

# Understanding the Influence of Trait Anxiety on Gait During Affective-Cognitive Interference

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**BACKGROUND:** Individuals with high levels of trait anxiety, a stable aspect of one's personality, exhibit diminished prefrontal control of attention. This makes it challenging to focus on multiple tasks at once, especially under conditions of threat. In general, trait anxious individuals tend to walk with slower speeds while dual task (DT) walking, i.e., walking while also performing a cognitive task. However, there remains a gap in understanding DT walking during threat. This study investigated how trait anxiety levels can predict gait behaviour during various permutations of DT and postural threat conditions.

**METHODS:** Using a repeated measures design, thirty neurotypical adults aged 19-28 completed five walking trials under four virtual reality (VR)-stimulated conditions: (i) low threat - walking across a virtual plank on flat ground, (ii) low threat and the attentional task (counting the frequency of numbers heard on an audio track), (iii) high threat - walking across a virtual plank elevated above a deep pit, (iv) high threat and the attentional task. At baseline, trait anxiety levels were recorded using the State Trait Anxiety Inventory, and baseline attentional task performance.

**RESULTS:** Linear regressions revealed that when considering the difference scores between single and DT walking on the ground, trait anxiety did not predict significant changes in gait behaviour. However, when considering the difference scores between single and DT walking at elevation, higher levels of trait anxiety predicted a significant decrease in velocity ( $p=0.028$ ) and increase in double support time ( $p=0.027$ ).

**DISCUSSION:** As trait anxiety predicted a more cautious gait behaviour only when dual task walking at elevation, it is possible that individuals reduced gait automaticity by prioritizing more top-down control of gait due to threat. This work may be applied to clinical populations, where these gait behaviours may predict fall risk, to generate holistic rehabilitation treatments targeted at managing anxiousness to prevent future falls.