Changes in body composition of previously sedentary individuals resulting from four gym-based exercise programmes

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A body composition characterised by high fat mass and low lean mass is associated with health conditions such as cardiovascular disease and type 2 diabetes. Despite compelling laboratory evidence demonstrating improvements in body composition following systematic physical activity (PA), obesity levels continue to rise, and public health initiatives appear to be failing to demonstrate clinically relevant outcomes. 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 (n=1128, age 43±5 years) who were taking no weight altering medication. 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). Measurements including body mass (BM), body fat percentage (BF%) fat mass (FM) and lean mass (LM) were completed by a trained exercise professional at baseline and 24 weeks.

Results: 622 participants reported for 24 week data collection (ST=187, FC=183, PAC=127, CON=125). A significant ($p<0.05$) pre post effect was observed in BM, BF%, FM and LM across all 4 conditions (BM (kg); STRUC -0.32, FREE -1.4, PAC -0.02, CON -0.8. BF%; STRUC -3.02, FREE -0.46, PAC -0.4, CON -1.34. FM (kg); STRUC -1.02, FREE -0.53, PAC -0.32, CON -0.66. LM (kg); STRUC 3.29, FREE 0.36, PAC 0.45, CON 0.23). A significant time*group effect was observed for BF% and LM with STRUC associated with largest effects and lowest attrition when compared with FC, PAC or CON.

Conclusion: Data suggest that STRUC combining aerobic and resistance training delivered within a community fitness centre may provide greater improvements in body composition when compared with FREE or PAC, despite larger reductions in BM following FC and measurement alone (CON).