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THE STRUCTURE OF MORPHOFUNCTIONAL CORRELATIONS AMONG CHILDREN AND ADOLESCENTS AS A MIRROR OF THE ANTHROPOGENIC PRESSURE IN THE DEVELOPMENTAL NICHE

Correlation is interpreted as a valid marker of a population's adaptive variability. The paper focuses on the correlation structure of morphofunctional indices of children aged 9, 13, and 15 years in connection with the level of anthropogenic pressure at the place of residence. The data (n=5137) were collected in 21 districts of the Nizhny Novgorod region in 2010–2012. The protocol included anthropometric dimensions (height, weight, chest girth), BMI, and body surface area (Du Bois method), physiometric indices (VC, left and right hand-held dynamometry), hemodynamic parameters (systolic and diastolic pressure, heart rate, Berseneva/Baevskiy indice of functional changes), glucose level. Correlation matrices were analyzed for 4 ecological clusters, separated by the anthropogenic pressure index (API). The total increase in the number of significant inter- and intrasystem morphofunctional correlations connected with the increase in the anthropogenic pressure level is the following: 186 in the ecologically satisfactory cluster, and 228 when the ecological situation is tense. The effect is more significant for children aged 9 years independent of sex, and male adolescents aged 13 years. The number of significant correlations is lower for girls independent of age, especially at 13 years, when the number is 156 for males and 125 for females. The study confirms the main statement of the correlation adaptometry that the number of associations of physiological and morphological parameters is associated with changes in ecological pressure. Boys tend to be more ecologically sensitive compared to girls, who are more resistant. The paper proves the efficiency of correlation analysis for the purposes of modern ecology.

Keywords: biological anthropology, schoolchildren, morphofunctional status, level of anthropogenic pressure, intersystem correlations, adaptive variability

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