



Department of Health Sciences
Division of Physiotherapy

Physiotherapy
programme
180 ECTS

Bachelor Thesis 15
ECTS
Spring 2017

**How is training to prevent knee injury used within youth female soccer in
Sweden and Australia?**

A cross-sectional study

Author

Andrea Musa, Klara Pettersson
& Maja Elgstrand
Physiotherapy programme
Lund University
andrea.musa.945@student.lu.se
klara.pettersson.852@student.lu.se
maja.elgstrand.346@student.lu.se

Supervisor

Eva Ageberg, Associate professor,
Senior lecturer.
Dept of Health Science, Lund University
eva.ageberg@med.lu.se

Examiner

Katarina Steding Ehrenborg, Senior Lecturer
Dept of Health Science, Lund University
katarina.steding_ehrenborg@med.lu.se

ABSTRACT

TITLE

How is training to prevent knee injury used within youth female soccer in Sweden and Australia?
A cross-sectional study.

BACKGROUND

Female soccer players have a higher risk than males of sustaining a severe knee injury, including injury to the anterior cruciate ligament (ACL). Injury prevention training programs are effective in reducing the number of ACL injuries in female soccer players, however, it is largely unknown whether such programs are implemented in the soccer practice.

AIMS

The aims were to identify to which extent and how ACL injury prevention training is used within youth female soccer teams in Sweden and Australia, assess any differences between these countries in use of injury prevention training, and to identify education and opinions about ACL injury prevention training.

STUDY DESIGN

A cross-sectional study.

PARTICIPANTS AND METHODS

Data was collected through a web-based questionnaire, specifically developed for the study. Participants were head coaches of youth female soccer players aged 13-17 years old in Sweden (n=23) and Australia (n=4).

ETHICAL ASPECTS

The participants were informed that participation is completely anonymous and voluntary.

RESULTS

All teams except one used injury prevention training at least once a week. Fifteen of the 23 (65%) Swedish coaches, and one of the four (25%) Australian coaches, had taken injury prevention training courses. Most coaches (70%) stated that the training consisted of a standardized program, which for the majority (89%) took about 5-15 minutes to complete. A commonly stated advantage about the injury prevention training was that it decreases the number of injuries. The main disadvantage was that the players find it boring.

CONCLUSION

A majority used a standardized training program which the coaches got access to through a course. However, any conclusion on possible differences between Sweden and Australia cannot be made due to the small sample of Australian participants. The path of education was similar among the coaches and most of them had mainly positive opinions about injury prevention training.

KEYWORDS

prevention and control, knee injuries, anterior cruciate ligament, female, adolescent, soccer.

SAMMANFATTNING

TITEL

Hur används träning för att förebygga knäskada inom flickfotboll i Sverige och Australien? En tvärsnittsstudie.

BAKGRUND

Flickfotbollsspelare har ökad risk att drabbas av en allvarlig knäskada jämfört med män, inklusive främre korsbandsskada. Skadeförebyggande träningsprogram har visat god effekt för att förebygga främre korsbandsskada på kvinnliga fotbollsspelare, dock är det överlag okänt om sådana program är implementerade i fotbollsträningen.

SYFTE

Att identifiera hur och i vilken utsträckning träning i syfte att förebygga knäskada används i svenska och australiensiska flickfotbollslag, att undersöka eventuella skillnader i användande av skadeförebyggande träning samt att identifiera utbildning i och åsikter om skadeförebyggande träning.

STUDIEDESIGN

Tvärsnittsstudie.

DELTAGARE OCH METODER

En webbaserad enkät specifikt framtagen för denna studie skickades ut till huvudtränare i flickfotbollslag i åldrarna 13–17 år. Tjugotre huvudtränare i Sverige och fyra i Australien svarade på enkäten.

ETISKA ASPEKTER

Deltagarna informerades om att deltagande i studien är helt anonymt och frivilligt.

RESULTAT

Alla lag utom ett använde skadeförebyggande träning minst en gång i veckan. Femton av de 23 (65%) svenska tränarna och en av de fyra (25%) australiensiska tränarna hade deltagit i kurs i skadeförebyggande träning. De flesta av tränarna (70%) svarade att de använder standardiserade träningsprogram, som för majoriteten (89%) tog mellan 5–15 minuter att genomföra. En fördel med skadeförebyggande träning som många angav var att det minskar antalet skador. Den största nackdelen var att spelarna tycker att träningen var tråkig.

SLUTSATS

En majoritet använde standardiserade träningsprogram som tränarna fick tillgång till genom en kurs. Nästan alla lag använde sig av skadeförebyggande träning som hade liknande innehåll. Ingen slutsats kan dras om eventuella skillnader i skadeförebyggande träning bland flickfotbollsspelare i Sverige och Australien eftersom det var för få deltagare från Australien. Utbildningsvägen var likartad hos tränarna och de flesta av dem hade positiva åsikter om den skadeförebyggande träningen.

NYCKELORD

förebyggande åtgärder, knäskador, främre korsband, kvinnlig, ungdomar, fotboll.

Table of content

INTRODUCTION	1
SOCCER IN SWEDEN AND AUSTRALIA	1
YOUTH FEMALE SOCCER PLAYERS AND SEVERE TRAUMATIC KNEE INJURY	1
PREVALENCE AND INCIDENCE FOR ACL INJURIES AMONG YOUTH FEMALE SOCCER PLAYERS.....	2
THE MECHANISM OF AN ACL INJURY	2
CONSEQUENCES OF AN ACL INJURY	3
INJURY PREVENTION TRAINING.....	3
STANDARDIZED INJURY PREVENTION PROGRAMS.....	4
IMPLEMENTATION OF INJURY PREVENTION PROGRAMS.....	5
AIMS	7
SPECIFIC QUESTIONS	7
STUDY DESIGN	7
PARTICIPANTS AND METHODS	7
PARTICIPANTS AND PROCEDURE	7
INCLUSION CRITERIA	9
EXCLUSION CRITERIA	9
ETHICAL ASPECTS.....	9
QUESTIONNAIRE.....	9
STATISTICAL ANALYSIS	9
RESULTS	10
COACHES CHARACTERISTICS	10
INJURY PREVENTION TRAINING	12
Education	12
Content of injury prevention training.....	12
OPINIONS ABOUT INJURY PREVENTION TRAINING	15
Stated advantages.....	15
Stated disadvantages	16
DISCUSSION	16
PARTICIPANTS AND METHODS - STRENGTHS AND LIMITATIONS.....	16
Inclusion and exclusion criteria	17

Questionnaire	17
Statistics	18
RESULTS DISCUSSION	18
Coaches' characteristics and training frequency	18
Injury prevention training - description and education	19
Advantages and disadvantages	20
CONCLUSION	21

INTRODUCTION

SOCCER IN SWEDEN AND AUSTRALIA

According to FIFA:s “Big Count 2006” there are 265 million male and female soccer players in the world. Out of these 265 million soccer players there are 26 million female players and these numbers are still increasing rapidly (1).

According to an article that was published in 2000 there are 507 000 registered soccer players in Australia. Out of these 507 000 there are 58 000 female registrants (2).

