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The efficacy of a movement control exercise programme to reduce injuries in youth rugby

Submission date
25/03/2015

Recruitment status
No longer recruiting

Registration date
10/04/2015

Overall study status
Completed

Last Edited
10/05/2021

Condition category
Injury, Occupational Diseases, Poisoning

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol
Background and study aims
Injuries to youth rugby players have become a prominent public health concern, raising the importance of developing and implementing appropriate injury prevention strategies. There is growing evidence from other youth sports that supports the use of structured pre-activity exercise routines to reduce the risk of injury. However, studies have yet to investigate the effect of such interventions in youth contact sport populations such as rugby union. The aim of this study is to determine whether the regular use of a specific movement control exercise programme by youth rugby players before training and matches is effective in reducing injury risk from participation. The study will also establish the influence of coach attitudes on the uptake of players to such programmes.

Who can participate?
The study will take place within the independent secondary school system in England. School rugby coaches will be the focus of the intervention as they will be trained to deliver the exercise programme. The effects of the exercise programme will be measured in male youth players aged 14-18 in school rugby programmes over the 2015-16 school winter term by collecting injury risk data.

What does the study involve?
Schools will be randomly allocated to either a pre-session movement control exercise programme or a sham exercise programme, both of which will be coach-delivered. Ongoing monitoring of match and training exposure, use of the exercise programmes, and injury occurrence will allow the effect of the exercise programme to be established. Questionnaires will evaluate coach attitudes, knowledge, and behaviours towards injury prevention both before and after the intervention period.

What are the possible benefits and risks of participating?
Staff in the school rugby programmes will be trained and given resources to deliver pre-activity exercises in their training and pre-match sessions which represent current best practice. These exercises are low to moderate intensity and focus on correct execution of the movement pattern so should present no additional risk to players over and above their normal participation in the sport.

Where is the study run from?
Sport, Health & Exercise Science, Department for Health, University of Bath (UK).

When is the study starting and how long is it expected to run for?
From March 2015 to December 2015.

Who is funding the study?
Rugby Football Union and University of Bath (UK).

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
N/A

Study information

Scientific Title
The efficacy of a movement control exercise programme to reduce injuries in youth rugby: a cluster randomised controlled trial

Acronym
RFU-Activate

Study objectives

The intended aims of this study are to assess the efficacy of a pre-activity movement control exercise intervention to reduce the incidence and severity of rugby-related injuries, as well as to assess the influence of coach attitudes on compliance to the exercise programmes.

Specific hypotheses are:
1. The incidence of rugby-related injuries will be reduced following 12 weeks of using the intervention exercise programme when compared with the sham exercise programme.
2. The average severity of rugby-related injuries will be reduced following 12 weeks of using the intervention exercise programme when compared with the sham exercise programme.
3. Coach attitudes towards injury prevention will change as a function of using the intervention exercise programme when compared with the sham exercise programme.
4. Coach attitudes towards injury prevention will demonstrate an influence on compliance to their exercise programmes.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Research Ethics Approval Committee for Health (REACH), University of Bath, 20/03/2015, ref: EP 14/15 141

Study design
Single-centre cluster randomised controlled trial

Primary study design
Interventional

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Sport injury

Interventions
Intervention context
Most rugby players will undertake a number of weekly coach-led training sessions within the school rugby environment in order to prepare appropriately for fixtures. These sessions are predominantly composed of rugby-related games and drills with some supplementary strength and conditioning sessions, whilst a focus on specific preventive exercise activities is rare. These characteristics would be expected to be consistent in schools across both trial arms as the exclusion criteria for this study will preclude the recruitment of any schools that currently engage in specific preventive training practices outside of normal strength and conditioning sessions.

Control arm: normal training + 'sham' exercise programme
In addition to adhering to normal training regimens, schools in the control group will be given a structured 'sham' programme derived from what is currently regarded as best practice in schools rugby. The programme is structurally indistinct from the intervention programme, with each session occurring at the beginning of each training session or match preparation lasting approximately 15 minutes and with exercises being varied at the same integer (4 weeks). However, the exercises chosen are intended to be distinct from those included in the

intervention programme. Each session will be led by the coach or associated member of staff, acting as a delivery agent.

Intervention arm: normal training + intervention exercise programme
Schools in the intervention arm will receive the intervention exercise programme in addition to continuing with usual training practices. The intervention exercise programme in this study will consist of a progressive multifaceted exercise programme which incorporates a blend of training methods such as lower limb balance and agility, whole body strengthening, and plyometrics. The intervention exercise programme is designed to be completed as the initial 15 minutes of every training session and prior to every match, though certain exercises will be withdrawn when the programme is performed prior to matches. As with the control arm, the coach or associated member of staff will act as a delivery agent. The programme is progressive with a new phase being introduced every 4 weeks.

