

# International Society for Snowsports Medicine



**35<sup>th</sup> SITEMSH congress 2016**

**Inawashiro – Fukushima  
JAPAN**

**March 13<sup>th</sup>-17<sup>th</sup> 2016**

# Evolution of knee injuries in snow sports

**Dr Aleix Vidal**



traumatologia i medicina  
d'esports d'hivern  
Dr. Aleix Vidal i col·laboradors

**Baqueira-Beret Medical Center 2005 - 2015**

# Baqueira-Beret Ski Resort

**1992 - 2015**

**15,568,790** visitors

**58,142** snow sport  
injuries seen in  
Baqueira Beret  
Medical Centre.



# Injuries per season

## Statistics



### Data

- **Ski: 2,4** per thousand ski days
- **Snowboard: 5,3** per thousand ski days

1. Baqueira Beret – Main data

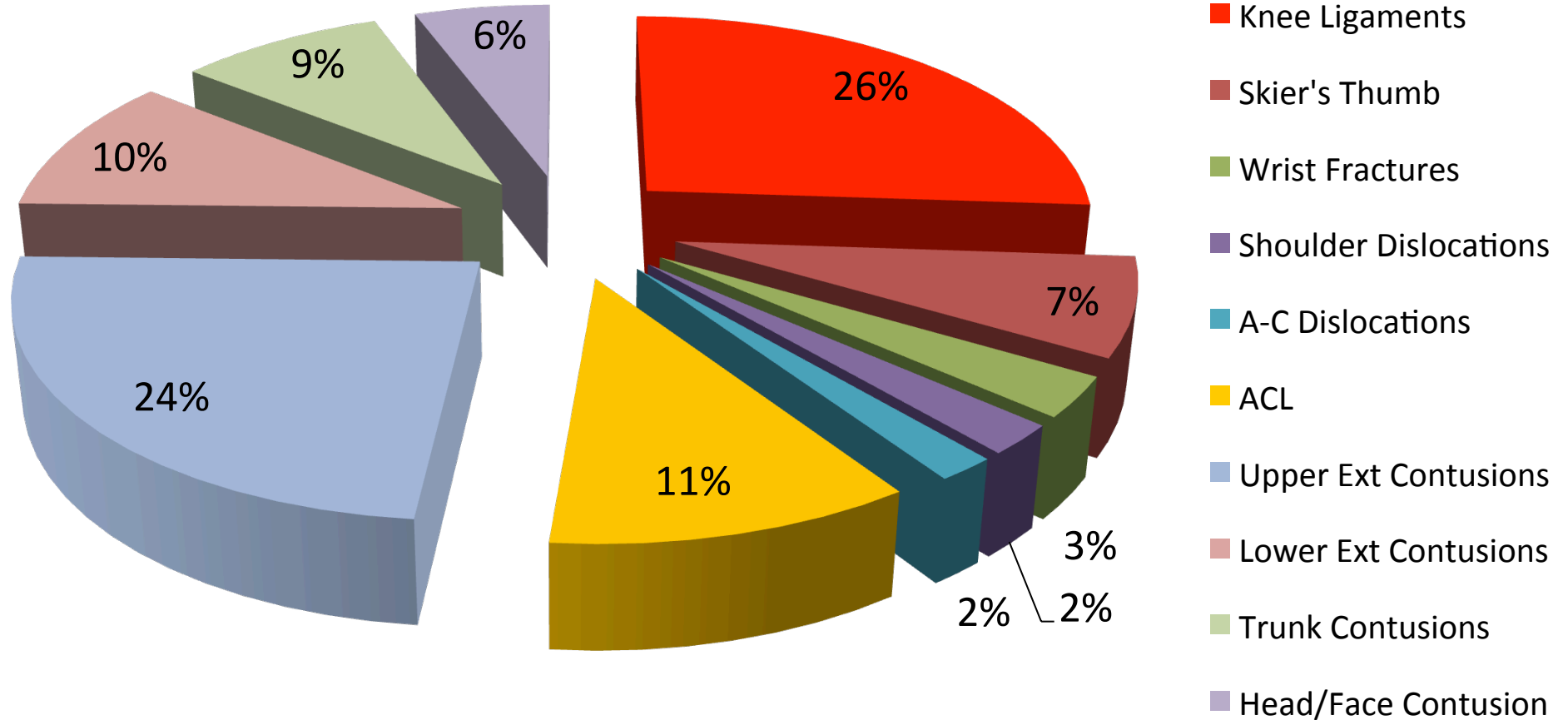
2. Types of injuries

3. Knee Injuries

4. Conclusions

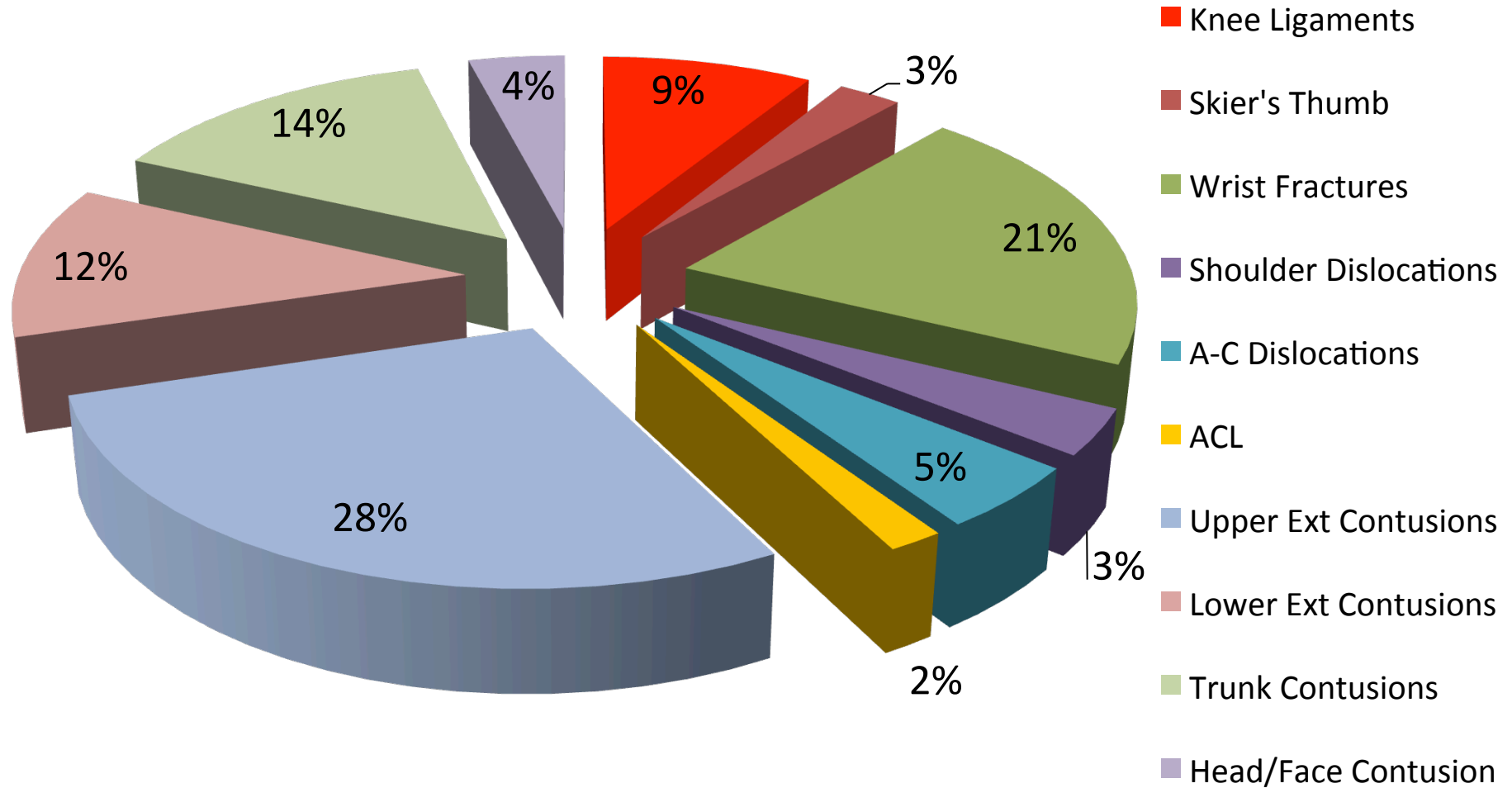
# Types of Injuries

## Ski – Most common injuries



# Types of Injuries

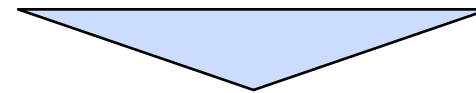
## Snowboard – Most common injuries



1. Baqueira Beret – Main data
2. Types of injuries
3. Knee Injuries
4. Conclusions

# Knee Injuries

30,477 sports injuries in last 11 seasons  
(2005-2015)