In Sweden the number of registered soccer players are increasing, especially among women. A measurement that was made in 2006 shows a result of almost a quarter million registered soccer players in Sweden from the age of 15 and above. Out of these there are 189 000 male soccer players and 59 600 that are female. In addition to these female soccer players there are about 23 400 female players in the ages between 12–14 years old (3,4).

YOUTH FEMALE SOCCER PLAYERS AND SEVERE TRAUMATIC KNEE INJURY

Female soccer players have a significantly increased risk of sustaining a severe traumatic knee injury, including injury to the anterior cruciate ligament (ACL). Studies have shown that female soccer players have a 2–3 times higher risk of getting an ACL injury compared to male soccer players (5,6). Also, female players seem to sustain their ACL injuries at a younger age compared to their male counterparts (5,7). Studies have shown that there is an increased risk for female soccer players to get an ACL injury when performing in a match play (5).

In a review made over 13 years on college athletes in USA found that there is a significant difference in frequency of ACL injuries among male soccer players (49.6%) and female (58.3%). Furthermore, during the 13 years the injury rate for male soccer players decreased while it remained constant among females (8).

Some studies claim that there might be some difference in the mechanisms of how females and males injure the ACL. It is more common among females with a valgus collapse, a combination of knee valgus, tibial rotation and an internal hip rotation, compared to males who are considered to have a more flexed knee joint while the hip and ankle are in a more neutral position when

injuring the ACL. Another mechanism in females that contributes to a higher risk of getting an ACL injury, associated with valgus collapse, is a lack of trunk control (7).

Several studies have been made not only about the risk of sustaining a severe knee injury among youth female soccer players, but also on how different aspects of life are affected after an injury (6, 7). The aim of a survey study with a cross-sectional design from 2015 was to investigate which factors were associated with the return to soccer playing in females after ACL reconstruction (ACLR). The study also investigated the differences in knee related quality of life, current knee function and readiness to return to the sport between those women who had returned to playing soccer after the ACLR and those who had not. The two main factors which the study found were associated with returning to soccer were: short period of time between injury and ACLR and high motivation. The study also found that those who had returned to playing soccer rated their knee-related quality of life, knee function and readiness to return to the sport higher than the reference group (6).

PREVALENCE AND INCIDENCE FOR ACL INJURIES AMONG YOUTH FEMALE SOCCER PLAYERS

The yearly prevalence of ACL injuries is between 0.6 and 8.5% of all male players and between 0.5 and 6.0% of all female players in the world(5).

In Sweden an annual incidence of ACL injuries has been reported to be 81 per 100 000 for the ages between 10 and 64 years in the general population (10).

THE MECHANISM OF AN ACL INJURY

There is a high risk of ACL injuries in pivoting sports, such as soccer. Contrary to what one may expect the injuries usually do not occur in contact with other players but in a movement consisting of several strenuous mechanisms in the knee joint (11, 12). These mechanisms are one or a combinations of the following: sudden change in direction, sudden deceleration, landing from a jump in or near full knee extension (11, 12) and pivoting in or near full knee extension while the foot is planted (12). In combination with a contraction of the quadriceps muscle these mechanisms form a high risk for ACL injuries (11). The most common ACL injury mechanism combines a deceleration with internal extension torque of the knee together with valgus rotation. The mechanism also includes the body weight being shifted to the injured leg and the plantar surface of the foot fixed flat on the ground (12).

Internal risk factors have been suggested to include, knee joint laxity, decreased strength and recruitment of the hamstring muscle in relation to the quadriceps, muscular fatigue, high BMI, decreased core strength and increased hip internal rotation and tibial external rotation with or without foot pronation. Also, for females not using oral contraception, being in the pre-ovulatory phase of the menstrual cycle may be a risk factor. External risk factors include, dry weather and surface, and artificial surface instead of natural grass (8, 11).

CONSEQUENCES OF AN ACL INJURY

After an ACL injury, the major problem is functional instability; i.e., a sudden loss of control of the knee in a weight bearing position. Other common consequences include decreased strength, differences in movement and muscle activation patterns and impaired postural control (7).

In the first years after an injury the knee function usually improves. However, despite rehabilitation and/or surgery, the majority of those with an ACL injury do not return to their preinjury sport level and therefore quit their sports (7). It has been shown that the main reason for this is fear of re-injury rather than actual lack of function in the joint (6, 7).

The long-term (more than 20 years) consequences following an ACL injury includes low selfreported knee function, low knee-specific physical activity level in comparison to the overall physical activity level and overall a lower functional performance in the knee and leg compared to the non-injured leg (7).

A common long-term consequence following an ACL injury is osteoarthritis. On average, at 10–20 years after the injury, about half of those with a diagnosed ACL injury have osteoarthritis with pain and/or functional impairment (10). Osteoarthritis due to ACL injury is suggested to be caused by intra-articular pathogenic processes starting at the time of the injury, combined with long-term changes in dynamic joint load. Variation in outcomes depends on individual factors such as age, sex, genetics, body weight, activity, and re-injury (10).

INJURY PREVENTION TRAINING

Studies have shown somewhat different results on ACL injury prevention training programs, but all in all a neuromuscular injury prevention training program seems to be the most effective. (13, 14). Neuromuscular training programs including plyometric exercises and a preseason

component, instead of merely during the season, were the most beneficial according to a systematic review (13).

Another study showed that programs with a combination of strength training, balance training, plyometrics and technique monitoring with feedback were most effective. This study also emphasized that there is a need of sport-specific programs because of the individual biomechanics of each sport (15).

STANDARDIZED INJURY PREVENTION PROGRAMS

There are several different types of prevention programs. These often include resistance training, eccentric or plyometric exercises combined with other exercises or alone. The main factors to consider when trying to prevent injuries among female and male athletes are landing, sidcutting, stop-jump and muscle strength outcomes. There are some training programs with focus on these techniques which often consist of plyometric exercises combined with other types of exercises, such as balance, strengthening and flexibility (16).

A Swedish study from 2009 (published in 2012) investigates a 15-minute neuromuscular warmup program called “Knäkontroll”. The intention of the program is to reduce the incidence of knee injury and especially ACL injury among youth female soccer players and the aim of the study was to evaluate the effectiveness of the program. The method was to follow an intervention group and a control group for one season, and to later compare the results to each other. The intervention group was introduced to Knäkontroll and used the program twice a week during seven months while the control group had no specific injury prevention training (4).

The warm-up program contained different neuromuscular exercises that focused on core stability and knee control (4). Knee control includes the knee in line with the hip and ankle. The result of the study was that 0.28% (seven players) in the intervention group suffered an ACL injury while 0.67% (14 players) in the control group had an ACL injury. Also, a reduced ACL injury risk of 64% was seen in the intervention group while no significant rate reductions were seen for secondary outcomes. The conclusion of the study was therefore that a neuromuscular warm-up program is effective in reducing the rate of ACL injuries among youth female soccer players (4).

According to an article by Lloyd D. (17) there is a great need for training to prevent ACL injury among Australian Football players. The non-contact ACL injuries are over 56% among Australian Football players. In this article they have come to the same conclusion as we have

mentioned above, namely that factors that may contribute to ACL injuries are jumping, running, landing and side-stepping. The author also suggests that injury prevention programs should include stability and balance training.