Intervention Type
Behavioural

Primary outcome(s)
The incidence and severity of injury, as well as the overall burden of injury in the intervention group compared with the control group.
Details (location, nature, mechanism, severity) of all injuries related to participation in school rugby that incur a 24-hour or greater time loss from subsequent school rugby exposure for the 2015/16 winter term will be recoded on a standardised form. The medical diagnosis for each injury will be coded to three levels according to the Orchard Sports Injury Coding System (OSICS) version by an on-site medical professional.
Coaches of all individual teams will be provided an exposure and compliance report form to be completed on a weekly basis, detailing team-level training and individual match exposure, along with a compliance record in relation to the exercise programme.
Injury and exposure information will be prospectively collected for the entire duration of the schools rugby season from late August 2015 to December 2015.
Poisson regression, with adjustment for clustering by school, offset for player-hours of exposure, and adjustment for the aforementioned covariates (i.e., age/maturation status, playing position, playing experience, level of play, coaches' attitude, and previous injury history) will be used to compare injury incidence and injury burden (injury incidence rate x mean absence per injury) between the trial arms. Injury severity will be compared between the trial arms using an identical model, but with a linear response distribution. Separate analyses will be conducted for match and training injuries. Interaction effects (e.g., maturation status x trial arm) will be examined for evidence of intervention effect modification.

Key secondary outcome(s))
1. The influence of coach attitudes on compliance and injury burden between the trial arms, in addition to changes in these through use of the exercise programmes.
2. The study design and both exercise programmes have been formulated in order to optimise compliance within the schools rugby setting. Nevertheless, this aspect will be monitored throughout the study. The coaches responsible for recording the weekly match and training exposure will also be responsible for recording whether or not the squad completed their allocated exercise programme. These data will be combined with exposure data in order to produce an index of compliance for all included teams (such as a percentage of exposures where the exercise programme was completed).
3. The attitudes, knowledge, and beliefs of coaches involved in leading the exercise programmes both before (August 2015) and after (December 2015) the intervention period. This will be

undertaken by two paper-based questionnaires of all coaches involved in the study, one prior to study commencement and one shortly before study conclusion using a standardised questionnaire designed by the authors based upon previous work investigating similar features. The questionnaires will assess whether coaches in the different trial arms have differing baseline views on injuries and injury prevention in youth rugby, how these views are associated with compliance to their allocated exercise programme, and whether these views are altered as a result of implementing their allocated exercise programme.
4. The influence of compliance on injury burden will also be analysed. Compliance will be computed into two entities: coach compliance (% of exposures where exercise programme was completed) and player compliance (% of players that completed the exercise programme during each exposure). The product of these two proportions will be taken forward for analysis as the total compliance. Teams in both trial arms will be stratified into tertiles based on total compliance: low, intermediate, and high. Poisson regression will be used to investigate the influence of compliance to the exercise programme on the risk of injury, with the low compliance tertile in the control arm serving as the reference group.
5. Behavioural, attitudes and knowledge variables will be pre-coded and analysed in a number of different ways. Only coaches that complete the study and provide questionnaire responses for at least the pre-season questionnaire will be included in this analysis. These variables will be compared at baseline between the two trial arms and at the end of the intervention to assess any changes using both categorical and continuous data analysis. To analyse the influence of coach beliefs on compliance, linear regression analysis will be used with team compliance (%) as the dependent variable and questionnaire responses serving as the predictor variables. The responses to the questionnaire will also be compared between the compliance tertile groups using categorical data analyses. To investigate the influence of coach attitudes on injury burden, poisson regression, adjusted for clustering by school, will be used with injury burden (days/1000 player-hours) as the dependent variable and questionnaire responses serving as the predictor variables. The results will be presented as Relative Risk (RR) with 95% confidence intervals and p-values. Both sets of analyses will be adjusted for coaching experience (years) and coaching level, which will be recorded as part of the pre-season questionnaire.

Completion date
31/12/2015

Eligibility

Key inclusion criteria
1. Males
2. Aged 14-18 years
3. Participating in secondary school rugby union programmes
4. Consenting to participate
5. Participating school has on-site medical facilities

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Child

Lower age limit
14 years

Upper age limit
18 years

Sex
Male

Total final enrolment
3188

Key exclusion criteria
1. Not male 14-18 years
2. Withheld informed consent
3. Participating in a school rugby programme without on-site medical support
4. Participating in a school rugby programme already engaged in specific injury prevention exercise programme

Date of first enrolment
30/03/2015

Date of final enrolment
30/06/2015

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University of Bath
Claverton Down
Bath
United Kingdom
BA2 7AY

Sponsor information

Organisation
University of Bath

ROR

https://ror.org/002h8g185

Funder(s)

Funder type
Other

Funder Name
Rugby Football Union

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		01/08/2017	10/05/2021	Yes	No
Protocol article	protocol	19/01/2016		Yes	No