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## **Fatness and fitness: how do they affect health-related quality of life in people with diabetes?**

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**Background:** Disease complications reduce health-related quality of life (HRQOL) in people with type 2 diabetes mellitus. Less is known about the association of modifiable risk factors such as obesity and fitness with HRQOL.

**Objective:** We hypothesized that decreased total body fatness and increased levels of fitness would be associated with higher HRQOL and attenuate the adverse effect of diabetes.

**Design:** Cross-sectional study using baseline data from subjects recruited for two exercise training studies.

**Participants:** One study enrolled subjects with and the other without diabetes. All subjects had mild hypertension, a sedentary lifestyle and were without other medical conditions that precluded exercise.

**Methods:** Aerobic fitness was assessed as maximal oxygen uptake ( $VO_2\text{max}$ ) during treadmill testing, total body fatness by dual-energy x-ray absorptiometry (percent body fat) and HRQOL by the Medical Outcomes Study SF-36. We used multivariate linear regression analyses to test the association of HRQOL outcomes with diabetes, fitness and fatness.

**Results:** There were 121 non-diabetics and 71 diabetics. Diabetics were younger ( $p<0.01$ ), more likely to be men ( $p<0.01$ ), non-white ( $p<0.01$ ) and meet criteria for metabolic syndrome ( $p=0.03$ ). Diabetics had significantly lower mean scores for general health perceptions (GHP) and physical component score (PCS). In a multivariate regression analysis, diabetes ( $p<0.01$ ) and lower  $VO_2\text{max}$  ( $p=0.02$ ) but not percent body fat, were associated with reduced GHP. The effect size was greatest for diabetes (effect size= - 3) even after accounting for fitness, fatness and other clinical variables. In a second multivariate analysis higher percent body fat ( $p=0.02$ ) and having diabetes ( $p=0.04$ ), but not  $VO_2\text{max}$ , were associated with reduced PCS. The largest effect size was for percent body fat (effect size= - 2.4).

### **Conclusion:**

Lower levels of fatness and improved fitness reduced the negative association of diabetes with HRQOL. These data suggest that patients with diabetes that make lifestyle changes focused on physical activity and weight reduction may be able to improve their HRQOL.