

# COMPARATIVE CHARACTERISTICS OF MORPHOMETRIC PARAMETERS OF PHYSICAL DEVELOPMENT AND ANTHROPOMETRIC DATA OF THE UPPER EXTREMITIES OF HEALTHY AND COMPUTER-DEPENDENT CHILDREN

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## Annotation

The anthropometric method was used to study the morphometric parameters of the upper extremities in 62 adolescent boys. It was found that computer-dependent adolescents have hypertrophy with the withdrawal of the little finger to the lateral side due to prolonged overstrain of the muscles of the right hand. In computer-dependent adolescents, there is an asymmetry of the trunk due to the forced posture in front of the computer, followed by the formation of scoliosis.

**Keywords:** anthropometric parameters, computer-dependent children, scoliosis.

## Introduction

Currently, computers have become an indispensable part of everyday life, while creating new problems associated with raising a healthy child [5]. From this point of view, a new disease "computer addiction" has appeared, which affects the young part of the population, mainly teenagers; the peak of gaming computer addiction occurs at the age of 11-13 years [1,2,4]. Although this disease has nothing to do with infection, it is spreading around the world at the speed of an epidemic. The term "computer addiction" defines a person's pathological addiction to work or spending time at a computer [1].

For the first time, the question of computer addiction was raised by American scientists in the early 80s, among them was Professor Leonard Keirrock. In 1984, William Gibson published the novel "Neuromancer", in which he first introduced the concept of "cyberspace" [5]. The most in-depth studies of this type of addiction were conducted by Kimberly Young, a doctor of psychology at the University of Pittsburgh [7].

A number of scientists and specialists in this field talk about the emergence of the "computer-addiction" syndrome, when a person loses a sense of real time and completely immerses himself in information types of computer activities, leading and increasingly immersing his consciousness in the virtual, artificial, computer world. The concept of "addiction" comes from the Latin word "addictus" - dependent, addicted to something, completely betrayed, enslaved, deprived.

For the first time this term "addiction" in relation to the interaction of a person with a computer was used by M. Shotton in 1989. Computer addiction of adolescents is one of the types of addictive behavior in modern society [3,6]. Subsequently, the first definition of "computer Internet addiction" was given by Ivan Goldberg in 1996 [2]. Kandel (1998) supplemented this definition, arguing that the concept of "computer Internet addiction" includes any type of activity on the network. Most scientists agree

that the disorder under study has several sources [2]. In 1998-1999, K. Young, D. Greenfield and K. Surratt published the first monographs on this problem [6].

Day after day, the phenomenon of the formation of a pathological connection between a person and a computer becomes obvious. All of the above gives reason to assert that computer addiction has become not only a social, but also a medical problem. In computer addiction, as a result of a sedentary lifestyle, changes in metabolic processes are observed that directly affect the parameters of physical development and anthropometric parameters of parts of the human body.

The literature provides little information about the morphometric parameters of a particular area of the body or parts of the body of children with computer addiction, and these data are contradictory. The aim of the study is to study the parameters of physical development and morphometric parameters of the upper limb of adolescents suffering from computer addiction, and to compare the data obtained with the data of computer-independent adolescents.

**Materials and methods** The study was conducted at school No. 2 in the city of Bukhara. The teenagers' computer addiction was determined using a special test questionnaire proposed by S. A. Kulakov (2004), which was filled out by the parents of these children. The boys (62) were divided into 2 groups: I - control group, computer-independent (20 boys - less than 50 points) and II - group, teenagers with computer addiction (42 boys, of which 30 boys with a high degree of dependence – 51-79 points, and 12 boys with a very high degree of dependence - 80 points and higher).

Body weight was measured on a medical scale. A standard-type height meter was used to measure standing height. The circumference of the chest was measured with a meter tape. The measurement of anthropometric indicators of the upper extremities was carried out. Statistical processing of the obtained results was carried out using standard methods of variational statistics using the tables of R. B. Strelkov (1986).

**Results and discussion** Observations have shown that among the children suffering from computer addiction, there is not a single girl. It is known that boys at a certain age are less successful, not always and not all are able to express what they feel, in most cases they lack emotional support from adults. This creates a feeling of insecurity, lowers self-esteem and lowers the level of sociability. And then the need for personal success begins to be satisfied by the computer, here you can forget yourself and get away from problems in the virtual world of games, where everything is easy.

