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Author:
Poulos, Roslyn; Donaldson, Alex

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Original research

Is sports safety policy being translated into practice: What can be learnt from the Australian Rugby Union Mayday Procedure?

Roslyn G Poulos[1]

Alex Donaldson[2]

[1]School of Public Health and Community Medicine, University of New South Wales

[2]Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Monash Injury Research Institute (MIRI), Monash University.

Dr Roslyn G. Poulos (corresponding author)

School of Public Health and Community Medicine

The University of New South Wales

Sydney NSW 2052

Australia

Email: r.poulos@unsw.edu.au

Phone: +61 2 93852519

Fax: +61 2 9313 6185

Dr Alex Donaldson

Australian Centre for Research into Injury in Sport and its Prevention (ACRISP), Monash Injury Research Institute (MIRI), Monash University, Clayton VIC 3000, Australia.

Key words: policy, translation, neck injury, accident prevention

Abstract

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Aim

To investigate the level of translation of the Australian Rugby Union "Mayday" safety procedure into practice among community rugby union coaches in New South Wales (Australia).

Methods

All registered coaches of senior community rugby union teams in five zones/associations in the north eastern region of the state were invited to complete a short online questionnaire at the end of the 2010 rugby season. The questionnaire was designed around the five RE-AIM dimensions and assessed: Reach, *perceived* Effectiveness, Adoption, Implementation, and Maintenance of the Mayday procedure.

Results

Seventy (39%) coaches participated. There was a high level of awareness of the Mayday procedure, and most coaches believed it was effective in preventing injuries. The majority reported training their players in the procedure, although training was generally infrequent. Coaches were confident that their own players could implement the procedure appropriately if required to do so, but less confident that other teams or referees could do so. Barriers to providing training included: not enough players at training; players not taking training seriously; and technical difficulties (e.g. verbalisation of instructions for physical tasks).

Conclusion

The findings suggest that the translation of the Mayday 'policy' could be improved by building individual coach, and club or zone organisational capacity by: ensuring coaches have the resources and skills in 'how' to train their players to complement their existing knowledge on 'what' to train them; setting expectations that encourage coaches to provide regular training for players; and regular monitoring of player competency to perform the procedure appropriately.

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Introduction

It has been widely acknowledged that even the most efficacious intervention will fail to have a public health impact in the absence of widespread and sustained implementation. [1 2] Consequently, there has been considerable recent interest in understanding how to facilitate the translation of sports injury prevention interventions—including macro- and micro-level policies—into sustained changes in practice in the real-world settings of community sport. [3 4 5] Future advances in sports injury prevention will require an understanding of the implementation context including intervention uptake.[3] The RE-AIM health promotion evaluation framework [1] has been proposed as a useful guide to inform injury prevention "implementation" research efforts in community sport. [2]

The prevention of spinal injuries has been a priority for rugby union administrators and researchers for many years [6] because of the potential catastrophic consequences of such injuries [7] and the recognition that parental safety concerns are a barrier to children's participation in the game.[8] Spinal injury prevention efforts, including the introduction of the four stage 'crouch-touch-pause-engage' scrum engagement sequence, have contributed to reductions in the number of scrum-engagement spinal injuries in rugby union. [9 10]

In addition to modifying the scrum engagement process, the Australian Rugby Union (ARU) also introduced the "Mayday" procedure as a "*a safety technique put into operation when a player believes that he/she is in a potentially dangerous position in a scrum*." [11] The Mayday procedure was introduced because it was considered necessary to have a recognised call Australia-wide which would lead to players and referees having an appropriate and standardised response when a potentially dangerous situation occurred in a scrum. [12] The Mayday procedure is now included in the ARU medical and safety recommendations for players, coaches, administrators & match officials. [11] It is

also a compulsory part of the ARU occupational health and safety program (SmartRugby) for every coach and referee participating in Australian rugby where there is a tackling component. [13] All coaches of such teams are required to be SmartRugby certified, with re-certification being required every two years.

