Injury Epidemiology and Prevention in Youth Rugby Union

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What did I do?

This mixed-methods thesis assessed the implementation and effectiveness of the *Activate injury prevention exercise programme* in English schoolboy rugby union. *Activate* is a rugby-specific warm-up designed to be used three times per week prior to training and games[1]. Initially, I conducted a systematic review investigating the implementation of rugby injury prevention strategies[2] to inform and develop the following research questions (figure 1):

- What are the knowledge, perceptions and awareness of schoolboy rugby coaches towards injury prevention, risk and *Activate*?
- Does attending an *Activate* workshops change these perceptions and affect *Activate* implementation?
- What barriers and facilitators are there to coaches implementing *Activate*?
- Is *Activate* effective in reducing injury risk in schoolboy rugby?

I co-authored the Youth Rugby Injury Surveillance and Prevention Project, to further understand the risk, types and mechanisms of injury in schoolboy rugby, providing epidemiological data to support the thesis[3].

Why did I do it?

Rugby Union has come under intense scrutiny due to the associated injury risk and the prevalence of injuries, such as concussion[3]. Various preventative strategies have been developed with one breakthrough being *Activate*. In 2015, *Activate* efficacy was assessed in a randomised controlled trial, reporting a 72% reduction in match injury incidence and 59% lower match concussion incidence for those using the programme three times per week[1]. In 2017, *Activate* was endorsed and disseminated by World Rugby (international governing body) and the Rugby Football Union (RFU; English governing body). However, efficacious interventions often do not have their intended effect in the applied-setting[4]. As such, there was a need to assess if and how *Activate* was being implemented in the ‘real-world’ and the effectiveness to reduce injury risk.

How did I do it?

I conducted a systematic review investigating the implementation of rugby injury prevention strategies to inform subsequent studies[2]. Articles were evaluated against the RE-AIM (reach, effectiveness, adoption, implementation, maintenance) framework, evaluating the reporting and assessment of implementation determinants.

Next, I invited coaches and players to complete a baseline survey investigating their perceptions towards injury risk, awareness of *Activate* and current injury prevention behaviours[5].

The RFU developed free *Activate* coach workshops as part of their dissemination strategy. The workshops were based upon constructs of the Health Action Process Approach (HAPA) model, specifically targeting improving self-efficacy. However, there was a need to assess the workshop’s effect on attendees’ perceptions and *Activate* behaviour[6].

A qualitative approach, through semi-structured interviews, was used to gain feedback from coaches exploring the barriers and facilitators to using *Activate*[7], with constructs of the HAPA model guiding interview themes and questions.

Finally, *Activate* effectiveness was assessed in a pragmatic study, assessing whether team weekly adherence and individual player exposure was associated with lower injury risk[8].
What did I find?

The systematic review highlighted the focus of rugby injury prevention research on intervention efficacy or effectiveness, with minimal reporting or assessment of intervention adoption, implementation, and maintenance[2].

Poor Activate implementation was highlighted through baseline surveys, with only 13% of players aware of Activate[5]. Coaches reported good Activate adoption during the season (76%), suggesting coaches made the decision whether to use Activate. Coaches generally did not implement Activate as intended, with a median adherence of two sessions per week and shortening the programme’s duration.

Attending a pre-season Activate workshop did not change coaches’ perceptions towards injury risk or prevention[6]. However, attendees had significantly greater Activate adoption and adherence during the season than non-attendees, associated with improvements in self-efficacy, supporting the use of a workshop to target behaviour change.

When interviewed, coaches reported positive perceptions towards Activate. However, none implemented Activate as designed, often selecting only a few exercises or gamifying the programme[7]. Some coaches adapted Activate to make it suitable for multiple sports, reflective of the school sport context, whilst others asked players to deliver Activate themselves, despite players being largely unaware of the programme.

Teams adopting Activate had a reduction in match and training injury incidence (23% and 59% respectively)[8]. A positive dose-response relationship existed between adherence and injury incidence, with the greatest effect found when completing Activate three times per week (match incidence 21.7/1000h) versus one-two times (28.8/1000h) or less than once per week (31.3/1000h).

What is the most important clinical impact / practical application?

This body of work showed Activate is effective at reducing injury risk in schoolboy rugby union, especially when used thrice weekly, and the programme should be further advocated for use in this population. A quarter of coaches were unaware of Activate and consideration should be given to maximising awareness. Workshops significantly improved coach behaviour, but are no longer being offered by the RFU. Making workshops available and accessible (online or pre-recorded) would likely aid implementation, although removal of the practical element may hinder self-efficacy development. Coaches heavily adapted the programme to improve player buy-in, but despite this Activate was effective at reducing injury risk.

References


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**Figure Legend**

**Figure 1.** Flow chart outlining thesis studies and their relation to each other [reference].

**NOTE:** HAPA: Health Action Process Approach Model. RE-AIM: Reach, Effectiveness, Adoption, Implementation, Maintenance Framework.