



SKI FIT

Body in Balance

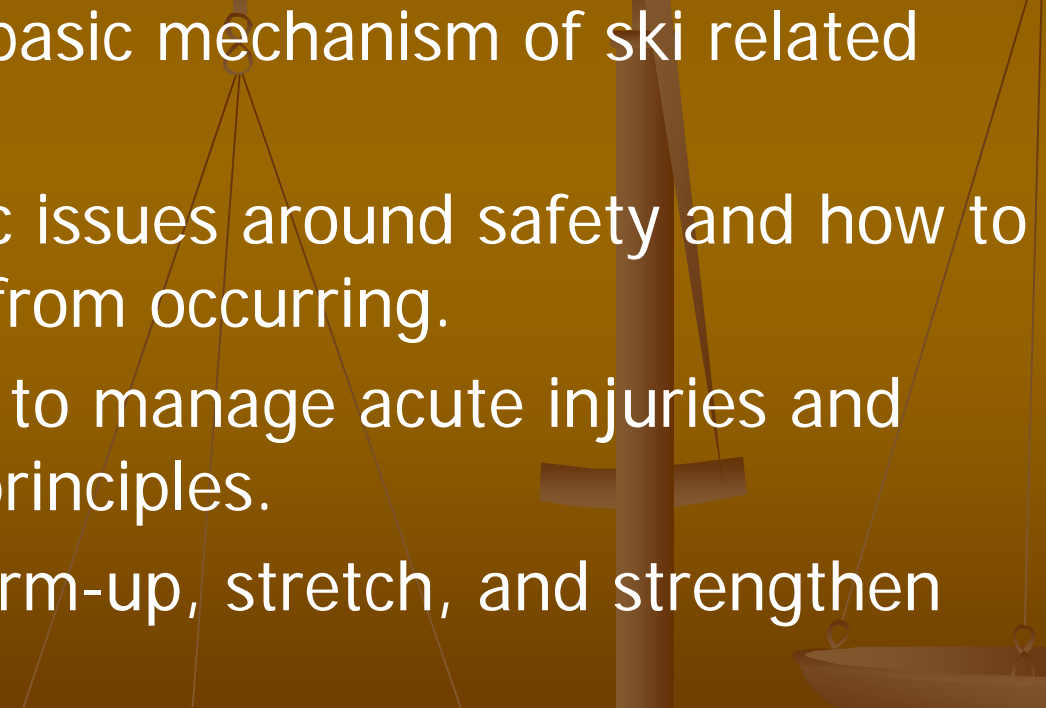
Professional Care.

Personal Treatment.

