Knowledge, Attitudes, and Behaviours of New Zealand Physiotherapists to Sports-Related Concussion

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ABSTRACT

Sports-related concussion (SRC) is a risk across all sports. New Zealand physiotherapists are more frequently in attendance at sporting events than medical doctors. The aim of this study was to determine the knowledge, attitudes, and behaviours of physiotherapists potentially working with SRC, using a 35-item, multi-choice questionnaire. The survey was completed by 122 physiotherapists (response rate 10%). Physiotherapists were knowledgeable regarding SRC and showed positive attitudes towards correct management of the injury. Of the respondents, 98% recognised the key signs and symptoms of SRC, and 88% would refer to a medical practitioner for further assessment of SRC. Physiotherapists indicated a strong desire to be more involved in sideline management and testing, and would like to see a more multidisciplinary approach to return-to-play decision-making after SRC. Given that the knowledge, attitudes, and behaviours of New Zealand physiotherapists to SRC were very good, it is suggested that the processes in New Zealand be reviewed to enable physiotherapists to be more involved in the assessment and management of concussion.

Reid, D. A., Hume, P., Whatman, C., Theadom, A., Walters, A., Hardaker, N., & Fulcher, M. (2020). Knowledge, attitudes, and behaviours of New Zealand physiotherapists to sports-related concussion. *New Zealand Journal of Physiotherapy, 48*(1), 19–28. https://doi.org/10.15619/NZJP/48.1.03

Key Words: Concussion, Sports, Physiotherapy

INTRODUCTION

Sports-related concussion (SRC) is a significant problem in New Zealand (Theadom et al., 2014; Theadom et al., 2018). Feigin et al. (2013) found that approximately 36,000 people in New Zealand acquire a traumatic brain injury annually. SRC is a subset of those people, with the traumatic brain injury occurring specifically in a sports-related environment. Individuals may or may not suffer from persistent post-concussion symptoms but will often require further evaluation if symptoms do persist. Those with SRC account for 21% of all traumatic brain injuries sustained (Theadom et al., 2014), equating to approximately 8,000 New Zealanders per year. The sports disciplines with the highest occurrence of SRC were rugby, cycling and equestrian (Theadom et al., 2014). In the 2017 financial year, there were 6,339 new SRC claims accepted by the New Zealand public accident insurer, the Accident Compensation Corporation (ACC) (ACC, 2019), with a cost to manage these claims of NZ$16 million. This places a significant burden on the New Zealand healthcare system (ACC, 2019). It is also possible that these figures are an underestimation of the financial burden, as only those people who seek medical attention have the injury registered with ACC.

In 2016, ACC updated its guidelines on the management of SRC (ACC, 2016). The purpose of these guidelines was to provide information and tools to assist and educate those involved in the management of SRC based on the Concussion in Sport Group consensus statement (McCrory et al., 2017). The consensus statement was published to assist health professionals involved with assessment and management of SRC. The guidelines recommend using the Sport Concussion Assessment Tool 5th edition (SCAT5) and the "11 Rs": recognise, remove, re-evaluate, rest, rehabilitation, refer, recover, return to sport,

reconsider, residual effects and sequelae, and risk reduction) (Echemendia et al., 2017).

One of the key aspects of all these guidelines is the recommendation that the suspected concussed sportsperson is assessed by a medical doctor who is trained to assess concussion and that clearance to return to play (RTP) must be signed off by a medical doctor. Recent surveys of New Zealand general practitioners and emergency care doctors (Reid et al., 2018), and Canadian family physicians, emergency doctors, and paediatricians (Stoller et al., 2014) raised several issues in relation to SRC management in keeping with the above guidelines. Firstly, few general practitioners in Canada and New Zealand are using the SCAT5 in their clinical practice as part of their assessment; secondly, the numbers being assessed by New Zealand doctors were low; and thirdly, the participants in the surveys were not confident making RTP decisions. It is not currently known if physiotherapists are routinely using the SCAT5 as part of their sideline assessment.