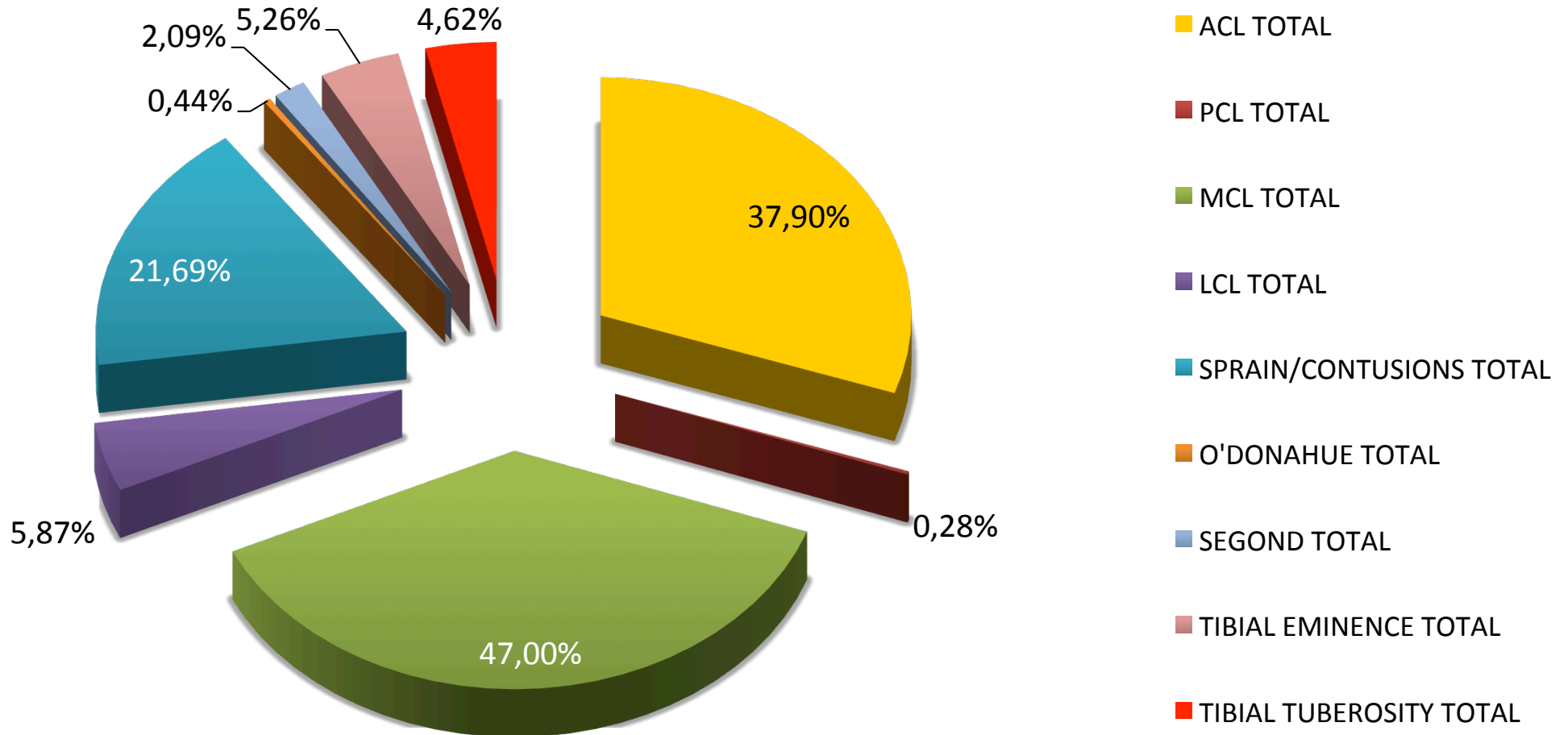


**10.319** knee injuries



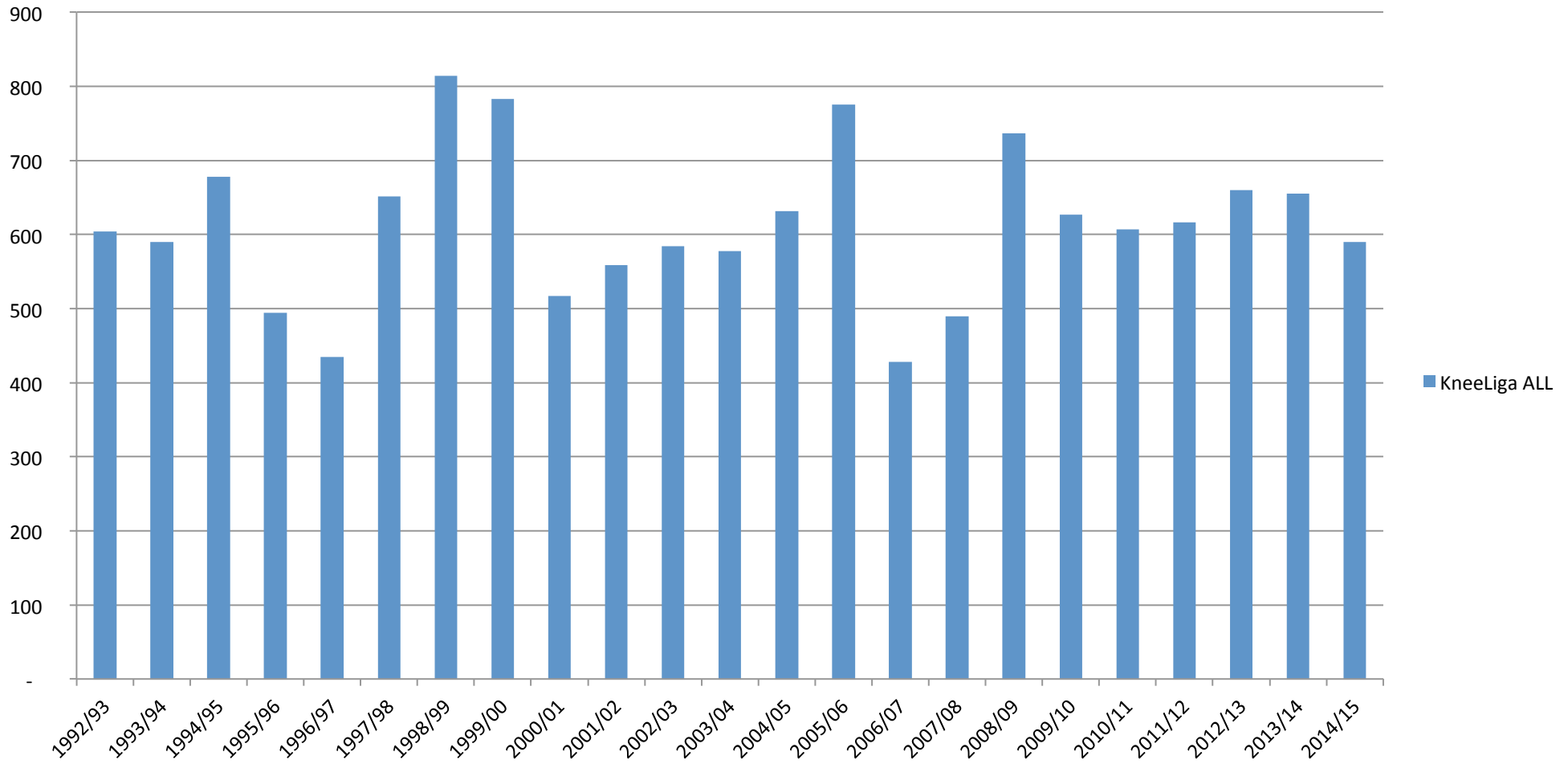
# Knee Injuries

10.319 knee injuries in 11 seasons



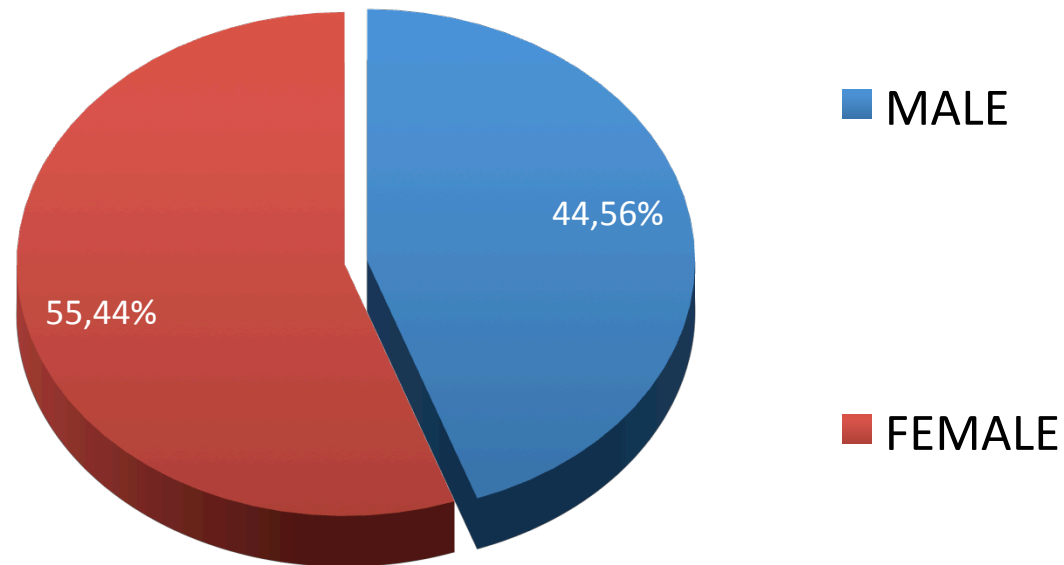
# Knee Ligament Injuries

KneeLiga ALL

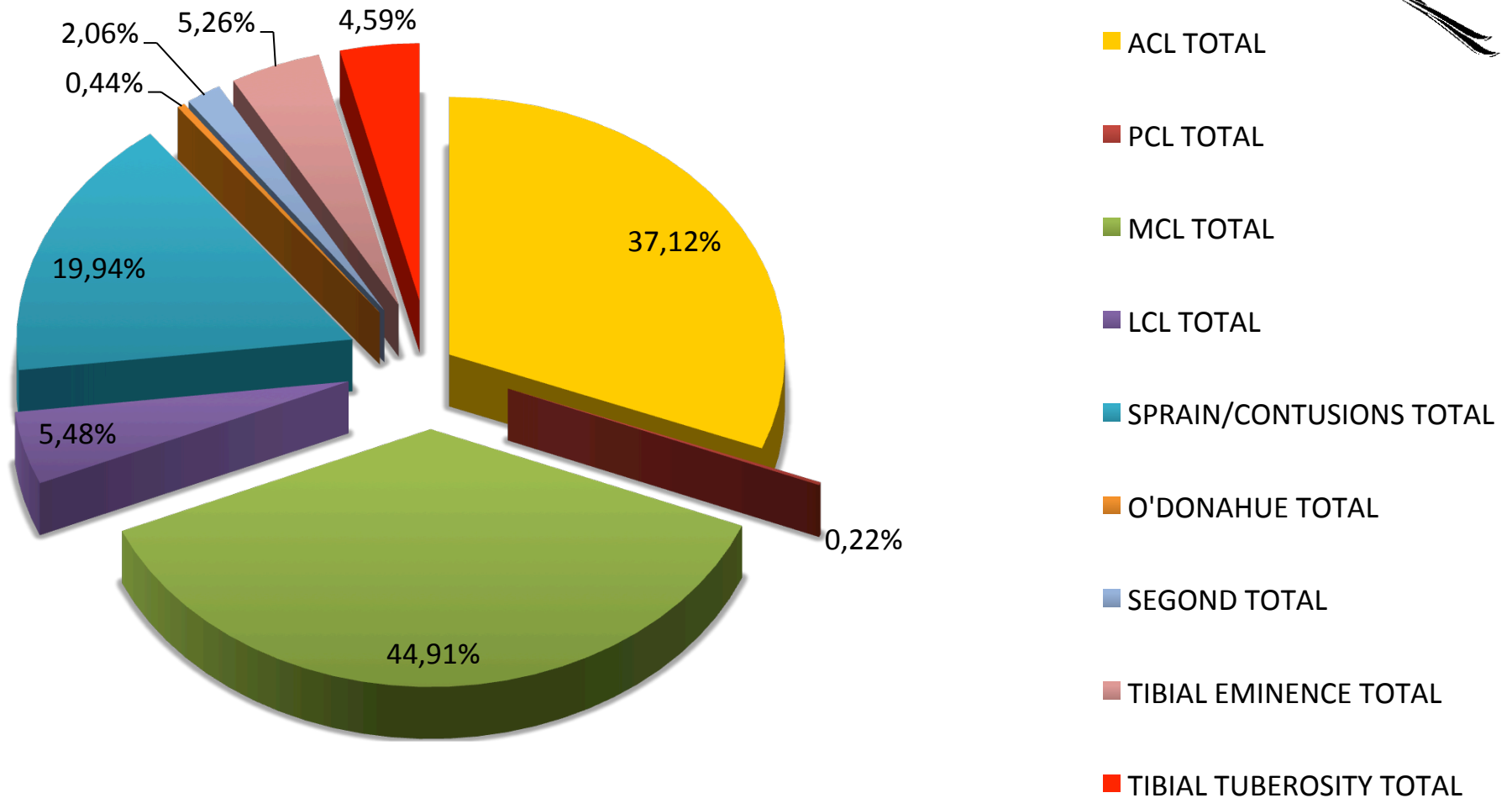


# Knee Injuries. 2005-2015

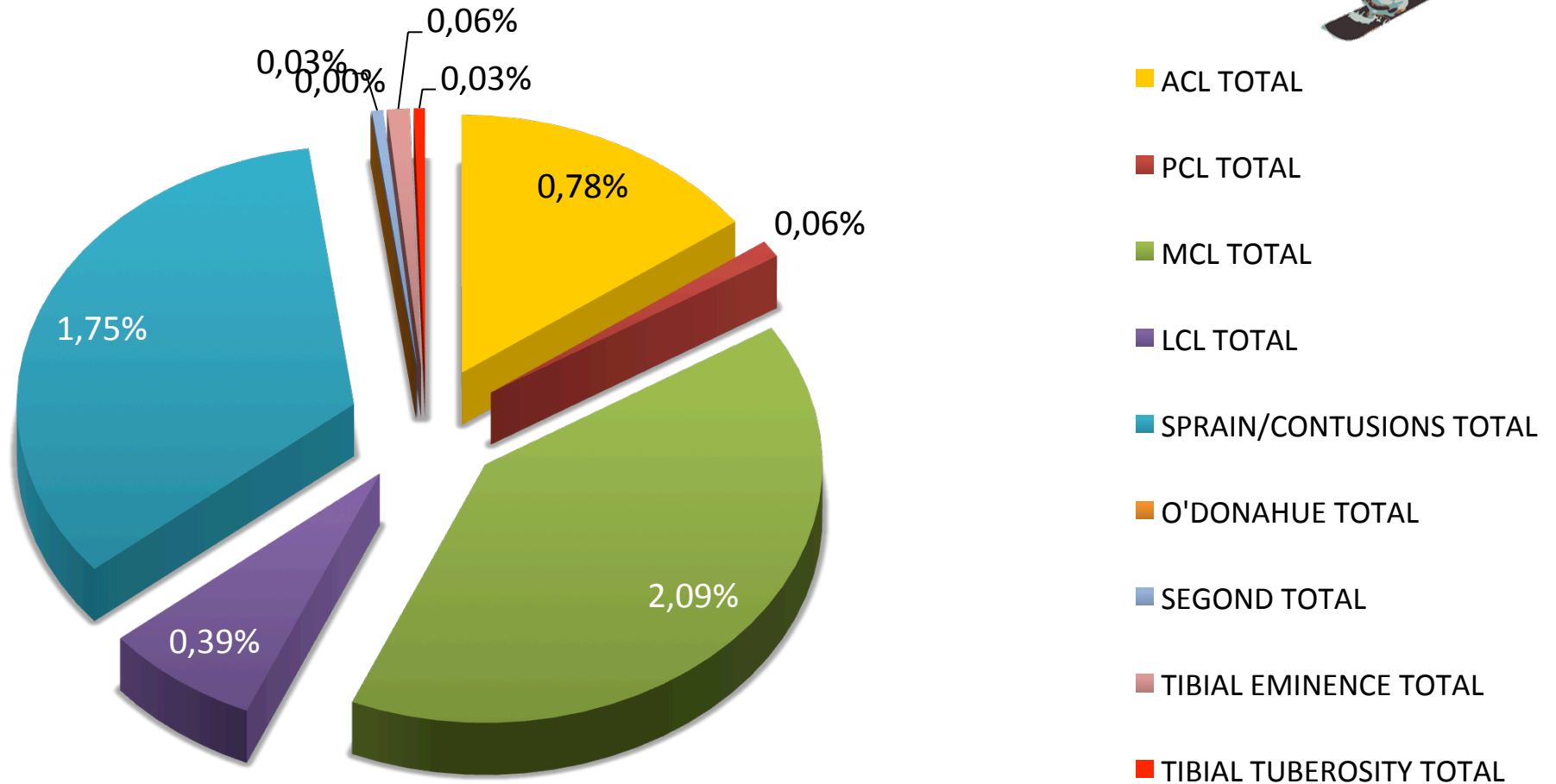
**10.319 Cases in 11 seasons**  
**Mean age 34 years old**



# Down Hill Ski Knee Injuries

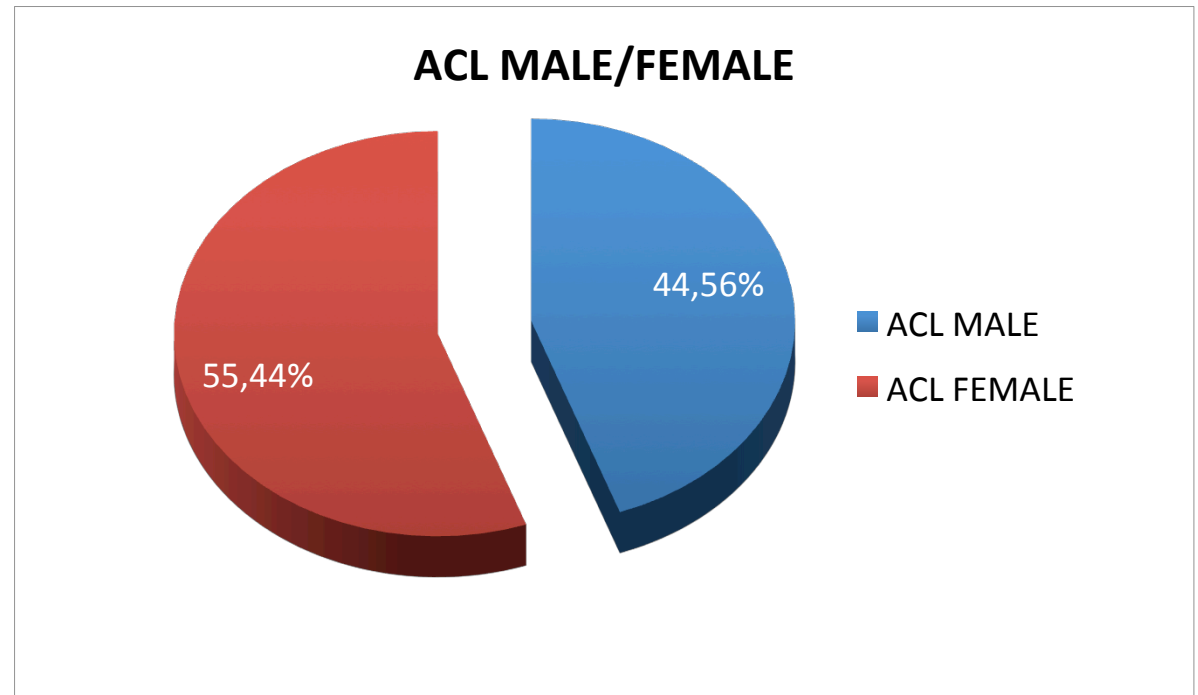
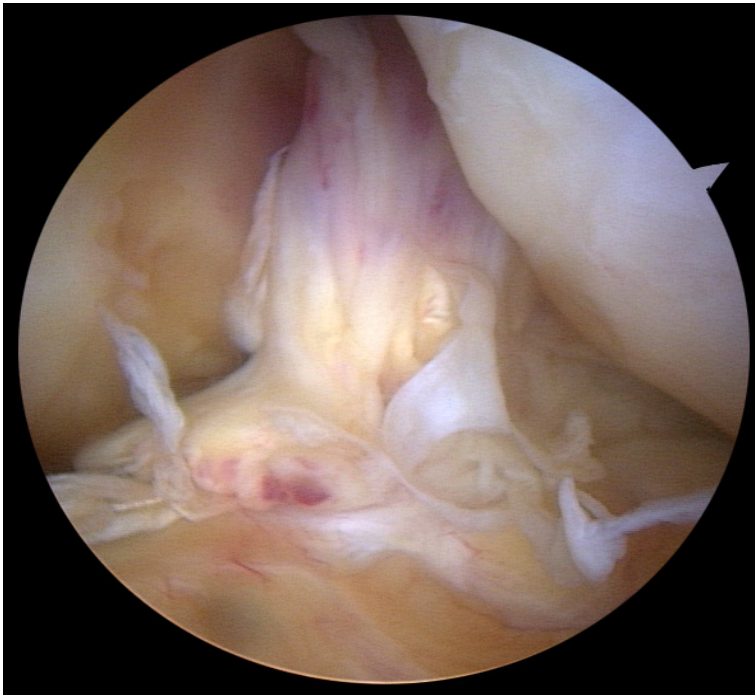