Soccer is a more popular sport among females in Sweden compared to Australia, in relative terms (2–4). In Australia, Australian Rules Football is a much bigger sport compared to Australian soccer (2, 3, 18). Training programs to prevent ACL injury are used among Australian Rules Football teams (17), but to our knowledge, this has not been investigated among soccer teams in Australia.

IMPLEMENTATION OF INJURY PREVENTION PROGRAMS

Whether or not implementation of ACL injury prevention programs is used among coaches in youth female soccer is rather unknown, and only described in a few studies (19). According to a cross-sectional study, only 19.8 % of the participating coaches had implemented an ACL injury prevention program to their regular soccer practices. Some factors related to the implementation were the length of coach experience and number of extra staff, such as assistant coach or athletic trainer. Improved performance is one of the biggest reasons why ACL injury prevention programs have been implemented, according to the coaches (19).

Most soccer coaches are aware of the fact that there is a need of training programs to prevent ACL injuries among youth female soccer players. However, there is a lack of implementation of injury prevention training programs despite this knowledge (19).

A prospective cohort study and retrospective survey based on a cluster-randomized trial (20) investigated, among other things, if there was a decrease in risk of sustaining an injury between a group of players with intermediate compliance and those with high compliance to a warm-up program. The results showed a 35% lower risk of injury for those with high compliance and who participated in at least 1.5 warm-up sessions per week. The program used in this study was FIFA 11+ (20).

The study mentioned above is cited in a somewhat similar cluster-randomized controlled trial (21). The latter study suggests that the main problem regarding insufficient effectiveness of injury prevention programs lays within the lack of adherence, acceptance and adoption in the population (coaches, athletes and other key stakeholders in the sports community).

The aim was therefore to investigate which implementation strategy was the most effective to reach high adherence for the FIFA 11+ injury prevention program among football players and coaches (21).

The different strategies was to be introduced to the program via an unsupervised website (the control group) or to participate in a workshop with (the “comprehensive” group) or without (the “regular” group) a physiotherapist's supervision. The results showed 85.6% adherence in the “comprehensive” group, 81.3% in the “regular” group and 73.5% in the control group, with no statistically significant difference between groups (21). The conclusion of this study was that proper education for the coaches, which in this case means a preseason workshop about injury prevention programs, is effective in reaching adherence among coaches as well as players (21).

Even though the importance of adherence and implementation has become more widespread, researched and understood over the past years there still remains a gap between research and practise (22). A paper published in 2016 addresses this problem and aims to describe a systematic approach to an effective implementation plan for injury prevention of the lower limb in the Australian football community (22).

The method described in the paper was Step 5 of the Implementation Mapping health promotion programme planning protocol (Step 5 IM). Step 5 IM consists of five steps of implementation programme planning. As an example these steps include; finding suitable adopters and implementers, and identify change objectives for adoption and implementation (22).

The conclusion of the paper was that the outcome of an injury prevention program is determined both by the effectiveness of the program itself as well as the effectiveness of the implementation. They come to the conclusion that Step 5 IM is effective as an implementation planning program and that it is crucial that researchers and practitioners collaborate as early as possible in the implementation process, in order to get a successful implementation (22).

It is suggested that a high adherence and successful implementation of injury prevention programs among soccer players, or in fact any athlete, is crucial for effective injury prevention (20, 22). It is also suggested that an effective implementation process starts with proper education of the coach, since they are most often the ones to deliver this knowledge to the players (21, 22).

AIMS

1) To identify to which extent and how knee injury prevention training is used within youth female soccer teams in Sweden and Australia, 2) assess any differences in use of injury prevention training between these two countries, and 3) to identify education and opinions about knee injury prevention training among the coaches.

SPECIFIC QUESTIONS

1. How often does the team use injury prevention training?
2. Do the coaches have any education in injury prevention training? In such cases, which one and have they received any other educations since?
3. How long has the team used injury prevention training?
4. What does this injury prevention training that the team use include?
5. How long does an injury prevention session last?
6. Does the coach perceive any advantages with injury prevention training?
7. Does the coach perceive any disadvantages with injury prevention training?

STUDY DESIGN

A cross-sectional study.

PARTICIPANTS AND METHODS

PARTICIPANTS AND PROCEDURE

The participants were head coaches of youth female soccer players in the ages between 13–17 years old in Sweden and Australia.

For the Swedish participants webpages of the soccer associations of Stockholm, Gothenburg and Skåne were used to find the contact details for suitable soccer clubs. Sixty soccer clubs were randomly selected, to whom an email with an inquiry to participate in the research project was sent (Appendix 1). One week after the original email, a reminder with the purpose of increasing participation was sent out. In total 13 contact persons responded which resulted in contact details, in the form of email addresses, to 32 head coaches. These head coaches then received an information letter (Appendix 3) which described the study and also included the link to the

questionnaire. Two reminders were sent out with one-week intervals. The responses from 23 head coaches were included in the analysis, yielding a response rate of 72% (Figure 1).

For the Australian participants the Australian website myfootballclub.com.au was used to find soccer clubs to send inquiries about contact information for head coaches. Different soccer clubs were found in Melbourne, Sydney, Newcastle, Brisbane, Cairns and other areas nearby. This resulted in 121 different soccer clubs to whom an inquiry about contact information to head coaches was sent (Appendix 2). Out of these 121 soccer clubs there were very few responses, and those who did respond did not achieve the inclusion criteria, i.e. the club did not have a female youth team in the ages 13-17 years or injury prevention training was not used. Therefore reminders were sent to those soccer clubs that did not respond, but there were few responses to that email as well. Due to this lack of responses phone calls were made to different soccer clubs instead of sending out emails. This gave a better response and eventually resulted in contact information for 13 different head coaches to whom an information letter and a link to the questionnaire were sent (Appendix 4). One week after the questionnaire was sent out another reminder was sent to the 9 head coaches who had not responded. The responses from 4 head coaches (response rate 31%) were included in the analysis (Figure 1).

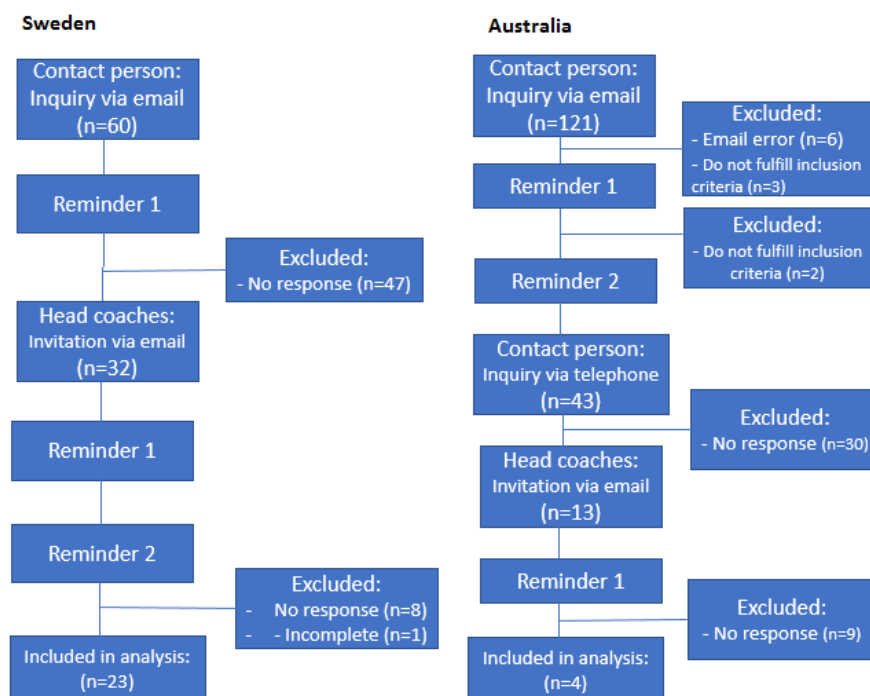


Figure 1. Flow chart of participants in the study.