On the other hand, physiotherapists may play a key role in the management of people who sustain SRC. They may often be the only health professional available at the sports field to potentially assess and manage acute SRC episodes and the sequelae. Research by Yorke et al. (2016) showed that American physiotherapists had very good knowledge and attitudes to SRC but were less confident in their knowledge of certain areas, such as decisions related to RTP. To date, the current knowledge, attitudes, and behaviours (KAB) of New Zealand physiotherapists to SRC is unknown, and therefore, the aim of this research was to explore this topic by way of a survey. Given the rise in SRC, this study seemed timely as the findings could help influence potential practice and policy changes within ACC to both enhance the future management of people sustaining SRC and physiotherapy's role in treating this type of injury.

METHODS

The study design was a descriptive questionnaire survey. The 35-item, multi-choice questionnaire was used to ascertain the KAB of physiotherapists based on previous studies of this nature (Murphy, 2015; Sye et al., 2006; Register-Mihalik et al., 2013). This study was part of a suite of surveys on SRC funded by ACC. Physiotherapists were one of the groups of interest, along with secondary school students and their parents, coaches, and referees. The main questions in the surveys were consistent across all groups. However, in this survey, 10 additional questions on behaviours towards SRC were included alongside the knowledge and attitude items to gain more physiotherapy-specific replies to certain behaviours. These additional questions were added following consultation between the authors and the ACC Sports Consultancy Group. Ethical approval for this study was obtained from the Auckland University of Technology Ethics Committee (reference number 16/187) and the ACC Ethics Committee.

Participants and data collection

The survey was undertaken from December 2018 to February 2019, with data collected using SurveyMonkey®, an online survey platform. The survey was initially sent to members of two special interest groups of Physiotherapy New Zealand that were deemed to have good engagement with SRC: the New Zealand Manipulative Physiotherapists Association (NZMPA; 383 members) and Sports & Exercise Physiotherapy New Zealand (SEPNZ; 796 members). A small number of physiotherapists with a special interest in SRC and who mostly worked in designated clinics were identified at a national physiotherapy conference (approximately 20) and were also invited to participate. Physiotherapy students and non-practising physiotherapists were not invited to participate. The survey link was sent from the office staff of the two special interest groups and the convenor of the meeting at the national conference. As the survey was anonymous, consent was gained when the participant agreed to undertake the survey. The participants received two email reminders over the time period that the survey was open.

Data analysis

All data were analysed descriptively using SPSS v25 (BM Corp, Chicago, Illinois, USA). Means, standard deviations, and frequency of responses are reported as appropriate for the data collected.

RESULTS

Participants

Of the approximately 1,199 potential New Zealand registered physiotherapists who could have participated, 158 started the survey, with 122 completing it (a response rate of approximately 10%).

Table 1 details the demographic characteristics of the participants who completed the survey. The mean (± standard deviation) age of the participants was 40.4 ± 11 years, with the majority being female (60%). The dominant ethnicity was New Zealand European (79%). The majority worked in sports private practice (74%) and most had been working in practice for between 10 and 30 years (69%). The main area of sports engagement was rugby union (45%).

Table 1

Demographics of the Physiotherapists who Completed the Survey (n = 122)

Demographic characteristics	Percentage *(n)*
Age (years)	40.4 ± 11.7 [a]
Gender	
Female	61.5 (75)
Male	38.5 (47)
Ethnicity	
New Zealand European	79.1 (95)
Māori	4.1 (5)
Pacific Peoples	0.8 (1)
Asian	3 (4)
Other	16 (20)
Type of practice	
Private practice/sports	74.3 (87)
Public hospital, outpatients	1.7 (2)
Public hospital, inpatients	4.2 (5)
Designated concussion clinic	5.1 (6)
Non-government provider	4.2 (5)
Other	10.6 (12)

Demographic characteristics	Percentage *(n)*
Main sport engaged with	
Rugby union	45 (49)
Rugby league	2.7 (3)
Netball	6.4 (7)
Football	14.7 (16)
Other [b]	31.2 (34)
Number of years in practice	
1-5	17.3 (21)
6-10	12.4 (15)
11-20	32.3 (39)
21-30	24.7 (30)
More than 30	13.2 (16)

Note. The data have been extracted with permission from a report commissioned by ACC (Reid et al., 2019). For responses related to ethnicity, participants could select more than one answer. Not all participants answered all other questions, meaning the number of responses for some categories was less than the total number of participants. *n* = number.

