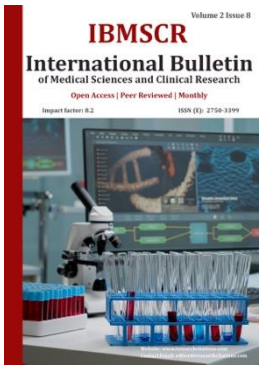

THE EFFECT OF PHYSICAL LOADS ON THE MUSCULOSKELETAL SYSTEM

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Annatation: Determining what functional changes physical education and sports lead to in the human body is of both theoretical and practical importance. Research in this area is aimed at monitoring and analyzing changes in morphological and functional systems.

Keywords: functional reservoirs, cardiovascular fitness, deformation (deformation) of the musculoskeletal system.

Physical exercise should be a continuous process throughout a person's life. Its constant implementation has a positive impact on the morphological and functional systems of the organism. It ensures the natural growth of motor qualities. The level of overall resilience is one of the main criteria for health, and work capacity forms resilience to diseases, resilience to stress, and is an integral indicator of the functional state of all major cardiovascular, respiratory, nervous, and muscular systems. Adequate training through physical exercises ensures the preservation of a person's physical and mental ability to work and, in addition, slows down the process of premature aging. The importance of physical work and exercise for human health is one of the important factors. The level of fitness of the body through exercise is determined by the indicator of its functional reserves. Optimal levels of physical fitness and fitness are necessary for health. A high level of physical performance is achieved through extensive sports training. This requires that the functional systems of all organisms work with greater strain than normal.

In the early years of life, the muscles of the musculoskeletal system and physical development grow rapidly. Between the ages of 2 and 4, the great buttocks and long muscles grow very rapidly. At the age of 7-12 years, the dihedral muscle of the lower leg grows relatively quickly. The feet of 7-year-old girls grow rapidly. Boys accelerate this process. From the age of 5-7 to 10-11 years, the length of the limbs increases rapidly compared to body growth. At this age, the rate of body mass gain lags behind the rate of neck gain. The main patterns of children's growth are:

The growth of children reflects the systemic process of development.

2. Growth rate decreases with age.

3. The growth rate is uneven.

After birth, the ratio of distal body segments increases rapidly (A.B. Mazurin, I.B. Varonsova, 2000)

Physical exercises are primarily performed through the function of the transverse striated and smooth muscles. This process manifests itself in the formation of internal motor potentials in the cells under the influence of one-stressed physical action in the muscle cell.

When performing physical exercises, an increase in the amount of glucogen and fats used as energy sources in muscles is observed, as well as an acceleration of energy and metabolism processes between blood vessels and capillaries and tissues. Muscle tissue absorbs blood oxygen more efficiently. In adults and people with limited mobility, there is a decrease in the oxygen uptake function of tissues, especially muscle tissue. Various physical exercises prevent this loss and contribute to the development of tendons and joints as a result of activating muscle function and blood supply. The muscles of the torso, back, and pelvic girdle are relatively well developed in a child aged 4-5 years. The legs and hands are more muscularly developed, which makes it difficult to perform small, delicate work. In the next 2 years, the fingers and muscles of the hands are extremely well developed, and it is possible to teach children to write. Some children may have various anomalies in their posture. For example, round and curved shoulders, asymmetric shoulders, and winged shoulder blades begin to appear. These changes are the result of a decrease in the function of the stretching muscles, which require constant regular training. This requires regular physical exercise.

Any physical exertion improves the functional state of the joints in the muscles and contributes to the prevention of osteoarthritis, the most widespread bone deformation (deformation) of osteochondrozed cartilage tumors. Data on the assessment of the level of physical development of students based on morpho-functional indicators were studied abroad and in the CIS countries in the works of D. Monov (2016), V. Daelmans (2017), R.P. Korobko (2002), A.T. Baygazakov (2002), S.A. Mirbabaeva (2004), S.L. Stepkina (2012), N.B. Pilkevich (2013), and A.M. Magomedov (2016).

In the conducted research, morpho-functional indicators were characterized by the determination of indicator values:

Student body mass measurement (kg);

2. Measuring the height of students (cm);

3. Measuring the chest circumference of students (cm);

4. Hand strength measurement (kg);

Determining the functional changes that physical education and sports lead to in the human body has both theoretical and practical significance. Research in this area is aimed at observing and analyzing changes in morphological and functional systems. Our observations were conducted on girls in grades 6-7 of the specialized sports school of the Pakhtaabad district who play table tennis, and on girls in grades 6-7 of the 43rd school of the city of Andijan who do not play table tennis.

From the morpho-functional indicators, students' height, weight, and chest circumference were taken as the main indicators (at rest, deep breathing, deep exhalation).

The average height of girls in the 6th grade who played table tennis was 149.89±1.3 cm. The highest value was 159 cm, while the lowest value was 135.0 cm.

