



Square peg round hole - Time to customise a concussion assessment tools for primary care: The New Zealand experience? A call for a GP-SCAT

Danielle M. Salmon , S. John Sullivan , Ian Murphy , Johna K. Regiser Mihalik , Bret Dougherty & Graeme McCrory

To cite this article: Danielle M. Salmon , S. John Sullivan , Ian Murphy , Johna K. Regiser Mihalik , Bret Dougherty & Graeme McCrory (2020): Square peg round hole - Time to customise a concussion assessment tools for primary care: The New Zealand experience? A call for a GP-SCAT, Brain Injury, DOI: [10.1080/02699052.2020.1831607](https://doi.org/10.1080/02699052.2020.1831607)

To link to this article: <https://doi.org/10.1080/02699052.2020.1831607>



Published online: 15 Nov 2020.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

Square peg round hole - Time to customise a concussion assessment tools for primary care: The New Zealand experience? A call for a GP-SCAT

Danielle M. Salmon^a, S. John Sullivan^a, Ian Murphy^a, Johna K. Regiser Mihalik^b, Bret Dougherty^c, and Graeme McCrory^d

^aInjury prevention, New Zealand Rugby, Wellington, New Zealand; ^bExercise and Sport Science, Matthew Gfeller Sport-Related TBI Research Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; ^cStudent Health te Ratoka Hauroa Akoka, University of Otago, Dunedin, New Zealand; ^dHastings Health Centre, Hastings, New Zealand

ABSTRACT

In rugby union concussions are a player welfare concern, particularly in the community game where there is often minimal sideline medical support. New Zealand Rugby (NZR) has three primary goals around the management of concussions in the community game: (1) players with a suspected concussion are removed from the game or training; (2) players are referred into primary care for a diagnosis by a general practitioner (GPs) (doctor in primary care); (3) prior to returning to contact training that they are medically cleared by a doctor. Given their role in the diagnosis and medical clearance of players with a concussion, GPs are a key stakeholder in the concussion management pathway. Thus to ensure that players are safely returning to play, NZR acknowledged the need to better support and engage with GPs. This editorial is an opportunity for NZR to share our experience working collaboratively with GPs in New Zealand to support the diagnosis and medical clearance of players following a rugby-related concussion.

ARTICLE HISTORY

Received 2 September 2020
Revised Vxx xxx xxxx
Accepted 29 September 2020

KEYWORDS

concussion; primary care;
SCAT; primary care; rugby;
childSCAT

New Zealand's national sport rugby is played by 177,640 men and women (New Zealand Rugby database). NZ Rugby (NZR) – the governing body of rugby union (hereafter referred to as rugby) recognizes the risks of concussions and has emphasized policies and initiatives to improve player welfare and mitigate injury risk (1,2). As a part of NZR's community concussion management initiatives players with a suspected concussion are removed from participation, referred to a general practitioner (GP) for a diagnosis assessment generally within 48 hours and a medical clearance following the required stand-down period prior to returning to contact training (2). In 2017, NZR began a pilot project working with GPs in four geographical regions (unions) aimed at encouraging them to adopt recognized concussion management best practice (3). As part of their clinical assessment, we asked GPs to adopt the Sport Concussion Assessment tool version 5 (SCAT5) (4), which is recognized as the gold standard concussion assessment tool (3). The purpose of this editorial is threefold: (1) to share the New Zealand experience in introducing a recognized quantitative tool to GPs in community rugby, (2) to inform other national sport organizations, and (3) to engage with leaders in primary care education and best practice development.

Concussion management in community rugby in New Zealand

In New Zealand, a diagnosis of concussion and consequent medical clearance can only be made by a medical doctor, where GPs have approximately 15 minutes to undertake these assessments. Following the 2017 pilot where GPs were asked to adopt best practice concussion management in community rugby, we

learned that GPs in New Zealand face substantial challenges in diagnosing and managing concussions. These include:

- (1) Being unfamiliar with current best practice and return to play guidelines,
- (2) Lacking experience in using standardized tools (such as SCAT5),
- (3) Having insufficient time to examine and/or clear players,
- (4) Typically seeing 1–2 concussions (any etiology) a month.

In response, NZR formed a working group of eight GPs who had been involved in the pilot together with sport physicians involved in professional rugby and representatives from the NZ College of General Practitioners. The group's purpose was to review the practicality of the pilot scheme and to explore potential options to adapt the system to meet the needs of GPs. The biggest barrier was the length of time taken to administer, in a single visit, all components of the SCAT5 (3). This led the group to explore and agree upon which components of the SCAT5 (3), Child SCAT5 (5), and earlier versions (6) would help inform clinical decisions regarding a concussion diagnosis.

Most clinically useful and feasible components

Based on these discussions, the NZR working group selected three components that could be completed in approximately five-minutes and incorporated them into the broader clinical exam. These components included:

- (1) Cognitive component (10-word immediate memory, numbers and months in reverse and delayed recall) (4),
- (2) Symptom checklist (5),
- (3) Dynamic balance component (tandem gait protocol from SCAT3) (6).

We excluded the orientation component and the modified BESS. To allow 5 minutes between immediate memory and delayed recall, the immediate memory was the first component assessed.