[a] Mean ± standard deviation.
[b] Other sports included hockey, athletics, mountain biking, snow sports.

Knowledge items

Table 2 contains the responses to the 20 knowledge items in the survey. Participants were able to choose more than one answer in this section of the questionnaire. Of the participants, 98% recognised concussion as an injury to the brain. With respect to symptoms, almost all the participants identified the key concussion symptoms of blurred vision (99%), confusion (99%), dizziness (98%), headache (99%), insomnia (80%), nausea (94%), and loss of consciousness (97%). They also correctly recognised who would possibly present with concussion in the short scenarios described in the questionnaire (99-100%). The responses to the question regarding who the best person is to make the RTP decision were varied. Whilst 58% said this should be a doctor, 33% stated "other". In reading the free text answers, the "other" response was a multidisciplinary team approach. Sources of information on concussion management were identified as the medical profession or other physiotherapists (88%), and ACC (84%).

Participants correctly identified that headgear was only useful in preventing cuts and grazes (85%), with 98% recognising that headgear does not prevent SRC. Most participants stated that someone who has sustained SRC should only RTP once symptoms have resolved (81%) or following medical clearance (85%). There was awareness of the need for cognitive rest and the need to avoid blue screen devices whilst recovering (Facebook 81%, texting 79%).

Attitudes towards sports-related concussion

Table 3 outlines the responses to the 10 attitude items of the survey, which examined current awareness of SRC. Participants tended to "strongly agree" and "agree" (98%) that guidelines should be followed in sports, and that concussion is often not reported (71%). When asked if physical activity should be avoided while symptoms are still present, 91% said they either "strongly agree" or "agree" with the statement. Almost all participants (99%) felt strongly that it was important to report signs and symptoms to a medical professional. In regards to SRC education, 83% said they "strongly agree" or "agree" that players are not well educated.

Behaviour items

There were 10 questions in the survey about the behaviours of sportspeople with respect to the management of SRC. Participants were asked if they had observed players with SRC being encouraged to play and, if so, by whom. Answers ranged from "very often" to "never".

With respect to the question, "Have you seen players playing on with a suspected concussion when you thought they should not have?", many participants (65%) stated this "sometimes" or "often" happened. Nearly 60% had also "sometimes" or "often" seen coaches allowing players to continue playing with suspected concussion, and 65% stated they had "often" or "sometimes" seen players putting pressure on other players to play on with concussion. A moderate percentage of participants felt that in their capacity as physiotherapists they were being asked to make decisions about RTP "very often" (14%) or "often" (34%), and that they were the key medical person to manage SRC ("often" 33%; "very often" 16%). A large percentage (89%) referred players for a medical review before players could RTP. Participants felt they should be involved in several stages of SRC management, including sideline recognition and player removal (98%), and RTP decisions (91%).

DISCUSSION

The main findings of the current survey indicate that this group of physiotherapists are very knowledgeable regarding SRC and have positive attitudes and behaviours towards the correct management of the injury in keeping with current guidelines. Participants indicated a strong desire to be more involved in sideline management and testing. The results support the potential to enable physiotherapists to be more involved in the assessment and management of SRC in addition to medical physicians to facilitate identification and management of this condition.

Knowledge of SRC

Participants demonstrated an ability to identify all key signs and symptoms after an SRC to a very high level. These results compared well with the study of American physiotherapists by Yorke et al. (2016), with more than 94% of participants correctly identifying the key symptoms of SRC.

The participants in this survey were experienced physiotherapists with nearly 40% having worked for 11-20 years in practice. This was comparable with the study by Yorke et al. (2016) where respondents had a similar number of years working in the profession.

