

ACTN3 R577X Polymorphism in Romany Children from Eastern Slovakia

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Abstract : The paper presents the results of the application of molecular genetics methods in sport research, with special emphasis on the most advanced methods and trends in diagnosing of motoric predispositions for the sake of identifying talented children. Genetic tests differ in principle from the traditional motoric tests, because the DNA of an individual does not change during life. Genetics is important in determining the capacity of an individual and for professional sport level. Genetic information can be used for individual genetic predispositions in early childhood. The phenotypes are influenced by a combination of genetic and environmental factors. The aim of the presented study was to examine physical condition, coordination skills, motoric docility and to determine the frequency of ACTN3 (R577X) gene in Romany children from Eastern Slovakia and compared their motoric performance with non-Romany children. This paper is not looking just for a performance, but also its association to genetic predispositions in relation to ACTN3 gene and its R577X polymorphism. Genotype data were obtained from 175 Romany children from 6 to 15 years old and 218 non-Romany children at the same age from Eastern Slovakia. Biological material for genetic analyses comprised samples of buccal swabs. Genotypes were determined using Real Time High resolution melting PCR method (Rotor Gene 6000 Corbett and LightCycler 480 Roche). Romany children of analyzed group legged to non-Romany children at the same age in all the compared tests. The % distribution of R and X alleles in children was different from controls. The frequency of XX genotype was 11,45% which is comparable to a frequency of an Indian population. Data were analysed with the ANOVA statistical programme and parametric and nonparametric tests. This work was supported by grants APVV-0716-10, ITMS 26220120023 and ITMS 26220120041.

Keywords : ACTN3 gene, R577X polymorphism, Romany children, sport performance, Slovakia

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