STRENGTH, BALANCE AND STABILITY: THE EFFECTS OF MODERATE INTENSITY RESISTANCE EXERCISE ON THE 40+ AGE GROUP

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INTRODUCTION

Balance and stability have increased in importance, not least economically, over the last decade. Poor balance increases the possibility of falls in older people and frequency of injury is related to one's relative stability.

Research in this area is important from economic, health, mortality and quality of life perspectives. Whilst the causes of falls in ageing populations are multi-factorial, increasing strength and improving balance can be achieved well into the 90's. Reducing the potential to fall improves quality of life, sleep, independence, confidence and a sense of well-being.

OBJECTIVES

Will self-selected, moderate resistance exercise, increase upper and lower body strength in subjects over 40 years of age?

Will such a strength intervention lead to improvements in balance as measured by the Balance Error Scoring System (BESS)?

METHODS

Fifteen subjects between 41 and 62 years of age exercised at moderate, self-selected intensities, one day per week for eight weeks. During each session, subjects performed a deadlift on the Cybex Bravo Lift, a standing chest press, on the Cybex Bravo functional trainer, and a leg press, on the Cybex Eagle Leg Press. From 5 to 6 sets of up to 8 repetitions were performed on each exercise.

Prior to and immediately following the strength intervention, the subjects were tested for balance using the Balance Error Scoring System (BESS).

RESULTS

Significant increases in strength were seen in the chest press (10.7 kg), deadlift (31.5 kg), and leg press (25.9 kg).

Table 1. Average changes in strength following training protocol

	Chest Press (kg)	Deadlift (kg)	Leg Press (kg)
Pre	13.67 ± 7.12	49.40 ± 20.35	56.93 ± 22.71
Post	24.33 ± 9.83 *	80.87 ± 29.35 *	82.87 ± 23.22 *
Effect Size	1.243	1.246	1.131
* P < 0.001			

Subjects also experienced a significant decrease in balance errors following the protocol, with an average imporvement of 34.2%.

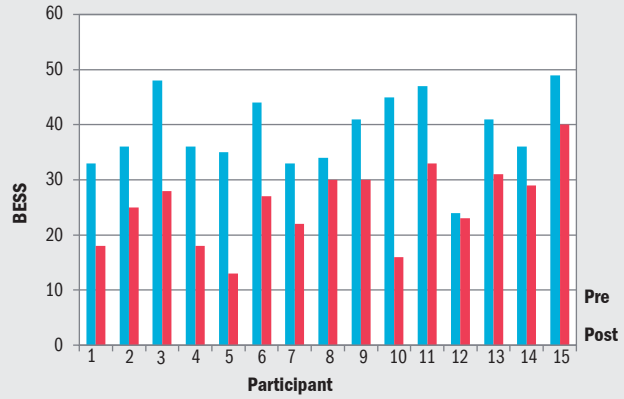

Figure 02. Balance error scoring system results for fifteen participants following training intervention

CONCLUSION

Engaging ageing and elderly subjects in moderate, tolerable exercise, can significantly improve upper and lower body strength in as little as one session per week for eight weeks. These strength gains are accompanied by significant improvements in balance, potentially reducing the risk of falls and enhancing quality of life.

This study is available in its entirety at: http://www.cybexintl.com/education/docs/CU_Strength_Balance_Stability_Study.pdf