



ASPC Exchange Program 2012



Ventura Ferrer Roca
Department of Biomechanics
CAR Sant Cugat



1.-Introduction

The Exchange Program promoted by the Association of Sports Performance Centre (ASPC) aims to encourage the sharing of knowledge and experiences, and the subsequent development of leaders between ASPC members. For a couple of years, one of the purposes of the CAR Science Unit is to consolidate a working group on injury prevention. During the last year our work has been focused on ACL injuries in sports as Gymnastics, Handball and Football. Our purpose is to establish and carry out protocols to prevent the ACL injury in these sports and, furthermore, assist in the process of the injury rehabilitation.

The Norwegian Olympic Sports Centre (Olympiattoppen) and our centre, CAR Sant Cugat (CAR) are members of this association and could participate in this Exchange program. Olympiattoppen combines clinical work and research with the Oslo University Hospital and the Oslo Sports Trauma Research Center, one of the world leaders in research in injury prevention programs. One of purposes of this program is to set the stage for a possible future collaboration through exchanging ideas, theories and protocols to reduce ACL injuries.

2.-Exchange program. Schedule (From 5th to 10th of November 2012)

Monday

Arrival Oslo Airport Rygge.

Check in at the Olympic Sports Hotel in the Olympiattoppen (Evening). The OSTRC center is next to the Olympic center.

Tuesday 6th

OSTRC

09.00 – 10.00 Grethe Myklebust: The Oslo Sports Trauma Research Center (OSTRC) - why and how?



- 10.00 – 12.00 Tron Krosshaug: Tour at the Norwegian School of Sport Sciences – ACL injuries and biomechanics
- 12.00 – 13.00 Ventura Ferrer – What is the ASPC exchange program? Injury prevention group in CAR Sant Cugat: ACL experience
- 13.00 – 14.00 Grethe Myklebust: Prevention of ACL injuries in sport
- 14.00 - 15.00 Thor Einar Andersen: OSTRC football research program

Wednesday 7th

Olympic Center program

12.00 – 18.00 Olympiatoppen

19.00 Dinner with biomechanics.

Thursday 8th

OSTRC

10.00-11.00 Agnethe Nilstad: ACL risk factor study – football

10.00-12.00 Ben Clarsen: Overuse injuries in sport

12.00-13.00 LUNCH with Tron, Ben, Agnethe, Tone and Grethe at the Olympic Training Center

13.00- 14.00 Tone Bere: Video analysis of skiing injuries

Friday 9th

Norwegian School of Sport Sciences

10.00 – 12.00 Ventura Ferrer. Cycling Presentation at the Physical Performance Department : Acute effects of small changes in saddle eight on pedalling efficiency and lower limb kinematics-



3.-Exchange Program: Topics discussed

3.1.-Oslo Sports Trauma Research Center

OSTRC was established at the Norwegian School of Sport Sciences in May 2000. Chaired by Lars Engebretsen and Roald Bahr. The aim of the OSTRC is to prevent injuries and other health problems in sports through research on risk factors, injury mechanisms, and prevention methods, with a particular focus on football, team handball, and alpine skiing/snowboarding.

Long term grants from the Royal Norwegian Ministry of Culture, the Norwegian Olympic Committee & Confederation of Sport, Norsk Tipping AS, and Pfizer AS. OSTRC won competitive grants from various sources, including from sports (FIFA, FIS, IOC). Budget in 2010 was 10 mill NOK.