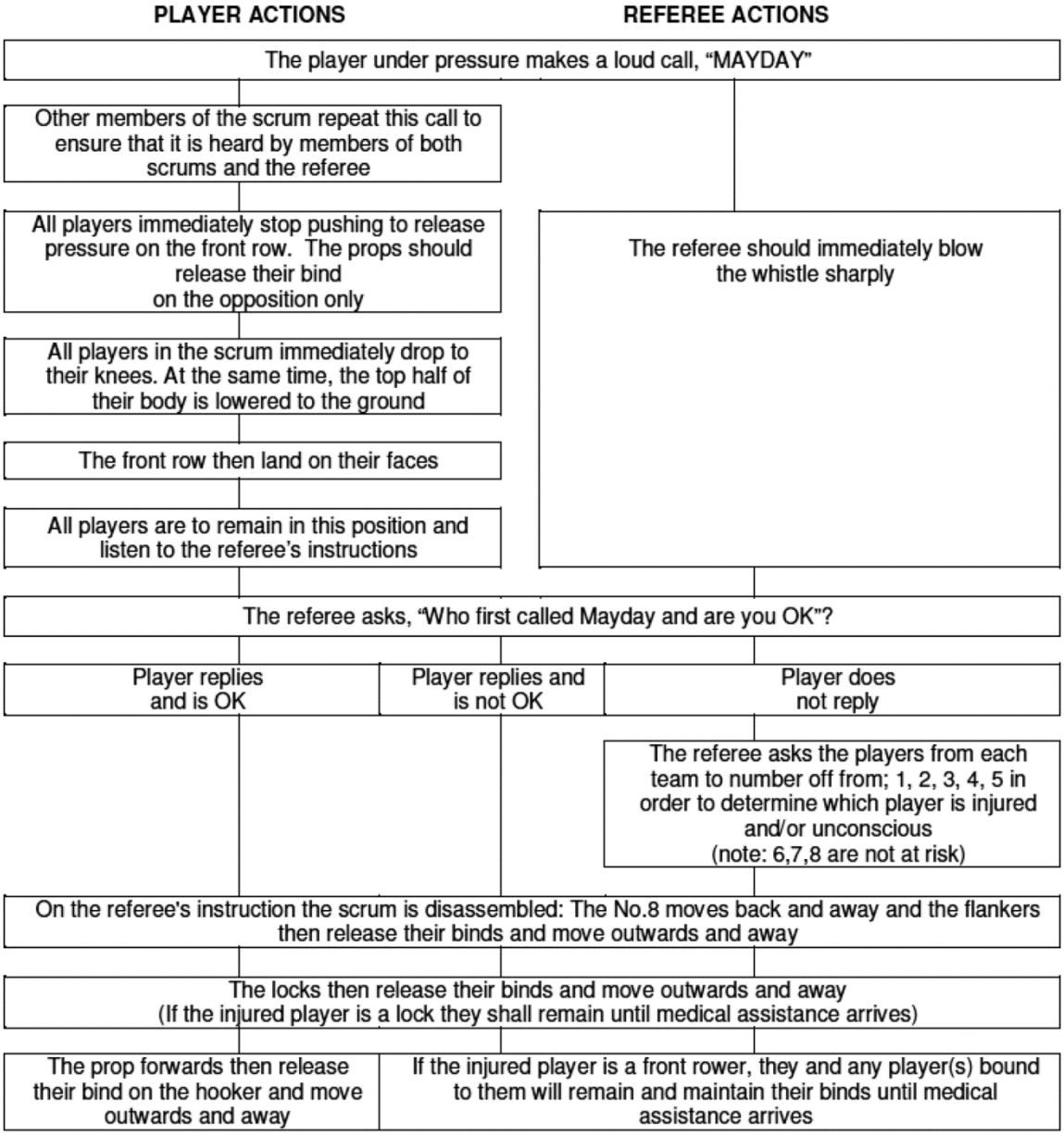


Figure 1: Description of the process to be followed by players and the referee when the "MAYDAY" call is heard [11]. Reproduced with permission.