The average height of schoolchildren is 144.5±1.2 cm. The highest value was 154.0 cm, while the lowest value was 132.0 cm.

When comparing the average height indicators of students in both grades, the difference was 5.3 cm. This is not statistically inevitable. ($P<0.05$).

The average height of girls in the 7th grade who played table tennis was 154.6±1.3 cm. The highest indicator was 163.0 cm, while the lowest was 144.0 cm.

The average height of schoolchildren is 152.8±1.1 cm. The highest value was 160.0 cm, while the lowest value was 145.0 cm.

When comparing the average height indicators of students in both grades, the difference was 2.0 cm. This is not statistically inevitable. (P>0.05).

The average body mass index of girls in the 6th grade who played table tennis was 43.7±0.8 kg/m. The highest figure was 50.0 kg, while the lowest was 35.0 kg.

The average weight of schoolchildren was 32.4±0.9 kg. The highest value was 42.0 kg, while the lowest value was 27.0 kg.

When comparing the body mass of students in both classes, the difference between them was 11.3 kg. This is statistically inevitable. (P<0.05)

The average body mass index of girls in the 7th grade who played table tennis was 42.7±0.5 kg. The highest figure was 49.0 kg, while the lowest was 35.0 kg.

The average weight of schoolchildren was 38.8±1.2 kg. The highest value was 48.0 kg, while the lowest value was 31.0 kg.

When comparing the body mass of students in both grades, the difference was 3.0 kg. This is statistically inevitable. (P<0.05)

The average chest circumference at rest in girls in the 6th grade of the sports school, engaged in table tennis, was 71.2±0.9 cm. The highest value was 80 cm, while the lowest value was 65.0 cm.

The average chest circumference of schoolchildren at rest was 66.3±0.8 cm. The highest value was 76.0 cm, while the lowest value was 60.0 cm.

The chest circumference of students in both classes at rest was 4.9 cm when compared to each other. This is statistically inevitable. (P<0.05).

The average chest circumference of sixth-grade girls engaged in table tennis during deep breathing was 74.5±0.8 cm. The highest value was 84.0 cm, while the lowest value was 68.0 cm. The average chest circumference of schoolchildren in deep breathing was 68.8±0.9 cm. The highest value was 77.0 cm, while the lowest value was 62.0 cm. When comparing the chest circumference of students in both grades during deep breathing, it was 5.7 cm. This is statistically inevitable. (P<0.05). The average chest circumference measurement for girls in the 6th grade of the sports school, engaged in table tennis, when exhaling deeply, was 70.1±0.9 cm. The highest value was 80.0 cm, while the lowest value was 63.0 cm. The average chest circumference of schoolchildren with deep breathing was 64.7±1.0 cm. The highest value was 75.0 cm, while the lowest value was 58.0 cm. When comparing the length of the chest circumference of students in both grades during deep breathing, the difference between them was 5.4 cm. This is statistically significant (P<0.05). The average chest circumference of girls in the 7th grade who played table tennis at rest was 71.9±0.6 cm, the highest was 77.0 cm, and the lowest was 66.0 cm. The average chest circumference of schoolchildren at rest was 71.1±0.8 cm. The highest value was 78.0 cm, while the lowest value was 65.0 cm. The chest circumference of students in both grades at rest was 0.8 cm when compared to each other. This is not statistically inevitable. (P>0.05). The average chest circumference of girls in 7th grade who played table tennis at deep breathing was 74.8±0.7 cm. The highest value was 82.0 cm, while the lowest value was 68.0 cm.

The average chest circumference of schoolchildren in deep breathing was 65.2±0.6 cm. The highest value was 81.0 cm, while the lowest value was 69.0 cm. When comparing the chest circumference of students in both grades during deep breathing, it was 9.6 cm. This is statistically inevitable. (P<0.05). The average chest circumference of girls in the 7th grade

who played table tennis with deep breathing was 71.0±0.7 cm. The highest value was 75.0 cm, while the lowest value was 65.0 cm.

The average chest circumference of schoolchildren with deep breathing was 69.4±0.7 cm. The highest value was 76.0 cm, while the lowest value was 64.0 cm. When comparing the length of the chest circumference of students in both grades during deep breathing, the difference between them was 0.8 cm. This is not statistically inevitable. (P>0.05).

In conclusion, it can be said that there is a gender difference in the morphological indicators of physical development of students of observation age.

Currently, our country is paying significant attention to improving the health of the population, promoting a healthy lifestyle, and popularizing sports, as well as developing and implementing measures to develop mechanisms for adapting students to the impact of harmful environmental factors during the study of their physical development.

The conducted research also allows us to determine the development of the musculoskeletal system in the body of children and adolescents as a result of a decrease in the level of physical activity, a decrease in the activity of the main functional systems of the body, and in turn, an increase in the level of susceptibility to various diseases.

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