

Sitemsh congress JAPAN March 2016

Epidemiology of snow sports injuries in France

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Medecins de Montagne



- French Association
- 300 physicians practicing close to the slopes
- trained to take care of sports injuries and emergency medicine
- taking care more than 150.000 winter sports injuries each winter
- 94% of the patients are locally treated without hospitalisation.

The Skiing Safety Network of Medecins de Montagne

Studies each winter season :

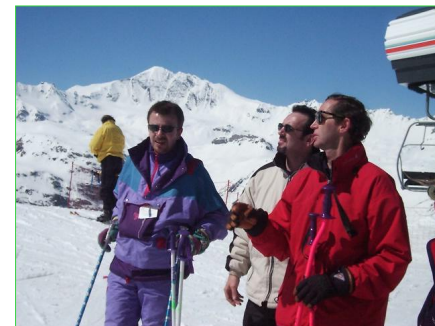
1. injured population
2. control group



Method : Control Group

Randomized counting is conducted at the bottom of ski lifts in 12 ski resorts.

Interviews are conducted in parallel on the ski slopes and in car parks.



Method: The population at risk

Respect a breakdown of resorts according to :

- The geographical distribution
- The dimension and turnover
- The type and the altitude
- The specificities of the resorts



Method : Injured Population

DATA FORM

ÉPIDÉMIO 2002/2003

MÉDECIN : _____

Médecins de Montagne

Station de l'accident : _____

DATE DE L'ACCIDENT : _____

NOM : _____
Family Name

Prénom : _____
Given Name

Date de naissance : _____
Birth Date

Sexe : F M

ADRESSE PERSONNELLE - Home address

Rue : _____
Street

Code postal - Commune : _____
Zip code - City

Pays : _____ Tél. : _____
Country

ADRESSE STATION - Local address

RUE : _____
Street

Code postal - Commune : _____
Zip code - City

PRISE EN CHARGE (possibilité de choix multiples) :
Take care with

Pisteur-secouristes
Ski-patrols

Pompiers
Firemen

Ambulance

Hélicoptère
Air service

Propres moyens
By my own

Autre : _____
Other

ACCIDENT DE SPORT

Ski alpin
Alpine skiing

Ski carving
Carving ski

Miniskis
Skiboards

Ski de fond
Cross country

Snowboard

Sport de glace
Ice skating

Autre sport : _____
Other

AUTRE ACCIDENT Voie publique
Street accident

Domestique
Home accident

ACCIDENT DU TRAVAIL Oui Non

NIVEAU

Débutant
Beginner

Débrouillé
Medium

Confirmé
Expert

Professionnel

SKI - Déclenchement des fixations
Ski bindings

Non Normal Intempéstif
No Release Inadvertance

SNOWBOARD

Type de chaussures Souples
Softboots

Rigides
Hardboots

de ski
Ski boots

Protection de poignet Oui Non

Portiez-vous un casque ?
Did you wear a helmet ? Oui Non

S'agit-il d'une collision ? Oui Non

Avec un autre usager ?

Skieur Mini-skieur Surfeur Engin motorisé Autre : _____

L'accident est-il survenu à la sortie d'un télésiège ? Oui Non

Accident dans le snowpark Oui Non

- A standardized form has been used since 1992, for each injured skier.
- Record and data analysis are performed on same software for all participants

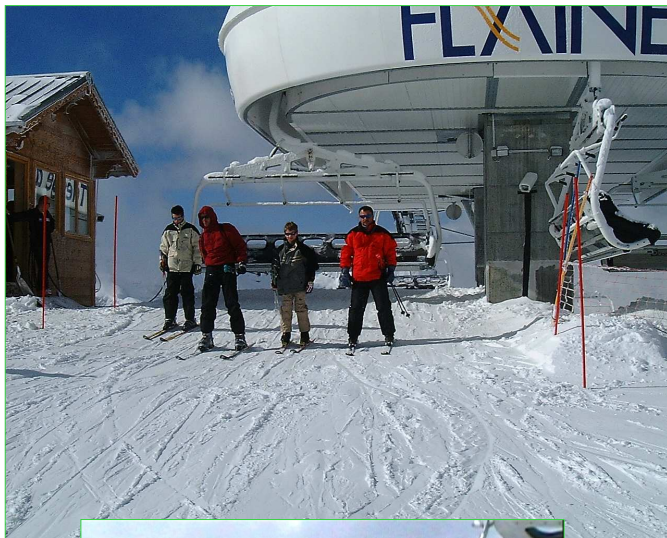
Method : Incidence Rate



The incidence rate is calculated in relation to a number of skiers per day or « skiers visits ».

A skier day is a standard based on the number of ski passes sold.

Method : MDBI



Results will be given in MDBI:

MDBI = skier visit/ nb of injuries

Higher the number is, lower the risk is.

At the opposite if the number is small the risk is high.

Method Medecins de Montagne

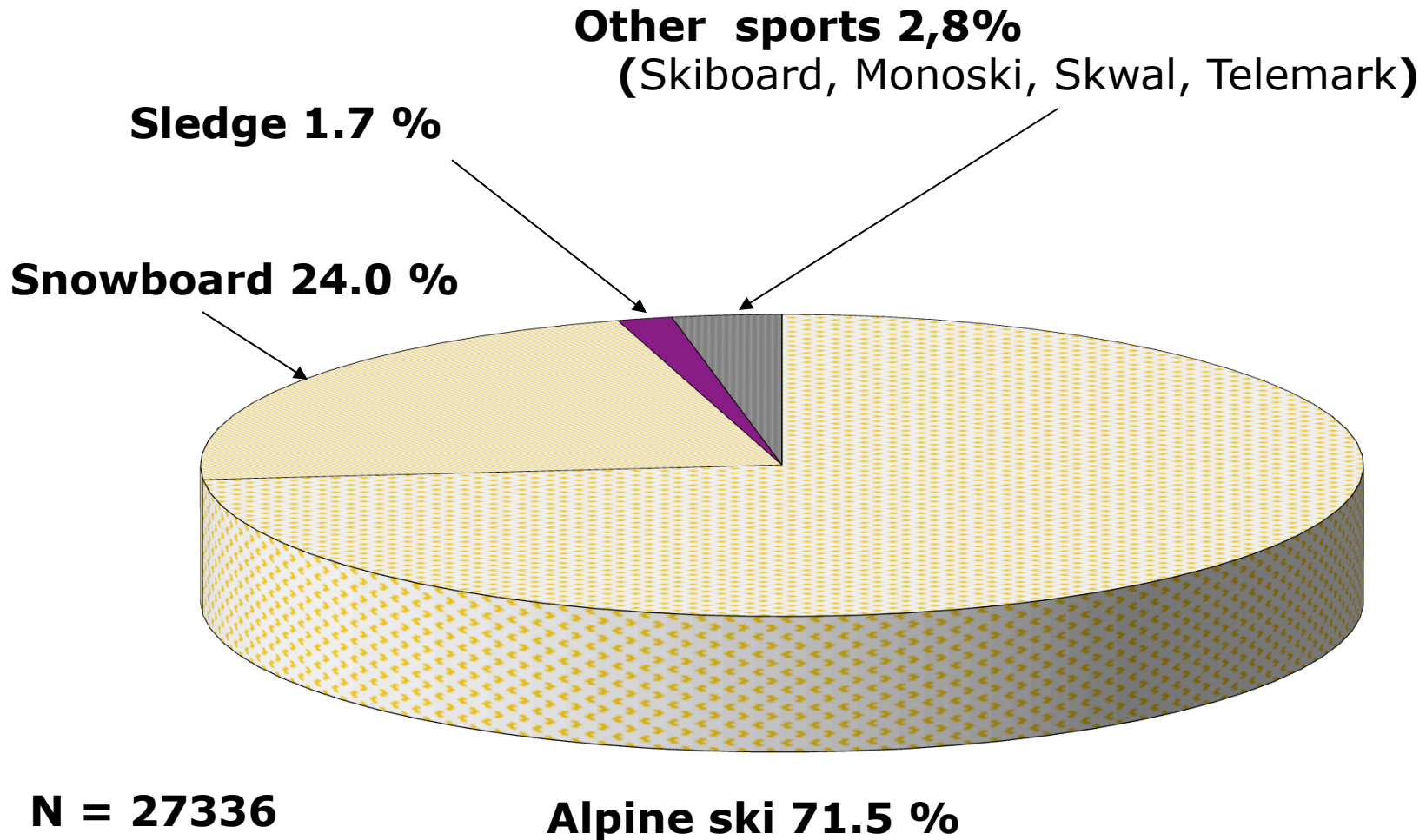


The method has been validated by an independent national statistical institute – INVS: Institut de la veille sanitaire