The Mayday procedure provides for quick release of pressure in a 'standing' scrum and a controlled 'collapsing and unpacking' of the scrum to avoid flexion and rotation of the neck of the potentially injured participant. It was developed in consultation with medical experts, exercise physiologists and

rugby coaching development personnel, informed by an understanding of the forces and biomechanics of scrummaging [14], the mechanisms of spinal injury and anecdotal accounts from injured players or players who had felt at risk during scrummaging. The Mayday procedure is described in Figure 1.

Although the effectiveness of the Mayday procedure has not been formally evaluated, it has the potential to prevent or reduce the severity of neck and spinal injuries among community rugby players. However, there are well recognised difficulties in ensuring the dissemination and uptake of centrally developed safety policy in community sport, [15] [16] [17] [18] and it is likely that opportunities exist to improve the reach, adoption, implementation and maintenance of the Mayday procedure among community rugby coaches. [19]

The purpose of this study was to generate an understanding of the current level of translation of the Mayday procedure among community rugby union coaches in New South Wales (NSW, Australia) based on the five constructs of the RE-AIM framework. [1] The information gathered will be used to underpin the development of a theory-informed diffusion plan for the Mayday procedure among community rugby union coaches in the 2011 season.

Methods

All (n=179) ARU registered coaches of senior community rugby union teams (including colts, U19s and U17s) in five zones/associations in north eastern region of New South Wales (NSW), were invited via email to complete a 10 minute online questionnaire at the end of the 2010 rugby season. To encourage participation, the invitation came from the ARU development officer responsible for supporting and liaising with community clubs and coaches in the region. All responses were submitted online to the authors to ensure anonymity. All potential participants were sent an original email invitation plus two email reminders, followed by a phone call or text message. They were also given the opportunity to enter a draw for an individual and a club rugby-related prize to encourage participation.

The questionnaire was designed around the five RE-AIM dimensions and included items to assess: reach (three items); *perceived* effectiveness (four items); adoption (four items), implementation (eight items) and maintenance (two items) of the Mayday procedure by community rugby union coaches. The original RE-AIM construct as used by Glasgow et al [1] was modified to become *perceived* effectiveness. The rationale behind this modification was that, according to diffusion of innovations theory,[20] the rate of translation, in contrast to the public health impact, of an innovation depends more on the end users' subjective perception of its effectiveness than it does on the objective evidence of the innovation's efficacy. The questionnaire was piloted with a small sample of community rugby union coaches and minor changes were made before administration with the study sample.

Data analysis was undertaken using SPSS version 17. Descriptive analysis of numeric data included frequencies, means (standard deviation (SD)), and medians. Cross tabulations (two-by-two) were undertaken using the Fisher exact probability test for small expected counts. Six key criteria of the procedure (aligned with the first six steps of players as shown in Figure 1) were used to assess coaches' free-text descriptions of the key points of the Mayday procedure. Responses to this question were independently assessed by four people (both authors and two ARU representatives) against these criteria and any rating discrepancies were discussed and agreed upon. Other qualitative data was analysed thematically (by the first author).

The Medical and Community Human Research Ethics Advisory Panel at the University of New South Wales approved the study.

Results

Seventy-seven coaches attempted the questionnaire but data was consistently missing for seven of these, giving a maximum response rate of 39%. The number of responses received ("n") varied between individual questions so the responses for each question are indicated in the text as necessary.

On average, coaches were 45 years old (SD=11; n=70), had 12 years of coaching experience (SD=10; n=69,) and coached 39 players, in 2010 (SD=22; n=67).

Reach: Awareness and knowledge of the Mayday procedure

Awareness and exposure to training

All coaches (n=67) indicated that they were aware of the Mayday procedure and almost all (94%) indicated they had attended Mayday procedure training (n=64).

