

## SECULAR CHANGES OF THE NEWBORNS' BODY WEIGHT AND WOMEN'S BODY SIZE IN KRAKÓW AND POZNAŃ (POLAND) DURING LAST CENTURY

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Long-term changes in morphological characteristics of population, progressing from generation to generation towards constant direction, reflect the secular trend. These changes apply to both birth and adult body size of a human and they are observed over the century. Responsible for this variability are mostly non-genetic factors, mainly those related to the socio-economic situation. Such elements of the human environment determine the implementation of the genetic potential. The aim of the study was to determine the existence of intergenerational changes in newborns' body weight and adult body size of women living in Kraków and Poznań over the past century. Finally the goal of this study was to defining factors responsible for these modifications. This research analyzed data of 15884 newborns (body weight) and 3612 women (body height and weight) at the age of 18, derived from 1900 to 2010. The analysis of differences between individual cohorts was made by means of one-way analysis of variance (ANOVA) and Tukey test. Despite short-term fluctuations, the results showed significantly increasing trends of all studied features. Changes in birth weight were similar in both cities - in Kraków increased by 184 g (♂) and 206 g (♀), in Poznań by 216 g (♂) and 120 g (♀). Changes in women's body size were also significant, but the level was different depending on the place of residence. In the last century, women's body height increased by 8,2 cm in Kraków and by 10,2 cm in Poznań and their body weight increased by 1 kg and 5 kg respectively. Considered period of time covered the years of socio-economic changes which occurred as a result of the political system transformation. Crises, prosperity ages and other factors which determine the standard of living and health care had an influence on the developmental level of the Polish population's physical features.

**Key words:** *secular trend, newborns, body size, socio-economic changes, political transformation*

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## ANTHROPOMETRY AND SECULAR TRENDS IN SARATOV (RUSSIA)

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Growth and development are influenced by different environmental factors, like nutrition, health, socio-economic life circumstances, and psychosocial factors. The analysis of pattern in growth and development is an important tool to observe growth trends over time and leading to a better understanding of children's growth and development under specific life circumstances. Little is known about the changes and secular trend in growth and sexual development in Saratov over the last decades. In this study anthropometric data of schoolgirls (aged 6-18 years) of the Russian city Saratov were analyzed. The investigations took place in three different years; 1969, 2004, and 2011 including an overall number of 2110 girls. The data involve measurements of height, weight, and other body measurements. Of these variables, body mass index, metric index and frame index were calculated. In addition information on secondary sexual characteristics and menarcheal age were collected to describe sexual development of the girls. The data were analyzed with Least-Mean-Square-method (LMS) (Cole 1990) and Probit-analysis (Finney 1971) to visualize the results. A comparison of anthropometric data and different stages of sexual development over the time showed that girls from 2011 are taller and heavier than from 1969. This is true for all age groups. Furthermore, mean menarcheal age decreased in the analyzed time period while BMI changed only little. The presented results of Saratov will be discussed in the light of secular trend and with implications on modern health related questions, like obesity and skeletal robustness.

**Key words:** *anthropometry, sexual development, menarcheal age, secular trend*

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