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GLUT4 rs5418 genotype and performance of Cross-country skiers in China

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Objective The GLUT4 gene is one of the genes that have a potential influence on physical performance. Studies have shown that the rs5418 genotype of GLUT4 is more prevalent in endurance athletes. Therefore, the GLUT4 rs5418 polymorphism may become a genetic marker for Cross-country skiers. The study aimed to examine the association of the GLUT4 rs5418 genotype with the performance of Cross-country skiers.

Methods The distributions of the GLUT4 rs5418 genotype and allele were examined in a general population (206) and a group of elite Cross-country skiers (163) in China by using PCR-RFLP and TOF.

Results Compared with the general population, the elite Cross-country skiers ($\chi^2=9.267$; $df=2$; $P=0.01$; $P<0.05$), especially the females, had a higher frequency of the AA genotype (Total: 22.09% VS 13.59%, Female: 24.19% VS 13.59%). The Cross-country skiers had a higher frequency of the A allele than the general population (45.40% VS 33.98%), and the difference was statistically significant ($\chi^2=9.972$; $df=1$; $P=0.02$; $P<0.05$).

Conclusions The GLUT4 rs5418 polymorphism was associated with the performance of elite Cross-country skiers in China. The SNP rs5418 could be used as a biomarker for selecting elite Cross-country skiers in China.