Information on how they became aware (n=64)

Coaches reported becoming aware of the Mayday procedure through ARU coaching courses (91%); ARU coaching resources (38%); other coaches (25%); online newsletters and websites (8%); and their experience as players (9%).

Knowledge of the six key criteria of the Mayday Procedure

Coaches were asked to describe the Mayday procedure in their own words. An example of a description that was considered to include all key criteria was *"Player calls mayday* (Criteria 1), *other players repeat* (Criteria 2) *and stop pushing* (Criteria 3), *ref blows whistle, props release outside bind, all players drop to knees* (Criteria 4) *lower top of body to the ground, front row do a face plant* (Criteria 5) *and ref calls players out of scrum from the 8 after he finds out who called mayday* (Criteria 6)*."* An example not including any of the key criteria was *"Stay calm. Get help ASAP. Remove all players from the injured player if possible.*" Table 1 indicates the number of responses identifying the key criteria for the Mayday procedure. (n=64).

Criteria	Identified count (%)
The player under pressure makes a loud call, "MAYDAY"	50 (78%)
Other members of the scrum repeat Mayday call	7 (11%)
All players immediately stop pushing to release pressure on the front row	33 (52%)
All players in the scrum immediately drop to their knees.	23 (36%)
The front row then land on their faces	15 (23%)
All players remain in this position and listen to the referee's instructions	36 (56%)

Table 1: Number of coaches identifying each Mayday criteria (n=64).

Perceived Effectiveness

The majority of coaches (72%) rated the Mayday procedure as completely or very effective (rating of four or five out of five) in preventing injuries (n=64). One third (33%) rated the Mayday procedure as completely or very effective in increasing participation (n=63), while about one quarter rated it as completely or very effective in increasing performance (24%) or in encouraging players to play in the front row (27%). See Figure 2.

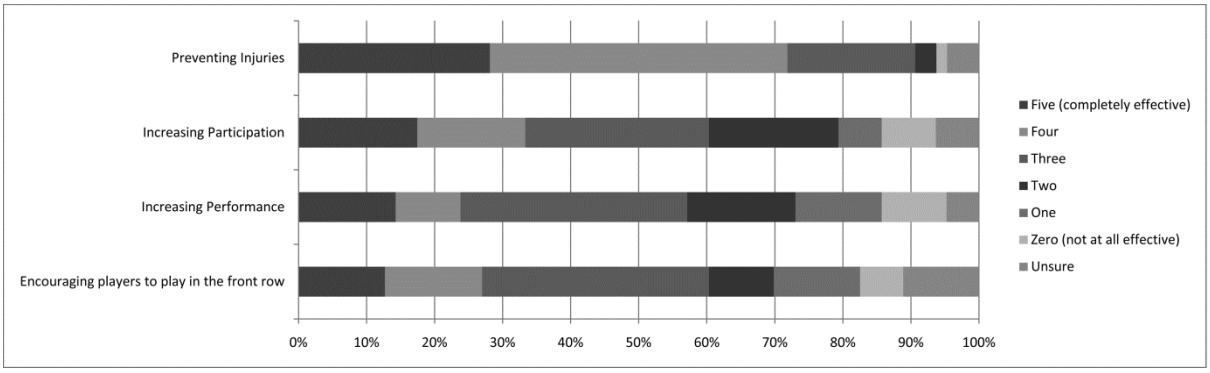


Figure 2: Coach perceived effectiveness of the Mayday procedure.

When asked to identify other benefits of the Mayday procedure coaches listed: alleviating the concerns of parents or partners of players, or stopping players being steered away from the sport (ten coaches); increasing player confidence by showing that something is being done about protecting them (eight coaches); demonstrating ARU commitment to player safety (eight coaches); increasing

the general awareness of safety among players (seven coaches); and developing a standard that applies across all levels of the sport (three coaches).

