

P309. Effects of Resistance Training in Postmenopausal Women on Muscle Strength and Total as well as Fat-free Muscle Mass measured with MRI

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Context

About 75 % of all women report from hot flushes (HF's) after menopause and it is hypothesised that resistance training (RT) can decrease these symptoms. The present study is a sub-analysis of a randomised controlled trial investigating the effects of (RT) on hot flushes. Preserved muscle strength is essential for healthy aging.

Objective

To investigate if RT for 15 weeks in postmenopausal women affected muscle strength and total as well as fat-free muscle mass with Magnetic Resonance Imaging (MRI).

Methods

Muscle masses were measured by MRI and a semi-automated method (AMRATM Profiler image analysis) for segmentation and calculation of lean muscle mass and intramuscular fat. The analysed muscles were latissimus dorsi, pectoralis major, anterior and posterior thigh. Muscle strength was assessed by 8 repetition maximum tests (8RM).

The analyses assessed if changes in muscle mass occurred after intervention and if changes in muscle mass correlated with changes in muscle strength.

Patients

We randomized 65 sedentary postmenopausal women with at least 4 moderate to severe HFs/day between RT or no intervention. Of these, 44 underwent MRI at baseline and after 15 weeks. Presently 23 pairs of MRI investigations have been analysed. Data will have been completed at the time of the conference.

Interventions

A 15-week standardised RT program with eight exercises performed with 15-20 repetitions (week 1-3) or 8-12 repetitions (week 4-15) in two sets three times/week. Loads were tailored individually from 8RM strength tests and increased progressively by a physiotherapist (HL).

Main outcome measures

Percentage change in total and lean muscle mass from before to after intervention as well as the correlation between change in muscle strength and muscle mass.

Results

Muscle mass increased significantly in the intervention group from baseline to 15 weeks in most muscle groups (mean percentage change totally for the women in the intervention group 3.6%). The control group tended rather to decrease in muscle mass with a significant difference in change between the two

groups ($p=0.001$).

There were correlations between changes in muscle mass and changes in the 8 RM strength tests for some but not for all muscle groups ($R^2 0.4$, n.s.) but muscle strength increased significantly in all muscle groups measured.

Conclusion

Already 15 weeks of supervised resistance training caused measurable increases in muscle mass measured with MRI.

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