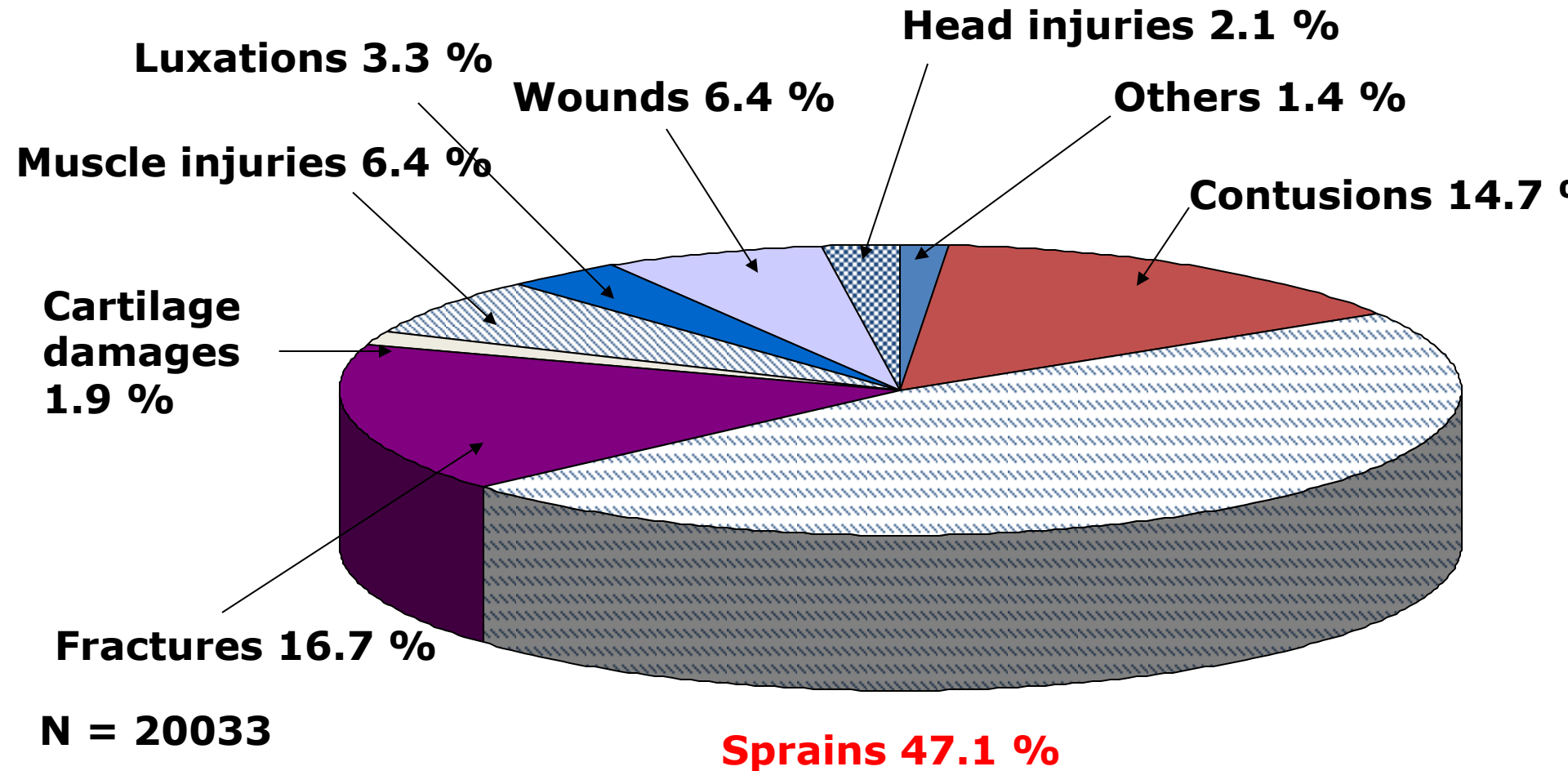
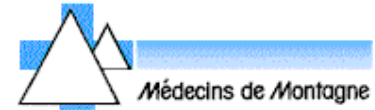
419 809 winter sports injuries in the database since 1992.

- 8.7 millions of skiers and snowboarders in 2015 in France
- **150 000** where injured while practicing winter sports
- only **51 000** have been assisted by ski patrols

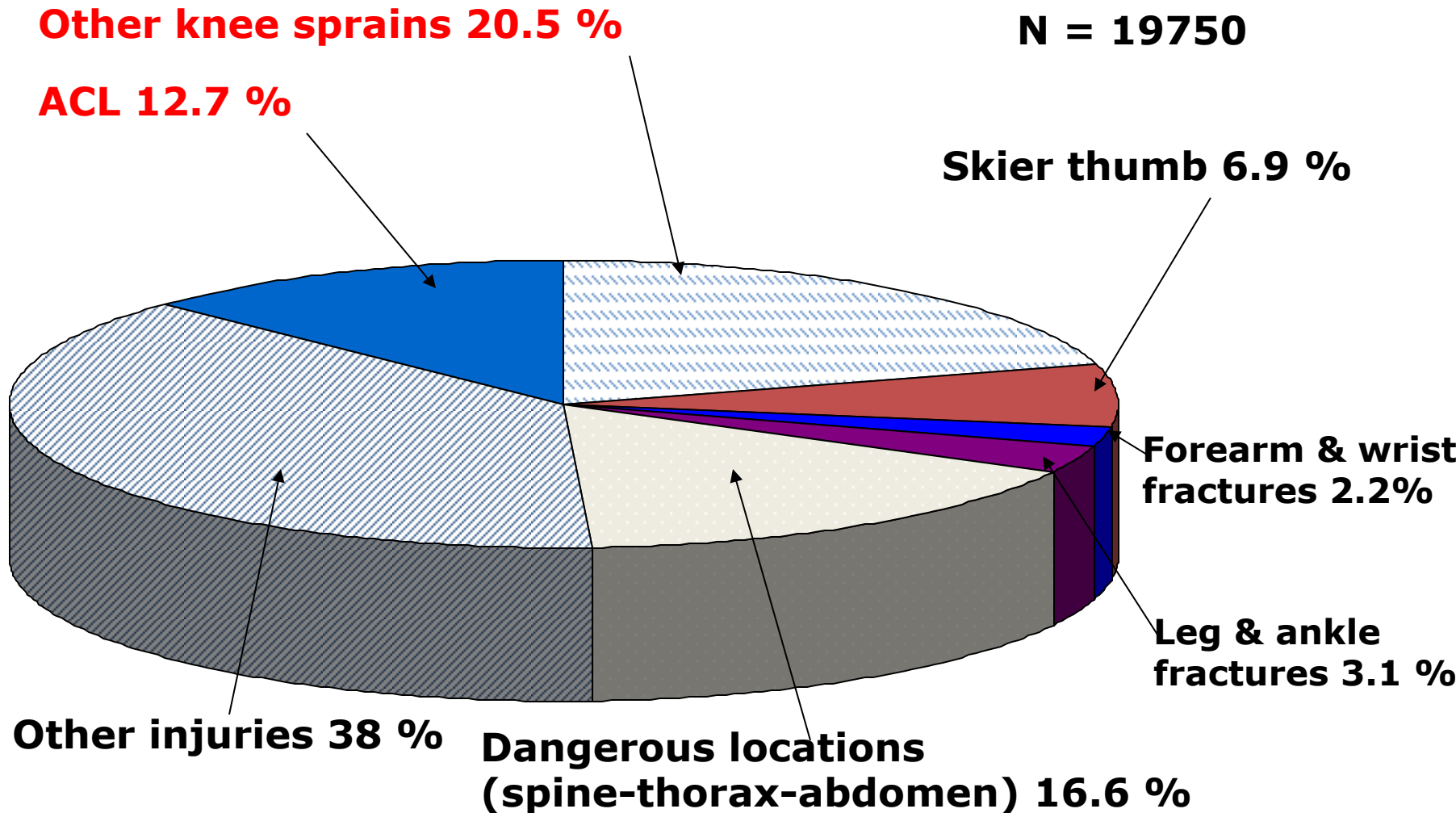
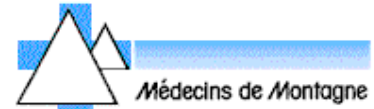
Injuries by practice



