

Development and Validation of a Novel Concussion Documentation Audit Tool

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Context: Concussions are complex conditions that ATs evaluate and manage; however, research indicates that ATs are not engaging in high-quality documentation practices for concussion evaluation. To date, there is no comprehensive tool available for ATs to evaluate their concussion documentation patterns. Therefore, this study aimed to develop and validate a novel Concussion Documentation Audit Tool (CDAT) to assist ATs in auditing their concussion documentation for completeness.

Methods: To develop the CDAT we conducted a thorough literature review of best practices for concussion evaluation and medical documentation; we identified 36 critical components for initial concussion evaluation documentation. To establish face and content validity, a panel of healthcare professionals with diverse expertise reviewed and provided feedback on the content and structure of the CDAT, which was subsequently updated per their recommendations. The 36 established criteria had values assigned with 2 points when the criterion was fully met, 1 point when the criterion was partially met, and 0 points when the criterion was not met. Two rounds of piloting, totaling 12 concussion notes, were completed by 3 auditors (certified ATs with 2-35 years' experience), and the CDAT was further revised based on those pilots. To establish concurrent validity, 2 certified ATs (10+ years of experience each) subjectively rated those same notes as "very good", "good", "fair", or "poor", which were converted to numerical scores of 100%, 75%, 50%, and 25% respectively. A convenience sample of 53 notes from 2 local clinical sites (1 high school, 1 college) were graded using the CDAT and the subjective rating rubric. Agreement between CDAT and subjective rating scores as well as concurrent validity were evaluated using Bland-Altman analyses and Spearman ρ correlation, respectively ($p < 0.05$).

Results: The 36 critical components included in the CDAT were divided into four subsections based on expert feedback: history (9 items), presentation (10 items), physical exam (10 items), assessment and plan (7 items). Bland-Altman analyses (Figure) indicated poor agreement between CDAT and subjective scores ($-14.6 \pm 10.8\%$ [95% CI: $-17.6, 11.6$], $p < 0.001$). CDAT and subjective scores had a strong positive correlation ($\rho = 0.81$, $p < 0.001$).

Conclusions: Scores on the CDAT were approximately 14% lower than subjective assessment, indicating the completeness of initial concussion documentation may be overestimated by ATs, supporting the need for a standardized audit tool like the CDAT. Expert validation, in conjunction with the strong relationship between CDAT and subjective scores, endorse the tool's validity to audit the completeness of initial concussion documentation. Future research should aim to use the CDAT to audit a broader sample of concussion documentation notes and explore the utility of the CDAT for quality improvement within healthcare organizations and as a learning apparatus for athletic training students.

Word Count: 432

Figure. Bland Altman Plot for CDAT Score and Subjective Rating Score Agreement. a indicates mean difference, b indicates upper limit of agreement, c indicates lower limit of agreement.