# Snowboard Ski Knee Injuries



# Anterior Cruciate Ligament 2005-2015

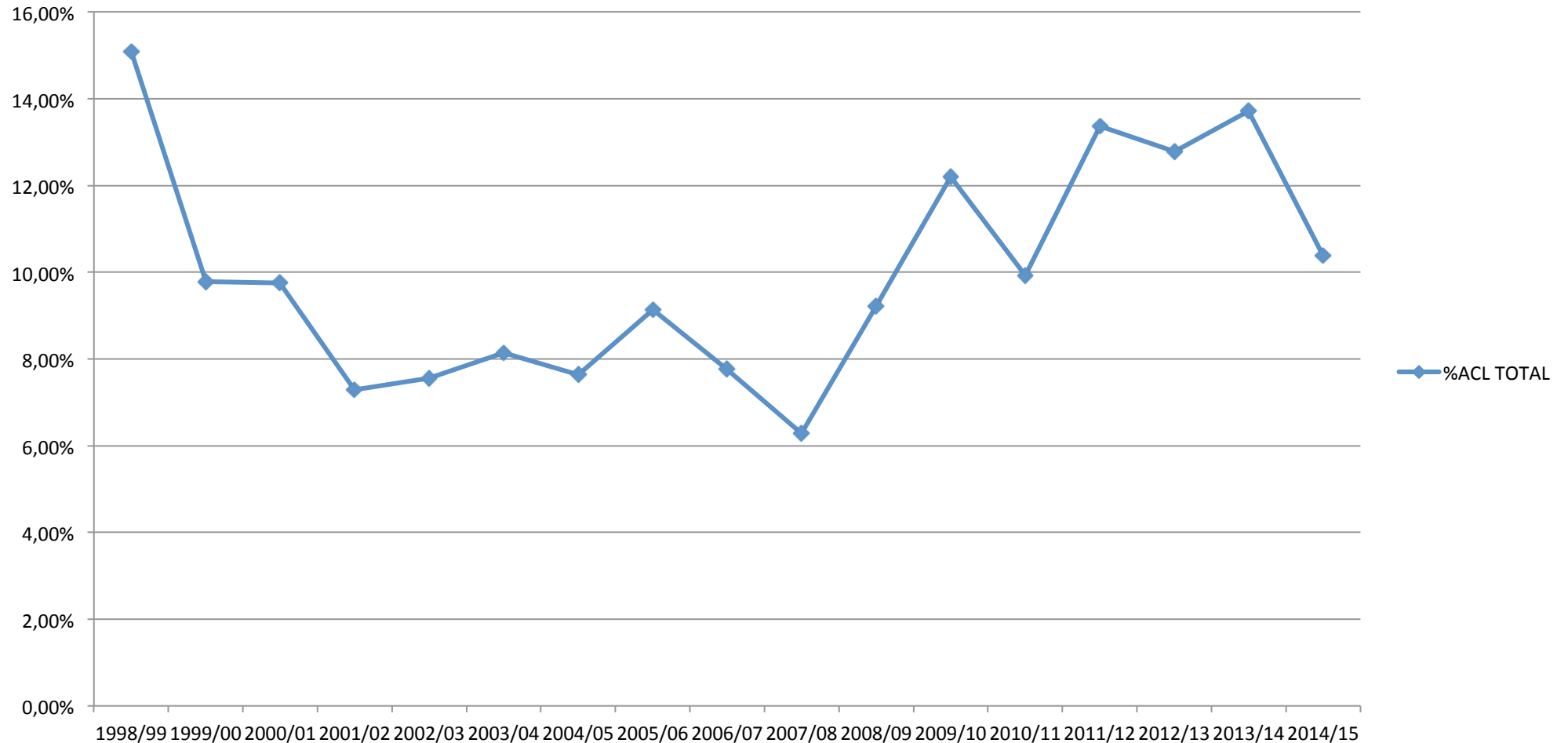
4.606 Cases in 11 seasons  
Mean age 39 years old



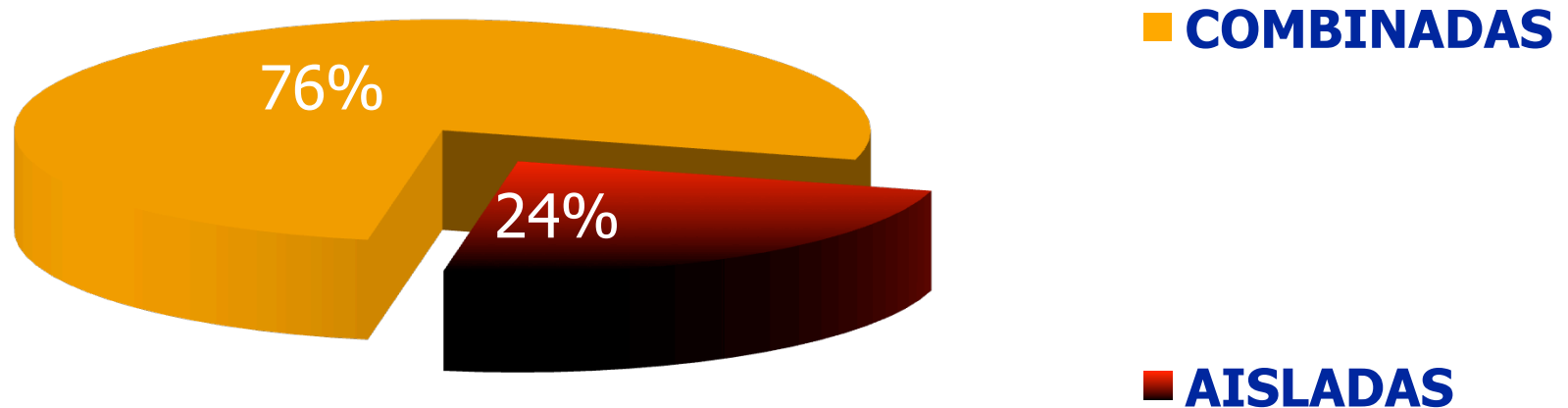
# Evolution of Injuries

## ACL (related to 1.000 injuries)

%ACL TOTAL



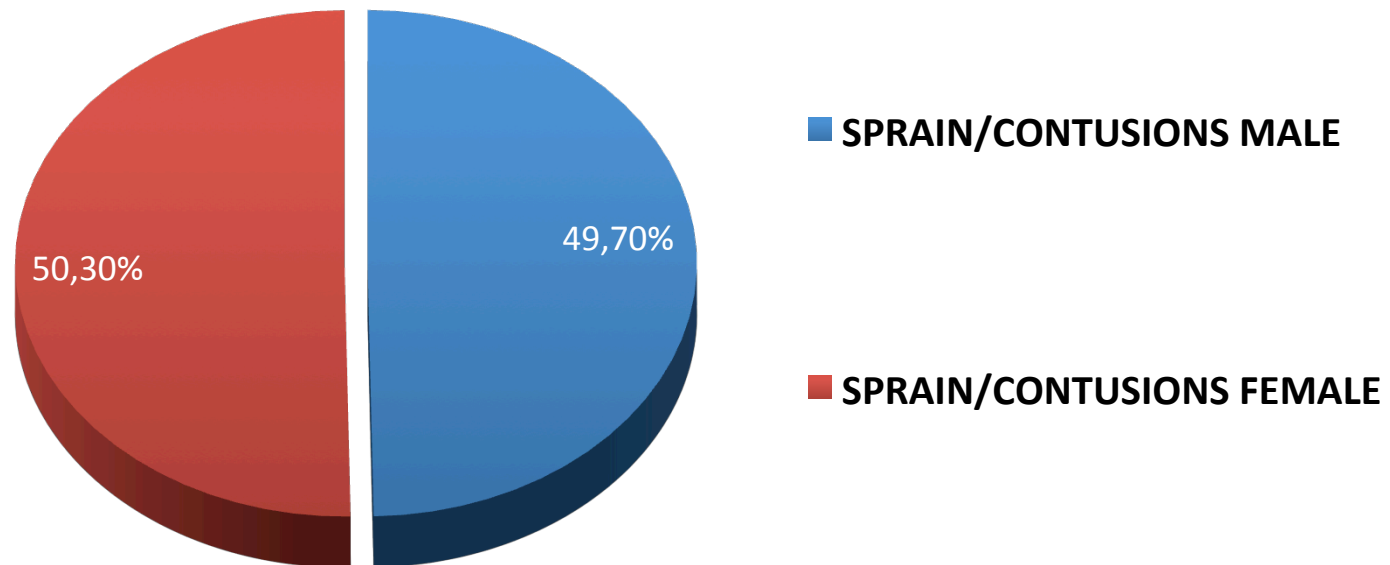
# In Down Hill Skiers, ACL injuries are commonly associated with other knee lesions...