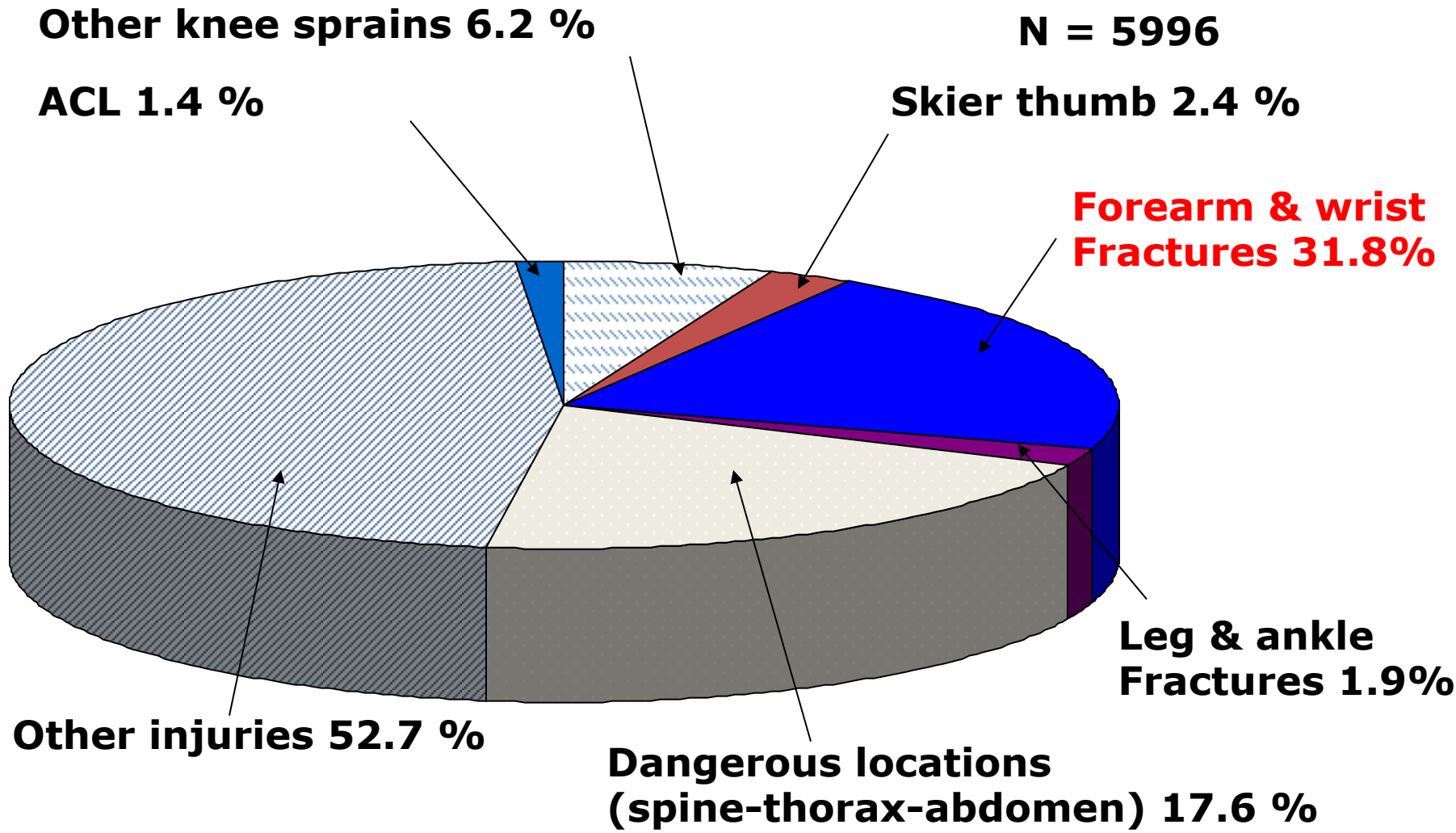
Injuries for alpine skiers



Injuries for alpine skiers



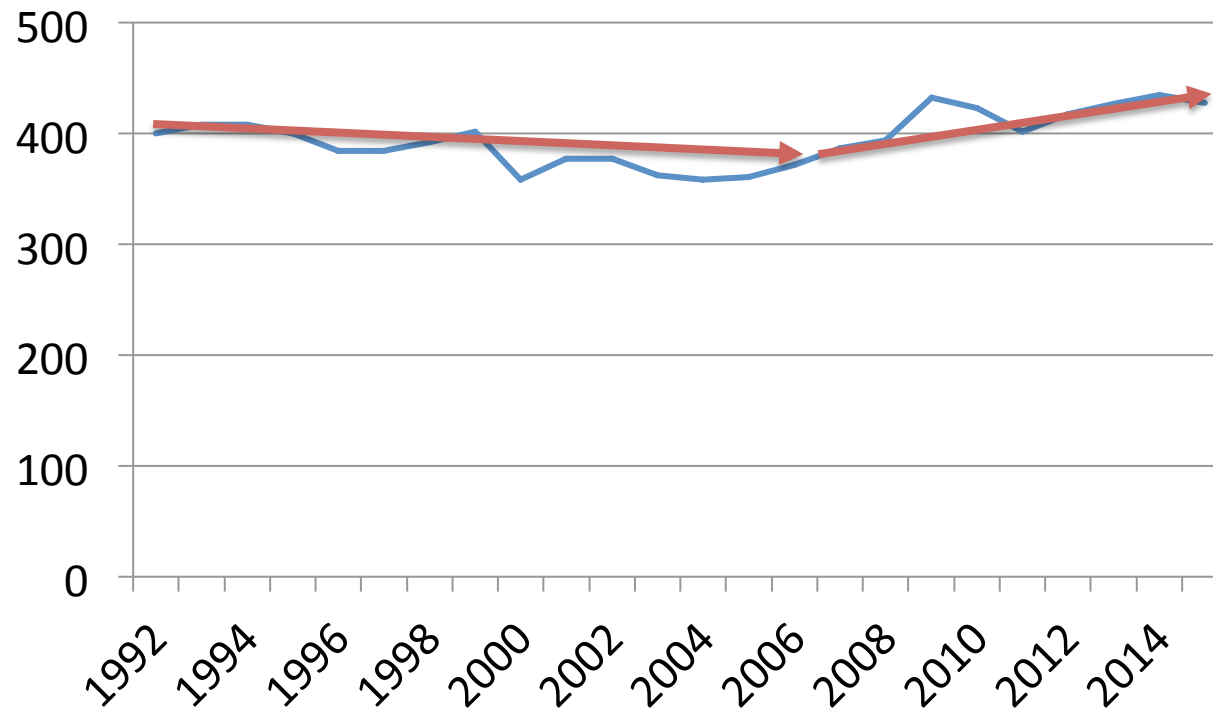
Injuries for snowboarders



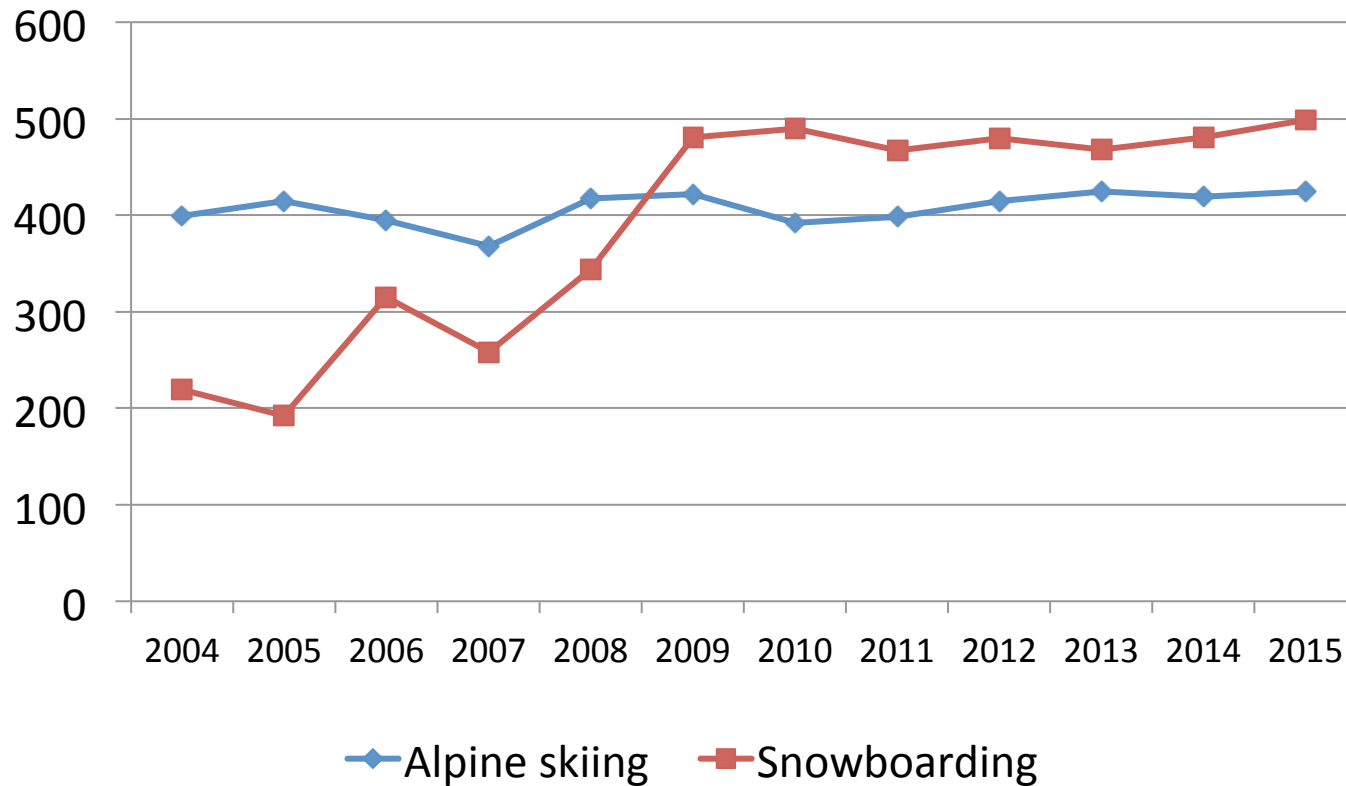
Incidence rate : MDBI : Mean days between injuries



