

MORPHOLOGICAL CHANGES IN ELITE MALE WATER POLO PLAYERS: SURVEY IN 1980 AND 2008

Abstract

Comparison between anthropometric measures of the two generations of water polo players revealed a positive trend in body skeletal measures (total arm length, hand breadth, height, biacromial breadth and negative trend in hand length). A positive trend is noted in circular dimensionality measures (chest girth, arm girth and forearm girth) and weight. Most noteworthy differences were an increase in total arm length, height and hand breadth and decrease in hand length. Cite variables statistical significantly discriminate generation "08" from "80" in manifest anthropometrical space. In latent space tree of five factors discriminate two generation. From discriminative factor structure is evident that factor of longitudinal dimensionality of skeleton has the biggest discriminative power. Weaker, but significant, groups discriminate third factor defined by hand length and foot length with added billiocrystal breadth of negative omen. Smaller but significant discriminative power of negative omen has the factor defined by measures of circular dimensionality with added weight and body mass index. Anthropometric characteristics of elite water polo players have changed over the analyzed 28 years. Body shape changed in terms of greater height and more elongated limbs, with thinner waist and broader shoulders. Body mass increased. Muscle-to-fat mass ratio increased. The observed changes are consequence of population secular trend and sport morphological adaptation (optimization).

Key words: *anthropometry; morphology; exercise; water polo; sports medicine*