There were good levels of awareness when participants were asked about which activities should be avoided following SRC with regards to physical exertion and the impact of using technology, such as texting and Facebook (95% and 98% respectively), which can over-stimulate a recovering brain. With respect to the questions relating to avoidance of physical exertion, 90% indicated this should be avoided while symptoms persist. However recent studies question this approach (Schneider et al., 2017). A study by Leddy et al. (2016)

Table 2
Physiotherapists' Knowledge of Concussion

Knowledge items	Percentage *(n)* of correct answers
Statements which participants considered to be a sign or symptom of concussion	
Abnormal sense of smell (false)	65.3 (80)
Abnormal sense of taste (false)	67.7 (83)
Amnesia (true)	96.6 (117)
Joint stiffness (false)	85.2 (104)
Blurred vision (true)	99.1 (120)
Black eye (false)	81.0 (99)
Bleeding from the ear (false)	65.0 (80)
Bleeding from the mouth (false)	81.2 (100)
Bleeding from the nose (false)	77.7 (95)
Confusion (true)	99.0 (120)
Fever (false)	96.7 (118)
Dizziness (true)	98.3 (119)
Headache (true)	99.0 (120)
Insomnia (true)	80.1 (97)
Loss of consciousness (true)	97.0 (117)
Nausea (true)	94.2 (114)
Numbness or tingling in the arms (false)	71.9 (88)
Skin rash (false)	97.6 (121)
Sharp burning pain in neck (false)	80.7 (98)
Weakness in neck movements (false)	75.3 (92)
Which of the following players would you say might be "concussed"?	
After a big knock/fall/head clash, the player starts making wrong decisions or actions during the game (true)	100 (121)
A teammate is complaining of headaches and blurred vision (true)	95.0 (115)
After a ruck/fall/head clash, a player is left on the ground not moving (true)	99.1 (120)
A player complains of stinging or burning in his calf muscles (false)	99.2 (121)
In the team room a couple of hours after the game a teammate complains of feeling sick with a headache (has not been drinking alcohol) (true)	98.3 (119)
If you are experiencing any signs and symptoms of concussion after a blow to the head or sudden movement of the body, you should not return to play (true)	97.5 (115)
If a player gets concussed, how long should they have to stay away for before practicing fully or playing again?	
Get straight back on	
1 week (false)	99.2 (121)
2 weeks (false)	95.9 (119)
3 weeks (false)	87.6 (107)
4 weeks (false)	97.6 (119)
When symptoms have fully resolved (true)	81.8 (99)
Only with medical clearance (true)	85.9 (104)
Depends on the rules of the sport (true)	24.7 (30)
What are the possible complications of returning to play too soon?	
No complications exist (false)	99.2 (121)
Increased symptoms (true)	94.2 (114)
Increased risk of future injury (true)	96.7 (117)
Brain damage (true)	74.3 (90)
Memory problems (true)	79.3 (96)
Joint problems (false)	93.0 (113)

Knowledge items	Percentage *(n)* of correct answers
What are the complications of multiple concussions?	
No complications exist (false)	98.5 (120)
Increased risk of further injury (true)	90.0 (109)
Paralysis (false)	86.0 (105)
Brain damage (true)	89.2 (108)
Reduced sports performance (true)	85.1 (103)
Joint problems (false)	92.6 (113)
If a player has suffered a concussion, who is the best person to decide if you were able to train/play again?	
Self	0 (0)
Coach	0 (0)
Doctor	57.8 (70)
Parents/caregiver	0 (0)
Other	33.0 (41)
Have you ever had any information about concussion from any of the following?	
Teacher/coach	12.9 (15)
Other players	6.0 (7)
Doctor/physiotherapist	88.7 (103)
School nurse	0.8 (1)
Other medical staff	31.0 (36)
Accident Compensation Corporation	84.4 (98)
Your sports club	16.3 (19)
Seen on TV	19.8 (23)
What does headgear prevent?	
Cuts and grazes (true)	85.9 (104)
Cauliflower ears (true)	85.1 (103)
Concussion (false)	91.0 (111)
Neck injury (false)	98.4 (120)
Skull fracture (false)	80.9 (99)
Unsure of answer (false/not selected)	96.7 (118)
Don't have contact with any sports that use headgear	95.7 (117)
Which activities should be avoided following concussion?	
Texting (true)	79.1 (95)
Facebook (true)	81.6 (98)
TV (false)	82.5 (99)
Long walks (true)	17.5 (21)
Jogging (true)	76.6 (92)
Gym training (true)	80.8 (97)
Schoolwork (true)	65.8 (79)
Going to sleep (false)	81.7 (100)

Note. The data have been extracted with permission from a report commissioned by ACC (Reid et al., 2019). Not all participants answered all questions, meaning the number of responses for some categories was less than the total number of participants. *n* = number.

suggests that complete rest beyond the first few days post-concussion may be detrimental to recovery and a more active approach using submaximal exercise is beneficial to recovery. As physiotherapists are skilled in exercise prescription, this is an area of potential future growth, requiring increased levels of engagement in the assessment of exercise as part of the management of SRC.