INCLUSION CRITERIA

i) Teams with youth female soccer players in the ages between 13–17 years old. ii) Teams from Sweden or Australia. iii) Some sort of ACL injury prevention training, as defined by the main coach, is used in the team. iv) The team is related to a soccer club/association. v) Teams competing in a youth/junior league.

EXCLUSION CRITERIA

i) Teams unrelated to a soccer club/association. ii) Teams competing on elite-/senior level.

ETHICAL ASPECTS

The participants received information about the study in an invitation letter (Appendix 3, 4). In the letter they were also informed that participation was completely anonymous and voluntary and that they can stop at any time, without having to give any particular reason.

All of our participants were adults (over 18 years old) and therefore there was no need to inform a parent or legal guardian.

QUESTIONNAIRE

A questionnaire was developed using Google Forms; one version in English and one in Swedish to suit our study groups. The questionnaire includes two different sections, one with demographic questions and one based on our aims and specific questions. The second section contains questions about frequency, education, content, time, advantages and disadvantages (Appendix 5, 6).

STATISTICAL ANALYSIS

Descriptive statistics were used for categorical data and demographics, the calculations regarding the response rate were automatically made by Google Forms. Our aim was to use the Chi-square

test to assess any differences between the groups but this was not possible because of the small number of Australian participants.

RESULTS

COACHES CHARACTERISTICS

Coaches characteristics (questions 1 - 5) are presented in Table 1. There were in total 23 Swedish and 4 Australian participants.

The Swedish coaches were mainly of male gender, 17 of them (74%) were men and 6 (26%) were women. Most of the Swedish participants had been coaching for 4–9 years. Regarding the players ages, most of them were between 14 and 15 years old and most (74%) of the Swedish teams had practise 2–3 times a week.

Among the Australian coaches the same pattern regarding gender was seen; there were three (75%) men and one (25%) woman. Most of the Australian participants had been coaching for more than ten years. Most players were between 13–14 years old and 50% of the teams had practise 1–2 times a week.

Table 1: Coaches characteristics and number of soccer practices per week (question 1–5).

	Sweden (n)	Australia (n)
Total number of participants	23	4
1. Age	23	4
≤ 20 years	3	-
21–30 years	4	1
31–40 years	4	-
41–50 years	8	1
51–60 years	4	2

> 60 years	-	-
2. Gender	23	4
Female	6	1
Male	17	3
3. What is the age of the players in your team?	23	4
13 years	7	4
14 years	16	4
15 years	15	2
16 years	10	2
17 years	3	-
4. Period of time as coach	23	4
< 1 year	-	1
1-3 years	1	1
4-6 years	8	-
7-9 years	8	-
≥ 10 years	6	2
5. Soccer practices /week	23	4
1	-	1
2	3	2
3	17	1
4	2	-
≥ 5	1	-

INJURY PREVENTION TRAINING

Questions related to the use of injury prevention training programs and education (questions 6 - 9) are presented in Table 2. As seen in the Table, all except one team used injury prevention training at least once a week.

Education

Fifteen (65%) of the 23 Swedish coaches had taken injury prevention training courses. Seven of these 15 (47%) coaches answered “course through a national/regional association”. One of the options was “Other”, which two (ca 13%) of the coaches chose. One of the coaches answered that the course was through the Swedish football association and the other answered “Knäk kontroll”. Three of the Australian responders chose the option “No” to the same question, that is one (25%) could answer the questions regarding injury prevention training courses, which means that the option this participant chose made up 100% of all answers to these questions for the Australian participants.

To the question “How did you get access to this course?”, 12 (80%) of the Swedish coaches answered “Through a soccer club”. One (7%) of the coaches chose the option “Other” and responded that the course was offered by the local authorities. The Australian participant who answered this question chose the option “Through a soccer club”.

Content of injury prevention training

To the question “What is included in your injury prevention training?” a majority of the Swedish coaches (n=17, 74%) answered “A standardized training programme”. One (4%) of the coaches choose the option “Other”. The answer was that the injury prevention training was inspired by the standardized programme “Knäk kontroll” and by a Swedish health community called “Friskis&Svettis”. They also did not have any exercises with footballs because that resulted in the players focusing more on the movement itself instead of focusing on the ball. For the Australian participants two (50%) answered “Standardized training programme”, one head coach (25%) answered “Standardized training programme that has been specifically applied to the players” and one of the head coaches (25%) chose the option “Other”. The head coach who chose “Other” said that the assistant does the work with injury prevention training and that “he has researched information and exercises and also uses exercises from his days as a first grade rugby union player”.

Most of the Swedish teams had been using injury prevention training for 1–2 years while in Australia most of them had been using it for three months or less.

Table 2: Usage of, and coaches education in, injury prevention training (questions 6–9).

	Sweden n	Australia n
6. How often do you use injury prevention training?	23	4
At all training sessions	8	1
≥ 2 times/week	6	-
Every week	9	2
Every month	-	-
During preseason training	-	-
Occasionally	-	1
7a. Have you taken any injury prevention courses?	23	4
Yes	15	1
No	8	3
7b. Which courses have you taken?	15	1
Course arranged through a national/ regional association	7	1
Course arranged through a soccer club	5	-
Course arranged through the soccer team	1	-
Other	2	-
7c. How did you get access to the course?	15	1

Through a soccer club	12	1
Applied because of my own interest	2	-
Other	1	-
7d. How many injury prevention courses have you taken?	15	1
1	5	-
2	7	1
3	1	-
4	1	-
≥ 5	1	-
7e. When did you last take an injury prevention course?	15	1
≤ 1 year ago	4	1
2–3 years ago	10	-
4–5 years ago	1	-
> 5 years ago	-	-
8. How long has your team utilized injury prevention training?	23	3
≤ 3 months	1	2
6 months	-	-
1–2 years	11	1
3–4 years	9	1
≥ 5 years	2	0

9a. What is included in your injury prevention training?	23	4
Standardized training program	17	2
Standardized training program that has been specifically applied to the players	5	1
We have developed our own training program	-	-
Other	1	1
9b. How long does the injury prevention training take per session?	23	4
< 5 minutes	-	-
5–10 minutes	10	2
10–15 minutes	12	-
> 15 minutes	1	2

OPINIONS ABOUT INJURY PREVENTION TRAINING

Stated advantages

The question “Do you see any advantages with injury prevention training?” (question 10). There were 18 responses to this question, which equals 78% of the Swedish coaches. A majority named one or more advantages, which means most of the Swedish coaches perceived advantages with injury prevention training. There were some coaches who answered that they were not sure but believed that it did help. Advantages like *it prevents injuries/ leads to less knee-related problems* were commonly reported. Other advantages were *balance/stability improves* and *strength improves*. Also, non-physical advantages like *it leads to better confidence among the players* and *it leads to a greater feeling of unity in the team* were described.