Some of the ongoing PhD-Projects:

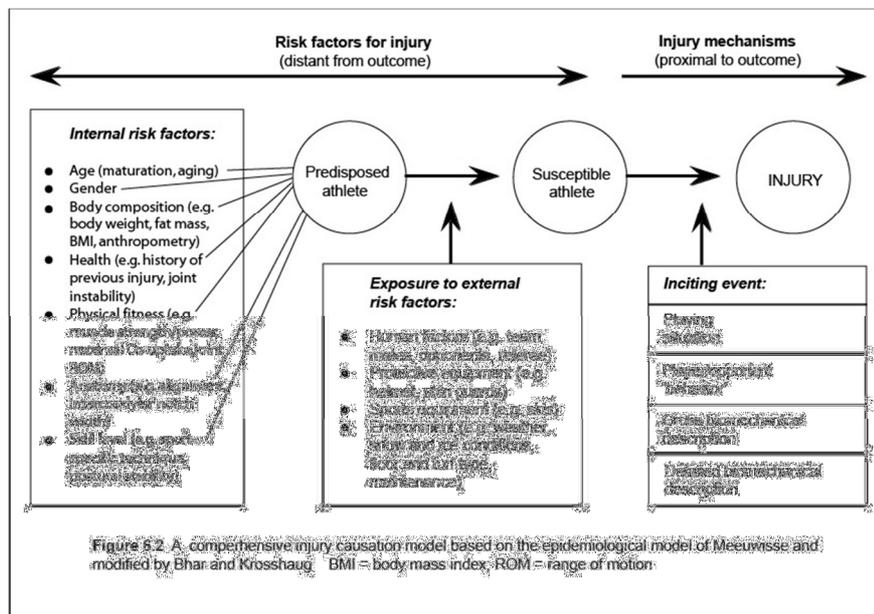
- Risk factors for patellar tendinopathy (Håvard Visnes)
- Treatment of patellar tendinopathy (Aasne Fenne Hoksrud)
- Artificial turf in elite soccer (John Bjørneboe)
- Cartilage injuries (Rune Jacobsen)
- Risk factors for ACL injuries in handball (Eirik Kristianslund)
- Preventing eating disorders in young elite athletes (Marianne Marthinsen)
- Mechanisms for World Cup skiing and snowboarding injuries (Tone Bere)
- Risk factors for ACL injuries in female soccer (Agnethe Nilstad)
- The footballer's heart (Hilde Moseby Berge)
- Cartilage injuries in sport (Cathrine Engen)
- Preventing overuse injuries in the throwing shoulder (Ben Clarsen)
- Causes of injuries in World Cup freestyle skiing (Stefan Randjelovic)

3.2.-Identify risk factors

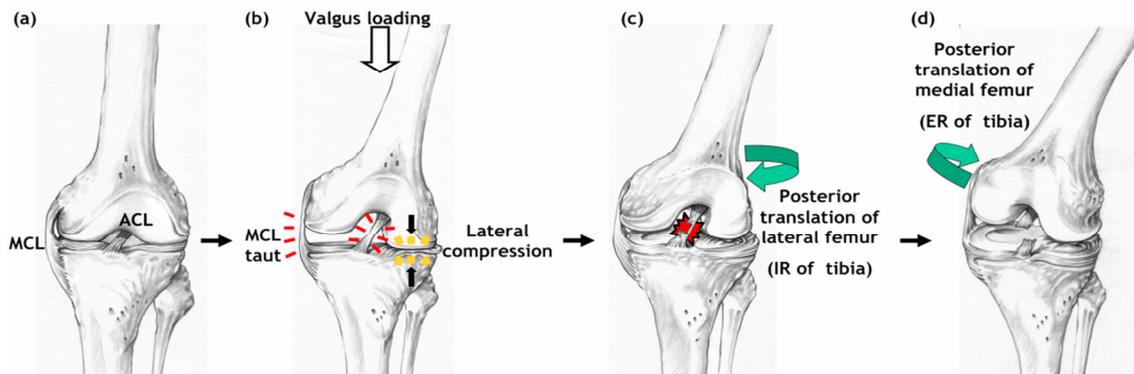
Injury surveillance is a key risk management tool. Establishing reliable and feasible registration systems is a necessary step toward identifying risk factors and implementing preventive strategies. As prospective medical staff registration represents the current gold standard for injury surveillance, but results of this study suggest that this should be reconsidered. Individual registration based on text messaging could replace established methods for monitoring and describing injury patterns in sports. Furthermore, there is a potential for developing even more efficient and accessible tools, including smartphone applications, as well as utilizing modern communicative methods such as Skype, Facebook, or Twitter.