Adoption

Provision of training to players

Most (92%) coaches reported providing training for their players in the Mayday procedure during the 2010 season (n=64). When given the opportunity to identify barriers to training, coaches highlighted: players not taking training seriously (11 coaches); not enough players at training (seven coaches); technical difficulties (e.g. verbalisation of instructions for physical tasks, coach confidence in teaching full procedure, coach not a forward player, practical ways to practice) (seven coaches); and lack of time (three coaches). When asked what helped them to provide training in the Mayday procedure, identified facilitators included specific ARU courses or resources (39 coaches); assistance of experienced coaches or front row players (eight coaches), personal experience as a player (two coaches); and having had practical experience of implementing the procedure (one coach).

Using ARU resources

Seventy percent of coaches reported reading the ARU information or watching the ARU DVD about the Mayday procedure (n=64).

Club and Zone policy

Sixty percent of coaches reported that their club had a policy (18% written and 42% unwritten) that required them to train their players in the Mayday procedure (n=62). One third (22% written and 10% unwritten) reported that there was such a policy at the zone or association level (n=58).

Implementation

Provision of training for players on the Mayday procedure

Although most (92%) coaches reported training their players in the Mayday procedure in the 2010 season (n=64), such training was infrequent, with 75% and 82% of coaches including training less

frequently than every fifth training session during the 2010 pre-season (n=61) or regular season (n=61), respectively. Coaches who trained their players frequently (at least every fifth training session) were more likely to report having a policy (either written or unwritten) at the club or zone/association than those coaches who trained their players infrequently (p values for pre-season training by club policy, p= 0.074 or zone/association policy, p= 0.003; for regular season training by club policy, p= 0.038 or zone/association, p=0.012).

Training quality and confidence

Coaches rated how well they had trained their players in 2010 in the Mayday procedure on a scale of 0 (very poorly) to 5 (very well). Seventy-four percent rated the quality of the Mayday procedure training they provided on the upper half of this scale (scores of 3 (18%), 4 (40%) or 5 (16%)) (n=62). On a scale of 0 (not at all confident) to 5 (very confident), the majority (92%) rated their confidence in their players' ability to implement the Mayday procedure appropriately during a game if required to do so (n=62) on the upper half of the scale (scores of 3 (21%), 4 (44%) or 5 (27%)).

Coaches who trained their players infrequently (less than every fifth training session) were less likely to feel they had trained their players well (scores of 3, 4 or 5) than coaches who trained their players more frequently (for pre-season training, p=0.006; for regular season training, p=0.052). However, there was no statistically significant association between training frequency and the degree of confidence that coaches had in their players' ability to implement the Mayday procedure appropriately during a game if required to do so.

About half (52%) of the coaches rated their confidence in the players from other teams being able to implement the Mayday procedure appropriately as being in the upper half of the scale (scores of 3 (18%), 4 (29%) or 5 (5%)); more coaches (73%) were confident that the referee in charge of their games would be able to implement the Mayday procedure appropriately (scores of 3 (11%), 4 (27%) or 5 (34%)). Refer to Figure 3.

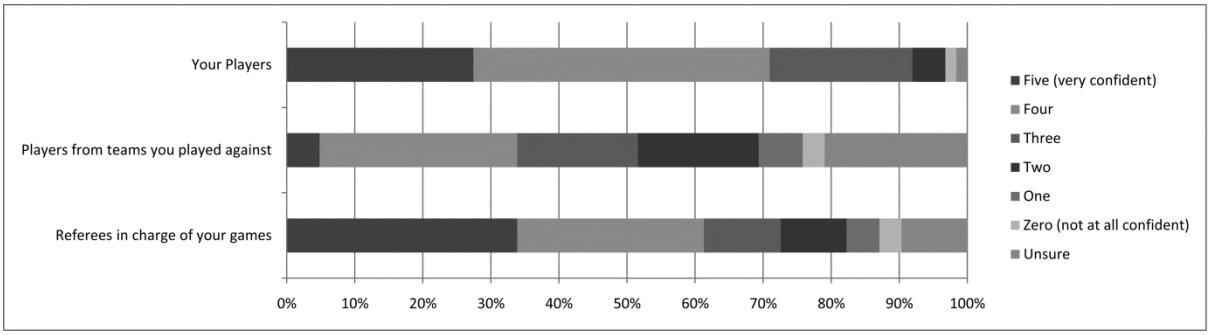


Figure 3: Coach confidence in the ability of their players, opposition players and referees to implement the Mayday procedure appropriately if required to do so (n=62).

