# SCAT5

Sports Concussion Assessment Tool 5 (SCAT5) is a standardized concussion assessment, available as a pdf or online , used by healthcare providers when a concussion is suspected in athletes ages 12 and older.

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The Fifth International Conference on Concussion in Sport was held in Berlin in October 2016. A series of 12 questions and subquestions was developed and the expert panel members were required to perform a systematic review to answer each question. Following presentation at the Berlin meeting of the systematic review, poster abstracts and audience discussion, the summary Consensus Statement was produced. Further, a series of tools for the management of sport-related concussion was developed, including the Sport Concussion Assessment Tool Fifth edition (SCAT5), the Child SCAT5, and the Concussion Recognition Tool Fifth edition [1].

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PDF

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Online

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The SCAT5 cannot be performed correctly in less than 10 minutes.

The revision of the SCAT3 (first published in 2013) culminated in the SCAT5. The revision was based on a systematic review and synthesis of current research, public input and expert panel review as part of the 5th International Consensus Conference on Concussion in Sport held in Berlin in 2016. The SCAT5 is intended for use in those who are 13 years of age or older. The Child SCAT5 is a tool for those aged 5-12 years, which is discussed elsewhere [2].

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The Sports Concussion Assessment Tool-5th Edition (SCAT5) and the child version (Child SCAT5) are the current editions of the SCAT and have updated the memory testing component from previous editions.

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To achieve consensus, via an international panel of SRC experts, on which athlete/player and parent/caregiver demographic variables should be considered for inclusion in future editions of the SCAT/Child SCAT respectively.

Methods: A two-round modified Delphi technique, overseen by a steering committee, invited 41 panellists to achieve expert consensus (≥80% agreement). The first round utilised open questions to generate demographic variables; the second round used a five-point ordinal item to rank the

importance of including each variable in future editions of the SCAT/Child SCAT.

Results: 15 experts participated in at least one Delphi round. 29 athlete/player and eight parent/caregiver variables reached consensus for inclusion in the SCAT, whereas two parent/caregiver variables reached consensus for exclusion. 28 athlete/player and four parent/caregiver variables reached consensus for the Child SCAT, whereas two parent/caregiver variables reached consensus for exclusion. Key categories of variables included the following: concussion/sport details, personal medical conditions and family medical history.

Conclusion: This study provides a list of athlete/player and parent/caregiver demographic variables that should be considered in future revisions of the SCAT/Child SCAT. By considering (and ultimately likely including) a wider and standard set of additional demographic variables, the Concussion in Sport experts will be able to provide clinicians and researchers with data that may enhance interpretation of the individual's data and the building of larger datasets [3)].

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In a prospective observational study, the ability of the SCAT5 and ChildSCAT5 to differentiate between children with and without a concussion was examined. Concussed children (n=91) and controls (n=106) were recruited from an emergency department in three equal-sized age bands (5-8/9-12/13-16 years). Analysis of covariance models (adjusting for participant age) were used to analyze group differences on components of the SCAT5. On the SCAT5 and ChildSCAT5, respectively, youth with concussion reported a greater number (d=1.47; d=0.52) and severity (d=1.27; d=0.72) of symptoms than controls (all p<0.001). ChildSCAT5 parent-rated number (d=0.98) and severity (d=1.04) of symptoms were greater for the concussion group (all p<0.001). Acceptable levels of between-group discrimination were identified for SCAT5 symptom number (AUC=0.86) and severity (AUC=0.84) and ChildSCAT5 parent-rated symptom number (AUC=0.76) and severity (AUC=0.78). The findings support the utility of the SCAT5 and ChildSCAT5 to accurately distinguish between children with and without a concussion [4)].

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A study aimed to validate this new memory component against the Rey Auditory Verbal Learning Test (RAVLT) as the validated standard. This prospective, observational study, carried out within The Royal Children's Hospital Emergency Department, Melbourne, Australia, recruited 198 participants: 91 with concussion and 107 upper limb injury or healthy sibling controls. Partial Pearson correlations showed that memory acquisition and recall on delay aspects of the SCAT5 were significantly correlated with the RAVLT equivalents when controlling for age ($p < 0.001$, $r = 0.565$ and $p < 0.001$, $r = 0.341$, respectively). Factor analysis showed that all RAVLT and SCAT5 memory components load on to the same factor, accounting for 59.13% of variance. Logistic regression models for both the RAVLT and SCAT5, however, did not predict group membership ($p > 0.05$). Receiver operating curve analysis found that the area under the curve for all variables and models was below the recommended 0.7 threshold. This study demonstrated that the SCAT5 and Child SCAT5 memory paradigm is a valid measure of memory in concussed children [5)].

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The two-week test-retest reliability of the SCAT5 baseline scores varied from moderate to high. However, there was considerable individual variability on the SAC and mBESS scores and most players have notable short-term fluctuation on performance even if uninjured. Recommendations for interpreting change on the SCAT5 are provided [6)].

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