Meta-analysis on the relationship between PGC-1α -482 genetic polymorphism and exercise intervention in insulin resistance

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Objective To study the relationship between the genetic polymorphism of *PGC-1α* -482 and insulin resistance to exercise intervention.

Methods Databases including PubMed (includes MEDLINE)，SCOPUS (a large, multidisciplinary database) and the Cochrane Library were searched to collecting the literatures that were with information on relationship between the genetic polymorphism of *PGC-1α* -482 and insulin resistance to exercise intervention. The odds ratio (OR) o f *PGC-1α* genotype distributions in cases-control groups was calculated. The Meta-analysis software RevMan5.3 was applied to heterogeneity test and pooled OR calculation.

Results A total of 11 case-control studies met the criteria and were selected for the Meta-analysis. Among the studies, there were totally 718 cases of insulin resistance and 732 cases of control were included. The pooled OR of the *PGC-1α* genotype G/G vs. G/S+S/S was 0.97 (95% CI = 0.78 ~ 1.20), which showed statistically no significant difference (Z = 0.32，P = 0.75). This indicates that the frequency distribution of PGC-1α genotype may be related to the increased risk of insulin resistance, and this association is statistically significant; however, the frequency distribution of this genotype is not necessarily related to exercise intervention in insulin resistance.

Conclusions The genetic polymorphism of *PGC-1α* may be a susceptible factor for insulin resistance but not an independent influence factor of exercise intervention in insulin resistance.