Maintenance

89% percent of coaches indicated an intention to train their players in the Mayday procedure during the 2011 pre-season; and 94% during the 2011 regular season (n=62).

Discussion

The findings of this study show that coaches of senior community rugby union teams are aware of the Mayday procedure, mainly through ARU coach education training (particularly the mandatory SmartRugby course) and ARU-related resources. Interestingly, other coaches were also identified as effective conduits of information, suggesting that future injury prevention intervention dissemination efforts among this target group could be enhanced by actively identifying and targeting dissemination efforts at community coach opinion leaders with strong interpersonal communication networks. [20]

The majority of coaches reported believing that the Mayday procedure effectively prevented injuries. This suggests that the ARU has successfully addressed 'expectation'—anticipatory outcomes of a behaviour—as a potential barrier to behaviour change. [21] Many coaches also reported believing that the Mayday procedure was at least somewhat effective in increasing player recruitment and retention (particularly in encouraging players to play in the front row), and performance. Some coaches in this study also perceived that the Mayday procedure provided a standardised response to a potentially

serious injury situation that everyone understands, and improved the image of the sport among parents, partners and players. These additional perceived benefits could be packaged as 'relative advantages' of the Mayday procedure to further enhance intervention diffusion. [20]

Apart from their knowledge that "Mayday" should be called by the injured player, community coaches generally had relatively poor written recall of the other key criteria involved in the Mayday procedure. The steps least well identified were the requirements for: all players in the scrum to repeat the Mayday call; all players in the scrum to drop to their knees, and for the front row to land on their faces. As these steps are important in the Mayday procedure (ensuring quick and clear communication of the potential for serious injury; effective depowering of the scrum; and a controlled two-phase bringing to ground and unpacking of the scrum to minimise opportunities for rotation, flexion or extension of the potentially injured player's neck), a relatively conservative approach was taken when interpreting the coaches' descriptions of the Mayday procedure. For example expressions such as "*players are to remain where they are"*, "*all players go to ground*" and "*players are peeled out of the scrum from the number 8 down to the number 1*" were not considered to be specific or detailed enough to meet Criteria 3, 4 or 6 respectively. Therefore, the findings derived from analysis of these responses may be an under-estimate of the coaches' actual knowledge. Further, coaches' knowledge of Criteria 1 may also have been underestimated because some may have assumed that the Mayday call had been made and it was therefore unnecessary to include Criteria 1 in their description. Nonetheless, it may be beneficial for future coach training to focus more on the steps that are currently poorly understood by coaches to enhance the fidelity with which Mayday procedure training is implemented.

The social cognitive theory [21] maintains that for someone to perform a behaviour they have to both know what to do (knowledge) and be able to do it (skill). One of the barriers identified by coaches to adopting the Mayday procedure training was their perceived lack of technical and player motivation skills (e.g., not knowing how to deliver the training to small numbers of players or how to get players interested and willing to participate in the training). This suggests that greater adoption of training

might be facilitated by focusing more of the mandatory coach training on "how" to coach the Mayday procedure. Particular emphasis should be on practical drills or activities that can be performed with less than a full complement of players (e.g., one vs. one and two vs. two drills).

Applying an ecological lens, [2 22 23], the findings suggest other opportunities to influence coaches' decisions to adopt Mayday procedure training. For example, the development of club and zone level policies that require coaches to train players in the procedure may be influential. These should be clear and unambiguous, well communicated and incorporate a recommended frequency of training which should be set by the ARU. Also, given that the successful execution of the Mayday procedure depends upon the referee and players from both teams competently performing their role in the procedure, activities that promote coach confidence that these groups could implement the Mayday procedure if required, may promote adoption.