# Sprains and Contusions

**4.338 Cases in 11 seasons**

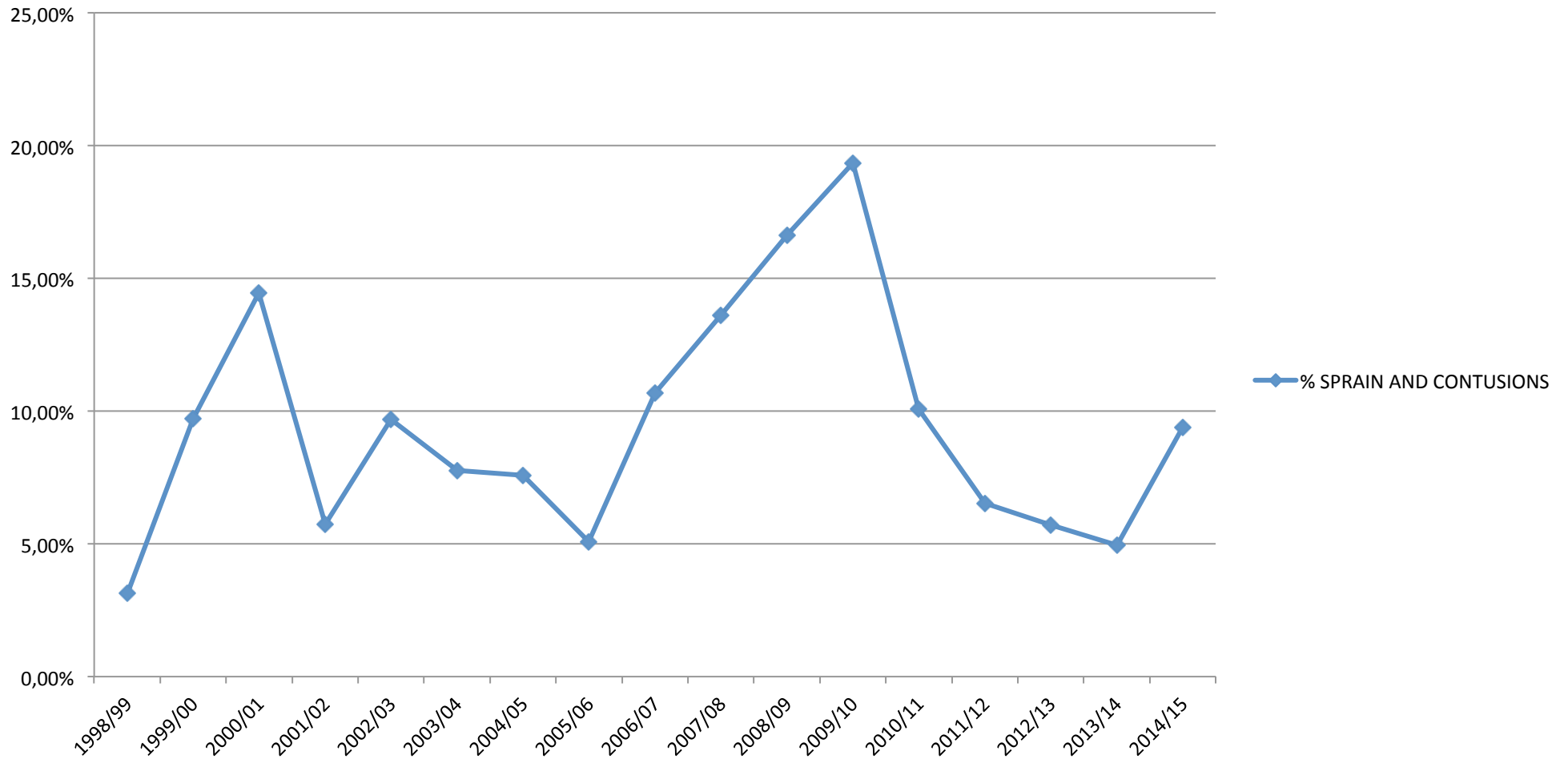
**Mean age 37 years old**



# Evolution of Injuries

## Sprains and Contusions (related to 1.000 injuries)

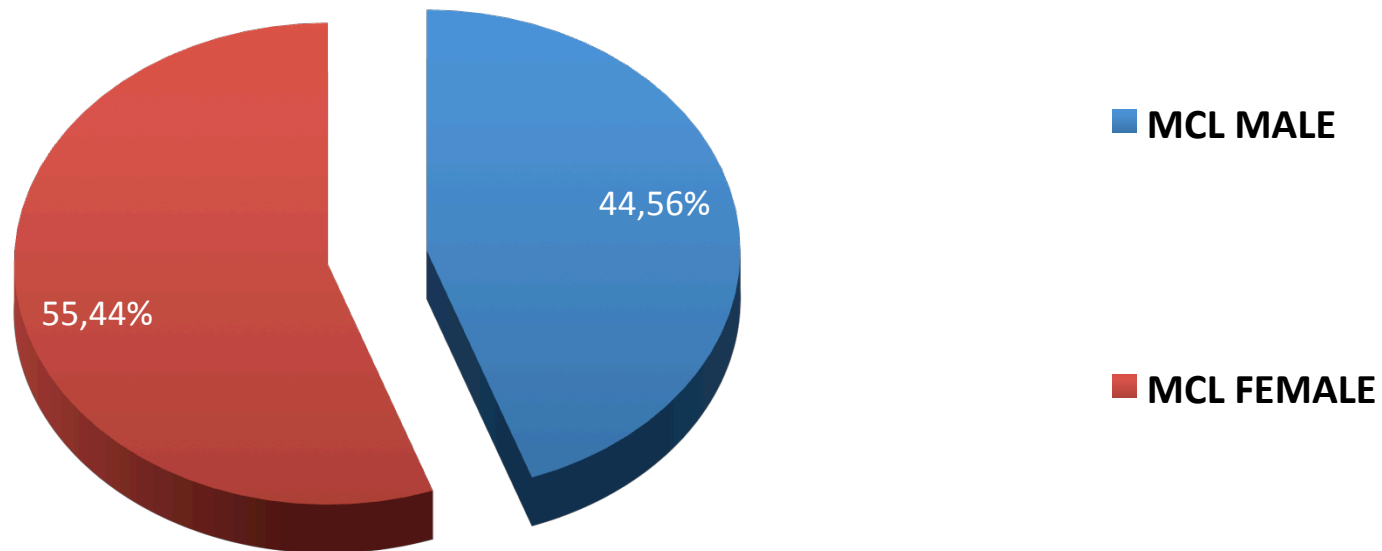
**% SPRAIN AND CONTUSIONS**



# Medial Collateral Ligament

7.595 Cases in 11 seasons

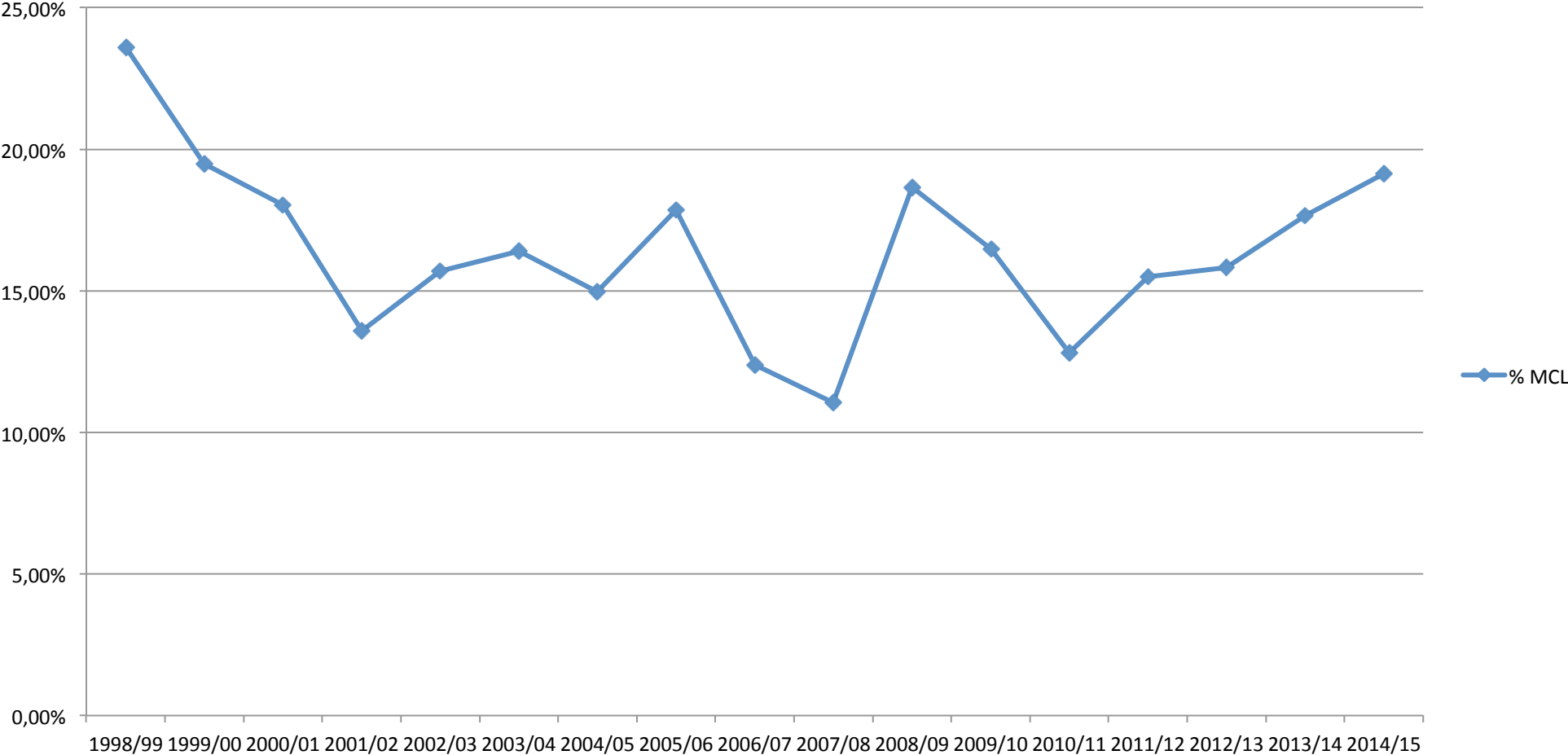
Mean age 37 years old



# Evolution of Injuries

## MCL (related to 1.000 injuries)

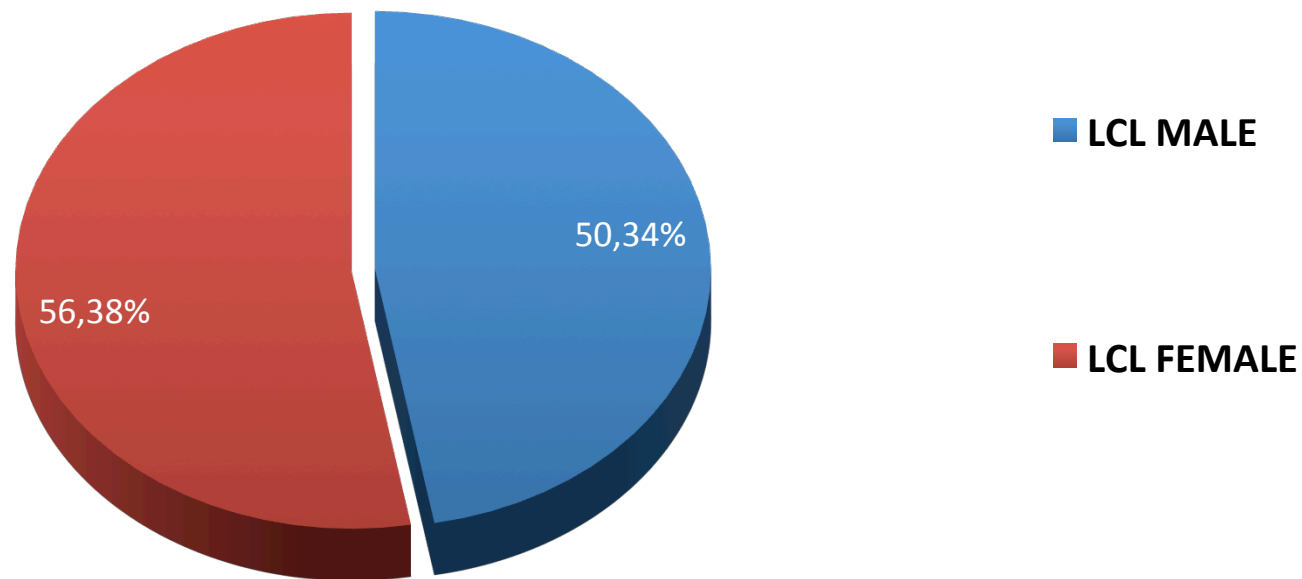
% MCL



# Lateral Collateral Ligament

**1.465 Cases in 11 seasons**

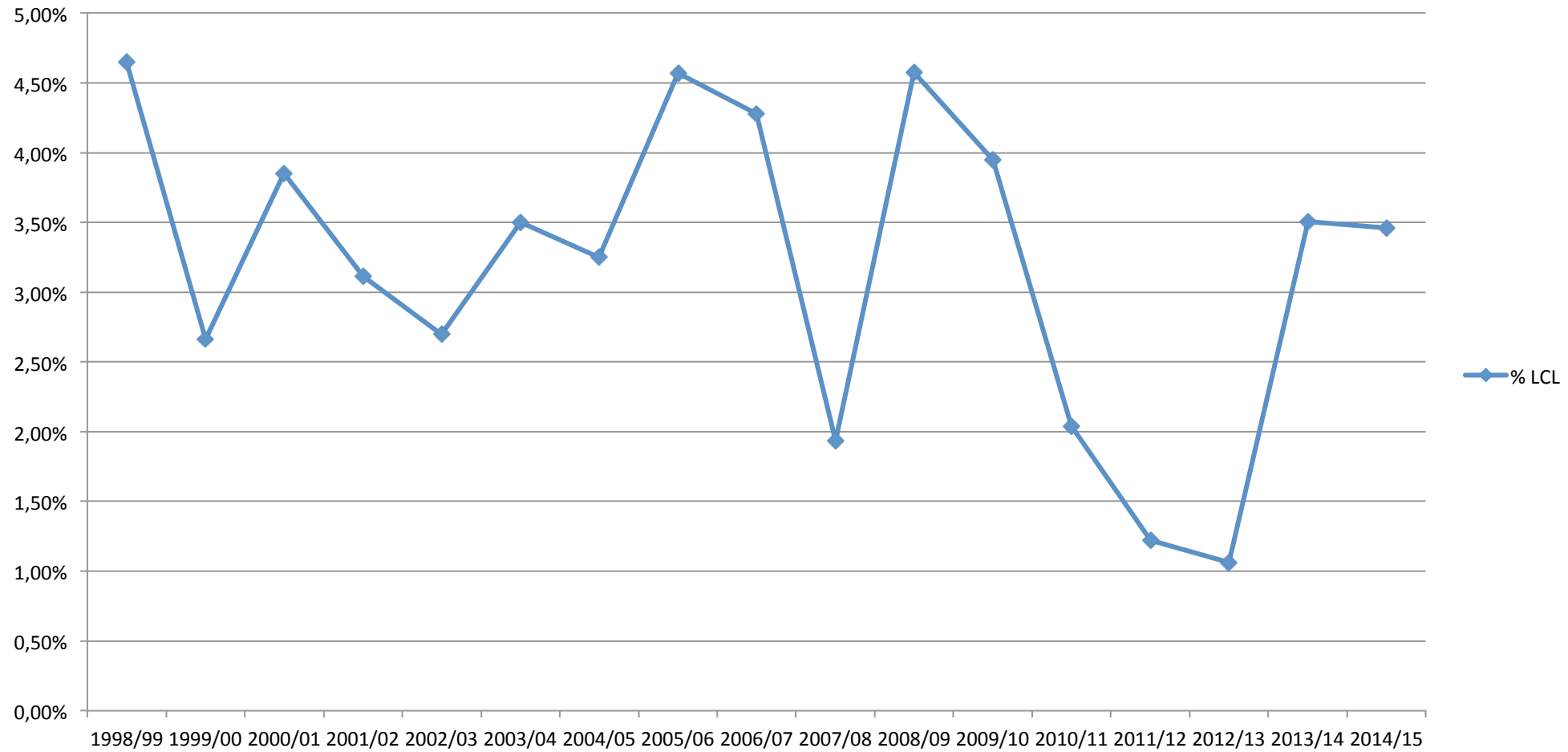
**Mean age 37 years old**



# Evolution of Injuries

## LCL (related to 1.000 injuries)

% LCL



# Segond Fracture

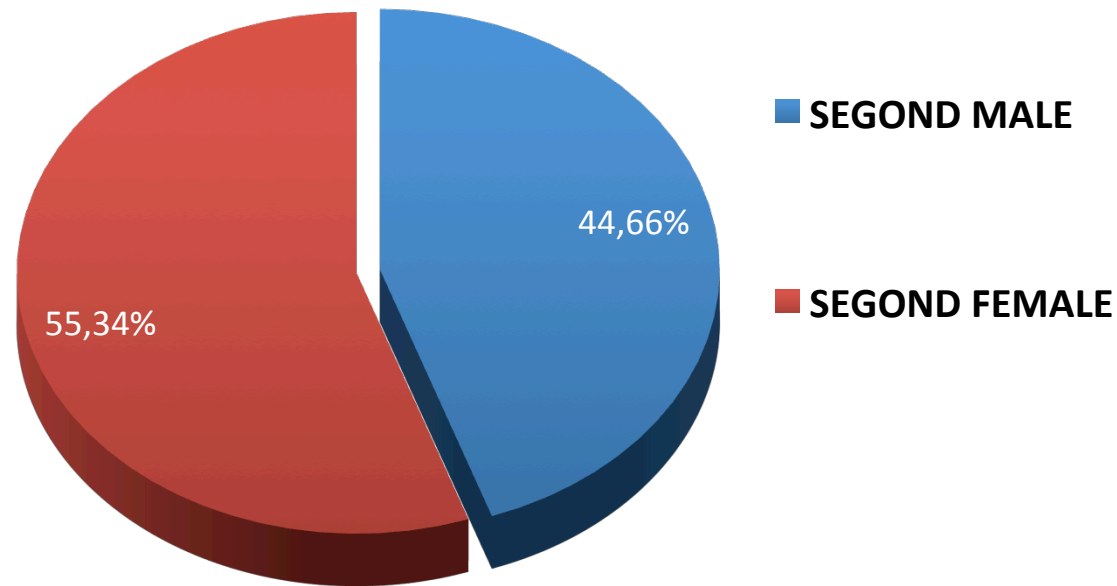
“Segond Lesion” *Progres Med*: 1879;7:297,319,340,0,419



