

Ethnic Differences in Body Proportions. Genes or Environment?

Anna Siniarska and Napoleon Wolanski

KEY WORDS Body Segments. BMI. Yucatan. Mexico. Poland.

ABSTRACT In various ethnic groups adult subjects have contrasting body proportions. Are there effects of differences in genes and/or in living conditions? The problem was examined in 1208 subjects, aged 2-70 years from Merida and Progreso in Yucatan, Mexico. Results were compared with published own data for Polish populations. Because body segments are in some proportion to body size, to investigate this problem, the percentile indices were calculated. For analysis were used: lengths of upper and lower extremities for height (UEI, LEI), ration between both extremities (IEI), trunk length for height (TLI), shoulder and hip breadth for height (SBI, HBI) and ratio between both breadths (SHI). Upper extremities (UEI) are relatively longer in Yucatecans in the pre-pubertal period, whereas lower extremities (LEI) are similar at this age in both populations and start to be relatively shorter in Yucatecans only just after puberty. However, trunk (TLI) is relatively longer in all ages. Interextremity index (IEI) shows greater ratio of upper to lower extremity lengths in Yucatecans than in Poles. Shoulders (SBI) do not show differences between both populations, and after puberty there are observed relatively wider shoulders in males than in females. Hips (HBI) do not exhibit differences in childhood between two compared populations and sexes, but since puberty such differences increase between sexes and in females of both populations. However, shoulder-hip ratio (SHI) is much lower (wider hips) in Yucatecans. Dynamics of growth of extremities particularly in first five years of live and than in pubertal period is different in various populations. Shift in periods of intensive extremities growth in Warsaw children over 20 years is also observed. These last results and secular changes in the Yucatan population suggest that differences in extremities length depend rather from environmental conditions, which influence on growth rate especially in early childhood and pubertal periods.

Authors' Addresses: Anna Siniarska and Napoleon Wolanski, Departments of Human Ecology: CINVESTAV, Merida, Mexico and Polish, Academy of Sciences, Warsaw, Poland