Kettlebell Training Increases Muscle Mass and Improves Muscle Function in Older Adults

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The age-related loss of muscle mass can begin as early as 40 years of age, with muscle mass declining at a rate of roughly 1% annually. When the progressive loss of muscle mass is accompanied by decline in muscle function, it can ultimately lead to increased morbidity and mortality. Resistance training has been introduced as a method to increase muscle mass and improve muscle function in older adults, but only a limited number of research studies has evaluated whether training with kettlebells can induce positive changes in this population.

PURPOSE: Determine whether kettlebell training (KT) increases fat free mass (FFM), muscle strength (grip strength and knee extension torque), and muscle function [short physical performance battery test (SPPB)] in older adults. METHODS: Individuals meeting the inclusion criteria (>60 years old and body mass index <42kg/m²) were enrolled in the study and participated in KT (2x/week) consisting of deadlifts, shoulder press, bent over rows, squats, and swings (3-5 sets with 4-10 reps for each exercise at a rate of perceived exertion level 7/10). Baseline measurements were conducted prior to initiating the training program and were repeated after 2 and 4 months of training. Participants were evaluated in the following assessments: body composition (dual-energy X-ray absorptiometry), SPPB test (including balance tests, gait speed test, and repeated chair stand test), grip strength, and knee extension torque. A repeated measures one-way Analysis of Variance was used to determine statistical differences across time.

RESULTS: Sixteen subjects (3 men/13 women) completed the training. KT increased FFM from baseline to 4 months of training (+2.55lbs, p=0.001) while not altering body weight or fat mass (p>0.05). Time to complete the 6-meter walk test and time to complete 5 repeated chair stands decreased from baseline to 4 months of training (5.2±1.0sec vs. 4.2±0.5sec, p=0.001; 10.3±2.9sec vs. 8.6±2.2sec, p=0.011, respectively). Grip strength and knee extension torque increased from baseline to 4 months (29.3±7.6kg vs. 32.3±6.9kg, p=0.0003; 85.9±26.3Nm vs. 97.9±30.9Nm, p=0.039, respectively). CONCLUSION: Our data shows that KT increases in FFM and improves muscle strength and muscle function in older adults. SIGNIFICANCE/NOVELTY: The age-related decline in muscle mass and strength leads to an inability to easily and safely complete activities of daily living. Therefore, strategies to maintain/improve muscle function and independence in older adults should receive increased attention. Here we show that long-term KT increases muscle mass and improves muscle function in older adults, thus suggesting that this type of training could be prescribed to counteract some of the age-related changes experienced in older adults.

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