The findings present some challenges for those seeking to improve community coach implementation of Mayday procedure training. Coaches were generally confident that they had trained their players well, and that their players could implement the Mayday procedure appropriately, despite the fact that most coaches reported not regularly training their players in the procedure. Strategies to address this situation might include empowering referees to require teams to regularly demonstrate their competency in the procedure before participating in games; creating the expectation[21] that coaches will provide regular training by incorporating this into zone and club policies, coaching accreditation criteria and position descriptions; and highlighting the duty of care that coaches have to ensure that all players are competent in the procedure.

The fact that nearly all coaches indicated that they would be providing training in the Mayday procedure to players in the 2011 suggests that they consider this as part of their 'core business' and that the ARU has successfully institutionalised [24] the Mayday procedure into the culture of their organisation and the community-level of their sport within Australia. This can probably be attributed to the inclusion of the Mayday procedure in the curriculum of the mandatory training for all

community rugby union coaches, coach education resources distributed to all coaches, and the ARU Medical and Safety Recommendations for clubs and schools.

There are a number of limitations of this study which should be noted. The study response rate was low, raising the potential for response bias which could either under or overestimate the variables of interest. This was despite an introductory email from the ARU, more than one follow-up reminder using two different communication mediums, and a small inducement to participate [25].Low response rates in research with community sports coaches are not uncommon [26 27 28] and may be an indication of the time constraints facing volunteer coaches in community sport, the timing of survey administration (in this case, several weeks after the community rugby season had concluded and coaches were no longer actively involved in competitive rugby matches or training), the method of survey (in this case, requiring the use of an on-line survey tool), or a general lack of interest in injury prevention activities. However, the email of invitation did not detail the intervention of interest, so non-response was not associated with the Mayday procedure specifically, although the small number of participants with missing data may be those who were unable to answer questions about the procedure. Data are self-report, and may not represent actual behaviour or intentions. We attempted to minimise the likelihood of "socially desirable" responses by guaranteeing anonymity for participants, and assuring them that the ARU would receive only aggregated data.

Conclusion

These findings suggest that if the ARU wishes to improve the translation of their Mayday 'policy' into regular, high quality and sustained implementation at the community club level, then they should consider building individual coach, and club or zone/association organisational capacity in the following ways: ensure community coaches have the skills, resources and abilities in 'how' to train their players in the Mayday procedure to complement the knowledge on 'what' to train them; and create an environment, possibly through policy development and other creative ways, of setting

expectations that encourage coaches to provide regular training for their players in the procedure and to regularly monitor their players competency to perform the procedure appropriately.

The application of the RE-AIM health promotion evaluation framework proved to be a useful guide for identifying opportunities to promote the translation of safety policy in this case study. We believe use of the framework could benefit other policy to practice initiatives within the wider sports sector.

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References

1. Glasgow R, Vogt T, Boles S. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Health* 1999;89:1322-27.

2. Finch C, Donaldson A. A sports setting matrix for understanding the implementation context for community sport. *Br J Sports Med* 2010;44(13):973-8.

3. Finch C. A new framework for research leading to sports injury prevention. *J Sci Med Sport* 2006;9(1-2):3-9.

4. Poulos R, Donaldson A, Finch C. Towards evidence informed sports safety policy for NSW, Australia: assessing the readiness of the sector. *Inj Prev* 2010;16:127-31.

5. Timpka T, Finch C, Goulet C, et al. Meeting the global demand of sports safety: the intersection of science and policy in sports safety. *Sports Medicine* 2008;38(10):795-805.

6. Silver JR. Injuries of the spine sustained in rugby union. *BMJ* 1984;288:37-43.

7. Scher AT. Rugby injuries to the cervical spine and spinal cord: a 10-year review. *Clin Sports Med* 1998;17(1):195-207.

