

Benefits of Resistance Training for Balance in Elderly Populations

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ABSTRACT

Objective: A pilot study to determine the minimum amount of resistance training required to increase strength for unilateral stance and gait velocity in elderly populations. **Design:** An uncontrolled longitudinal study with subjects assigned a high intensity resistance training exercise two times per week for eight weeks. **Subjects:** Six community dwelling men (n=1) and women (n=5) aged 65-90 years. **Intervention:** Progressive resistance training utilizing 2 sets; 1 warm-up at 50-75% of 1-repetition maximum, 1 set to complete volitional fatigue between 12-15 repetitions. Once able to complete 15 repetitions, weight was increased. **Measures:** Unilateral stance using a long force plate to assess mean COG sway velocity and left/right difference with eyes open and eyes closed. Functional assessment of gait velocity in meters/second utilizing a timed 10 meter walk, timed 20 meter walk and 6 minute walk for distance. **Results:** Muscle strength increased in each of the participants in the seated leg press with a mean percent increase of $66.7 \pm 4.2\%$. COG sway velocity on the left side with eyes open decreased significantly ($P < .01$); COG sway velocity on the right side with eyes open decreased, approaching significance ($P = .026$) (Fig. 1). COG sway velocity on the left and right sides with eyes closed decreased significantly ($P < .01$) on both (Fig. 2). A mean decrease of $.10 \pm .12$ m/s presented in the 10 m walk. The 6 minute walk presented an increase of $.04 \pm .12$ m/s. **Conclusion:** A minimal resistance training program that achieves exhaustion of the muscle group through volitional fatigue done twice weekly can increase unilateral stability and gait velocity. This increase in unilateral stability and gait velocity could potentially reduce the risk of falls or the severity of falls in elderly persons.

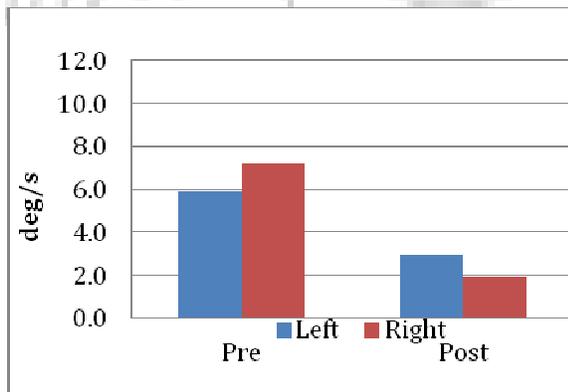


Fig. 1 COG Sway Velocity-Eyes Open

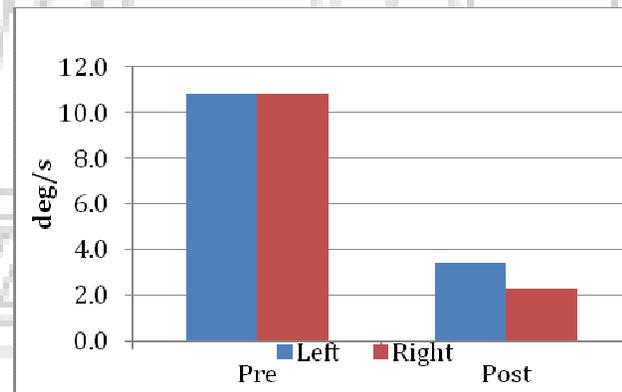


Fig. 2 COG Sway Velocity-Eyes Closed