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Dietary protein intake and sarcopenia risk factors in Nordic and regular walkers

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Nordic walking is becoming an increasingly popular form of exercise, particularly in the elder population. It is characterised by the use of two walking poles which may impact long term upon maintaining arm muscle mass and strength. Additionally there is a reported 3–30 % prevalence of sarcopenia in the global aging population and there is a need to explore preventive and management strategies for this condition.[1] To the best of our knowledge, no study has evaluated the association of dietary protein intake and sarcopenia risk factors based on the European Working Group on Sarcopenia in Older People consensus definition (low muscle mass + low muscle function).[2] Additionally this has not been evaluated in Nordic walkers. Thus the aim of this cross-sectional study was to compare measures of sarcopenia risk in healthy community-dwelling individuals participating in either Nordic walking or regular walking exercise and to investigate the relationship between dietary protein intake and these risk factors in this population group.

A total of 37 participants of either Nordic walking or regular walking aged 45–74 years were recruited into the study. Height, weight, waist, hip and thigh were measured and percentage body fat and percentage appendicular skeletal muscle mass (SMMa) were estimated from Bioelectrical Impedance Analysis. Muscle strength was measured by handgrip dynamometry. Dietary protein intake was estimated from a 3-day un-weighed diet diary. Habitual physical activity levels were estimated by the General Practice Physical Activity Questionnaire. Variables were compared between group using either an unpaired t test or Mann-Whitney test. Relationships between variables were tested using either Pearson's or Spearman's correlation.

All participants produced handgrip strength within the normal range whereas eleven percent of participants met the criteria for low muscle mass (appendicular muscle mass corrected for height: $SMMa/Ht^2$). The Nordic walking group tended towards a healthier body composition compared with the regular walkers but this did not reach statistical significance (lower BMI, lower % body fat, greater % SMMa/kg body mass, lower waist-to-hip ratio and greater handgrip strength (kg/BMI), p = NS. A negative correlation between dietary protein intake (g/kg/d) and percent body fat ($r = -0{\cdot}73$, $p < 0{\cdot}001$), a positive correlation between dietary protein (g/kg/d) and fat-free mass ($r = 0{\cdot}73$, $p < 0{\cdot}001$), and a positive correlation between dietary protein (g/kg/d) and muscle strength ($r = 0{\cdot}55$, $p = {\cdot}005$) were observed.

This preliminary study showed that Nordic walking exercise in older adults compared with regular walking exercise may be more beneficial in decreasing sarcopenia risk factors. However, the small sample size and the variation in the degree of Nordic and regular walking within the groups will have limited the statistical power and potential body composition effects. Dietary protein intake may also be related to markers of sarcopenia risk. Further studies are warranted to investigate the potential for Nordic walking and dietary protein intake in the prevention and management of sarcopenia.

1. Patel HP *et al.* (2013). *Age Ageing* **42**, 378–384.
2. Cruz-Jentoft AJ *et al.* (2010). *Age Ageing* **39**, 412–423.