# Segond Fracture

255 Cases in 11 seasons

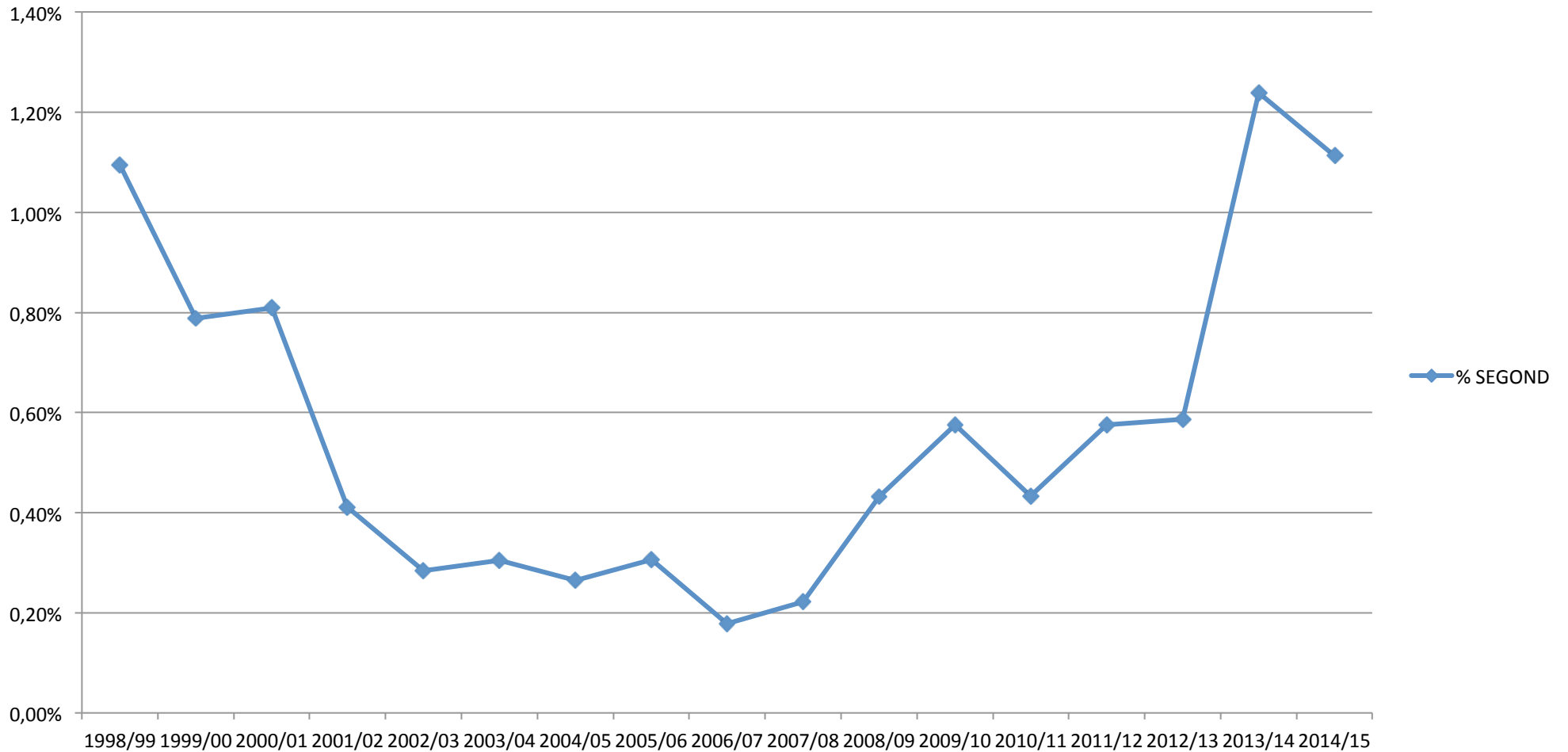
Mean age 42 years old



# Evolution of Injuries

## Segond (related to 1.000 injuries)

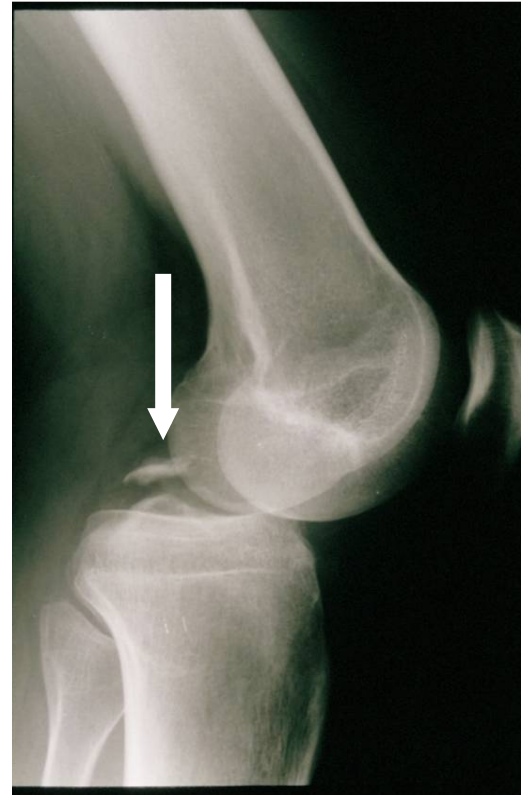
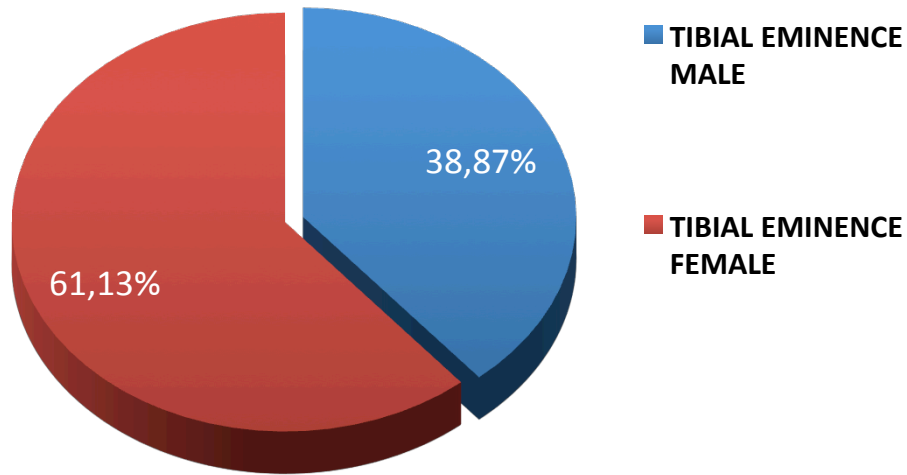
% SEGOND



# Tibial Eminence Avulsion Fracture

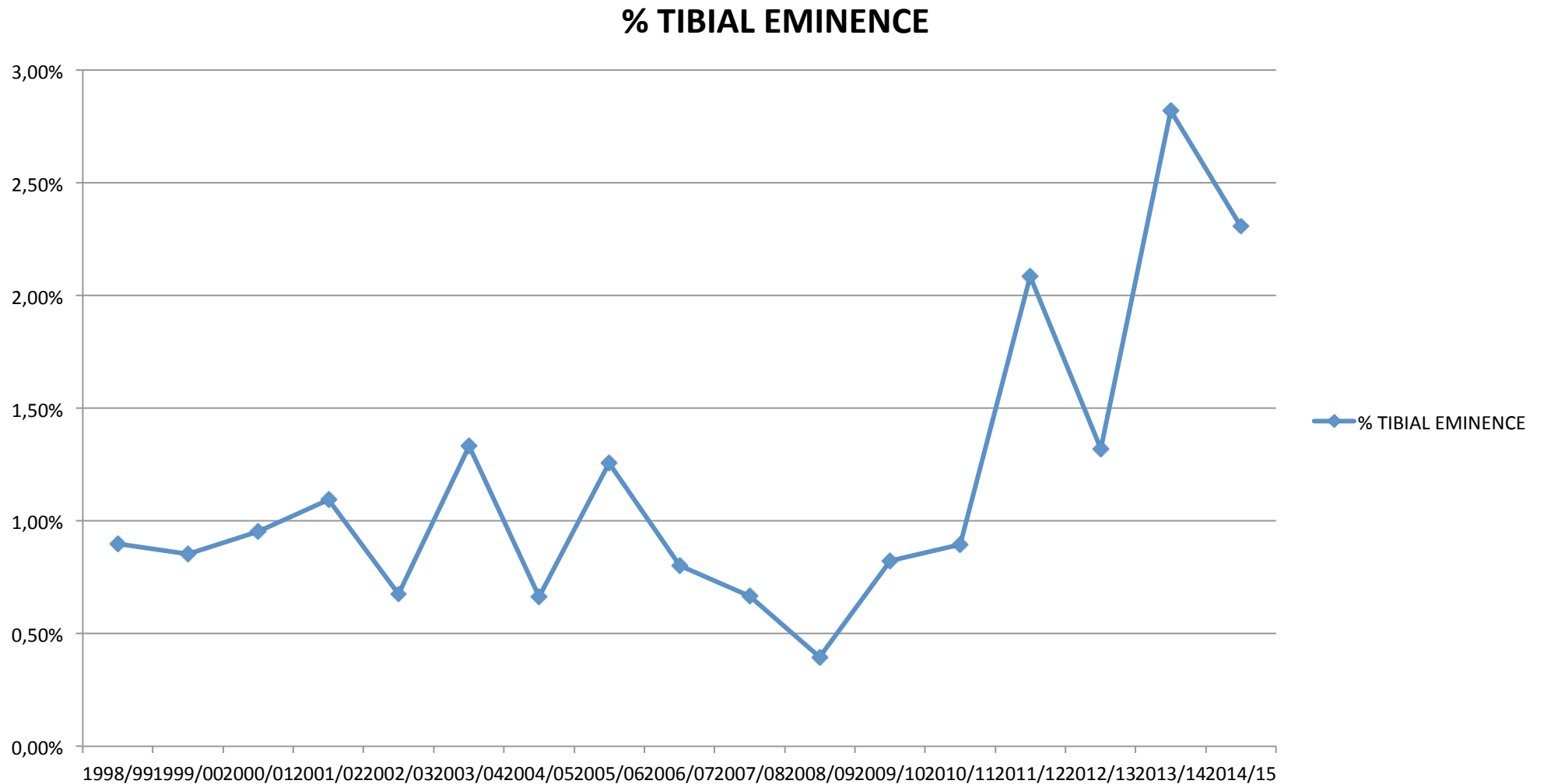
533 Cases in 11 seasons

Mean age 36 years old



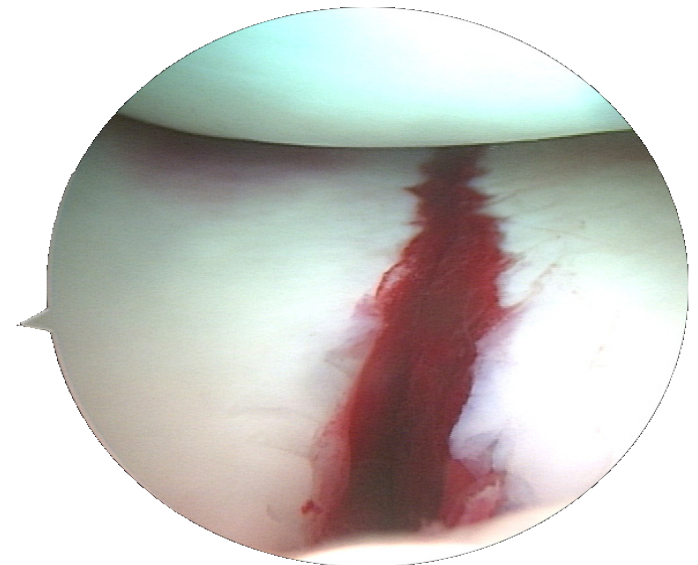
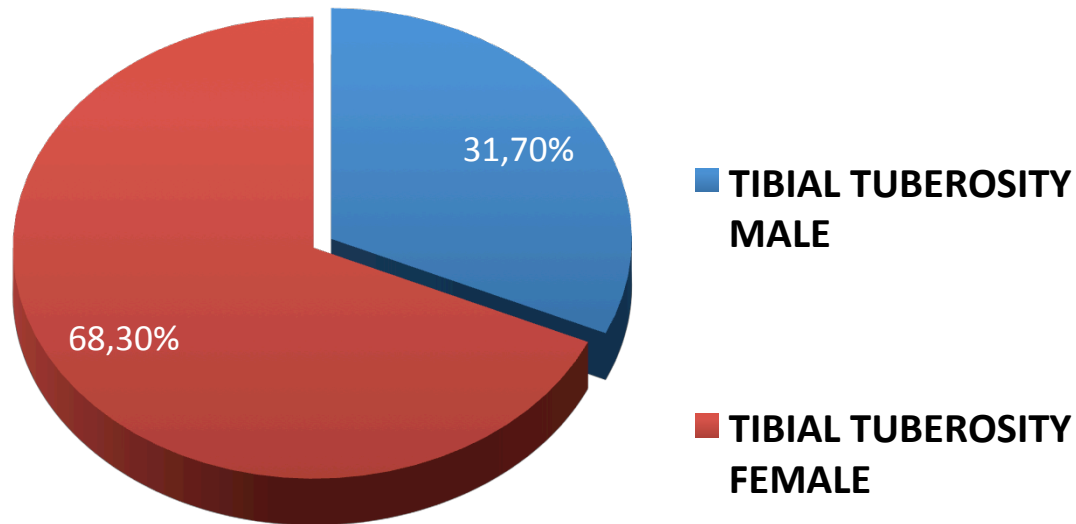
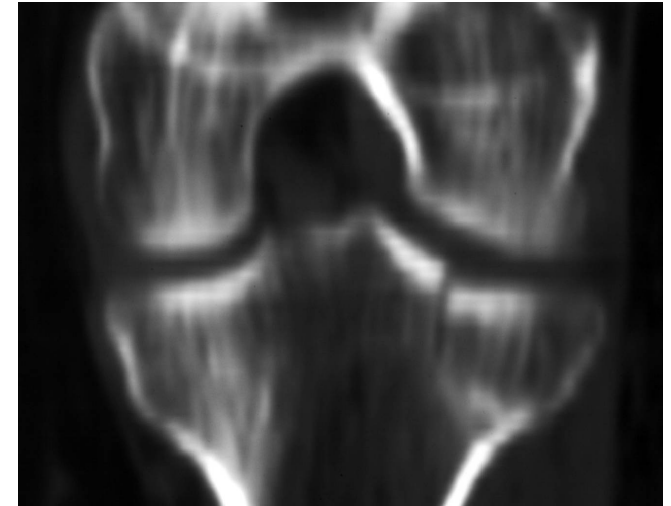
# Evolution of Injuries