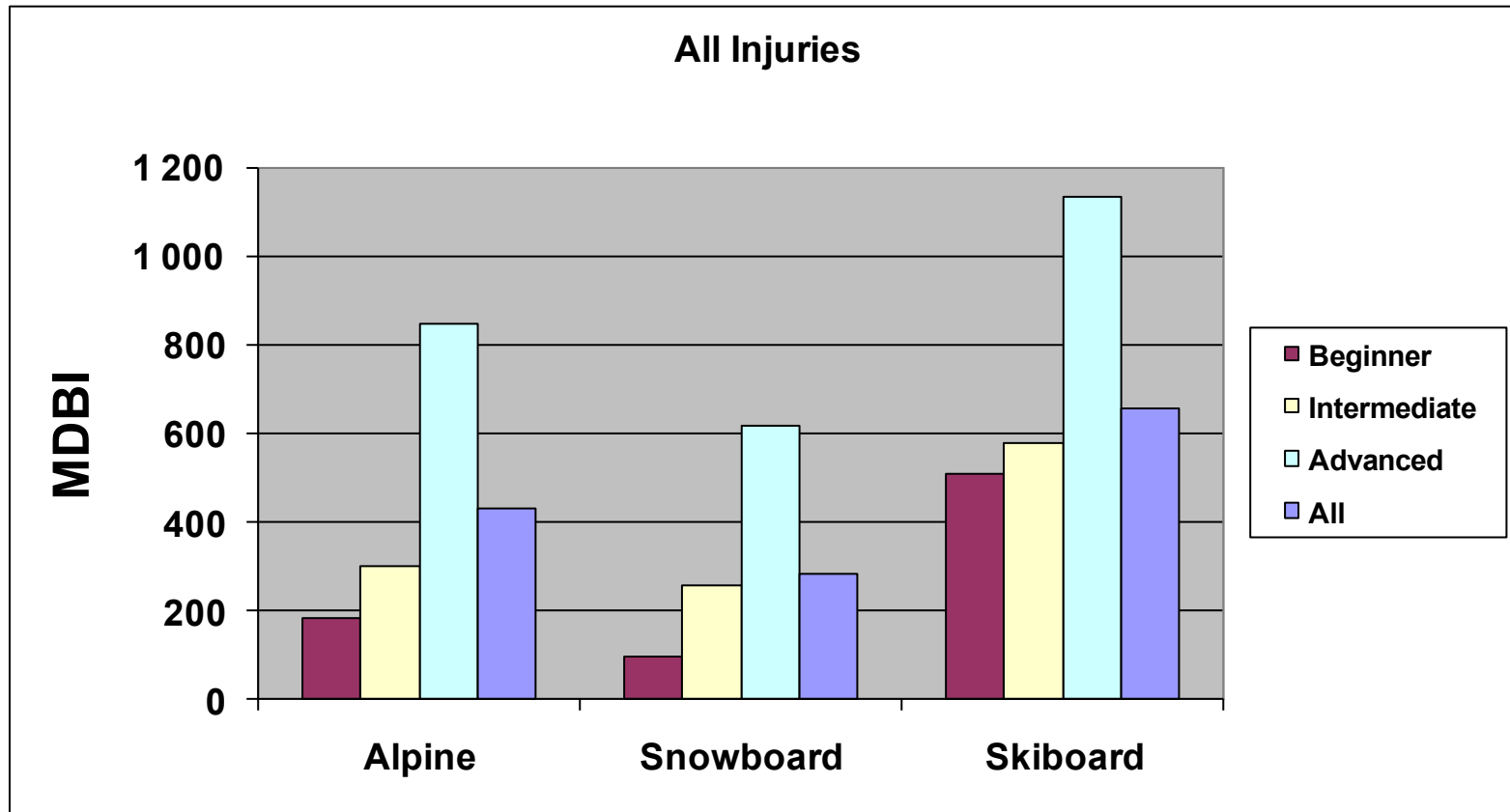
MDBI



Incidence rate : MDBI by type of practice



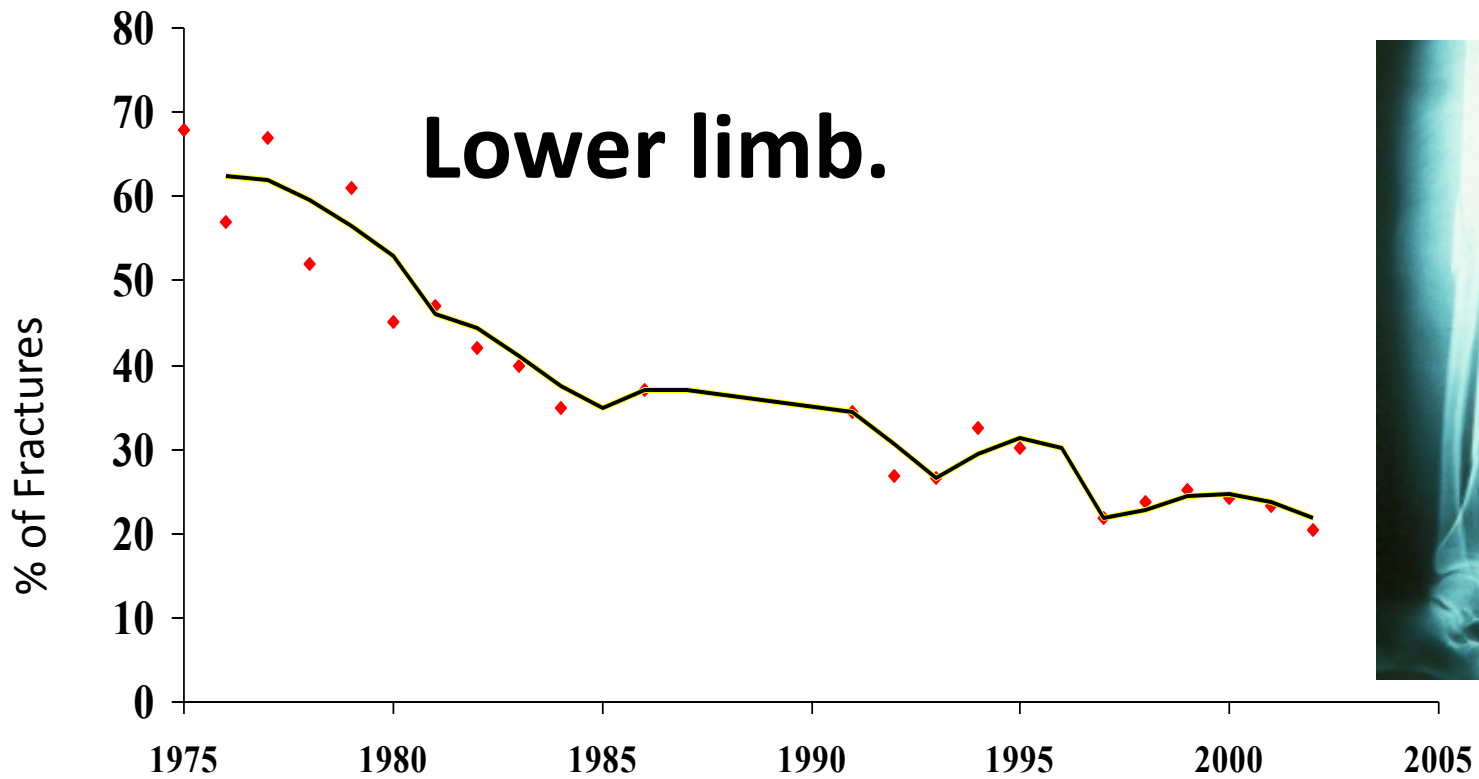
Results – All Injuries –By Experience Level



Beginner injury rates 2-3x higher than all injuries, 4-6x advanced
Beginner in snowboarding less than 100 MDBI

