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Investigating the effect of a shoulder injury prevention program in handball on external rotation strength and internal rotational range of motion

Submission date
30/05/2018

Recruitment status
No longer recruiting

Registration date
05/06/2018

Overall study status
Completed

Last Edited
13/01/2021

Condition category
Musculoskeletal Diseases

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

Plain English summary of protocol

Background and study aims
Many handball players have shoulder pain while playing handball. A recent study demonstrated that it is possible to reduce the problem by over a quaarter. Despite this reduction in shoulder problems, only 3 in 10 of the coaches would continue using the whole program the next season, because 'the program was too time-consuming'. To be able to reduce the number of exercises and make the program more efficient, we need to know how the exercises reduce shoulder injuries. Shoulder external rotation weakness and limited internal rotation are considered to be the most important risk factors for shoulder problems in handball. The aim of our study is to test if the prevention program affects these two risk factors.

Who can participate?
Handball players aged 16 to 18 years from clubs located in or close to Oslo will be invited to participate in this study.

What does the study involve?
Half of the participants will do a shoulder prevention program designed for handball over an 18-week period, while the other half will do their regular handball warm-up and training. All the participants will be tested for shoulder strength and range of motion before, during the training period (after 6 and 12 weeks) and after the training period (18 weeks).

What are the possible benefits and risks of participating?
Reduction of shoulder problems is a possible benefit in the intervention group. (All the participants will be offered the training program after the intervention is finished). There are no known risks of participating.

Where is the study run from?
The study is being run by the Oslo Sports Trauma Research Center in Norway.

When is the study starting and how long is it expected to run for?
August/September 2018 to February 2018.

Who is funding the study?
Oslo Sports Trauma Research Center

Who is the main contact?
1. Hilde Fredriksen, hilde.fredriksen@nih.no
2. Grethe Myklebust, grethe.myklebust@nih.no

Contact information

Type(s)
Scientific

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Additional identifiers

Study information

Scientific Title
Investigating the effect of Oslo Sports Trauma Research Center (OSTRC) shoulder injury prevention program in handball on key risk factors, external rotation strength and internal rotational range of motion

Study objectives
The OSTRC shoulder injury prevention program in handball affects the risk factorsfor shoulder injury: external rotation (ER) strength and internal rotation (IR) range of motion (ROM).

Ethics approval required
Old ethics approval format

Ethics approval(s)
Norwegian regional committee for medical and health research ethics, South East region, 14/05/2018, 2018/412/REK sør-øst

Primary study design

Interventional

Study design
Randomized controlled trial

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Shoulder injury prevention training in healthy handball players

Interventions
Four handball teams, players aged 16 to 18 years will participate. The teams will be randomized, with stratification for gender, to one exercise group and one control group.
The intervention group will perform the Oslo Sports Trauma Research Center (OSTRC) shoulder prevention program in handball over an 18-week period as described in the original study. The prevention program is a 10-minute warm-up program, carried out three times per week as a part of the regular handball warm-up, and consists of five exercises with different variations and levels. The exercises are intended to increase the muscle strength in shoulder external rotation (ER), to improve neuromuscular control around the scapula and improve shoulder internal rotation (IR) range of movement (ROM). Exercises to improve kinetic chain activation and thoracic mobility were also added.
The control group will continue doing their regular handball warm-up.

Intervention Type
Behavioural

Primary outcome(s)
1. Shoulder isometric external rotation strength (measured with a handheld dynamometer [HHD]) after 18 weeks
2. Internal rotation range of motion after 18 weeks

Key secondary outcome(s)
1. Isometric ER strength by HHD at weeks 6 and 12
2. IR ROM at weeks 6 and 12
3. Isometric muscular strength by HHD in IR at weeks 6, 12 and 18
4. ER/IR isometric ratio at weeks 6, 12 and 18
5. Isokinetic ER and IR, concentric at 60 and 300°/sec and eccentric at 60°/sec, both absolute values and the functional deceleration ratio (FDR) ERecc/IRcon at 60°/sec at 18 weeks
6. IR at weeks 6, 12 and 18
7. Total rotational ROM at weeks 6, 12 and 18

Completion date
31/12/2019

Eligibility

Key inclusion criteria

1. Handball players
2. Aged 16 to 18 years
3. Play handball in clubs located in or close to Oslo

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Mixed

Sex
All

Total final enrolment
57

Key exclusion criteria
1. Player in a club that already implements the shoulder injury prevention program
2. Handball clubs with less than 12 players

Date of first enrolment
01/08/2018

Date of final enrolment
12/09/2018

Locations

Countries of recruitment
Norway

Study participating centre
Oslo Sports Trauma Research Center/ Norwegian School of Sport Science
Sognsveien 220
Oslo
Norway
0806

Sponsor information

Organisation

Oslo Sports Trauma Research Center

ROR
https://ror.org/018ct3570

Funder(s)

Funder type
Not defined

Funder Name
Oslo Sports Trauma Research Center

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be available upon request from Hilde Fredriksen, hilde.fredriksen@nih.no. Raw data of strength and range of motion will be shared. The data will become available after publication of the study.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/08/2020	13/01/2021	Yes	No