SRC symptoms were correctly identified by 95-100% of participants in each hypothetical situation presented, demonstrating a good level of practical knowledge application to identify players with SRC. These responses most likely reflect that respondents frequently deal with similar situations and recognise the key signs and symptoms of those who sustain SRC.

The RTP decision questions provided varied responses. Most participants indicated a player should RTP once the symptoms had fully resolved (81%) or when cleared by a medical professional (85%). The participants did not select the time

Table 3
Physiotherapists' Attitudes Towards Concussion [a]

Attitudes towards concussion	Responses	Percentage *(n)*
Concussion guidelines should be followed in sports	Strongly agree	85.7 (102)
	Agree	12.2 (17)
Concussions are not often reported	Strongly agree	10.9 (13)
	Agree	61.3 (73)
	Not sure	9.2 (11)
	Disagree	5.8 (7)
	Strongly disagree	12.6 (15)
Seriousness of headache and dizziness after a head knock	Mildly serious	9.0 (11)
	Moderately serious	34.7 (42)
	Very serious	39.6 (48)
	Extremely serious	16.5 (20)
It is important to avoid physical activity when signs and symptoms of concussion are present	Strongly agree	71.9 (87)
	Agree	21.5 (26)
	Not sure	2.4 (3)
	Disagree	4.1 (5)
Is it important to understand how concussions occur	Strongly agree	87.6 (106)
	Agree	12.4 (15)
Is it important to be informed of how concussion can be prevented	Strongly agree	46.2 (56)
	Agree	38.8 (47)
	Not sure	13.2 (16)
	Disagree	0.8 (1)
	Strongly disagree	0.8 (1)
It is important to understand to be informed of what to do if you have a concussion	Strongly agree	87.6 (106)
	Agree	12.4 (15)
Is it important to report signs and symptoms of concussion to a medical professional	Strongly agree	89.2 (108)
	Agree	10.7 (13)
Is it important that coaches are informed of possible concussion	Strongly agree	84.3 (102)
	Agree	15 .7 (19)
Players are not well educated about concussion	Strongly agree	30.5 (37)
	Agree	52.9 (64)
	Not sure	10 (12)
	Disagree	6.6 (8)

Note. The data have been extracted with permission from a report commissioned by ACC (Reid et al., 2019). Not all participants answered all questions, meaning the number of responses for some categories was less than the total number of participants. *n* = number.

[a] Answers scored on a scale of 1 (strongly agree) to 5 (strongly disagree).

frames set by sporting bodies as a good indicator of when it is safe to RTP, for example the three weeks stand-down required by New Zealand Rugby (New Zealand Rugby, 2018). However, 30% indicated that the RTP decisions depended on the sport. This may suggest a lack of awareness or an area of confusion as each major sporting code in New Zealand has differing RTP criteria. Just over half of participants indicated that a doctor alone was the best person to decide whether a player was ready to return to sport. It is important to note that physiotherapists can be part of the decision-making team in the return to the training phase as per the ACC guidelines (ACC, 2016), but the final decision for RTP still rests with a qualified medical practitioner. This desire to be involved with the final RTP decision is consistent with the beliefs of physiotherapists in North America (Yorke et al., 2016) who indicated they should be part of a multidisciplinary team management approach related to RTP (98% "strongly agree" or "agree"). Physiotherapists often bring other skills to concussion management, such as assessment and treatment of the cervical spine and vestibulo-ocular system. These skills have been shown to be clinically effective and could contribute well in a multidisciplinary team (Schneider et al., 2018). This is a key area of further research

Table 4
Physiotherapists' Behaviours Towards Concussion [a]

