INTRODUCTION

- Sensory loss is a major cause of postural instability in older individuals.
- There are many other comorbidities that can lead to a reduction in postural control/stability.
- Light touch, also known as sensory augmentation, has been shown in previous studies to improve postural stability in individuals.
- Light touch is defined as touch on a stable surface of no more than 1 Newton.
- Light touch is potentially useful for individuals with visual impairments, vestibular loss, proprioceptive disabilities, sensory loss, and balance problems.
- This study is a follow up to the study, Spatial orientation during eyes closed versus eyes open in the dark: are they the same?, by Chong et al., which found that a sway referenced surface in complete darkness with the eyes open and a distraction task was the most challenging condition on postural sway.
- We are looking to see how light touch effects postural sway in low light settings and reduced somatosensory.

METHODS

Assessment Tools

- We used the NeuroCom’s EquiTest® to measure postural sway among our subjects.
- Among the various NeuroCom system tests, we used the Sensory Organization Test (SOT) program in order to record our data.
- The SOT was chosen because it provides a reliable measure for postural sway, and it allowed us to use a fixed- and sway-referenced surface.
- Each subject performed two, twenty second trials for each of the 5 Conditions listed below.
- For the Retro6 Conditions, the subjects were given a number and asked to count backwards by “7” as fast and accurately as possible.
- All subjects wore “blacked out” goggles during the lights-off conditions (C, D, and E), and they were asked to keep their eyes open during all trials.

Conditions

- Condition A: Fixed Surface, Fixed Surround, Eyes Open, Lights On
- Condition B: Fixed Surface, Fixed Surround, Eyes Open, Lights On, Retro-7 Counting
- Condition C: Sway Referenced Surface, Fixed Surround, Eyes Open (blacked out goggles), lights off
- Condition D*: Sway Referenced Surface, Fixed Surround, Eyes Open (blacked out goggles), Lights Off, Retro-7 Counting
- Condition E*: Sway Referenced Surface, Fixed Surround, Eyes Open (blacked out goggles), Lights Off, Retro-7 Counting, Light Touch

*Conditions D and E were randomized.

RESULTS

- We found that anteroposterior postural sway did not show any significant improvement with light touch versus no light touch.
- The speed of Retro-7 counting showed no significant change with light touch or no light touch.
- The accuracy of the Retro-7 counting was significantly improved when light touch was implemented.

CONCLUSION

- Tactile feedback appears to be beneficial for some aspects of cognitive performance during dual-tasking.
- More research is needed to determine if a similar benefit may be derived in populations at risk for falls such as individuals with peripheral neuropathy, stroke, or Parkinson’s disease.

References


This poster design is adapted from “Thavinoz Z, Caglio L, Chong B, Lee KB, and Claudia Carlisteck. Effects of 8-week aquatic exercise training on postural control and quality of life in Parkinson’s disease” located at

http://www.georgiahealth.org/alliedhealth/poi/research.htm