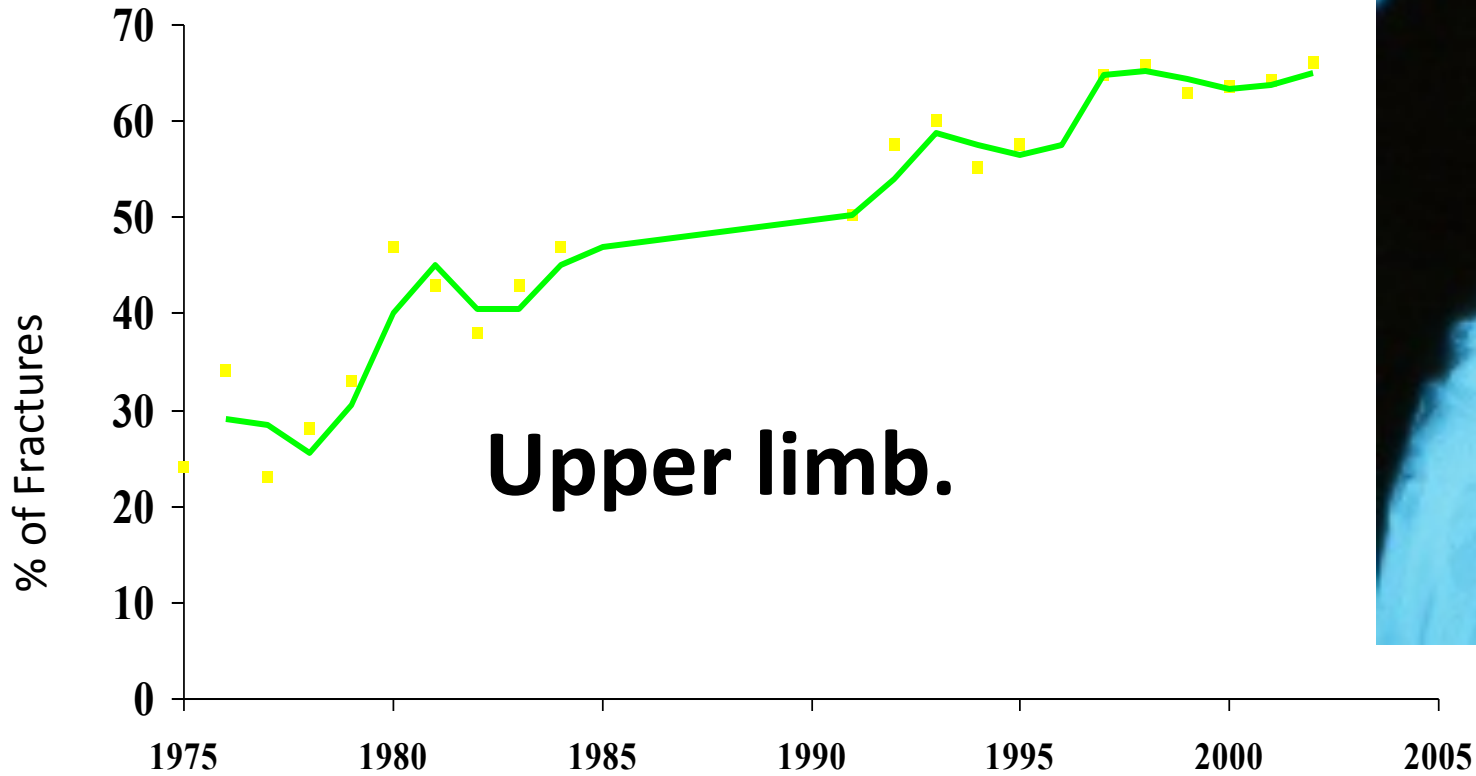
LIMB FRACTURE

Evolution since 1975



5 % of injuries

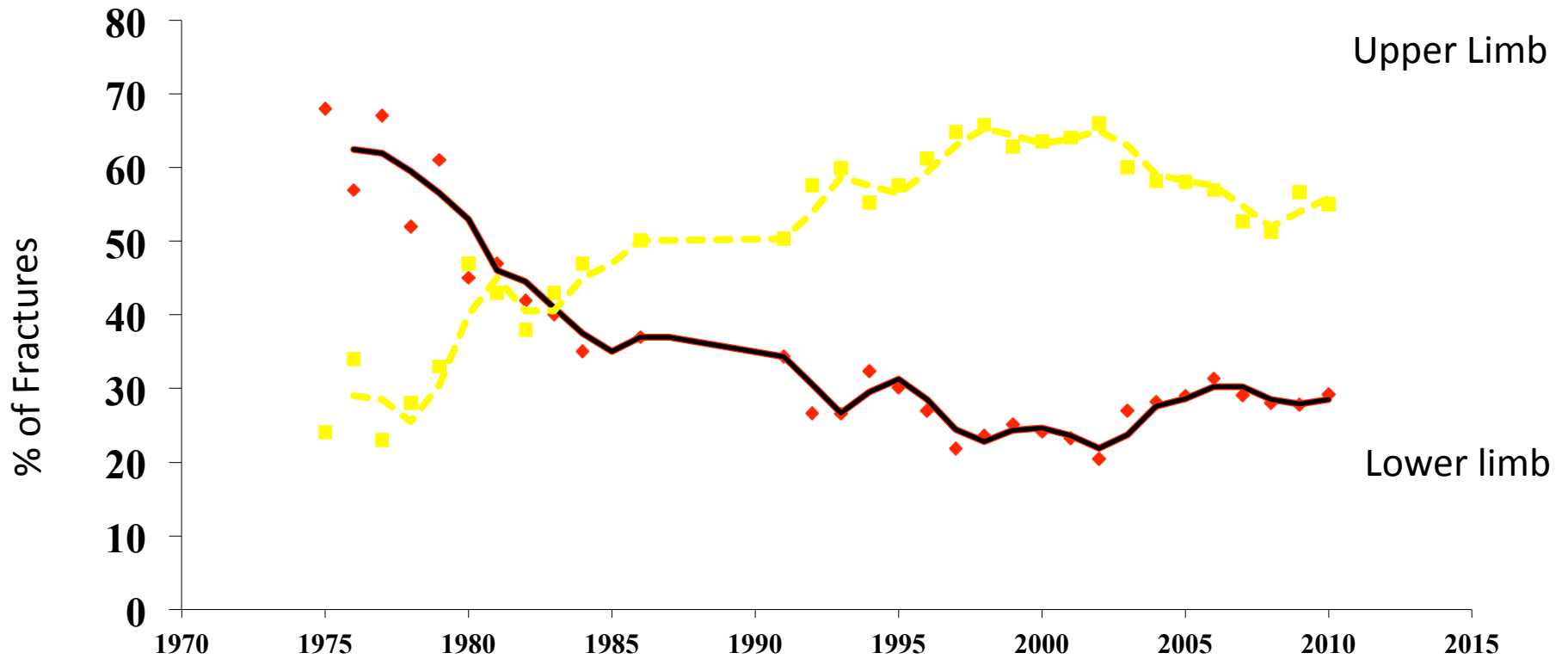
LIMB FRACTURE Evolution since 1975



16.1 % of injuries

LIMB FRACTURE

Evolution since 1975

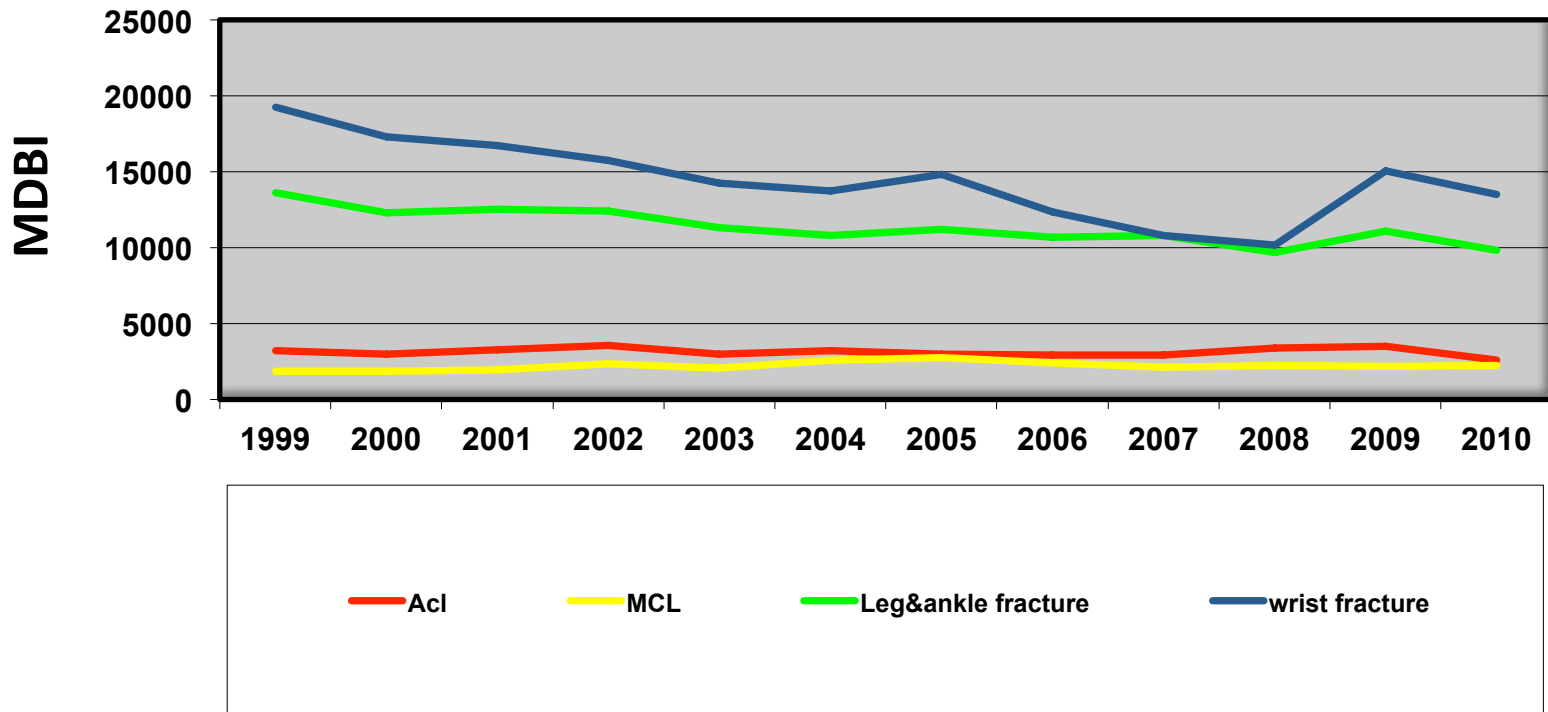


Evolution of 5 types of injuries occurring amongst skiers and snowboarders:

- ACL
- MCL
- Leg and ankle fractures
- Wrist fractures
- Skier thumb

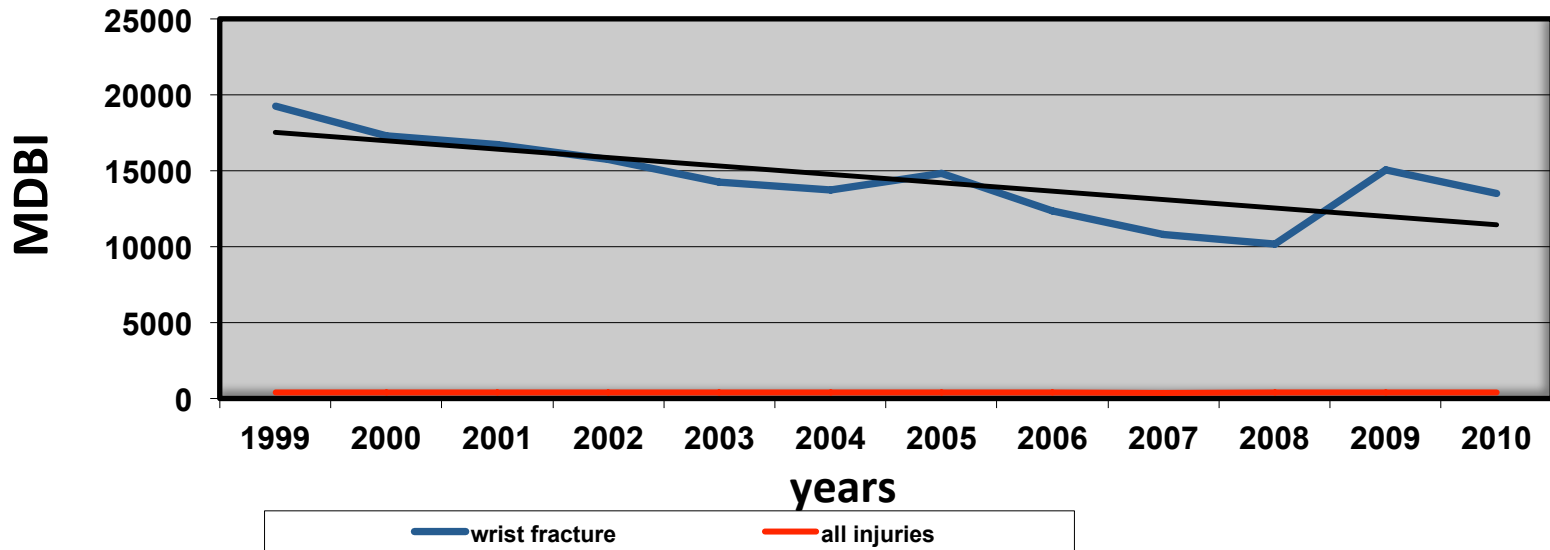


Alpine skiing: relative risks



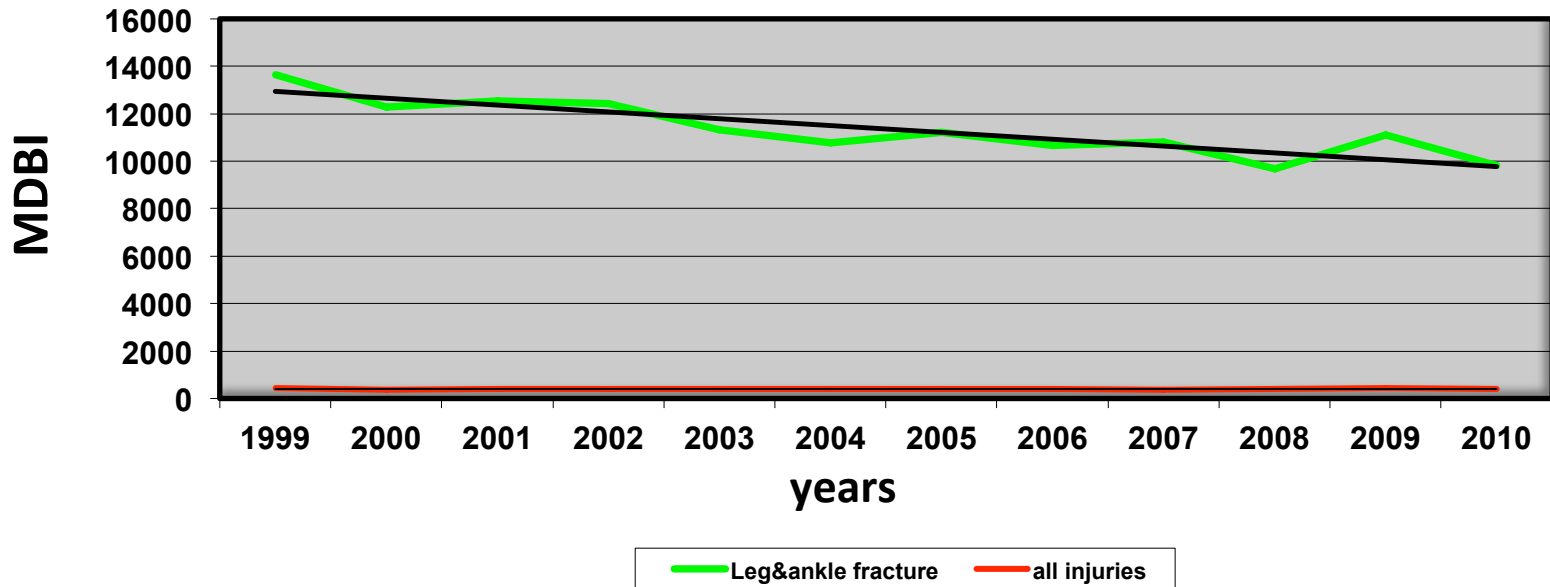
ACL and MCL injury rates are higher than lower leg and wrist fracture

Alpine skiing: wrist fracture