In our opinion, girls are more sociable and involved in domestic work, their interests and hobbies are broader, their mental development is ahead of the psychological maturity of boys, they are more gently and smoothly going through crisis age periods. The parameters of physical development in children of group II are noticeably lower compared to computer-independent children. The height of group I boys ranges from 138 to 162 cm, on average,  $143.2 \pm 0.7$  cm, body weight - from 35 to 60 kg, on average,  $43.5 \pm 0.7$  kg, chest circumference - from 61 to 94 cm, on average,  $78.0 \pm 0.95$  cm. The height of group II boys ranges from 126 to 154 cm, on average,  $138 \pm 0.98$  cm, body

weight - from 32 to 46 kg, on average,  $38.0 \pm 0.6$  kg, and chest circumference - from 60 to 95 cm, on average,  $71.1 \pm 1.2$  cm.

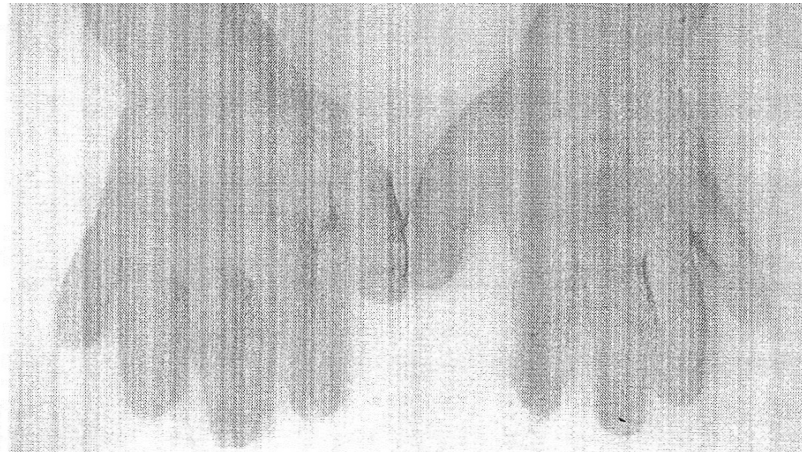


Foto: hypertrophy of the muscles of the right hand of a teenager

In 19.0% of adolescents of group II, a curvature of the spine (scoliosis) was revealed to the right and in 4.8%-to the left. The length of the upper limbs varies from 58 to 73 cm, on average,  $66.5 \pm 0.53$  cm, and the length of the lower limb varies from 75 to 88 cm, on average- $80.1 \pm 0.75$  cm. There was no asymmetry in the length of the upper and lower extremities. However, along the circumference of the shoulder, forearm and fingers of the hand, there is a lag of these parameters on the left side and hypertrophy of the muscles of the right hand (holding the mouse with the right hand) (Fig. 1). On the right side, there is a "domed" hand with the little finger pointing to the side (Fig.2a, b).

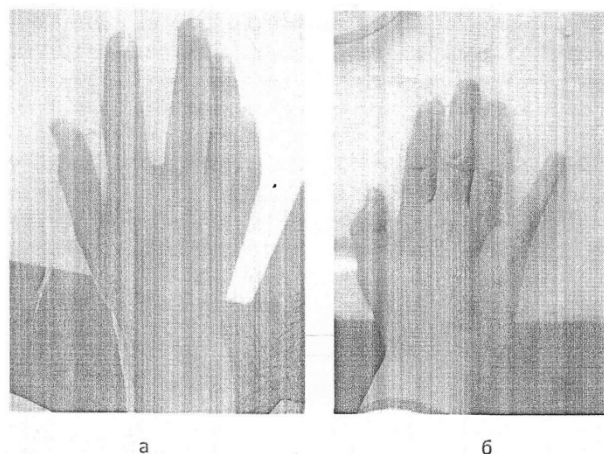


Foto.: 2. Morphometric changes of the brush: a - the " dome-shaped " brush of boy A. b - the withdrawn little finger of boy B.

The study found that computer addiction not only affects the functional systems of a person, but also leads to a lag in the physical development of a young body due to irregular nutrition as a result of skipping meals. In computer-dependent adolescents, there is an asymmetry of the trunk due to the forced posture in front of the computer, followed by the formation of scoliosis and morphometric changes in the upper limb, due to prolonged overstrain of the hand muscle.

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