

AAN 66th ANNUAL MEETING ABSTRACT

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Abstract Title: Vision Testing Is Additive to the Sideline Assessment of Sports-related Concussion

Press Release Title: More Evidence That Vision Test on Sidelines May Help Diagnose Concussion

Objective: We examined the King-Devick (K-D) test, a vision-based test of rapid number naming that requires saccadic eye movements, as a complement to the Sport Concussion Assessment Tool, 3rd edition (SCAT3) for diagnosis of concussion.

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Background: Visual signs and symptoms are common in concussion; adding a vision-based test may increase diagnostic power for clinicians and others evaluating athletes on the sidelines.

Design/Method: Baseline and post-concussion data for the University of Florida men's football, women's soccer and women's lacrosse teams were collected, including K-D test, Standardized Assessment of Concussion (SAC) and Balance Error Scoring System (BESS). Post-Concussion Scale (PCS) also was used to assess symptom reporting. Analyses examined changes in scores from baseline to post-injury. The relation of changes in scores for K-D vs. SAC and BESS was determined, as was the relation of K-D scores to symptoms (PCS). Immediate Post-concussion and Cognitive Testing (ImPACT) scores, obtained as part of routine clinical practice for concussion management, but not diagnoses, also were correlated with K-D and SAC scores at baseline.

Results: Among 30 athletes with first concussion during their athletic season (n=217 total), differences from baseline to post-injury (witnessed event or time of reporting) showed worsening of K-D time scores in 79%, while SAC showed a ≥ 2 -point worsening in 52%. Combining K-D and SAC captured abnormalities in 89%; adding the BESS identified 100% of concussions. Symptom severity scores on the PCS worsened from baseline with increases in K-D scores ($p < 0.001$); among specific symptoms, light and noise sensitivities were particularly well correlated with K-D worsening. Baseline scores for the ImPACT testing visual motor speed sub-score were worse for athletes who required longer times to complete the K-D test at baseline ($p < 0.001$, linear regression).

Conclusions: Adding a vision-based test may allow us to detect more athletes with concussion. This is particularly important since not all athletes reliably report symptoms of concussion, including those related to visual function.

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