3.3.-Causes of the ACL injury

Research on injury prevention has been described by van Mechelen et al (1992) as a step by step process, in which information on the causes of injury is systematically collected and used to develop potentially effective intervention methods. One important goal is to map the different extrinsic and intrinsic risk factors that contribute to the susceptibility of an athlete to injury, as described by Meeuwisse. However, to develop specific injury prevention methods for a particular injury type in a given sport, it is important to describe the inciting event or mechanism of injury, as outlined by Bahr and Krosshaug:



ACL Injury mechanism (Koga et al; 2010): Sudden valgus increase reached 12° in 40 ms after initial foot contact, internal tibial rotation increased by 8° in 40 ms after initial contact, peak vertical ground reaction force occurred at 40 ms after initial contact. Due to valgus loading, then Medial collateral ligament gets taut and lateral compression occurs, compressive loading and/or quadriceps drawer. ACL rupture through anterior tibial translation and internal tibial rotation, after the injury, the primary restraint to anterior tibial drawer is gone and the medial femoral condyle is displaced posteriorly resulting in external tibial rotation.



3.4.-Prevention program of ACL

A structured warm-up programme designed to improve awareness and control of knees and ankles during landing and pivoting that combine plyometrics, core strengthening, balance, resistance or speed/agility training may improve several measures of performance concomitantly and at the same time reduces injuries to the lower limb in youth team handball. Preventive training should therefore be introduced as a natural part of youth sports training programmes in similar pivoting sports. OSTRC has designed training programs for handball and football (11+).

11+

PART 1: RUNNING EXERCISES - 8 MINUTES

1 STRAIGHT AHEAD To go to: Running straight ahead, 10 seconds. Repeat 10 times.	2 RUNNING UP/DOWN To go to: Running up/down stairs, 10 seconds. Repeat 10 times.	3 RUNNING UP/DOWN To go to: Running up/down stairs, 10 seconds. Repeat 10 times.
4 RUNNING ON ONE FOOT To go to: Running on one foot, 10 seconds. Repeat 10 times.	5 RUNNING ON ONE FOOT To go to: Running on one foot, 10 seconds. Repeat 10 times.	6 RUNNING ON ONE FOOT To go to: Running on one foot, 10 seconds. Repeat 10 times.

PART 2: STRENGTH - PLYOMETRICS - BALANCE - 10 MINUTES

1 THE BENCH STENCH To go to: Bench stench, 10 seconds. Repeat 10 times.	2 THE BENCH STENCH To go to: Bench stench, 10 seconds. Repeat 10 times.	3 THE BENCH STENCH To go to: Bench stench, 10 seconds. Repeat 10 times.
4 THE BENCH STENCH To go to: Bench stench, 10 seconds. Repeat 10 times.	5 THE BENCH STENCH To go to: Bench stench, 10 seconds. Repeat 10 times.	6 THE BENCH STENCH To go to: Bench stench, 10 seconds. Repeat 10 times.

PART 3: RUNNING EXERCISES - 2 MINUTES

1 RUNNING AROUND THE PITCH To go to: Running around the pitch, 10 seconds. Repeat 10 times.	2 RUNNING AROUND THE PITCH To go to: Running around the pitch, 10 seconds. Repeat 10 times.
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Forebygging av korsbåndskader

AK1
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK2
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK3
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK4
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK5
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK6
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK7
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