8. Boufous S, Finch CF, Bauman A. Parental safety concerns-a barrier to sport and physical activity in children? *Aust N Z J Public Health* 2004;28(5):482-6.

9. Haylen P. Spinal injuries in rugby union, 1970-2003: lessons and responsibilities. *Med J Aust* 2004;181(1):48-51.

10. Gianotti S, Hume PA, Hopkins *WG*, et al. Interim evaluation of the effect of a new scrum law on neck and back injuries in rugby union *Br J Sports Med* 2008;42:427-30.

11. Australian Rugby Union. Australian rugby union medical and safety recommendations for Players, Coaches, Administrators & Match Officials, 2010.

12. Australian Rugby Union. Australian Rugby Union Safety Directive for Players, Coaches, Administrators & Match Officials, 2007.

13. Australian Rugby Union. ARU SmartRugby Confidence in Contact: A guide to the 2010 SmartRugby program and the equivalent for referees: Australian Rugby Union Ltd, 2010.

14. Milburn PD. Biomechanics of rugby union scrummaging. *Sports Med* 1993;16(3):168-79.

15. Braham R, Finch C, McIntosh A, et al. Community football players' attitudes towards protective equipment-a pre-season measure. *Br J Sports Med* 2004;38(4):426-30.

16. Skille E. Understanding sport clubs as sport policy implementers: A theoretical framework for the analysis of the implementation of central sport policy through local and voluntary sport organizations. *Int Rev Sociol Sport* 2008;43:181-200.

17. Twomey D, Finch C, Roediger E, et al. Preventing lower limb injuries: Is the latest evidence being translated into the football field? *J Sci Med Sport* 2009;12(4):452-56.

18. Saunders N, Otago L, Romiti M, et al. Coaches' perspectives on implementing an evidence-informed injury prevention programme in junior community netball. *Br J Sports Med* 2010;44:1128-32.

19. Poulos R, Donaldson A, Elkington J, et al. Understanding the barriers and bridges to the development and implementation of evidence-informed sports injury prevention policy in NSW. Project report for the NSW Sporting Injuries Committee, 2008.

20. Rogers E. *Diffusion of Innovations*. New York: Free Press, 2003.

21. Baranowski T, Perry C, Parcel G, editors. *How individuals, environments, and health behaviour interact: Social Cognitive Theory*. San Francisco: Jossey-Bass, 2002.

22. McLeroy K, Bibeau D, Steckler A, et al. An ecological perspective on health promotion programs. *Health Educ Q* 1988;15(4):351-77.

23. Emery C, Hagel B, Morrongiello B. Injury prevention in child and adolescent sport: whose responsibility is it? *Clin J Sports Med* 2006;16(6):514-21.

24. Steckler A, Goodman R, Kegler M, editors. *Mobilizing organizations for health enhancement: Theories of organizational change.* San Francisco: Jossey-Bass, 2002.

25. Gratton C, Jone I. *Research methods for sports studies*. New York: Routledge, 2004.

26. Whitaker J, Cunningham A, Selfe J. A study to determine the extent of first aid qualifications and knowledge among team officials in non-elite youth sport in England. *The Internet Journal of Emergency Medicine* 2007; 3(2). http://www.ispub.com/journal/the-internet-journal-of-emergency-medicine/volume-3-number-2/a-study-to-determine-the-extent-of-first-aid-qualifications-and-knowledge-among-team-officials-in-non-elite-youth-sport-in-england.html

27. Gianotti S, Hume P, Tunstall H. Efficacy of injury prevention related coach education within netball and soccer. *J Sci Med Sport* 2010;13(1):32-5.

28. Sawyer R, Hamdallah M, White D, et al. High school coaches' assessments, intentions to use, and use of a concussion prevention toolkit: Centers for Disease Control and Prevention's heads up: concussion in high school sports. *Health Promot Pract* 2010;11(1):34-43.