The Effects of Prioritization on Dual-Tasking Performance
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Introduction
Living in a busy world has made dual-tasking an everyday occurrence. Dual-tasking is potentially dangerous, particularly when a person must perform both balance and cognitive tasks simultaneously.

In one recent study subjects were asked to maintain standing balance while engaging in a cognitive task of either retro-seven counting or listing words of the same first letter. Results indicated that subjects suffered greater balance decrements in retro-seven counting rather than word generating, suggesting that perhaps the human brain engages in visuo-spatial computation in both retro-seven counting and balance, creating the need for dual-tasking (Chong et al. 2010).

Our study further explored this concept of visuo-spatial computation as well as dual-tasking by asking subjects to engage in retro-counting while maintaining balance. Additionally, subjects were asked to prioritize either the cognitive or the motor task. It was our hypothesis that subjects would prioritize the cognitive task over the balance task, regardless of instructions given.

Methods
Assessment tools:
• We used the Sensory Organization Test (SOT) program in the NeuroCom’s EquiTest® to measure postural sway among our subjects
• Each subject completed the SOT under four unique protocols (A-D)
• Regardless of the protocol, each subject performed three, twenty-second trials for each of the six SOT conditions
• For the cognitive task of retro-counting, the subject was given a three-digit number and asked to count backwards by “7” as quickly and accurately as possible

Subjects:
• 24 healthy young adults between the ages of 22-30
• 12 men and 12 women

Conclusion
• Specificity of instruction during patient care could be crucial to patient’s rehab potential in regards to treatment outcomes
• When initially learning a task, it may be detrimental for the patient to engage in dual-tasking
• Potential clinical implications for patients with neurological disorders who have difficulty multi-tasking

Results

Figure 1: When told to focus on balance, balance improved during conditions 4-6. These are the conditions in which the force plate moves, making it more difficult to balance.

Figure 2: Counting speed improved when asked to prioritize, regardless of instructed focus type.

Though not pictured, results indicated that there was not a significant change in accuracy of counting when prioritization was introduced.

Asterisks are used when comparing to Baseline condition: *p<0.05, **p<0.01, ***p<0.001
Crosses are used when comparing to Retro-Focus condition: †p<0.05, ‡p<0.01, ≡p<0.001