

OBESITY

Physical activity reduces genetic contribution to obesity risk

Physical activity reduces the effect of *FTO* on the risk of obesity, shows a new meta-analysis published in *PLoS Medicine*.

The *FTO* gene contains the most important known locus associated with the risk of obesity. Whether physical activity has an effect on this association has been the subject of debate. Ruth Loos and colleagues set out to clarify the issue by inviting the authors of published studies on the effects of physical activity on *FTO*-related BMI increase or obesity risk to reanalyze their data in a standardized manner. Researchers conducting studies on the topic that have yet to be published were also invited. The meta-analysis included data from 45 studies involving 218,166 adults and nine studies involving 19,268 children and adolescents.

The analysis confirmed that the minor allele of the *FTO* rs9939609 variant increases the risk of obesity in adults. However, physical activity reduced this effect by 27%. “This interaction between physical activity and the *FTO* gene was more pronounced in North America than in Europe,” comments Loos, although

the reasons for this disparity are not yet clear. No effect of physical activity on *FTO*-related obesity risk was observed in children and adolescents.

“A question that has not yet been answered is whether physical activity was a proxy for a generally healthy lifestyle and whether a healthy diet would have similar effects,” Loos points out. The researchers are also investigating the effects of physical activity on obesity-susceptibility genes other than *FTO*. The mechanisms underlying the effects of physical activity on *FTO*, which might be epigenetic, also warrant investigation.

“Our findings carry an immediate public-health message that is relevant at the population level,” concludes Loos. “Even those with a high genetic susceptibility to obesity can reduce their risk by living a physically healthy lifestyle.”

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Original article Kilpeläinen, T. O. *et al.* Physical activity attenuates the influence of *FTO* variants on obesity risk: a meta-analysis of 218,166 adults and 16,268 children. *PLoS Med.* 8, e1001116 (2011)