The incidence of wrist fractures increased significantly during this period
P<0.05

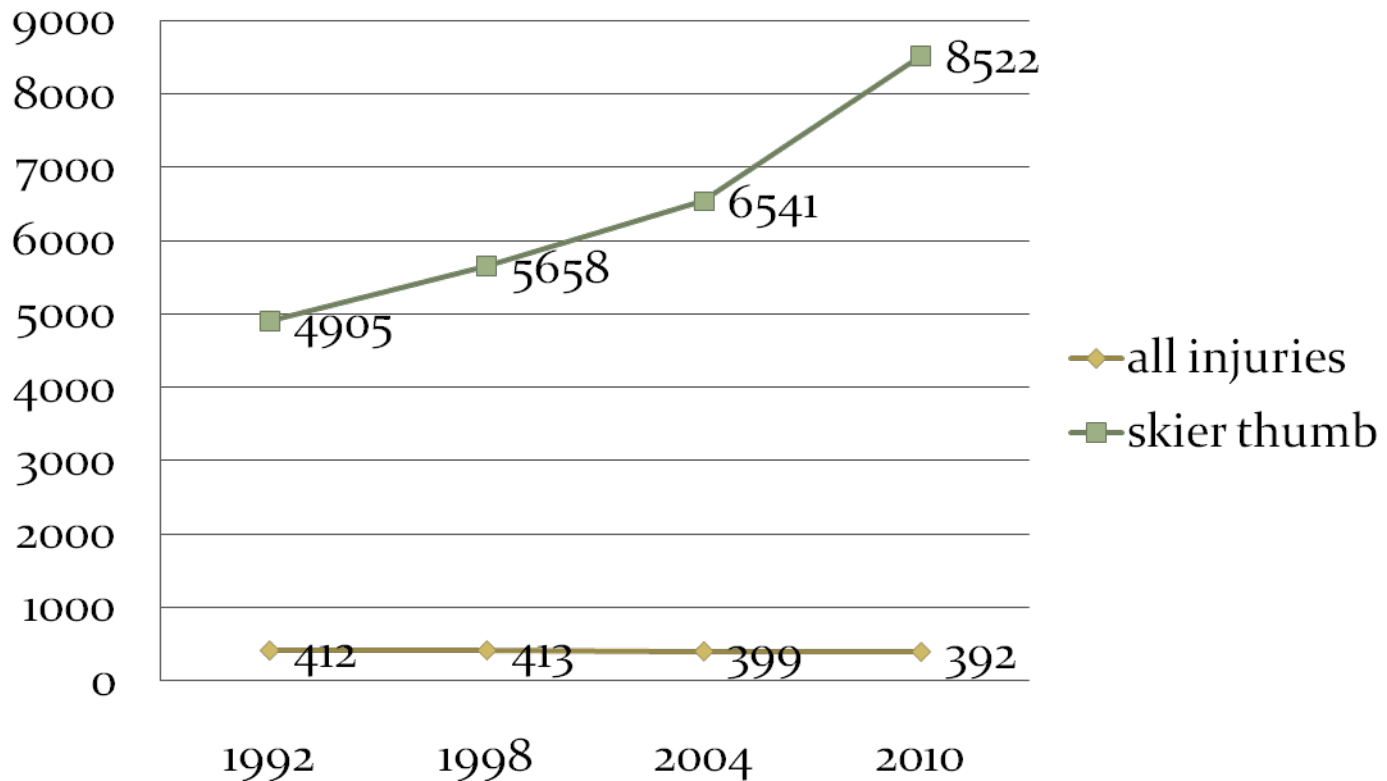
Alpine skiing lower leg and ankle fracture



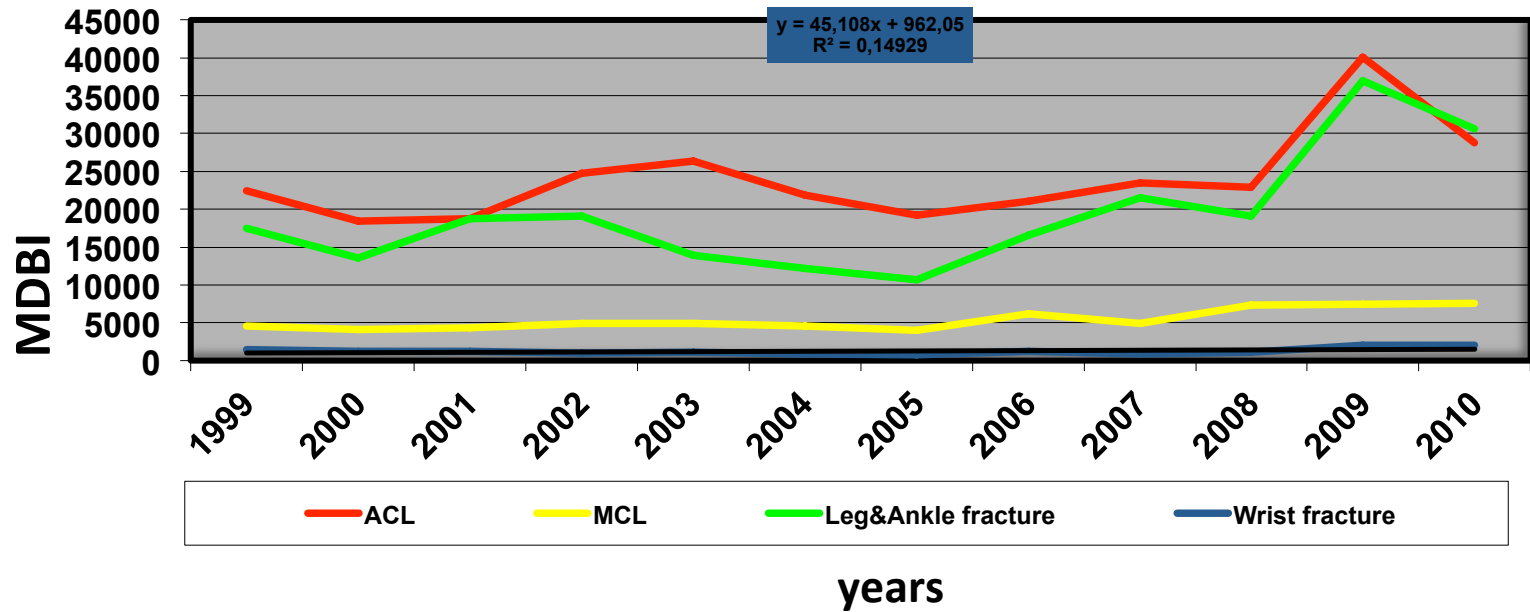
The incidence of lower leg fractures increased significantly during this period
P<0.05

