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INFLUENCE OF FAMILY HISTORY OF DIABETES ON MUSCLE STRENGTH AND FITNESS – 1 YEAR RESULTS OF PPP-BOTNIA EXERCISE STUDY

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Objectives

The aim of the study was to evaluate the long-term effects of a prescription of exercise or a group-based training program on aerobic fitness, muscle strength and metabolic variables in subjects with poor physical fitness, stratified for family history of type 2 diabetes (T2D).

Methods

290 subjects with poor aerobic fitness, aged 30-70 years, from the population-based PPP-Botnia study were randomized either to training in exercise-groups (n=146) or prescribed individual exercise (n=144). The training group was offered endurance and resistance training twice weekly for 12 months, the prescription group performed training by themselves. The examination at baseline and 1 year later included an oral glucose tolerance test, 2 km walking test, measurement of muscle strength, waist, weight, blood pressure, plasma lipids, fasting insulin, and questionnaires on life style and physical activity.

Results

Aerobic fitness increased in both training and prescription groups (14.9 % vs. 11.7 %, p=0.09). Changes in fitness were associated with favorable changes in insulin sensitivity, weight and waist circumference irrespective of a family history of T2D (FH+/-). Improvement in muscle strength was smaller in FH+ than in FH- participants, although after adjustment for training times in gym the difference was significant only for changes in triceps strength.

Conclusions

Both interventions, group-training and prescription of exercise, resulted in improvement of fitness with concomitant improvement in body weight, body composition and insulin sensitivity. Although a family history of diabetes did not negatively influence changes in fitness or metabolic/anthropometric variables it had some restraining effects on improvements in muscle strength. The health benefits of these changes need to be evaluated in a prospective follow-up.