## Tibia Eminence Avulsion (related to 1.000 injuries)



# Tibia Tuberosity Fractures

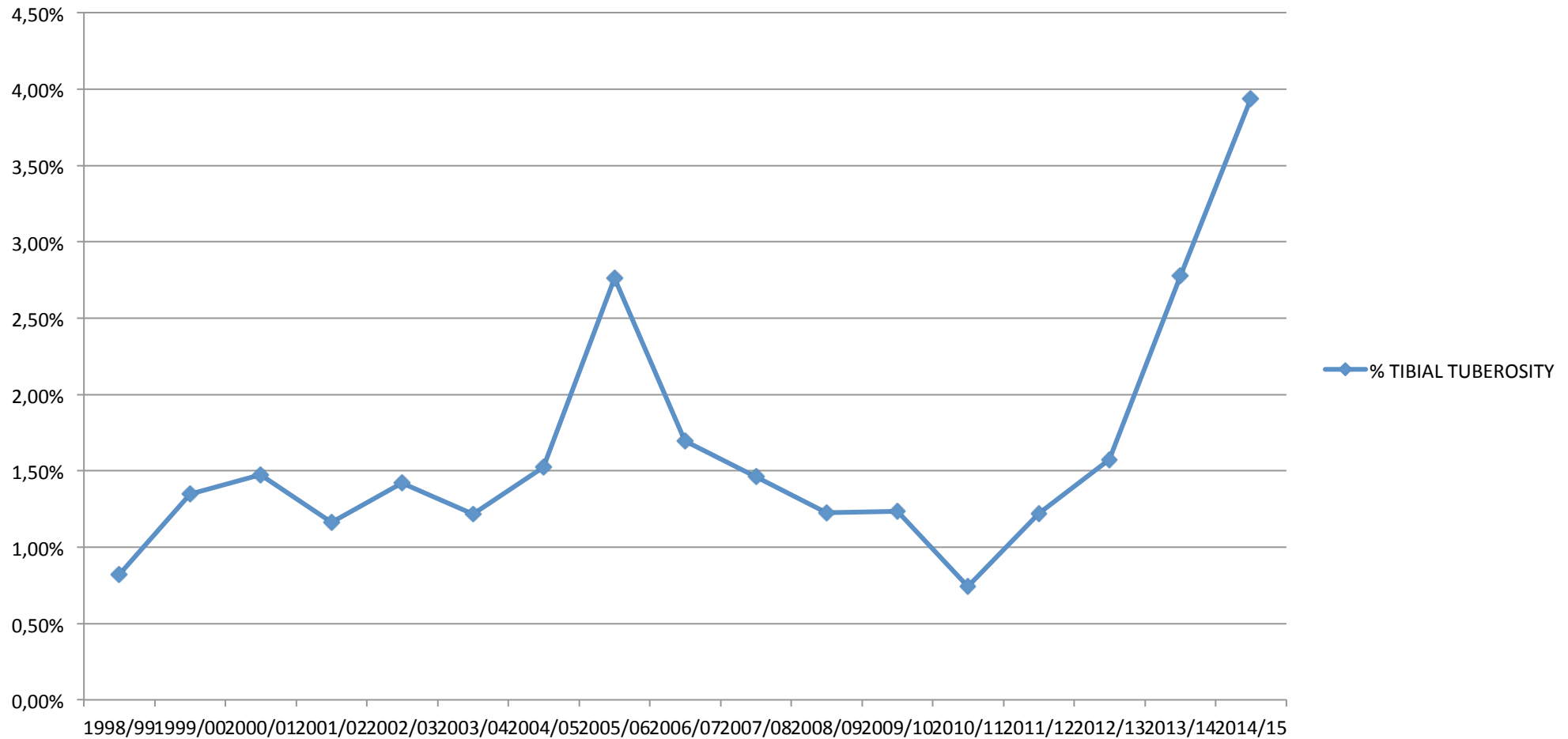
**748 Cases in 11 seasons**  
**Mean age 49 years old**



# Evolution of Injuries

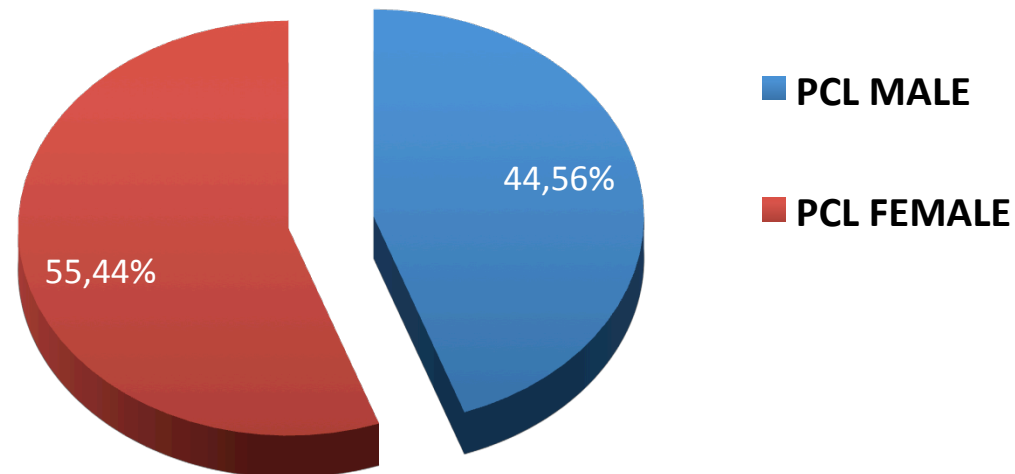
## Tibia Tuberosity (related to 1.000 injuries)

% TIBIAL TUBEROSITY



# Posterior Cruciate Ligament

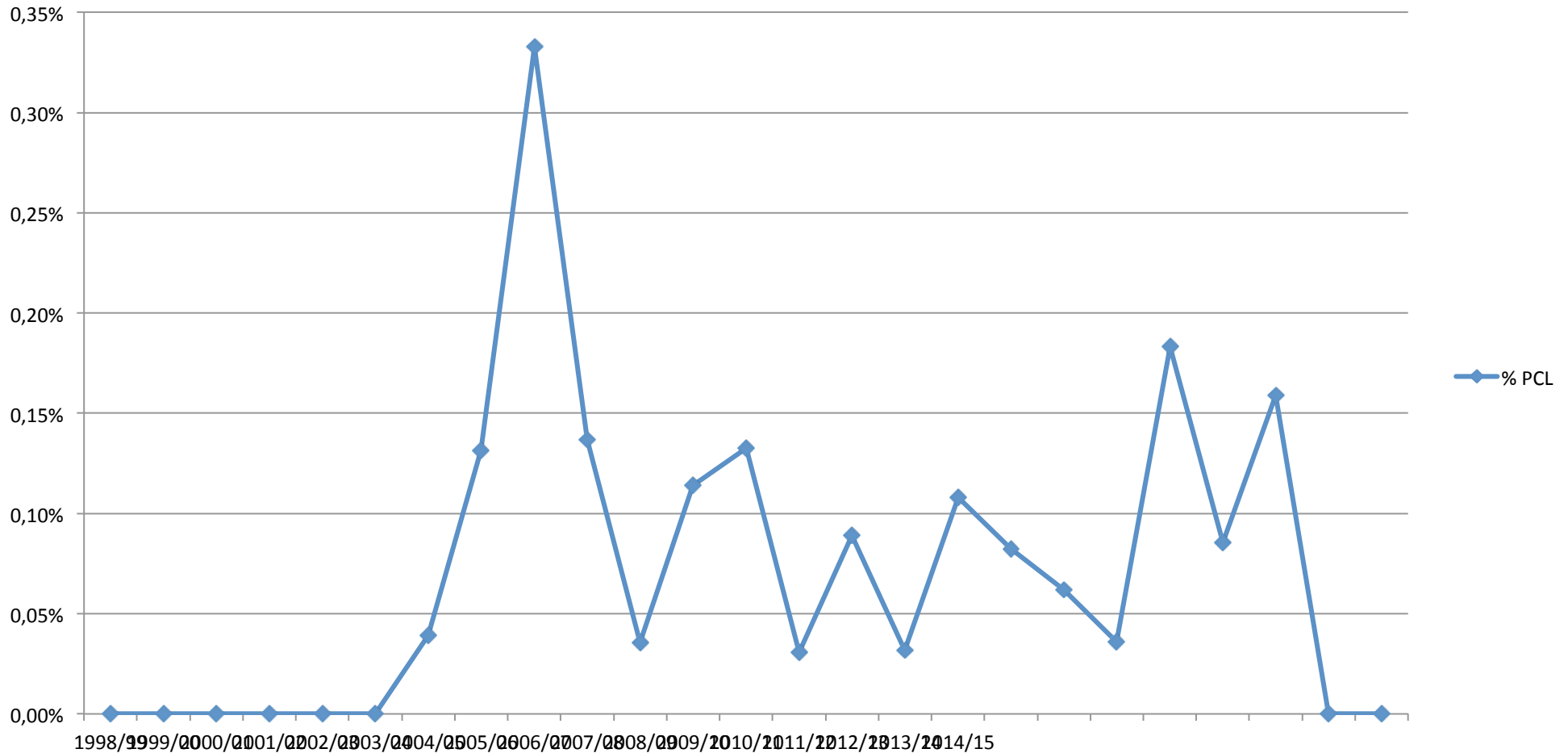
**47 Cases in 11 seasons**  
**Mean age 34 years old**



# Evolution of Injuries

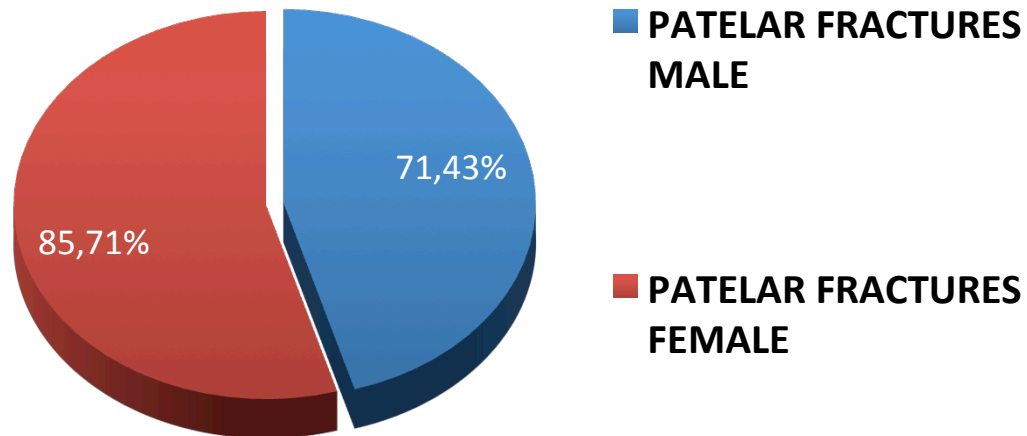
## Posterior Cruciate Ligament (related to 1.000 injuries)

% PCL



# Patellar Fractures

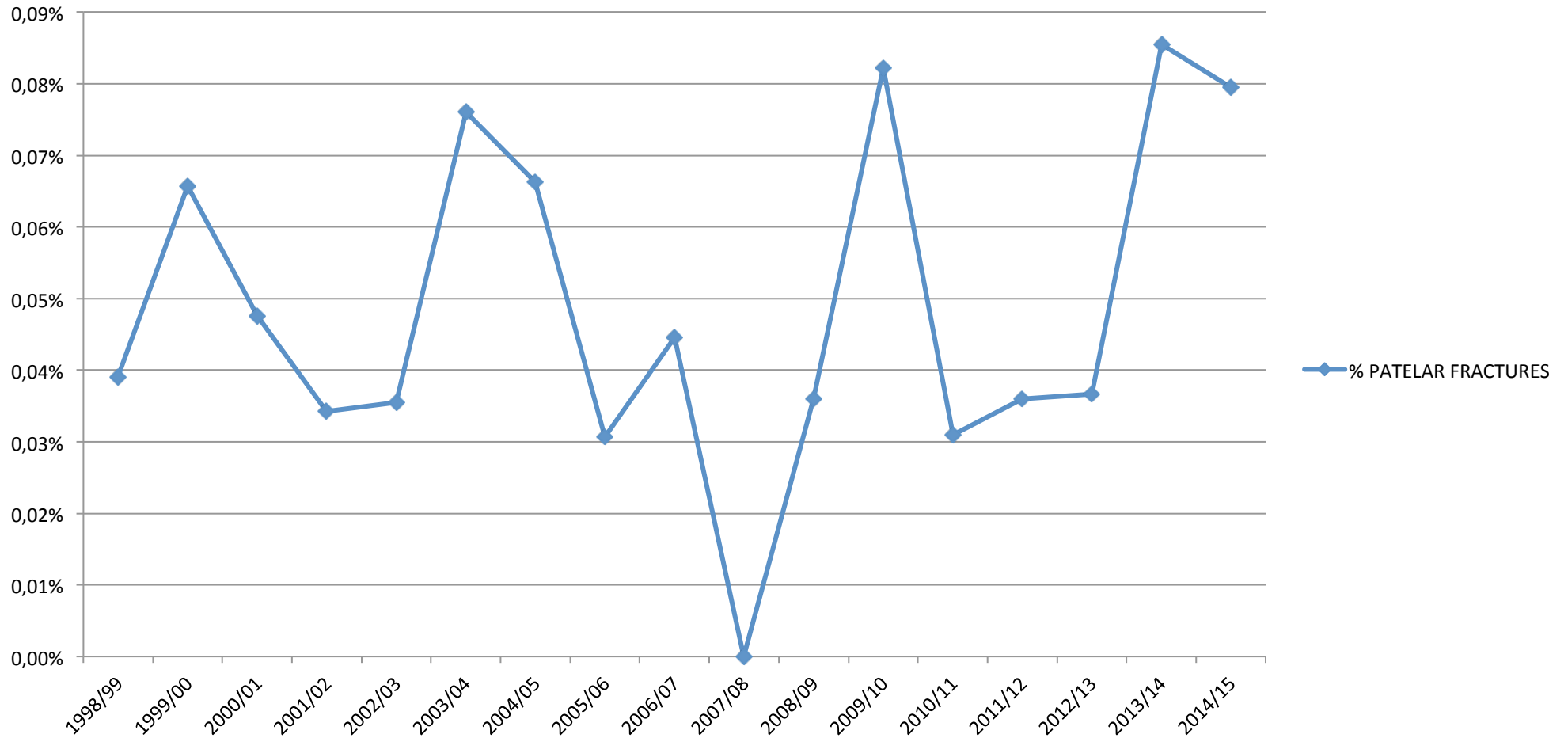
**22 Cases in 11 seasons**  
**Mean age 17 years old**



