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Single-task and dual-task tandem gait test performance after concussion

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Abstract

Objectives: To compare single-task and dual-task tandem gait test performance between athletes after concussion with controls on observer-timed, spatio-temporal, and center-of-mass (COM) balance control measurements.

Design: Ten participants (19.0±5.5 years) were prospectively identified and completed a tandem gait test protocol within 72 hours of concussion and again 1 week, 2 weeks, 1 month, and 2 months post-injury. Seven uninjured controls (20.0±4.5 years) completed the same protocol in similar time increments.

Methods: Tandem gait test trials were performed with (dual-task) and without (single-task) concurrently performing a cognitive test as whole-body motion analysis was performed. Outcome variables included test completion time, average tandem gait velocity, cadence, and whole-body COM frontal plane displacement.

Results: Concussion participants took significantly longer to complete the dual-task tandem gait test than controls throughout the first 2 weeks post-injury (mean time= 16.4 [95% CI: 13.4-19.4] vs. 10.1 [95% CI: 6.4-13.7] seconds; $p = .03$). Single-task tandem gait times were significantly lower 72 hours post-injury

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