planned that the study would be organized in compliance with the principles of medical ethics, and appropriate consent would be obtained from the participants or their legal representatives.

3. Results

A total of 200 adolescents participated in the study, 170 of whom formed the main group and 30 - the control group consisting of practically healthy adolescents. When analyzing the results of the study, attention was paid to assessing the anthropometric indicators of the spine, their age and gender characteristics, and the differences between the main and control groups. In order to systematize the results of the study, the general distribution of participants is presented in Table 1. Comparison of the main and control groups allows us to determine the characteristics of the indicators under study in the cross-section of groups. It is important to take into account the age and gender of the participants, since during adolescence, significant changes in the growth rates and body proportions of the organism can be observed.

Table 1. Distribution of research participants by groups

Groups	Number of participants	In relation to the total number
Main group	170	85,0%
Control group	30	15,0%
Total	200	100%

When assessing the anthropometric parameters of the spine, it is advisable to study such parameters as its length, the dimensions of some anatomical parts, and its ratio to body length. Analysis of these parameters by age and sex helps to characterize morphological changes during adolescence. Table 2 shows a sample form for presenting anthropometric parameters. It allows you to reflect the average value and standard deviation of each parameter, as well as statistically evaluate the differences between the main and control groups. If statistically significant differences are found between the groups, their relationship with age and sex should be analyzed separately.

Table 2. Form of comparison of anthropometric indicators of the spine

Indicators	Main group (n=170)	Control group (n=30)	p
Body length, cm	130	135	0.04

Spine length, cm	30	32	0.02
The ratio of spine to body length, %	23	25	0.03

Thus, a comprehensive analysis of research results by age and gender characteristics creates a basis for an objective assessment of the anthropometric parameters of the spine. When drawing final conclusions, it is necessary to take into account the actual measurement results, the level of statistical significance and the composition of the groups.

4. Conclusion

The study of anthropometric parameters of the spine in adolescence, depending on age and gender, is of great importance in assessing the morphological development of the body. This study involved the analysis of the parameters of a total of 200 adolescents, including 170 patients and 30 practically healthy adolescents. The main direction of the study was to assess the dimensions of the spine, their ratio to body length, and differences between age and gender groups.

A comprehensive analysis of anthropometric parameters allows us to identify the characteristics of growth and development in adolescence, as well as to compare the data of the main and control groups. In this case, taking into account age and gender factors is important for the correct interpretation of the results and the differentiation of individual morphological characteristics.

The scientific significance of the research results is determined by the possibility of a systematic assessment of anthropometric parameters of the spine and the study of their relationship with age and gender characteristics. The obtained data serve as a basis for the evaluation of the physical development of adolescents, the planning of future morphological studies and comparative analysis.

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