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The influence of red meat intake upon the response to a resistance exercise-training program in older Australians

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Background

In older adults muscle performance declines with age, and in the elderly this can have a major impact on daily living by impairing the ability to undertake routine activities, increasing risk of falls and hindering recovery from injury. A recent study has suggested that the protein intake of older adults may be insufficient to maintain optimum muscle capacity (1).

Objective

To examine the effects of a 12-week diet and exercise program upon skeletal muscle performance and body composition in older Australians.

Design

Subjects (n=28, mean age=67yr, range 63-76yr) undertook a lower limb resistance-training program while consuming a diet with 20% energy as protein delivered through two levels of red meat intake (either moderate = 800g/week, or low = 400g/week in combination with other sources of dietary protein). Muscle performance was assessed at weeks 0, 6 & 12. At week 0 and week 12, body composition was assessed using anthropometry, BIA and thigh X-sectional CT, and dietary intake assessed by diet history.

Outcomes

Exercise training significantly increased leg muscle strength by more than 50% (P<0.01) and muscle endurance ~30% (P<0.01), and reduced thigh skin folds ~15% (P<0.01). Subjects on the moderate red meat diet had greater improvements in muscle strength at week 6 than those on the low red meat diet (P<0.01), but this difference was abolished at the study endpoint. The red meat was incorporated into both diets with no change in overall energy intake.

Conclusions

In older Australians, a resistance-training program markedly increased muscle strength. Consuming a diet with a moderate red meat content compared to a low red meat content in part enhanced the benefits upon muscle performance.

1. Campbell WW, Trappe TA, Wolfe RR, Evans WJ. The recommended dietary allowance for protein may not be adequate for older people to maintain skeletal muscle. *J Gerontol.* 2001;56A:M373-380