Three Australian head coaches answered that they thought that injury prevention is important. One of these three said that “*Absolutely [...]soft tissue injuries become fewer and fewer. This year with a new head senior coach not with as much emphasis on injury prevention and soft*

tissue injuries have tripled". One coach answered "*not obvious at this age as injury rate is minimal*".

Stated disadvantages

The question "Do you see any disadvantages with injury prevention training?" (question 11). Eighteen (78%) Swedish coaches responded to this question. Eleven of these answers, which equals 61% (or 48% calculated on the total number of Swedish participants) answered "No". The most commonly reported disadvantages were that *the players find it boring/the players have a lack of motivation for doing these exercises*. Other disadvantages that were reported were that the injury prevention training *took too much time of each training session* and that *players who already have had a knee injury find the exercises difficult and painful*.

Two Australian head coaches did not perceive any disadvantages with injury prevention training. The other two answered "No" as well, but one added that the players themselves didn't like doing the training or thought it was pointless and the other one added "*No, if implemented with strength and conditioning*".

DISCUSSION

PARTICIPANTS AND METHODS - STRENGTHS AND LIMITATIONS

There are some limitations to this study. First, we had limited time and resources which resulted in us having to settle for a result that might have been different, in particular considering the number of participants, and therefore outcome as well, if we would have had more time.

Second, which goes along with the first limitation, is that the time for collecting data was in September-October 2016. The soccer season for youth teams usually ends in September in both countries. This means that we missed the countries' peak of the season. For the Swedish participants we did not experience this to be a problem since soccer is practiced all year around and the clubs are still active off-season. We believed that this would be the case with the Australian teams as well, but it seems as if the clubs were far less active during off-season compared to their Swedish counterparts. We had problems to get in touch with the Australian teams. If we would have had the time and opportunity to wait until the season started in Australia we might have had more participants. We believe that the off-season is one of the main reasons for the limited number of Australian participants in our study.

Third, the salary for soccer coaches varies a lot depending on the level and age of the players (23). We did not include teams competing in elite/senior level in our study. One can draw the conclusion that coaching at the level and age group that was included in our study is not something one does for a living, but rather for recreational purposes. Since it is not a full-time occupation and it was off-season, club e-mail inboxes might not be checked until the season starts, which means that this as well might be a reason for not receiving more replies.

Last, one must consider “the human factor”. Reasons for not participating in the project could be as simple as not wanting to participate, not having time or forgetting to reply.

Things that could have been done differently are mainly regarding the collecting of data during the soccer season. One could also hypothesize that if we were to choose a country closer to Sweden, we might have had a better opportunity to get in touch with the teams. As described in the method we did telephone some Australian teams but it might have been easier to do so if it was a neighbouring country with more similarities in the overall club organisation. Also, one must not underestimate the power of contacts, which we unfortunately did not have.

Inclusion and exclusion criteria

To make this study possible we chose very precise inclusion and exclusion criteria. This can be considered both a limitation and a strength. Coaches are the key for implementing injury prevention training (24), which is why they were chosen as participants in the study. The strength lies within the fact that we could, thanks to the very precise criteria, study exactly what we aimed to, that is, usage of injury prevention training among youth female soccer players. On the other hand, such precise criteria can simply be limiting. We chose to study coaches for female soccer players between the ages 13–17 years. Merely the fact that they were female showed to be a limitation since there are far less female soccer players, regardless of age, overall in the world (1), including Sweden and Australia (2–4). This was something that was proved to us when we were searching for teams. Even though we did find a lot of teams that met our inclusion criteria, it was a tough task. Especially in the search of Australian teams we reflected on that it probably would have been easier if the aim would have been to study the same subject but for male soccer teams instead, since there were considerably more of youth male teams than youth female teams.

Questionnaire

Since we could not find a suitable questionnaire for our study we chose to develop our own questionnaire. We consider this to be both a strength and limitation to the study. Using a self-

developed questionnaire gave us the possibility to get the exact answers that we needed to answer our specific questions and meet our aims. On the other hand, if we would have used a standardized questionnaire, or a questionnaire used in another study, we would have been able to make more straightforward comparisons between ours and a similar study. Because we developed the questionnaire specifically for our study, it has not been validated which is also a limitation.

Statistics

Our aim was to perform statistical analysis to assess any differences between the groups. The method we aimed to use was the Chi-square test since it is a common test for categorical data. Unfortunately, we did not have enough participants to go through with this step. To make legit calculations at least 30 individuals in each group is preferred (25), our study included 23 Swedish participants and 4 Australian.

RESULTS DISCUSSION

Coaches' characteristics and training frequency

We found that most of the coaches were men. In Sweden there were 74% men and 26% women, for the Australian participants we found that 75% were men and 25% were women. According to a study by Brush and Naples about two third of all head coaches in National Collegiate Athletic Association (NCAA) Division 1 women's soccer teams are men (26). A similar pattern can be found in another study which states that 73% of all coaches in UK are male (27). Even though women and girls have got more space and opportunities to participate in all levels and roles in soccer lately, there still seems to be a male dominance (1–4, 28). The reason for this could be that soccer traditionally is seen as a predominantly male sport (26, 28). But, of course, the distribution of gender among head coaches could vary between different regions and levels.

Regarding the coaches age, there was a large range. We believe that this is because the coaching seemed to be on a recreational level rather than on a professional, and that it therefore attracts people in different stages of life and in different ages as long as they have an interest for soccer. Because of the variety of age there was also a variety regarding how long they had been coaching, anything between less than a year to ten years or more were stated.

The amount of soccer practices a week varied between the different participants and countries. All teams except one practiced at least once a week, in Sweden three times a week was most

common and in Australia twice week was most common. One can hypothesize that the reason for the variation could be anything from economical and time resources to interest and commitment among the players.

Injury prevention training - description and education

Even though all teams used injury prevention training at least once a week, except for one team which used it "occasionally", not all of the coaches had undergone education. In Sweden 65% of the coaches said that they had taken injury prevention courses, while the number was 25% for the Australian participants. Education for coaches is an important key for successful implementation among players (21), and implementation among players is an important key to having less injuries (20). Also, collaboration between researchers and practitioners is believed to improve and facilitate the implementation process (22). One could therefore wish that the percentage regarding this issue would be higher for both countries as it is suggested that a proper and thorough injury prevention training education for the coach is the key for reaching adherence and implementation among the players (21, 22) and that this is a way to decrease severe knee injuries (20, 22).

Regarding the courses there were a lot of similarities between the groups. Most of them got access to the courses through the soccer club and the courses were mostly arranged through a national or regional association. Having this in mind one could draw the conclusion that these courses most likely are thorough and standardized since both the clubs and associations have responsibilities to deliver proper and thorough education. This belief was strengthened by the answers to the question: "What is included in your injury prevention training?" where most participants chose the option "Standardized training program".

Most of the participants had taken two or more courses which we believe is a positive sign of interest and a will to keep the injury prevention training up-to-date. Also, most of them had taken their latest course a year or less ago, which likely means that the knowledge is still fresh and relevant.