# Evolution of Injuries

## Patelar Fractures (related to 1.000 injuries)

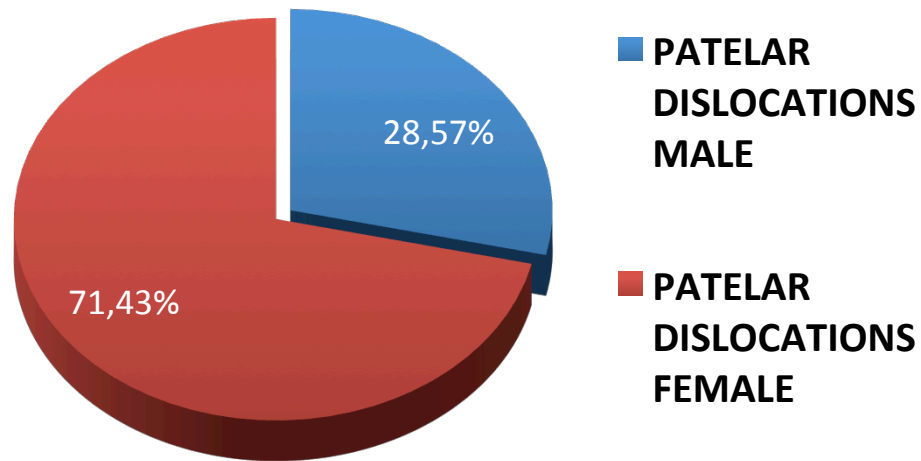
% PATELAR FRACTURES



# Patellar Dislocation

**52 Cases in 11 seasons**  
**Mean age 31 years old**

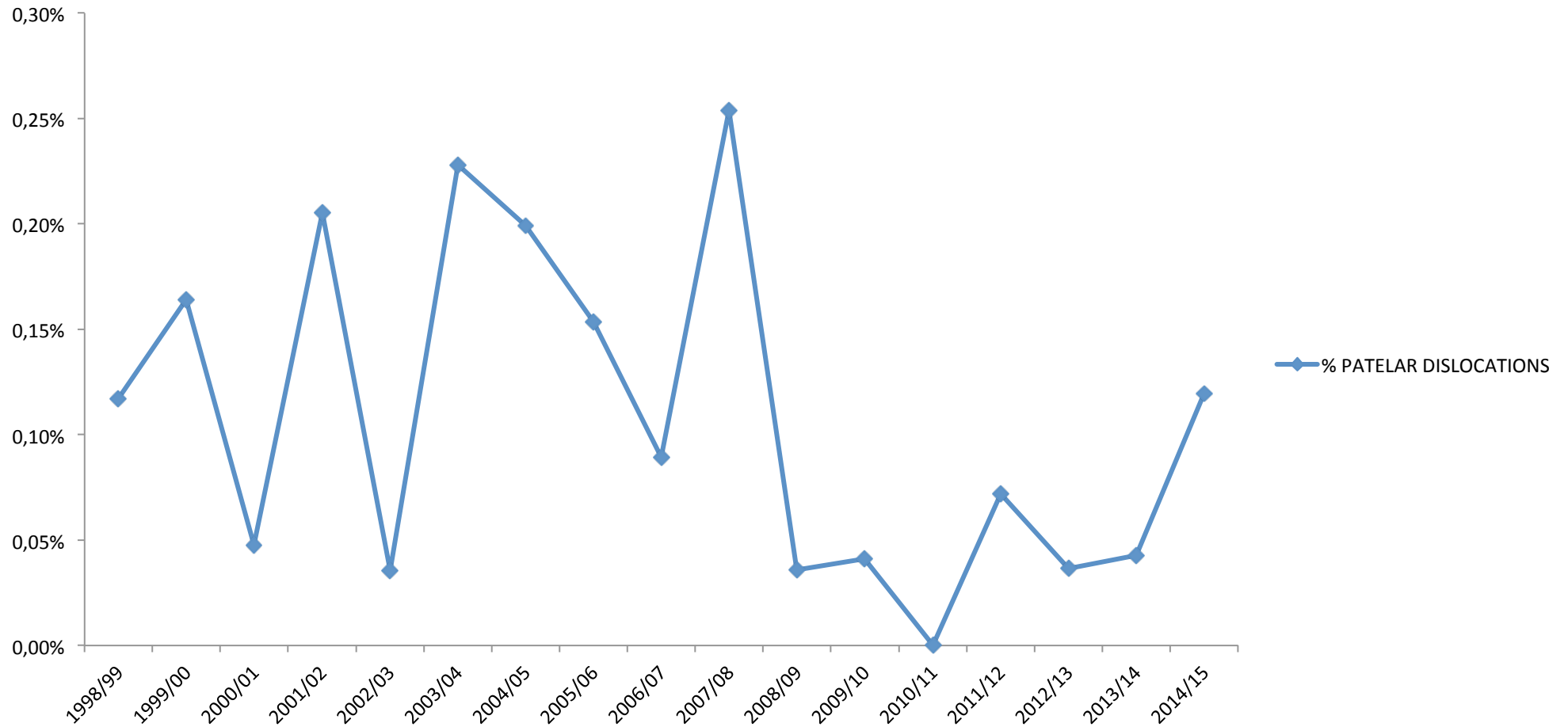
**PATELAR DISLOCATIONS MALE/FEMALE**



# Evolution of Injuries

## Patelar Dislocations (related to 1.000 injuries)

**% PATELAR DISLOCATIONS**



# Knee Cuts – wounds?

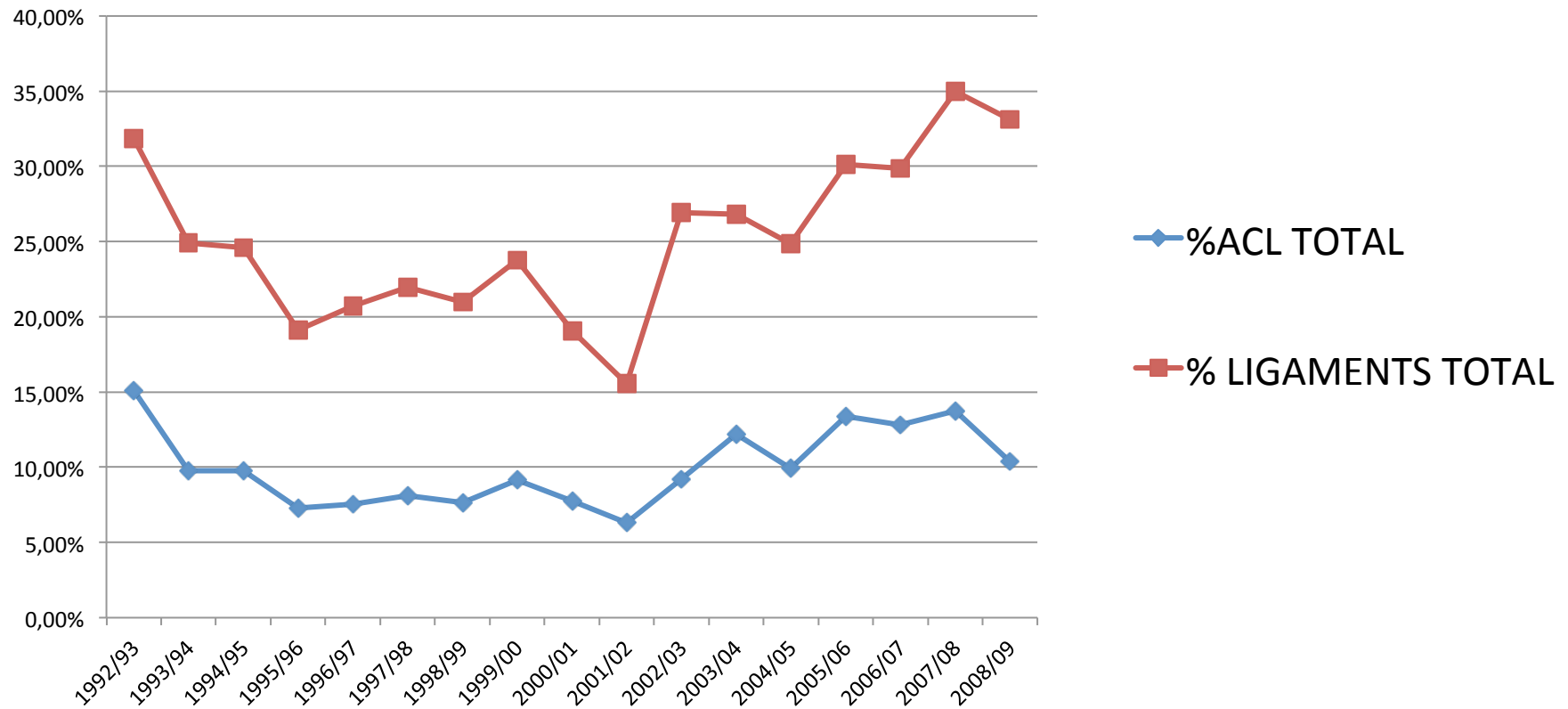


**35 Cases in 10  
seasons**

# Evolution of Injuries

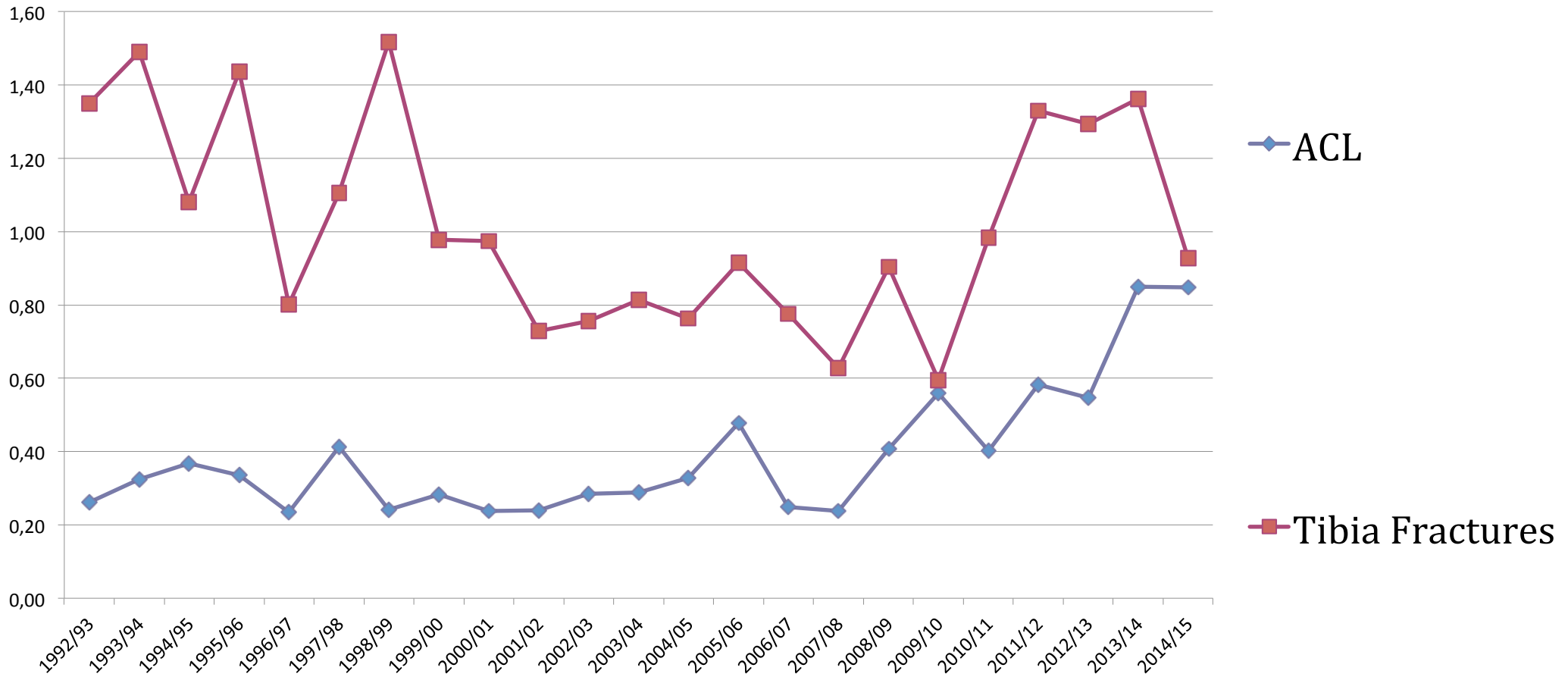
## Knee Ligaments and A.C.L. (related to 1.000 injuries)