Questions	Responses	Percentage *(n)*
Have you seen players playing on with a suspected concussion when you thought they should not have?	Very often	5.0 (6)
	Often	24.5 (29)
	Sometimes	41.5 (49)
	Rarely	20.3 (24)
	Never	8.4 (10)
Have you seen coaches allowing players to play on with a suspected concussion?	Very often	5.0 (6)
	Often	11.9 (14)
	Sometimes	48.3 (57)
	Rarely	20.3(24)
	Never	14.4 (17)
Have you seen referees/umpires allowing players to play on with a suspected concussion?	Very often	1.7 (2)
	Often	6.8 (8)
	Sometimes	29.0 (34)
	Rarely	42.7 (50)
	Never	19.6 (23)
Have you seen players putting pressure on other players to play on with a suspected concussion?	Very often	5.0 (6)
	Often	24.5 (29)
	Sometimes	41.5 (49)
	Rarely	20.3 (24)
	Never	8.4 (10)
As a physiotherapist are you being called upon to make decision about return to play after concussion?	Very often	14.4 (17)
	Often	34.7 (41)
	Sometimes	25.5 (29)
	Rarely	10.1 (12)
	Never	16.1 (19)
As a physiotherapist do you feel you are in a position of being the key medical person to manage concussion?	Very often	16.4 (19)
	Often	33.3 (39)
	Sometimes	21.3 (25)
	Rarely	17.0 (20)
	Never	12.0 (14)
As a physiotherapist do you feel you are making decisions about the level and seriousness of concussion?	Very often	11.0 (13)
	Often	30.25 (36)
	Sometimes	33.6 (40)
	Rarely	13.4 (16)
	Never	11.7 (14)
How important do you think it is that a player you think has concussion is seen by a doctor on the day of injury?	Very important	36.6 (44)
	Somewhat Important	33.3 (40)
	Neutral	27.5 (33)
	Somewhat unimportant	2.5 (3)
Do you refer all players for a medical review with regards to return to sport?	Always	59.5 (69)
	Often	28.45 (33)
	Sometimes	6.0 (7)
	Rarely	4.3 (5)
	Never	1.7 (2)

Questions		Responses Percentage *(n)*
As a physiotherapist what stages of concussion management do you feel you should be part of?	Sideline recognition and removal	98.2 (110)
	Sideline testing	83.0 (93)
	Clinical assessment and evaluation	74.1 (83)
	Clinical diagnosis	48.2 (54)
	Administration of treatment modalities	78.5 (88)
	Return to play decisions	68.7 (77)
	Return to play integration	91.6 (103)

Note. The data have been extracted with permission from a report commissioned by ACC (Reid et al., 2019). Not all participants answered all questions, meaning the number of responses for some categories was less than the total number of participants. *n* = number.

[a] Answers scored on a scale of 1 (very often) to 5 (never).

given the limited capacity of medical doctors in current clinics in New Zealand with long waiting times for appointments for SRC assessments. This is also important given that many athletes have limited knowledge of RTP time frames and frequently do not report SRC (Sye et al., 2006). Data from the United States demonstrated that when college athletes have greater contact with athletic trainers (who have a mix of strength and conditioning, and physiotherapy training), they are more likely to report SRC than those without access to athletic trainers (Wallace et al., 2017). This is a useful area of further investigation given that physiotherapists are often at the forefront of sideline SRC management.

Attitudes towards concussion

Overall, physiotherapists have very positive attitudes to the management of SRC, and recognise the importance of following the guidelines (98%) and recognising symptoms. However, it was interesting to note that sports players are often not following the existing guidelines. The survey participants had strong views that symptoms are often not reported (72%), and there was also a widespread belief that players are not well educated about SRC (83% "agree" or "strongly agree"). These findings are in keeping with previous studies undertaken with secondary school rugby players (Sye et al., 2006). Given this survey was undertaken over 10 years ago, it is disappointing to see these attitudes still persist. As physiotherapists often work very closely with teams, there is definite scope to take a greater educative role in a similar fashion to Wallace et al. (2017).

Behaviour items

The survey specifically asked about player, coach, and referee behaviours when dealing with players who might have been concussed during sport, and the physiotherapists' role in current SRC management. Overall, the participants in this study reported that there was sometimes pressure for players to continue with suspected SRC, and this pressure came from coaches (48%) and players (41%). As participants in this survey have demonstrated good recognition of key signs and symptoms of SRC, physiotherapists may be in a better position to make key decisions about RTP at sporting events than the coach or player. This may also reflect the close contact physiotherapists have with sports teams consistent with Wallace et al. (2017), and their ability to observe and identify potential SRC, highlighting another opportunity for greater education around these matters.