One of the main differences between Sweden and Australia was for how long they had been using injury prevention training. In Sweden, 47% of the teams had been using injury prevention training for 1–2 years. While in Australia, 67% had been using such training for 3 months or less. One reason for this difference could be that soccer is a more developed and structured sport in Sweden (2–4) while it seems as Australian Rules Football is more developed in Australia (2, 3, 18). If our study would be repeated in five or ten years, the results might have been different

since the interest for soccer seems to be growing in Australia (29). It would be of interest to make further studies in a country like Australia, where soccer is still a growing and new sport, at least compared to the countries of Europe where soccer has been popular for generations, to see if the growing interest is affecting the development and usage of injury prevention training.

There were some differences with regard to which extent and how the teams were using the injury prevention training. All teams except one used injury prevention training at least once a week, but, only about 60% of the Swedish teams and 25% of the Australian used it twice or more times a week (or at every training session). According to the study of the Swedish injury prevention program Knäkontroll, using this injury prevention program at least twice a week is recommended (4). The same goes for FIFA11+ which have a 35 percent estimated risk reduction for injury when used at least 1.5 times per week (30). Since these are controlled and valid injury prevention programmes one can draw the conclusion that this is the general number of sessions recommended.

Performing a full session of Knäkontroll takes about 15 minutes (4) and a session of FIFA11+ takes about 10–15 minutes (30). Again, since these are controlled injury prevention programmes one can draw the conclusion that 10–15 minutes is the general time recommended time for an injury prevention program. Among the Swedish participants about 57% said that the injury prevention takes 10–15 minutes or more than 15 minutes per training session. A similar pattern was seen for the Australian participants with 50% choosing the same options. Taking the fact that only about half of the Swedish teams used injury prevention training as often and as long as recommended one can draw the conclusion that injury prevention is not used to the extent needed. The same goes for Australia, with only 25% using it as often as recommended and 50% as long as recommended.

Advantages and disadvantages

As expected, most of the participants perceived advantages as well as disadvantages with injury prevention training. The opinions did not differ much among the countries with most of the participants stating physical gains as advantages, for example less injuries, and “No” or psychological/practical matters, for example that the players find it boring or that it takes too much time, as disadvantages. It would be interesting to study whether there is a correlation between the perceived disadvantages and whether the coach had education in injury prevention training or not, since education is an important factor to how the knowledge is passed on and implemented to the players (20–22).

CONCLUSION

Injury prevention training among youth female soccer players appears to be used similarly in Sweden and Australia although an overall conclusion cannot be made because we were not able to recruit enough Australian participants. All teams except one used injury prevention training at least once a week and the content of the training as well as the coaches' education path was similar. A majority used a standardized training program which the coaches got access to through a course. The courses were mostly accessed through the soccer club and organized by a national or regional organisation. The Swedish teams had soccer practise more often and they had also used injury prevention training for a longer time than the Australian teams. Most injury prevention training session lasted for 5–15 minutes.

It appears as if injury prevention training is not used to the extent needed either in Sweden or in Australia. Only about half of the Swedish teams used it as many times a week and as long as recommended and even less of the Australian teams did so.

Opinions about injury prevention training among the coaches were similar, most of them stated advantages like “decreases the risk/number of injuries” and disadvantages were mainly that the players find it boring.

LIST OF REFERENCES

1. Fédération Internationale de Football Association [Internet]. Zurich: FIFA; c1994- [updated 2007 May 31; cited 2016 Sep 3]. FIFA Big Count 2006: 270 million people active in football.

Available from: <http://www.fifa.com/media/news/y=2007/m=5/news=fifa-big-count-2006-270-million-people>
<http://www.fifa.com/media/news/y=2007/m=5/news=fifa-big-count-2006-270-million-people-active-football-529882.html>
<http://www.fifa.com/media/news/y=2007/m=5/news=fifa-big-count-2006-270-million-people-active-football-529882.html>

2. Hoare D, Warr C. Talent identification and women's soccer: An Australian experience. *J Sports Sci.* 2000 Sep 18(9): 751-758.
3. Swedish Football Association [Internet]. Solna: SvFF; c1904- [updated 2006 Nov 28; cited 2016 Sep 3]. Rekordmånga fotbollsspelare i Sverige. Available from: <http://svenskfotboll.se/arkiv/tidigare/2006/11/rekordmanga-fotbollsspelare-i-sverige/>
4. Waldén M, Atroshi I, Magnusson H, Wagner P, Hägglund M. Prevention of acute knee injuries in adolescent female football players: cluster randomised controlled trial. *BMJ.* 2012 May 2012 46(13):904
5. Waldén M, Hägglund M, Werner J, Ekstrand J. The epidemiology of anterior cruciate ligament injury in football (soccer): a review of the literature from a gender-related perspective. *Knee Surg Sports Traumatol Arthrosc.* 2011 Jan 19(1):3-10.
6. Fältström A, Hägglund M, Kvist J. Factors associated with playing football after anterior cruciate ligament reconstruction in female football players. *Scand J Med Sci Sports.* 2015 Nov 26(11):1343-1352.
7. Tengman E. Long-term consequences of anterior cruciate ligament injury: knee function, physical activity level, physical capacity and movement pattern. [dissertation] Umeå: Umeå University; 2014.
8. Fältström A. One Anterior Cruciate Ligament injury is enough!: Focus on female football players.[dissertation] Linköping: Linköping University, 2016.

9. Agel J, Arendt E, Bershadsky B. Anterior cruciate ligament injury in National Collegiate Athletic Association basketball and soccer: a 13-year review. *Am J Sports Med.* 2005 Apr 33(4): 524-530.
10. Lohmander S, Englund M, Dahl L, Roos E. The long-term consequence of anterior cruciate ligament and meniscus injuries: osteoarthritis. *Am J Sports Med.* 2007 Oct 35(10):1756-69.
11. Paszkewicz J, Webb T, Waters B, Welch McCarty C, Van Lunen B. The effectiveness of injury-prevention programs in reducing the incidence of anterior cruciate ligament sprains in adolescent athletes. *J Sport Rehabil.* 2012 Nov 21(4):371-7.
12. Alentorn-Geli E, Myer G, Silvers H, Samitier G, Romero D, Lazaro-Haro C, et al. Prevention of non-contact anterior cruciate ligament injuries in soccer players. Part 1: Mechanisms of injury and underlying risk factors. *Knee Surg Sports Traumatol Arthrosc.* 2009 Aug 17(7):705-29.
13. Stevenson J, Beattie C, Schwartz J, Busconi B. Assessing the effectiveness of neuromuscular training programs in reducing the incidence of anterior cruciate ligament injuries in female athletes: a systematic review. *Am J Sports Med.* 2015 Feb 43(2): 482-490.
14. Donnell-Fink L, Klara K, Collins J, Yang H, Goczalk M, Losina E, et al. Effectiveness of Knee Injury and Anterior Cruciate Ligament Tear Prevention Programs: A Meta-Analysis. *PLoS One.* 2015 Dec 10(12): 1-17.
15. Michaelidis M, Koumantakis G. Effects of knee injury primary prevention programs on anterior cruciate ligament injury rates in female athletes in different sports: A systematic review. *Phys Ther Sport.* 2014 Aug 15(3): 200-210.
16. Monajati A, Larumbe-Zabala E, Goss-Sampson M, Naclerio F. The Effectiveness of Injury Prevention Programs to Modify Risk Factors for Non-Contact Anterior Cruciate Ligament and Hamstring Injuries in Uninjured Team Sports Athletes: A Systematic Review. *PLoS One.* 2016 May 11(5): 1-15.
17. Lloyd D. Rationale for training programs to reduce anterior cruciate ligament injuries in Australian football. *J Orthop Sports Phys Ther.* 2001 Nov 31(11): 645-661.
18. Australian Football League [Internet]. Melbourne: AFL; 1896- [updated 2015 Oct 13; cited 2016 Sep 15]. Woman's participation in soars in 2015. Available from:

<http://www.afl.com.au/news/2015-10-13/womens-participation-in-afl-soars-in-2015>

19. Joy E, Taylor J, Novak M, Chen M, Fink B, Porucznik C. Factors Influencing the Implementation of Anterior Cruciate Ligament Injury Prevention Strategies by Girls Soccer Coaches. *J Strength Cond Res.* 2013 Aug 27(8): 2263-2269.
20. Soligard T, Nilstad A, Steffen K, Myklebust G, Holme I, Andersen T, et al. Compliance with a comprehensive warm-up programme to prevent injuries in youth football. *Br J Sports Med.* 2010 Sep 44(11): 787-793.
21. Steffen K, Meeuwisse W, Romiti M, Kang J, McKay C, Emery C, et al. Evaluation of how different implementation strategies of an injury prevention programme (FIFA 11+) impact team adherence and injury risk in Canadian female youth football players: a cluster-randomised trial. *Br J Sports Med.* 2013 May 47(8): 480-487.
22. Donaldson A, Lloyd D, Gabbe B, Cook J, Finch C. We have the programme, what next? Planning the implementation of an injury prevention programme. *Inj Prev.* 2016 Jan 2015041737.
23. Leaf Group Ltd [Internet]. Santa Monica: Leaf Group Ltd; c2016- [cited 2016 Oct 27]. The Average Salary of Professional Soccer Coaches. Available from: <http://oureverydaylife.com/average-salary-professional-soccer-coaches-18005.html>
24. Donaldson A, Finch C. Applying implementation science to sports injury prevention. *Br J Sports Med.* 2013 May 47(8): 473-475.
25. Ejlertsson G. *Statistik för hälsovetenskaperna*. 2nd ed. Lund: Studentlitteratur; 2012.
26. Brush B, Naples G. Winning in NCAA Women's Soccer: Does the Gender of the Coach Matter? *Contemporary Issues In Education Research.* 2011 Aug 4(8): 19-28.
27. Sports Coach UK [Internet]. Leeds: Sports Coach UK; c1983- [updated 2011 Feb; cited 2016 Oct 21]. UK Coach Tracking Study - Year Three Headline Report. Available from: <http://www.sportscoachuk.org/sites/default/files/Coach-Tracking-Study-Yr3.pdf>
28. Fielding-Lloyd B, Meân L. Standards and Separatism: The Discursive Construction of Gender in English Soccer Coach Education. *Sex Roles [Internet].* 2008 Jan 58(1-2): 24-39.

29. Football Federation of Australia [Internet]. Sydney: Football Federation of Australia; c1963- [updated 2015 Dec 8; cited 2016 Oct 31]. FFA audit confirms football participation boom. Available from: <http://www.footballaustralia.com.au/article/ffa-audit-confirms-football>
30. Barengo N, Meneses-Echávez J, Ramírez-Vélez R, Cohen D, Tovar G, Bautista J. The impact of the FIFA 11+ training program on injury prevention in football players: a systematic review. *Int J Environ Res Public Health*. 2014 Nov 11(11): 11986-12000.

APPENDIX 1



LUNDS UNIVERSITET
Medicinska fakulteten

Förfrågan om medverkan i forskningsprojekt

Hej,

Vi är studenter vid fysioterapeutprogrammet vid Lunds Universitet. Vi skriver en kandidatuppsats där **syftet** är att **kartlägga användning av träning för att förebygga knäskada** inom flickfotboll i Sverige och Australien.

Till vårt projekt behöver vi **huvudtränare till flickfotbollslag** i åldrarna **13–17 år**, som använder sig av någon form av **skadeförebyggande träning**.

För att medverka i projektet svarar man på en **webbaserad enkät** som tar cirka **5–10 minuter** att genomföra.

Vi är tacksamma om vi kan få **kontaktuppgifter** till huvudtränare för de flickfotbollslag som passar in på beskrivningen ovan.

Vid frågor kontakta gärna oss (se kontaktuppgifter nedan)

Tack på förhand

Andrea Musa
076–2323910 andrea.musa.945@student.lu.se

Klara Pettersson 070–6210839

klara.pettersson.852@student.lu.se

Maja Elgstrand 070-283

90 69

maja.elgstrand.346@student.lu.se

Handledare:

Eva Ageberg, docent, universitetslektor

Lund Universitet

046-222 49 43

Eva.ageberg@med.lu.se

Med vänliga hälsningar Andrea Musa, Klara Pettersson & Maja Elgstrand

APPENDIX 2



LUND UNIVERSITY
Faculty of Medicine

Inquiry to participate in research project

Hello,

We are physiotherapist students at Lund University, Lund, Sweden. We are currently working with our bachelor thesis with **the aim to identify whether ACL injury prevention training is used** within youth female soccer teams in Sweden and Australia.

For our project we will include **head coaches of youth female soccer teams** in the ages between **13–17 years** who use some sort of **injury prevention training**.

To participate in our project you are asked to fill in a **web based questionnaire** which takes about **5–10 minutes** to complete.

We would be grateful if we could get the contact information for the head coaches of the youth female soccer teams that suit the description above.

If you have any questions, don't hesitate to contact us (see contact details below)

We are looking forward to hearing from you.

Andrea Musa

+46 76 232 39 10

andrea.musa.945@student.lu.se

Klara Pettersson +46 70 621 08 39

klara.pettersson.852@student.lu.se

Maja Elgstrand +46 70 283 90 69

maja.elgstrand.346@student.lu.se

Supervisor:

Eva Ageberg, PhD, Associate Professor, Senior lecturer

Lund University, Lund, Sweden

+46 46 222 49 43

Eva.ageberg@med.lu.se

Kind regards,

Andrea Musa, Klara Pettersson & Maja Elgstrand

APPENDIX 3



LUNDS UNIVERSITET
Medicinska fakulteten

Information om deltagande i forskningsprojekt om användning av skadeförebyggande träning inom flickfotboll

Hej du som är huvudtränare i...

Vi är studenter vid fysioterapeutprogrammet vid Lunds Universitet. Vi skriver en kandidatuppsats där **syftet** är att **kartlägga användning av träning för att förebygga knäskada** inom flickfotboll i Sverige och Australien.

Knäskador inom fotboll är mycket vanligt och drabbar framförallt unga flickor. Forskning visar att skadeförebyggande träning minskar antalet knäskador.

Vårt projekt handlar om att kartlägga användning av träning för att förebygga knäskada inom flickfotboll. Vårt projekt riktar sig till **huvudtränare för flickfotbollslag** i åldrarna **13–17 år**, som använder sig av någon form av **skadeförebyggande träning**.