### KNEE LIGAMENTS



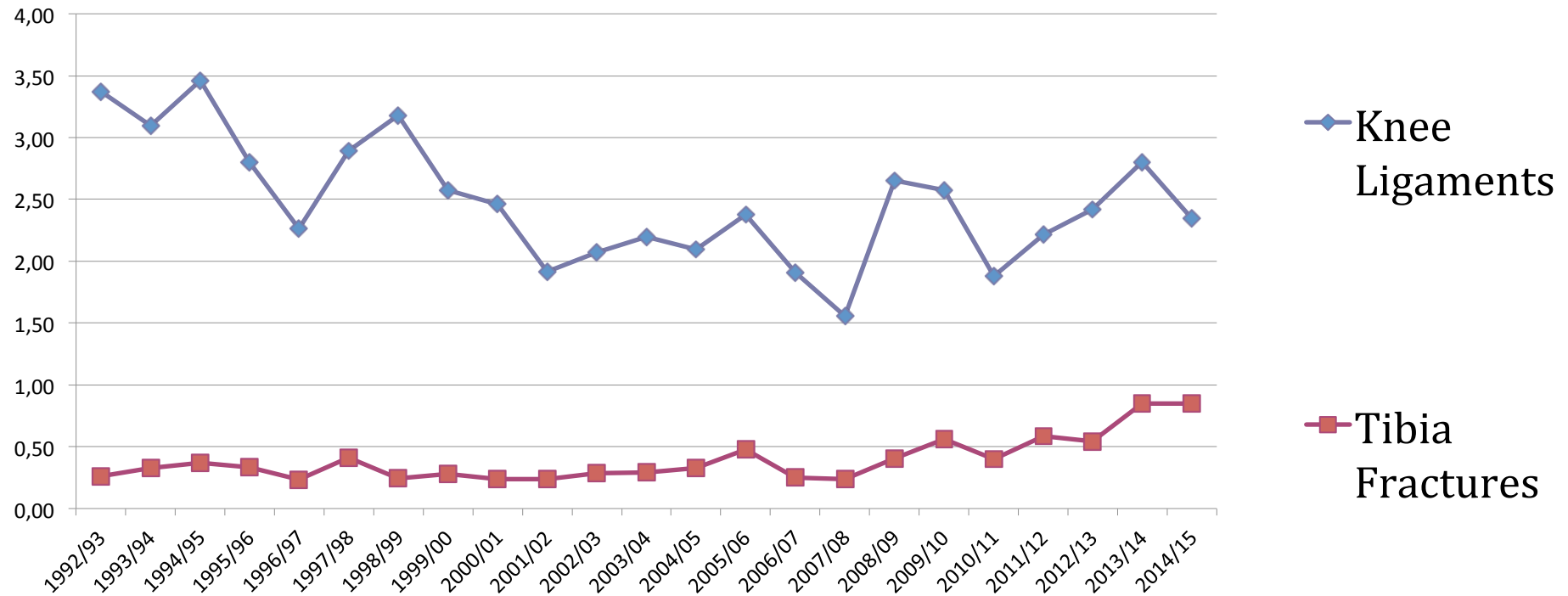
# Evolution of Injuries

## Anterior Cruciate Ligament and Lower Extremity Fractures (related to 1.000 injuries)



# Evolution of Injuries

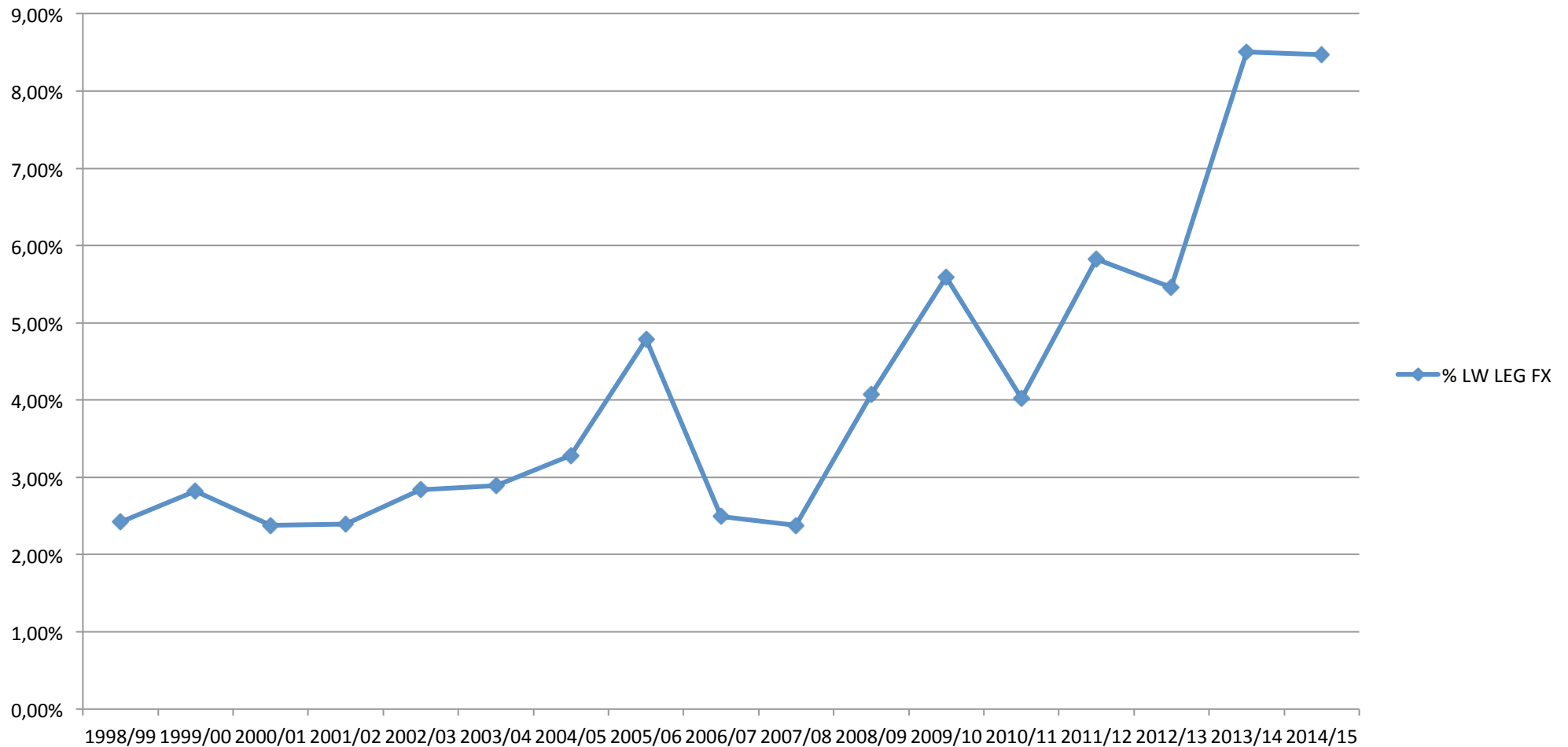
## Knee Ligaments and Tibia Tuberosity Fractures (related to 1.000 injuries)



# Evolution of Injuries

## Lower Extremity Fractures (related to 1.000 injuries)

% LW LEG FX



# Conclusion

- Knee Ligament Injuries are more common in Down Hill Skiers compared to Snowboarders
- ACL injuries tend to occur associated to other knee diagnosis
- **Medial collateral ligament injuries tend to occur as an isolated injury**

# Conclusion

- **ACL and Tibia Eminence Avulsion remained a constant diagnosis throughout the 11 ski seasons**
- **Tibia Plateau Fractures have a tendency to increase**

# Thank you for your attention



traumatologia i medicina  
d'esports d'hivern

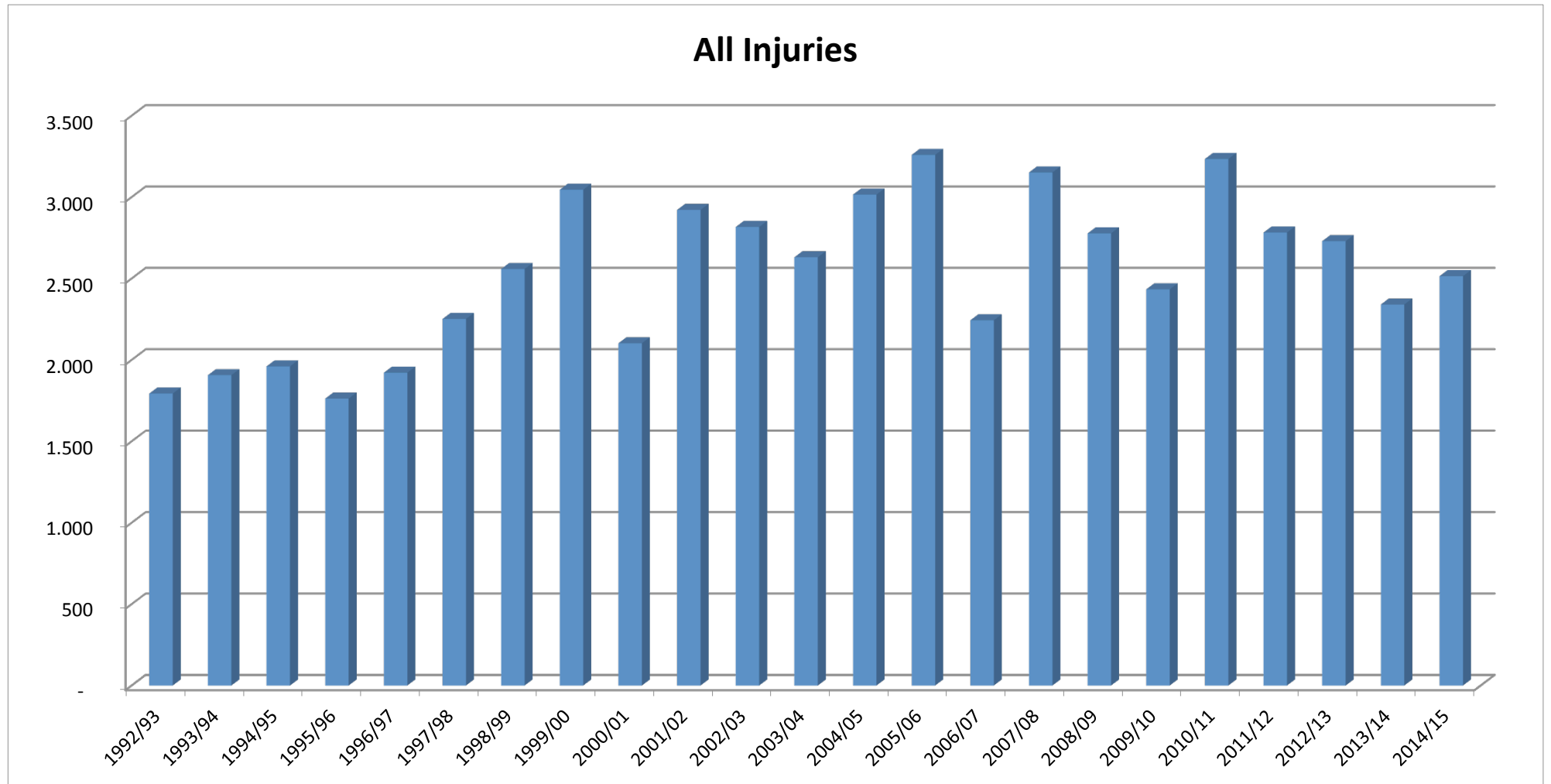
Dr. Aleix Vidal i col·laboradors

# Baqueira-Beret



# Injuries per season

## All Injuries (units)

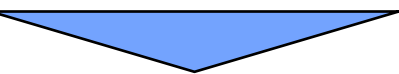
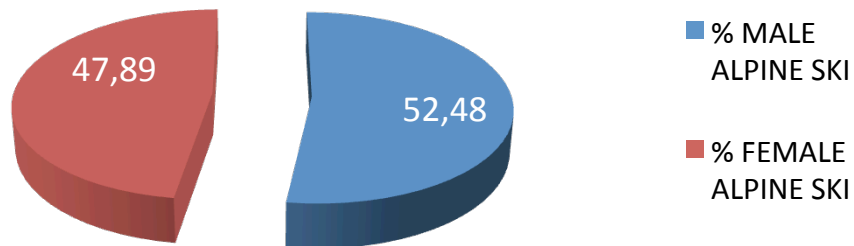


# Probability of injuries

## Distribution per gender

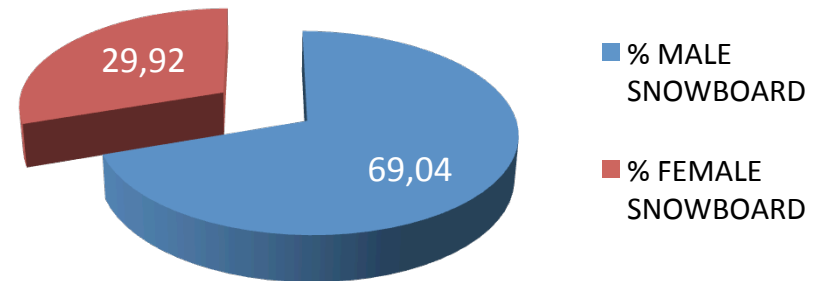


### ALPINE SKI INJURIES BY GENDER



Mean Age: 34,82

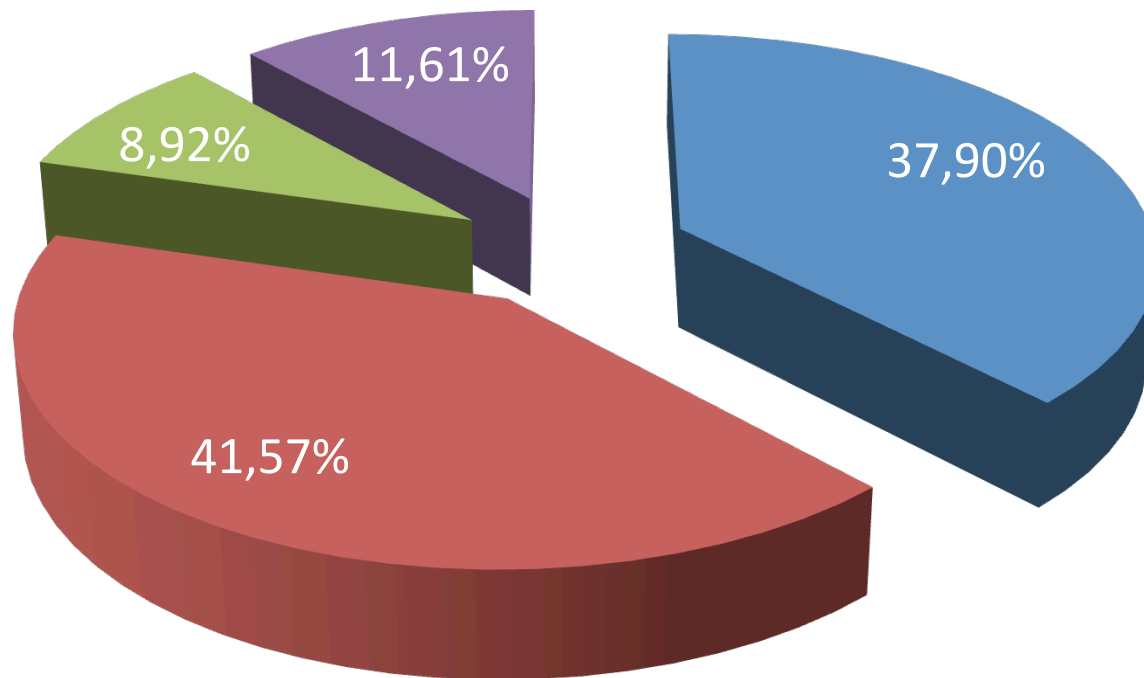
### SNOWBOARD INJURIES BY GENDER



Mean Age: 27,45

# Distribution per anatomical region

## Injuries per area



- UPPER EXTREMITIES
- LOWER EXTREMITIES
- HEAD AND FACE
- TRUNK