With respect to questions about SRC decision-making, a majority of participants (66%) stated they were "sometimes" or "often" making decisions about the level and seriousness of concussion. This may reflect the more frequent contact they have had at a team and sports level where medical practitioners are less available. However, there were also high numbers of participants (88%) referring players for a medical review about RTP, indicating a desire for further medical oversight and in keeping with the ACC guidelines (ACC, 2016).

The area that drew very strong responses was the stages of management physiotherapists want to be part of. There was a strong desire to be involved in sideline recognition of concussion and player removal (98%), sideline testing (83%), and RTP integration (91%). Further development of a triage-type role for sideline physiotherapists could be useful given the limited availability of medical practitioners, particularly at lower sporting levels. In keeping with the previous comments relating to a multidisciplinary team management approach, physiotherapists can add value to the medical team, particularly in the assessment of the cervical spine and vestibulo-ocular systems (Schneider et al., 2018). A recent study by Schneider et al. (2018) demonstrated that those players with SRC who received a multimodal approach to treatment returned to play sooner than those in the control group. In this instance, the multimodal treatment included cervico-vestibular rehabilitation and graded exertion via treadmill training.

It is interesting to note that, as included in a National Collegiate Athletic Association consensus document (National Collegiate Athletic Association Sport Science Institute, 2017), athletic trainers in the United States can now legally sign a player for RTP as well as a medical professional (Robinson, 2016). Given that athletic trainers have different training to physiotherapists, this is an area requiring review. In New Zealand, we do not have athletic trainers per se, so physiotherapists are the next most likely profession to take on this role. It must be noted that medical practitioners have the skills to assess other more difficult aspects of SRC, especially when a player has not spontaneously recovered. Therefore, players who are suspected of being concussed should still be referred for a physician medical review.

Limitations

There are a number of limitations in this study. Firstly, it is noted that those physiotherapists with good SRC knowledge and attitudes may have been more likely to participate in this study. Secondly, only certain physiotherapy groups were targeted to answer the survey. A wider distribution of all registered physiotherapists and, potentially, physiotherapy students may have yielded different results. Thirdly, the survey was mostly taken from a study in the United States and was not altered greatly for the New Zealand setting. Fourthly, the survey was used across a range of populations and, for consistency, was not modified to each population. Fifthly, the questionnaire was developed before the latest concussion statement was released, and so some questions may have been dated. Finally, due to the low response rate, the findings are not necessarily generalisable to the wider physiotherapy profession.

CONCLUSION

The findings of this study suggest physiotherapists are very knowledgeable regarding SRC and have positive attitudes towards correct management of this injury. They recognise the key signs and symptoms, and refer regularly to medical practitioners. Participants indicated a desire to be more involved in sideline management and testing of SRC, and would like to see a more multidisciplinary approach to RTP decision-making. Further work should look at this area as well as the potential for physiotherapists to make decisions around RTP alongside medical practitioners, as is currently possible in other countries.

KEY POINTS

1. Physiotherapists have good KAB with respect to SRC.
2. Physiotherapists can take a greater role in the education of players to improve symptom recognition and management of SRC.
3. Discussions are recommended with the variety of practitioners involved with SRC athletes without prolonged concussive symptoms, with respect to improving strategies to manage RTP in a more multidisciplinary manner.
4. It would be timely for the processes in New Zealand be reviewed to allow physiotherapists to be more involved in the initial assessment and ongoing management of SRC.

DISCLOSURES

The study was funded by ACC. ACC provided permission for the data to be represented from reports commissioned as part of a series of studies funded to explore KAB to SRC across a range of populations. There are no other conflicts of interest which may be perceived to interfere with or bias this study.

PERMISSIONS

Ethical approval was obtained from the Auckland University of Technology Ethics Committee (reference number 16/187) and the ACC Ethics Committee.

ACKNOWLEDGEMENTS

We thank all of the participants for giving their time to complete the surveys.

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