Does meeting physical activity guidelines in normal weight females influence body fatness?

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Richard Swift

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Abstract

Purpose: To investigate the associations among objectively measured physical activity and markers of body composition in normal weight, New Zealand European women.

Methods: Anthropometric measures were performed in 107 women aged 16-45 years with a BMI between 18.5 to 25 kg/m^2. Accelerometers were worn over 7 days to assess sedentary time (<100 counts per minute), light (100 - 2019), moderate (2200 - 5998) and vigorous (>5999) physical activity. Independent *t*-tests were used to compare associations between participants with normal (<30%) and high (≥30%) body fat. Partial correlations examined the independent associations of physical activity behaviours on body fat.

Results: Participants with normal body fat completed significantly more moderate to vigorous physical activity (MVPA) minutes per week (*P* = .002) and MVPA% (*P* =.021).   Achieving current physical activity recommendations of ≥ 150 mins/week of MVPA, resulted in lower body fat (*P* =.038). Achieving ≥300 mins/week of moderate physical activity showed a trend towards significance for lower body fat (P = .076), while achieving ≥150 mins/week of vigorous activity showed significantly lower body fat% (*P* = .022). Partial correlations determined the significance of MVPA on body fat% independent of sedentary (r [104] = -.258 *P* = 0.008) and light activity (r [104] = -.273 *P* = 0.005).

Conclusion: Achieving current exercise recommendations was associated with lower body fat % in normal weight women. Our data suggest this association is stronger for vigorous activity, and is independent of the amount of sedentary activity achieved. Increasing vigorous physical activity may be important for improving body composition in this group.

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To all the lovely ladies that volunteered for the EXPLORE study and gave up their time to contribute to this research, it is very much appreciated and I hope you found some useful information about yourself, that helps with your health moving forward.

Finally to my family who have given me the support to achieve my goals over the course of this project.

Contributions

Richard Swift (Masters Student). Performed the phlebotomy and processing of the blood samples* for the EXPLORE study, was responsible for the analysis of the accelerometer data and performed all the statistical analysis.

Dr Pamela von Hurst and Dr Sarah Shultz (Supervisors). Both Dr von Hurst and Dr Shultz were investigators on the EXPLORE study and helped with supervision of the writing of the thesis. Dr von Hurst also performed DEXA* assessments for the EXPLORE study.

Dr Philip Fink: Dr Fink developed the code for the MATLAB software that allowed the accelerometer data to be analysed

Dr Rozanne Kruger: Dr Kruger was the principal investigator on the EXPLORE study and also performed the BodPod and DEXA* assessments.

Dr Kathryn Beck, Dr Cathryn Conlon: Both were co – investigators on the EXPLORE project and also helped with data collection required for this project.

PhD Candidate: Wendy O'Brien: Wendy co-managed the EXPLORE study and also performed the BodPod assessment and the accelerometer station.

PhD Candidate: Shakeela Jayasinghe: Shakeela co-managed the EXPLORE study, managed the taste testing station* and also helped with data collection required for this project.

Masters Students: Zara Houston and AJ Hepburn: Both Zara and AJ helped with the initial screening for inclusion into the EXPLORE study, facilitated the completion of questionnaires* and helped with data collection required for this project.

*data from these assessments were not utilised in this study

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