

## Abstract

In Indonesia, older adults' population keeps increasing and 17.6% of the population had sarcopenia which is indicated by the reduced muscle functions. Alteration in dietary patterns and lifestyle, especially through protein consumption and regular physical activity could improve the well-being. It has been observed that not only the quantity but the quality and timing of the protein consumption also contributes to the muscle protein synthesis. However, study discussing this topic was still limited. Thus, this study aims to investigate whether protein consumption (quantity, quality, and timing) and/or physical activity level are associated with the muscle strength of older adults. The dietary recall was used to collect the data regarding protein consumption while the Global Physical Activity Questionnaire version 2 was used to assess the physical activity level. In addition, some muscle strength measurement tests, such as hand-grip and chair-stand tests, were used to measure the muscle strength of older adults. The study successfully interviewed 172 older adults and it was found that protein quantity ( $p$ -value = .000;  $r_s$  = .467 for hand grip strength and  $p$ -value = .000;  $r_s$  = .305 for chair stand performance) had the strongest positive correlation with muscle strength. The result also showed that protein quantity had more effect on the muscle strength of the older adults compared to the sources and timing. While for the physical activity, the significant association ( $p$ -value = .014;  $\beta$  = .122) was only found with the hand grip strength in the multiple regression analysis which could happened due to the type of the exercise. Thus, it was concluded that both protein consumption (quantity, quality, and timing) and physical activity affect muscle strength.

**Keywords:** muscle function, muscle strength, older adult, physical activity, protein consumption