The Effect of Executive Cognitive Distraction on Sustaining a Volitional Preemptive Abdominal Contraction During a Unipodal Functional Movement in Healthy Subjects. Cooper K, Garcia L, Kunkel B, Hooper T, Drusch A, Kublawi M, Brismee J, Sargent E, Wilhelm M, Yang H, Gan J, Sizer P.

Context: Daily distractions can affect the muscle performance during a functional task. Rehabilitation professionals should demonstrate a better understanding of cognitive distraction on trunk and lower extremity (LE) muscle activation patterns.

Objective: To determine the effect executive cognitive distraction (ECD or "Stroop effect") has on the ability to maintain a volitional preemptive abdominal contraction (VPAC) in healthy subjects while performing a unipodal functional task. Subjects used an abdominal bracing maneuver (ABM), or No-VPAC, with and without ECD, while performing the Y-Balance Test (YBT).

Design: Within-subjects, repeated measure cohort design.

Setting: Clinical laboratory setting. Subjects recruited from local community.

Participants: Convenience sample of 30 healthy individuals, ranging 20-41 years (x= 27.2 yrs).

Intervention: Surface electromyography data was recorded on subjects' moving and stance internal obliques (IO) and external obliques (EO) while performing the YBT in the anterior (ANT), posteromedial (PM), and posterolateral (PL) directions. The auditory Stroop program consisted of masculine and feminine terms, requiring subjects to respond by moving the appropriate 5th finger.

Results: The 2 (VPAC) x 2 (ECD) ANOVA revealed a main effect for VPAC strategy for ECD in all YBT directions ($p<.05$). Repeated measures ANOVA revealed a main effect for Stroop to PM reach distances ($p= .006$). In addition, the repeated measures ANOVA revealed a main effect for stance IO and moving EO VPAC in the PM direction, as well as for moving EO in ANT direction ($p<.05$).

Conclusion: Our study revealed that normal subjects were able to perform a VPAC during a LE reaching task, even when cognitively distracted. YBT reach distances were affected by Stroop distraction in the PM YBT direction. This study served to inform health professionals on the effect ECD has on VPAC strategies during a LE reach task, such as during an athletic, recreational, or daily living activity.