As the “Symptom checklist” is a key component of the abbreviated tool, it was essential that the symptom descriptors were at a literacy level that allowed easy comprehension. In 2017, NZR used the SCAT5 to baseline test high school rugby players from a variety of ethnicities and socioeconomic backgrounds. When conducting the SCAT5 symptom checklist, we found that many players had difficulty understanding the language used. Players were unaware of what the following terms meant: “Nausea,” “Feeling like in a fog,” “Irritability,” and “Anxious” (3). In response, the NZR research team piloted the Child SCAT5 symptom list in six schools that covered a range of socioeconomic and cultural backgrounds and found improved comprehension, and elected to use this scale for all age groups (5). In addition, the tandem gait protocol as described in the SCAT3 (6) was chosen to assess dynamic balance as the GPs reported difficulty with the instructions and scoring of the modified BESS. Feedback from semi-structured interviews with local GPs involved in the 2018 & 2019 trial of pathway has been overwhelmingly positive, with GPs reporting being more confident and comfortable managing concussions.

Our research highlights the challenges NZR faces with the management of concussions in primary care. While the SCAT5/Child SCAT5 are valuable tools to assist with concussion diagnosis where expertise and time are sufficient (3,5), our experiences and international evidence indicate that there are barriers to the use of all components in primary care (7,8). If value is seen in the use of a standardized approach to concussion management, we need to re-think best practice guidelines/tools, as others have done (9) and consider how they can be appropriately utilized in primary care.

We argue, like others (9) for the need to reconsider what is “absolutely essential” for GPs (and others) working in primary care to inform their diagnosis of concussion. By sharing our experience, we hope that the future revisions of the SCAT/Child SCAT take into account all health-care professionals who are likely to use them, particularly those working in the primary care setting where a standardized tool could add value but those using them are subject to time pressures. While the components we included from the SCAT family of assessments require validation to explore their clinic utility, we hope this may provide to impetus for future work to explore the development of an abbreviated SCAT. If an endorsed pragmatic set of key elements was available for GPs such as the GPSCAT, it could lead to wider adoption of these important tools which could help to inform clinical decisions and improve patient outcomes.

Acknowledgments

The authors acknowledge Drs: Stephen Kara, Theo Dorfling, Chris Reid, Helen Fulcher, Patrick McHugh, Warren Groarke, Andrew Webster, Wendy Gush & Mrs. Emma Wicks who were a part of the GP advisory group who helped develop the New Zealand Rugby Concussion Assessment Protocol and New Zealand Rugby Concussion Assessment Tool and for their contributions to this project. We would also like to thank Dr. Ken Quarrie (New Zealand Rugby) for his critical review of an earlier version of this manuscript.

Contributorship

DS and SJS conceived the idea for the paper. DS drafted the first iteration of the paper. All authors contributed to the critical review and revision of the manuscript.

Competing interests

DS and IM are/were employed by New Zealand Rugby.

Funding

This editorial received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

1. Quarrie K, Gianotti S, Murphy I, Harold P, Salmon D, Harawira J. RugbySmart: challenges and lessons from the implementation of a nationwide sports injury prevention partnership programme. *Sports Med.* 2020;50(2):227–30. doi:10.1007/s40279-019-01177-8.
2. Salmon D, Sullivan J, Romanchuk J, Murphy I, Walters S, Whatman C, Clacy A, Keung S, Van Der Vis K. Infographic. New Zealand rugby’s community concussion initiative: keeping kiwi communities RugbySmart. *Bri J Sports Med.* 2020;54(5):300–01. doi:10.1136/bjsports-2019-100949.
3. McCrory P, Meeuwisse W, Dvorak J, Aubry M, Bailes J, Broglio S, Cantu RC, Cassidy D, Echemendia RJ, Castellani, RJ. Consensus statement on concussion in sport – the 5th international conference on concussion in sport held in Berlin, October 2016. *Br J Sports Med* 2017;51:838–47.
4. SCAT5. Sport concussion assessment tool – 5th edition. *Br J Sports Med.* 2017;11:1–8..
5. Davis GA, Purcell L, Schneider KJ, Yeates KO, Gioia GA, Anderson V, Ellenbogen RG, Echemendia RJ, Makdissi M. The child sport concussion assessment tool 5th edition (Child SCAT5): background and rationale. *Br J Sports Med* 2017;51:859–61.
6. SCAT3. Sport concussion assessment tool – 3th edition. *Br J Sports Med.* 2013;47(5):259.
7. Arbogast KB, Curry AE, Metzger KB, Kessler RS, Bell JM, Haarbauer-Krupa J, Zonfrillo MR, Breiding MJ, Master CL. Improving primary care provider practices in youth concussion management. *Clin Pediatr.* 2017;56(9):854–65. doi:10.1177/000922817709555.
8. Mrazik M, Dennison CR, Brooks BL, Yeates KO, Babul S, Naidu D. A qualitative review of sports concussion education: prime time for evidence-based knowledge translation. *Br J Sports Med.* 2015;1–8.
9. Patricios J, Collins R, Branfield A, Roberts C, Kohler R. The sports concussion note: should SCAT become SCOAT? *Br J Sports Med.* 2012;46(3):198–201. doi:10.1136/bjsports-2011-090386.