



Changes in cardiovascular risk of previously sedentary individuals resulting from four gym-based exercise programmes

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A sedentary lifestyle is associated with cardiovascular disease (CVD). A substantial and compelling body of evidence demonstrates reduced CVD risk following systematic physical activity (PA). Despite this evidence, inactivity related diseases continue to rise and public health initiatives appear to be failing to demonstrate clinically relevant effects. Data suggest that laboratory findings are not translating into public health.

Purpose: This multi-centre (n=26) investigation aimed to investigate four physical activity interventions delivered by exercise professionals within community fitness facilities.

Methods: Participants were sedentary individuals receiving no medication to reduce CVD risk (n=1128, age 43±5 years). Participants selected a PA or exercise (EX) pathway. Those who selected PA were randomised to either fitness centre based physical activity counselling delivered by an exercise professional (PAC n=251) or a control condition (CON n=239), those who selected EX were randomised to either a structured exercise program (STRUC n=321) or unstructured fitness centre use (FREE n=316). Measures included systolic and diastolic blood pressure (SBP & DBP), lipid profile (total cholesterol *TC*, low density lipoprotein *LDL* & high density lipoprotein *HDL* and predicted maximal cardiorespiratory fitness *VO2*). Measures were taken by a trained exercise professional at baseline and 24 weeks.

Results: 622 participants reported for 24 week data collection (STRUC=187, FREE=183, PAC=127, CON=125). A significant ($p<0.05$) pre post effect across all four conditions was observed for SBP (mmHg) (STRUC -3.06, FREE -3.23, PAC - 2.96, CON -2.66), DBP (mmHg) (STRUC -0.92, FREE -0.66, PAC - 2.45, CON -1.6), TC (mmol/L) (STRUC -0.19, FREE -0.12, PAC -0.09, CON -0.22), nonHDL (mmol/L) (STRUC -0.17, FREE -0.12, PAC 0.04, CON -0.07) and *VO2* (ml/kg/min) (STRUC 1.88, FREE 0.88, PAC 1.48, CON -0.39). No between group interaction was observed. No significant effects were observed for LDL, TD:HDL ratio or HDL.

Conclusion: Data suggest that although interventions resulted in statistically and clinically significant improvements in BP and *VO2*, such interventions may not produce clinically meaningful improvements across the lipid profile. Sustained behaviour change and further *VO2* increases may elicit this however.