För att medverka i projektet svarar du på denna **webbaserade enkät** som tar dig cirka **5–10 minuter** att genomföra. Du svarar anonymt på enkäten och dina svar kommer därefter sparas tillfälligt i ett enkätsystem. De personer som kommer att ha tillgång till den insamlade informationen är vi och vår handledare.

Här är länk till enkäten: www.xxxxx.se

Din medverkan i studien är helt frivillig och du kan när som helst avbryta ditt deltagande utan att ange något särskilt skäl till detta.

Vi är tacksamma om du kan besvara enkäten senast datum: xx-xx-xx.

Vid frågor kontakta gärna oss på

Andrea Musa 076-232 39 10

andrea.musa.945@student.lu.se

Klara Pettersson 070-621

08 39

klara.pettersson.852@student.lu.se

Maja Elgstrand 070-283

90 69

maja.elgstrand.346@student.lu.se

Handledare:

Eva Ageberg, docent, universitetslektor

Lund Universitet

046-222 49 43

Eva.ageberg@med.lu.se

Med vänliga hälsningar Andrea Musa, Klara Pettersson & Maja Elgstrand

APPENDIX 4



LUND UNIVERSITY
Faculty of Medicine

Information about participation in research project about injury prevention training for youth female soccer

Hello head coach of Xxx

We are physiotherapy students at Lund University, Lund, Sweden. We are currently working with our bachelor thesis with **the aim to identify whether ACL injury prevention training is used** within youth female soccer teams in Sweden and Australia.

Knee injuries among soccer players are very common, especially among young girls. Research shows that injury prevention training reduces the number of knee injuries.

Our project is to identify whether ACL injury prevention training is used within youth female soccer teams. Our project is directed to **head coaches of youth female soccer teams** in the ages between **13–17 years old**, who use some sort of **injury prevention training**.

To participate in our project please answer this **web based questionnaire** which takes about **5–10 minutes** to complete. Your answers to the questionnaire are anonymous and will be temporarily saved in a questionnaire system. The people who will have access to the collected information include ourselves and our mentor.

Here is a link to the questionnaire: www.xxxx.se

Your participation in this study is optional and you can at any time stop your participation without needing to give any specific reason.

We are grateful if you would complete the questionnaire at the latest date: xx-xx-xx.

If you have any questions, don't hesitate to contact us at (see contact details below).

We are looking forward to hearing from you.

Andrea Musa 0762323910

andrea.musa.945@student.lu.se

Klara Pettersson 0706210839

klara.pettersson.852@student.lu.se

Maja Elgstrand 070283

90 69

maja.elgstrand.346@student.lu.se **Supervisor:**

Eva Ageberg, PhD, Associate Professor, Senior lecturer

Lund University, Lund, Sweden

+46-222 49 43

Eva.ageberg@med.lu.se

Kind regards,

Andrea Musa, Klara Pettersson & Maja Elgstrand

APPENDIX 5

Enkät till huvudtränare i flickfotbollslag ålder 13–17 år

1. Ålder

- ≤ 20 år
- 21–30 år
- 31–40 år
- 41–50 år
- 51–60 år
- > 60 år

2. Kön

- Kvinna
- Man
- Annan

3. Vilken/vilka åldersgrupp(er) tillhör spelarna i ditt fotbollslag? Flera alternativ kan kryssas i.

- 13
- 14
- 15
- 16
- 17

4. Hur länge har du varit fotbollstränare?

- <1 år
- 1–3 år
- 4–6 år
- 7–9 år
- ≥ 10 år

5. Hur många gånger per vecka har ditt fotbollslag fotbollsträning?

- 1 gång/vecka
- 2 gånger/vecka
- 3 gånger/vecka
- 4 gånger/vecka
- ≥ 5 gånger/vecka

6. Hur ofta använder ni er av skadeförebyggande träning? Vid

alla träningstillfällen

≥ 2 ggr/vecka Varje

vecka

Varje månad

Vid försäsongsträning

Någon enstaka gång

7a. Har du någon utbildning i skadeförebyggande träning? Om nej: gå vidare till fråga 8 Ja

Nej

7b. Vilken utbildning har du?

Kurs via regionalt/nationellt förbund (t ex SISU Idrottsutbildarna)

Kurs via klubb

Kurs via fotbollslaget (t ex tränare, förälder)

Annat: _____

7c. Hur fick du tillgång till utbildningen?

Genom fotbollsklubb

Sökte efter den pga eget intresse

Annat: _____

7d. Hur många utbildningar i skadeförebyggande träning har du genomgått?

1

2

3

4

≥ 5

7e. När gick du utbildning senast?

1 år sedan

2–3 år sedan

4–5 år sedan

> 5 år sedan

8. Hur länge har ni använt er av skadeförebyggande träning i det lag du tränar?

≤ 3 månader

6 månader

1–2 år

3–4 år

≥ 5 år

9a. Vad innefattar denna skadeförebyggande träning?

Standardiserat träningsprogram (t ex Knäkontroll, Fifa 11+)

Träningsprogram som grundar sig i standardiserat program men som är anpassat efter spelarnas behov

Eget utvecklat träningsprogram

Annat: _____

9b. Hur lång tid tar den skadeförebyggande träningen per tillfälle?

<5 min

5–10 min

10–15 min

> 15 min

10. Upplever du några fördelar med den skadeförebyggande träningen?

11. Upplever du några nackdelar med den skadeförebyggande träningen?

APPENDIX 6

Questionnaire for head coach of youth female soccer team ages 13–17

1. Age

- ≤ 20 years
- 21–30 years
- 31–40 years
- 41–50 years
- 50–60 years
- > 60 years

2. Gender

- Woman
- Man
- Other

3. What is the age group of the players in you soccer team? Several answers can be chosen.

- 13
- 14
- 15
- 16
- 17

4. How long have you been coaching soccer?

- <1 year
- 1–3 years
- 4–6 years
- 7–9 years
- ≥ 10 years

5. How many times a week does your team practice soccer?

- 1 time
- 1–2 times
- 2–3 times
- 3–4 times
- ≥ 5 times

6. How often do you use injury prevention training during soccer practice?

At all training sessions

≥ 2 times/week

Every week

Every month

Pre-season training

Occasionally

7a. Have you taken any injury prevention training course(s)? If no: go directly to question

8

Yes

No

7b. Which course(s) have you taken?

Course arranged through regional/national association

Course arranged through a soccer club

Course arranged through a soccer team (e.g. an additional coach, a parent) Other:

7c. How did you get access to this course?

Through soccer club

My own interest

Other: _____

7d. How many injury prevention training courses have you taken?

1

2

3

4

≥ 5

7e. When did you last take an injury prevention course?

1 year ago

2–3 years ago

4–5 years ago

≥ 5 years ago

8. How long have you utilized injury prevention training?

≤ 3 months

6 months

1–2 years

3–4 years

≥ 5 years

9a. What is included in your injury prevention training?

Standardized training program (for example Fifa 11+)

Standardized training program that has been specifically applied to the players

We have developed our own training program

Other: _____

9b. How long does this injury prevention training take per session?

5 min

5–10 min

10–15 min

≥ 16 min

10. Do you see any advantages with injury prevention training?

11. Do you see any disadvantages with injury prevention training?