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Four Months of Kettlebell Training Improves Muscle Strength and Functional Outcomes in Older Adults

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Aging is characterized by loss of muscle mass, decrease in muscle strength, and decline in bone mineral density (BMD). Resistance training has been proposed as a strategy to help attenuate these changes in older adults, but not many studies have evaluated whether high intensity strength training with free weights is effective in mitigating such age-related alterations. **PURPOSE:** Determine the effects of 4 months of kettlebell training (KT) on BMD, muscle strength, and functional outcomes in older adults. **METHODS:** Participants meeting the inclusion criteria (≥ 60 years old and body mass index $< 42 \text{ kg/m}^2$) were enrolled in the study. The KT program (2x/week) consisted of the following exercises: deadlifts, shoulder press, bent over rows, squats, and swings (3-9 sets with 4-10 reps for each exercise at a rate of perceived exertion level 7/10). Baseline assessments were conducted one week prior to initiating the training program and were repeated after 2- and 4-mo of training. At each timepoint, participants were evaluated in the following assessments: body composition and BMD (dual-energy X-ray absorptiometry), stair climb test, short physical performance battery (SPPB) test, grip strength, and knee extension torque. A repeated measures one-way Analysis of Variance was used to determine statistical differences across time. **RESULTS:** Eight subjects (2 men/6 women) completed the training (age: 70 ± 4 yrs). Preliminary results show that 4 months of KT led to no changes in body composition (fat mass and fat free mass), BMD, time to ascend stairs, or SPPB score ($p > 0.05$ for all). Time to complete the 6-meter walk test decreased from 2 to 4 months ($5.0 \pm 1.0 \text{ sec}$ vs. $4.2 \pm 0.5 \text{ sec}$; $p = 0.0491$). Grip strength and knee extension torque increased from baseline to 4 months (grip strength: $27.5 \pm 6.7 \text{ kg}$ vs. $31.6 \pm 6.5 \text{ kg}$; $p = 0.0014$, knee extension torque: $72.4 \pm 19.1 \text{ Nm}$ vs. $89.5 \pm 33.2 \text{ Nm}$; $p = 0.0185$). **CONCLUSION:** The present results demonstrate that four months of high intensity strength training with free weights leads to significant improvements in functional outcomes in older adults while not altering body composition or BMD.

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