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ADIPOSIITY IS INDEPENDENTLY ASSOCIATED WITH FRAMINGHAM RISK SCORES IN HEALTHY ADULTS

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Objectives

Fitness and adiposity have both been independently associated with mortality and cardiovascular disease (CVD) risk factors in healthy and clinical populations. The purpose of this study was to investigate the associations between fitness and adiposity with the 10-year Framingham CVD risk score in healthy adults.

Methods

593 healthy young to middle-aged adults were recruited from a preventative health clinic and were attending their annual health screening assessment. All participants were free from cardiovascular and/or metabolic conditions and were not on any prescribed medication. Data for sex, age, resting blood pressure, total cholesterol, HDL-cholesterol and smoking status were required to calculate FRS. Overall adiposity measures included body mass index (BMI) and whole-body bioelectrical impedance-derived body fat content (BF%). Central adiposity measures included waist circumference (WC) and waist-to-hip ratio (WHR). Participants were separated into 3 groups based on recommended cut-off points or distributional tertiles. A sub-maximal Bruce treadmill test was performed to at least 85% age-predicted maximum heart rate. Fitness was determined by total exercise duration and sub-maximal HR at stage 2, both were separated into distributional tertiles.

Results

ANOVA's reported significant associations between WHR, BF% and exercise duration with FRS (all $P < 0.001$). Following adjustment for age and fitness, WHR and BF% retained an independent association with FRS ($P \leq 0.001$). Exercise duration was not significantly associated with FRS after adjustment for age, WHR and BF% ($P = 0.332$).

Conclusions

In healthy young to middle-aged adults, central and overall adiposity had a significant mediating effect on the association between sub-maximal fitness and FRS. Whereas, the significant cross-sectional association between central and overall adiposity with FRS was independent of submaximal fitness. This is suggestive that adiposity plays a more important role in the 10-year risk of developing CVD.