

## **Return-to-Play Clinical Milestones: Fail-Rate for Those Claiming to Be Fully Symptom Free**

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### **ABSTRACT**

Sport-related concussion remains a concerning public health issue. A multifaceted test battery is recommended for clinical judgments, including return-to-play (RTP). Initiation of RTP testing is based on the athletes' honesty with their current symptoms and is confirmed by the multifaceted test battery. **PURPOSE:** Examine the rates of test failure in NCAA Division I athletes when they present as being symptom free for 24 hours. **METHODS:** 36 Division I athletes (18 male, 18 female; avg. age=20.1 years) were evaluated at pre-season baselines (BL), within 48 hours of a diagnosed concussion (CON), and when they reported being symptom free (SF) for 24 hours. At each time point, they were evaluated on a symptom severity score (TS), the vestibular/ocular motor screening (VOMS) exam, and tandem gait (TG) under single-task (ST) and dual-task (DT) conditions (serial-7s subtraction). Neurocognitive testing using the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) was only performed at BL and again if they were clinically clear on the VOMS and TG. Lastly, the Buffalo Concussion Treadmill Test (BCTT) was administered at CON and SF using the standard recommended procedures. Concussions were diagnosed using the international consensus criteria alongside symptom presentation and a mechanism of injury. The fail rate was determined if they presented with one or more of the following: 1) a TS of >7 or physiological symptoms (i.e. headaches, dizziness) not present at BL, 2) VOMS change score >2, 3) NPC >5.0cm, 4) ST outside of 1.5s of their BL, 5) DT outside of 1.7s of their BL, 6) declined ImPACT test results determined by a trained clinician using minimal detectable change score, and 7) symptom provocation during the BCTT. **RESULTS:** A total of 67% (n=23/36) successfully cleared all the testing criteria and moved onto an RTP protocol once subjectively considered SF. 67% (n=12/18) of females and 61% (n=11/18) of males successfully cleared all the testing at their respective impressions of being SF. The average time from CON to SF was 16.8±16.91 days with no significant difference (p=.56) between males (18.50±17.72 days) and females (15.11±16.41 days). **CONCLUSION:** These results suggest that a multifaceted concussion assessment battery is heavily warranted to determine the athletes' concussion status and readiness for RTP.