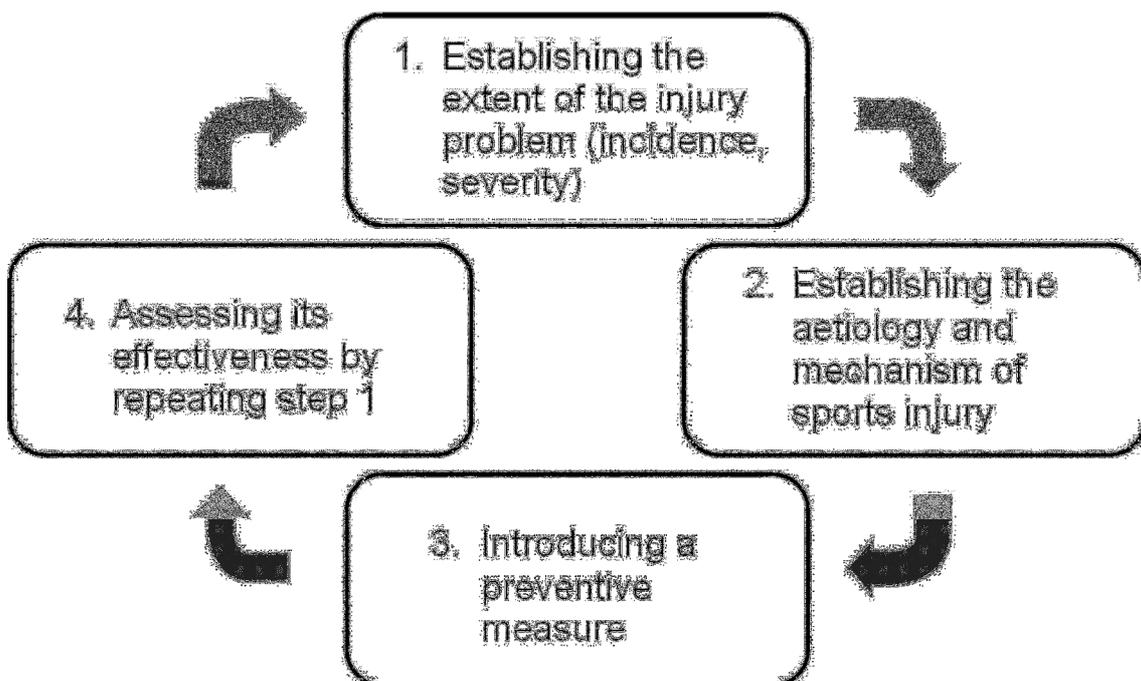
AK8
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK9
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

AK10
To go to:
Running straight ahead, 10 seconds.
Repeat 10 times.

4.- Conclusions

The conceptual model developed by Van Mechelen in 1992 seems to be a good line of work to prevent injuries such as ACL in Handball, Football and Gymnastics.





Following this conceptual model, the CAR should promote mainly three care and research lines:

Firstly, a project to develop a surveillance system based on Individual injury registration based in modern communicative methods such as Skype, Facebook, or Twitter. The aim is to assess the incidence and severity of the injuries in each sport and to evaluate preventive programs adopted. In this case, it would be very interesting to collaborate with OSTRC and Olympiatoppen because they have already an on-going project related to this topic.

Second. Department of Biomechanics should continue developing and improving screening tests to evaluate risk factors and to detect athletes predisposed to an ACL injury. At least, at the beginning of each season, biomechanics should carry out these screening tests.

Third. Physical trainers and Physiotherapists jointly with sports coaches should develop the ACL injury prevention programs. In the case of Handball and Football, the prevention programs developed by the OSTRC could be an interesting starting point. On the other hand, gymnastics should start with exercises tailored to the sport.

In conclusion, the injury prevention of our athletes could be a major concern of the ASPC. The exchange information of this topic between the ASPC centres could be a very good support to improve the prevention programs in specific sports with high injury incidence. From my point of view, this exchange program has been an enriching professionally experience. It is a good starting point to develop joint projects between the both institutions. Moreover, I am sure that this experience will improve the ACL injury prevention program in CAR.