

# THE INFLUENCE OF ACTN3 GENOTYPE ON THE CHANGES OF ANAEROBIC TRESHOLD AND Yo-Yo INTERMITTENT ENDURANCE TEST LEVEL 2 OF SOCCER PLAYERS AGED 15-17 YEARS

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**The aims** of this study are to determine the ACTN3 genotype and its influence on the changes of anaerobic threshold and Yo-Yo intermittent endurance test level 2 of soccer players aged 15-17 years.

**Material and methods:** 46 soccer players, aged 15-17 years, were included in this study. During a training and competition process of 4 months (half-competition season), three times (at the beginning-P<sub>1</sub>, in the middle-P<sub>2</sub> and after the finishing of this process-P<sub>3</sub>), we measured: ACTN3 genotype from abstracted genomic DNA (RR, XX and RX variant); anaerobic threshold (AnT, km/h) with Conconi protocol on treadmill and maximal treadmill speed (km/h) and speed of running (km/h) and total distance covered (m) with Yo-Yo intermittent endurance test level 2 on field (Yo-Yo IE2). We used descriptive statistics, ANOVA and multiple regression analysis ( $p < 0.05$ ).

**Results:** The most frequent variant of ACTN3 genotype was RR variant (44%), than RX (41%) and XX (15%). AnT ( $12,3 \pm 1.09$ ;  $12,43 \pm 1,35$ ;  $12.15 \pm 1.09$ ) and maximal treadmill speed changed insignificantly during this training and competition process. There were insignificant changes of speed of running and total distance covered with Yo-Yo IE2 of soccer players aged 15-17 years during a competition half-season. The variants of ACTN3 genotype had significant influences on AnT and Yo-Yo IE2.

**Discussion:** During this soccer competition half-season, the model of soccer training process did not increase significantly the AnT and aerobic endurance that was probably connected with stagnation of sport performance. ACTN3 genotype profile could help in process of selection and specialization of young soccer players.

Key words: ACTN3 genotype, AnT, Yo-Yo IE2, soccer players, aged 15-17 years