Abstract

This thesis is concerned with the influence of specific genes on the occurence of joint hypermobility. The main goal is to verify, whether the hypermobility test results differ among persons tested for the polymorphism of COL5A1, ACTN3, COL1A1 and GDF-5 gene with the respet to a particular genotype.

The theoretical part of the thesis presented the specifics of sports genetics, general overview of the most important findings about hypermobilty, the manners in which it can be examined, its clinical features and also a detailed analysis of the role of the above stated genes, their association with health and performance attributes and their relation to hypermobility and range of motion.

In the practical part, an examination of 15 probands (9 males and 6 females) at the age of 28,7 ± 5,6 years was conducted applying four scoring systems for measuring hypermobility. All probands were genetically tested by the PCR method.

The statistical analysis was carried out by one-factor ANOVA. The statistical significance $p < 0,05$ wasn't reached with respect to any of the analysed genes. For SNP rs 12722 of COL5A1 gene, the average medians of the total hypermobilty score with respect to a particular genotype were 10,82 (CC), 7,30 (CT) and 10,99 (TT). For SNP rs 1815739 of ACTN3 the average medians of the total hypermobilty score with respect to a particular genotype were 6,22 (RR), 10,62 (RX) and 15,38 (XX). For SNP rs 1107946 of COL1A1 gene the average medians of the total hypermobilty score with respect to a particular genotype were 9,08 (CC), 10,99 (AC) and 5,37 (AA). For SNP rs 143383 of GDF-5 gene the average medians of the total hypermobilty score with respect to a particular genotype were 8,49 (CC), 8,59 (TT) and 12,03 (CT).