Alpine skiing: thumb

MDBI

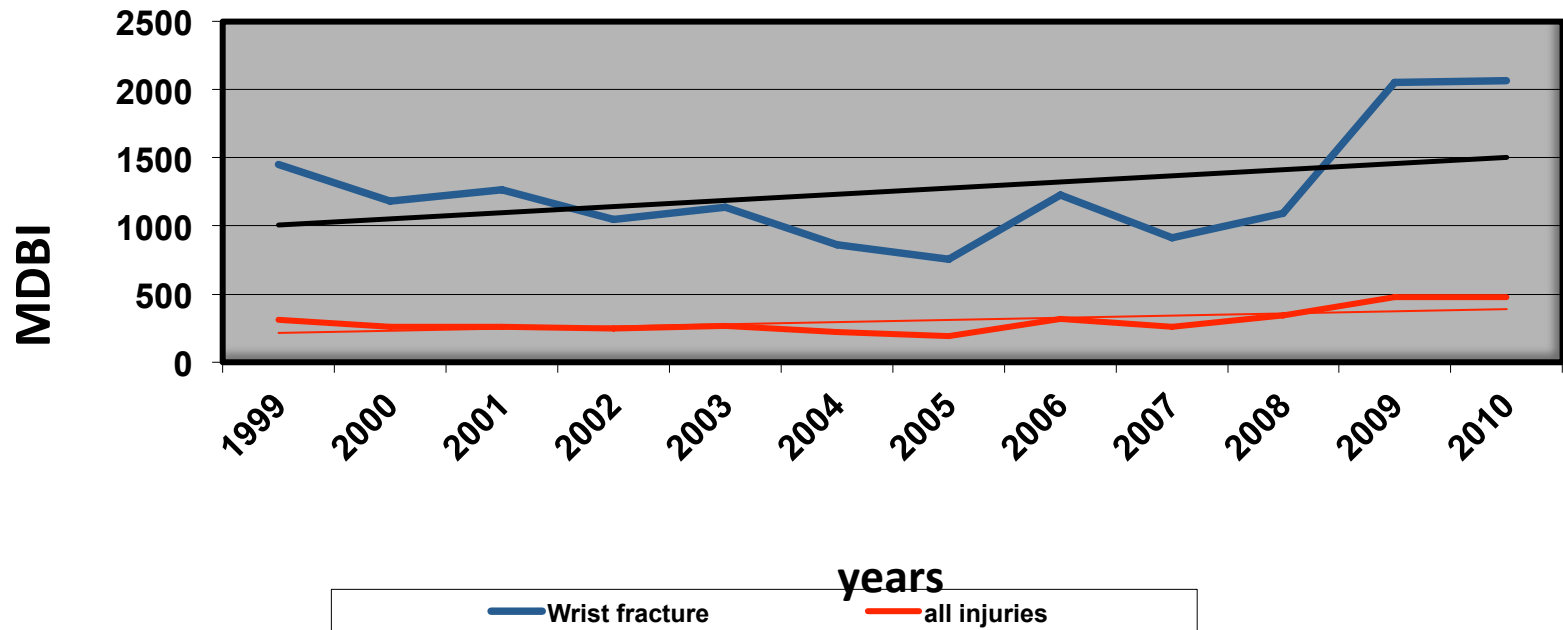


Snowboarding: relative risks



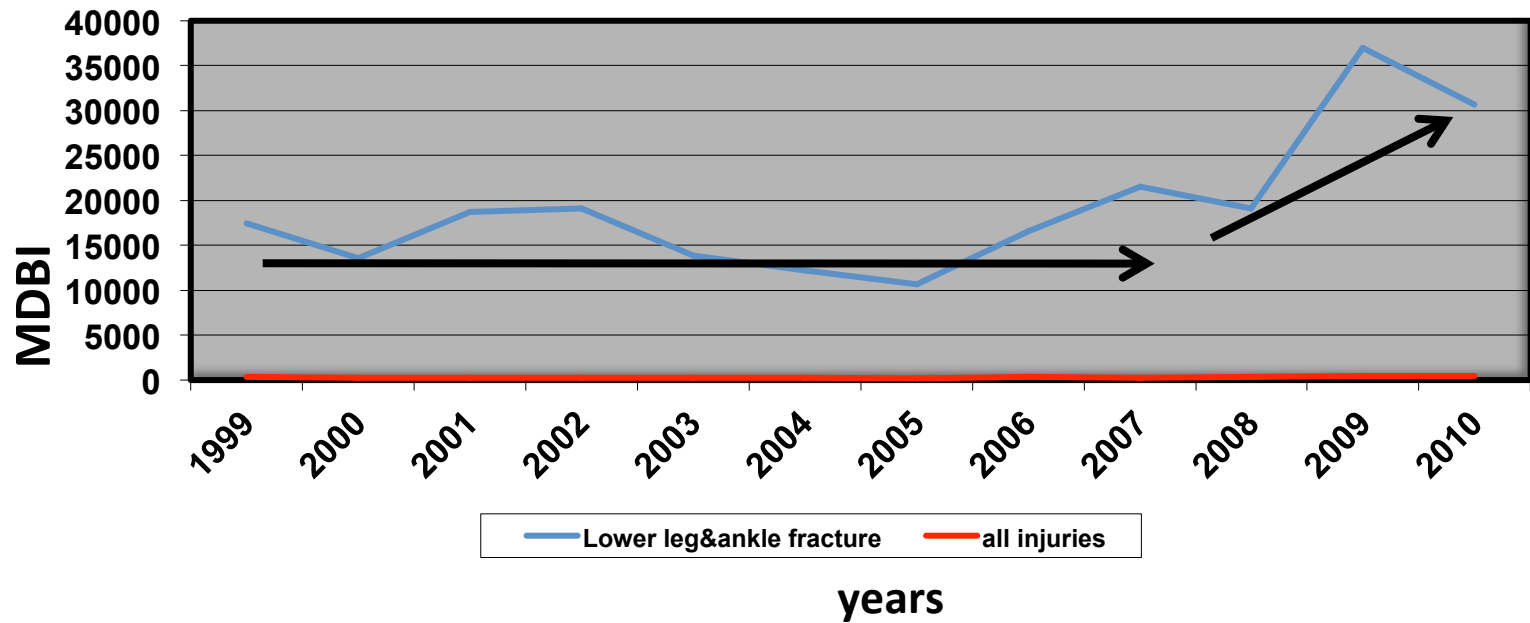
The incidence of MCL and wrist fracture are higher than ACL or lower leg fracture

Snowboard: wrist fracture



The incidence of wrist fractures is slightly going down

Snowboard: lower leg fractures



The incidence of lower leg fractures was stable until 2007 decreasing rapidly thereafter.

Discussion



- For alpine skiing, the increased incidence of lower leg and ankle fractures could be related to inconsistent ski binding settings.
- The decrease of skier thumb could be linked with to the changes in ski pole design.

Discussion



For snowboarding the lower overall incidence of injuries could be linked with the fact that beginners now account for a lower proportion of the control group compared to the earlier period.

Conclusion



Trends for alpine skiing:

- **Important decrease of skier thumb**
- **Increased rate of lower leg and ankle fractures**
- **ACL stable**
- **MCL decreasing**
- **High rate of female knee injuries**

Conclusion



Trends for snowboarding:

- Important decrease of the risk
- Stable rate of wrist fractures
- Still very important rate of wrist injury in teenagers & beginners
- Decreased rate of ACL & MCL injuries



Thank you for your attention!