

Protein intake and grip strength in older adults: an evaluation of an over 60's exercise programme

O. Murray¹, M. Burke², G. Stratford¹ and T. Butler^{1,2}

¹Faculty of Health, Social Care and Medicine, Edge Hill University, Ormskirk, UK and

²Cardiorespiratory research centre, Edge Hill University, Ormskirk, UK

Ageing poses a significant challenge on human body, with multiple physiological changes occurring that have direct effects on the various body systems⁽¹⁾. In particular, there is a marked decline in musculoskeletal (MSK) health and strength, and reductions in muscle protein synthesis⁽²⁾. This decline in MSK health and blunting of MPS has led many researchers to recommend a higher protein intake in this elderly group^(3,4). At a societal level, exercise classes provide an excellent opportunity to improve fitness in the elderly population, and can be a vehicle for providing advice and support that promotes healthy ageing.

The aim of this investigation was to evaluate the impact of attending an over 60's exercise class on protein intake and handgrip strength.

Participants were sampled from an over 60s exercise class in the North West of the UK. Those meeting entry criteria of being over 60 years of age had dietary intake assessed using multiple 24 hr recalls. Grip strength was assessed using a Takei 5401 digital dynamometer. Grip strength was measured with participants in the seated position, with the elbow flexed 90 and the forearm in a neutral position. Nutritional intake was assessed using Nutritics™ software. Protein intake (g/Kg bodyweight) was compared to calculated values based off recommendations for 0.75, 1.0⁽³⁾ and 1.2 g/Kg bodyweight⁽⁴⁾ using paired t-tests. Mean grip strength was compared to age- and sex-matched 50th centile values⁽⁵⁾. A P value <0.05 was regarded as significant. All procedures were approved by the Health Research Ethics Committee at Edge Hill University.

From a total of 60 participants, 45 expressed interested in the study with one not meeting the inclusion criteria (aged <60 years). Of these 45, 15 participants completed the dietary assessment and 21 the grip strength evaluation. Mean age of the group was 70.4 ± 6.8 years. There was no significant difference between current protein intake (g/d) and calculated values using 0.75, 1.0 or 1.2 g/kg bodyweight (64.0 ± 32.2 g/d vs. 46.1 ± 5.4 g/d [p = 0.069], 62.1 ± 7.2 [p = 0.838], and 74.5 ± 8.7 [p = 0.261], respectively). Mean grip strength of the participants was significantly lower than the age- and sex-matched 50th centile values (19.7 ± 7.1 kg vs. 25.8 ± 5.9, p = 0.0010, respectively).

We have shown that in this elderly population attending a weekly exercise class, protein intake is sufficient and not significantly different to recommendations for older adults. However, grip strength is significantly below average values for their ages. This may be due to the types of exercise performed in the group which are likely insufficient to promote strength in these participants. Future efforts should be directed to focus on improving strength through resistance training to better support muscle function.

Acknowledgments

All participants involved in the study and Mr Paul Corless who runs the exercise programme.

References

1. Nie C, Li Y, Li Rui *et al.* (2022) *Cell Reports* **38**, 110459.
2. D'Onofrio G, Kirschner J, Prather H *et al.* (2023) *Prog Cardiovasc Dis.*
3. Volkert D, Beck AM, Cederholm T *et al.* (2019) *Clin Nutr* **38**, 10–47.
4. Deutz NEP, Bauer JM, Barazzoni R *et al.* (2014) *Clin Nutr* **33**, 929–36.
5. Dodds RM, Syddall HE, Cooper R *et al.* (2014) *Plos one* **9**, e113637.