

**O-0014****Effects of voluntary control on center of pressure sway and coactivation of ankle muscles during dual task in individuals with stroke**

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[Purpose]

In individuals with stroke, balance training under a dual task may help to regain balance automaticity (Geurts 2005). During a dual task, the coactivation of ankle muscles and center of pressure (COP) sway are thought to decrease by reducing voluntary control of postural control (Reynolds 2010, Nafati 2011). We investigated whether coactivation and COP sway decrease by voluntary control reduction when individuals with stroke performed a cognitive task during quiet standing.

[Methods]

Seventeen individuals with unilateral stroke (64.5 years; 11 affected left limbs) were asked to perform a Control condition (they were instructed to stand as usual) and Dual condition (they performed a cognitive task while standing). Each condition (20 s) was performed twice. The root mean square of total COP and the mean velocity of COP of each limb were calculated. Electromyographic data (tibialis anterior and medial gastrocnemius muscles) were used to calculate the coactivation index (CI). After completing each trial, the subjects were asked to provide a Likert scale (LS) score of the degree of voluntary control on a 4-point scale (4 = high voluntary control), and they were grouped into an increase or decrease (higher or lower LS score under the Dual compared to the Control condition, respectively) group. Each reduction difference value (Control - Dual condition) of the variables of the COP and CI was compared between both groups.

[Results]

The reduction difference value of the root mean square of total anteroposterior COP, the mean velocity of anteroposterior COP, and CI of the nonparetic side limb were significantly larger in the decrease group (9 subjects) compared to the increase group (8 subjects)

[Discussion]

The results of this study suggest that reducing voluntary control during a dual task training could lead to a decrease in the coactivation, amplitude, and velocity of anteroposterior COP in individuals with stroke.