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**2025 Davee Foundation Lecture**

**and Resident Research Day**

**Abstract**

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**Title: The Effects of Physical Fatigue on King-Devick Test Performance**

**Background:**The King Devick (KD) test uses rapid number naming to quickly assess concussion status in athletes on the sidelines. Previous studies show that the KD test is sensitive to effects of sleep deprivation. It is possible that other factors, like environment, physical fatigue and cognitive function could impact the efficacy of the KD test on the sidelines of athletic events. Thus far, studies have examined exercise-induced fatigue in controlled settings with conflicting results.

**Methods:**

Objective: Determine the effect of physical fatigue on KD test performance through authentic workouts

Design: Prospective Cohort Study

Setting: Physical fatigue was induced through a single challenging practice session. Wrestlers participated in a two-hour practice and runners performed four to twelve 800-meter timed intervals

Patients or Other Participants: Seven NCAA Division-I wrestling athletes participating in regular practice and eighteen recreational runners performing weekly workouts

Main Outcome Measures: Time to completion and number of errors on the KD test

**Results and Conclusions:**Time to completion decreased by a mean of 3.72s [95% CI 2.17-5.26, p= 0.00008] in the fatigued state compared to resting state. The number of subjects committing at least one error was not different between the fatigued state and resting state (p=0.22).

This study demonstrates that the validity of the KD test is not affected by physical fatigue induced by a challenging training session. The KD test is not overly sensitive to the effects of fatigue in this setting and is unlikely to be affected by sports participation when used as a sideline concussion test.