

### HORMONAL STATUS AS A FACTOR OF DIFFERENTIATION OF RATES OF DEVELOPMENT

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The problem of individually typological patterns of growth in connection with the general physical development is one of the most important issue in modern auxology, physical and age morphology. Among the numerous factors affecting the rate of development and somatic status, hormones belong to the most effective ones. This study applies the biotypical approach to the analysis of individual variability of hormonal status in pubertal males. A number of hormones, the most informative for this age, were selected: sex hormones and growth hormone (GH) – leading anabolic factors of growth and development in the pubertal period, and cortisol as their antagonist. As the most informative criterion of biological age, stages of sexual development were used, particularly of such a character as pubic hair (P). There are marked differences in the ratio of testosterone:cortisol: it increases more than twice from the stage P1-2 to P4. The ratio of estradiol: testosterone is reduced from the stage P1-2 to P4 more than twice. An apparent trend towards stabilization in the level of GH between stages P3 and P4 is consistent with the literature data. Anabolic trends in the endocrine formula in connection with the biological age (absolute and relative increase of testosterone in relation to cortisol and estradiol) are accompanied by the corresponding changes in the body build – strong development of endo- and mesomorphic components. The results clearly show the connection of the accelerated type of development with the highest level of testosterone and the minimal ratio of estradiol-testosterone.

**Key words:** *endocrine formula, biological age, auxology*

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### PHYSICAL DEVELOPMENT OF CHILDREN IN MOSCOW REGION AND SOME STATISTICAL INDICATORS IN 1976–1980S

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Patterns of physical development of schoolchildren in different areas of Moscow Region (Podolsk, Istra, Dedovsk, Solnechnogorsk, Zagorsk, Golitsino, 1985, n=3512) with additional data of Tchulkovo, Ramenskiy district (1976, n=842) were compared. Height, chest circumference, shoulder and pelvic diameters were studied; questioning of parents was conducted. Main statistical parameters for every age group were calculated. The significance of differences was estimated using Student's t-test. One-way ANOVA and multiple comparisons by Scheffe's method were also used. The results of the 10-year study (1976–1985) show some reducing of the girls' height against its increasing in boys. In chest circumferences, girls and boys of 1976 have smaller values than those of 1985 children. In shoulder and pelvic diameters, children measured in 1976 are ahead of those examined 10 years later. These results indicate to a certain heterochrony of secular changes: growth in length has stopped (at least in girls), while some dimensions continue increasing. Somatotypes of children examined in 1980 demonstrate a trend towards asthenization. Generally, it gets in line with the trends found in other populations, examined at the same period of time. The results of parental questioning indicate that 92.4% of children were from two-parents families, while 7.2% - from incomplete families. Parallel to this study, some analysis of demographical data for Moscow Region has been performed. The dynamics of matrimony-divorce rate as well as the rate of population increase was examined with the use of the official statistics data (FSSS 1997, 2003, 2012). It shows that since the beginning of the 1960s the matrimony rate exceeds the divorce rate: related figures are 8.1% to 1.5%. By 1975 related figures are 11.1 to 3.6%. After 1980's the situation is drastically changed. In the period of 1985-1990 the corresponding figures are 9.71% to 4%, and the divorce rate goes on increasing. As there was no official statistical data for Moscow Region in 1970's, it's hard to consider the dynamics of natural increase rate. However, the data for a later period indicate that after 1980's natural increase turns to natural "loss". This process is going on till 2012.

**Key words:** *physical development, schoolchildren, Moscow region, demographical data*

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