**Alessandro Rosatelli M.Phty.(Manip).,Cred.MDT.,
B.Sc.PT**

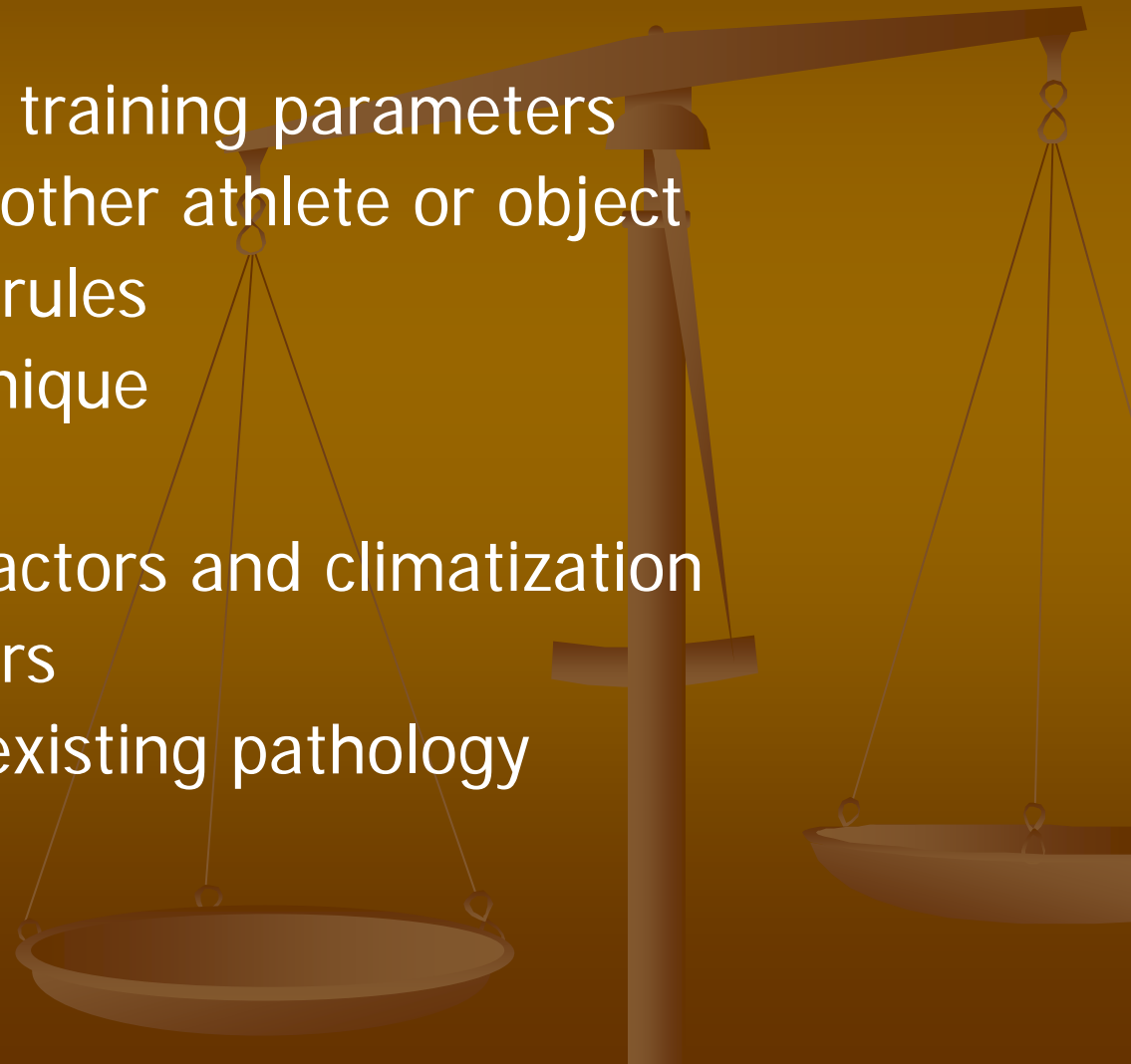
Objectives

AIMS:

- Understand the basic mechanism of ski related injuries.
 - Understand basic issues around safety and how to prevent injuries from occurring.
 - Understand how to manage acute injuries and apply P.R.I.C.E principles.
 - Know how to warm-up, stretch, and strengthen appropriately.
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Mechanisms of Injury

- Overuse or poor training parameters
- Collision with another athlete or object
- Infringement of rules
- Dangerous technique
- Force overload
- Environmental factors and climatization
- Equipment factors
- Failure to treat existing pathology



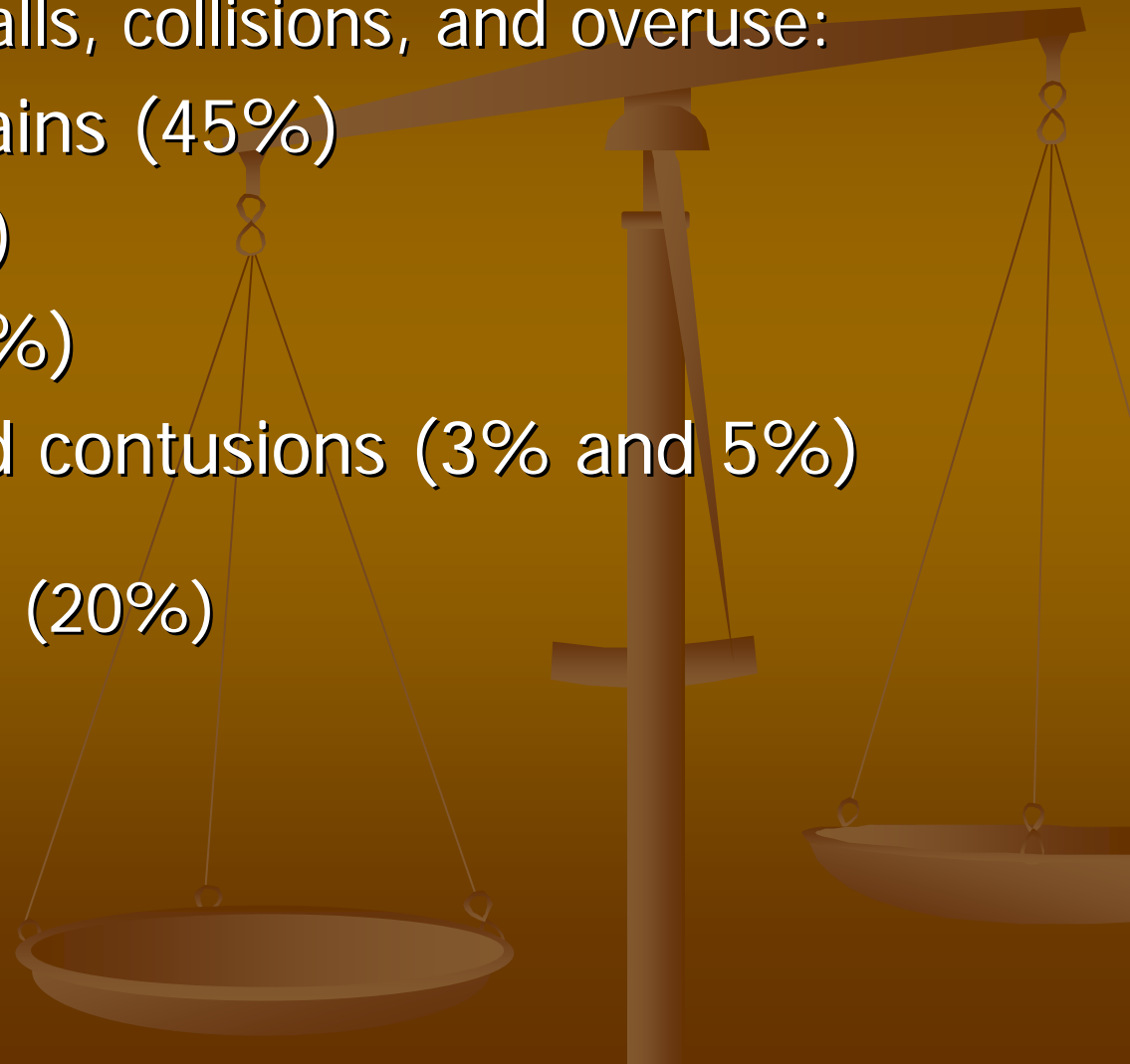
Common Injuries

- Lower extremity (54%)
 - Knee injuries (35%) → ACL and MCL mostly
 - Boot top fractures (35-50%)
- Axial skeleton (head, neck, chest, back, trunk ; 21%)
 - head and face (15%)
- Upper extremity (19%)
 - skier's thumb (4%)
 - shoulder (8%)

Davidson, T.M. and Laliotis, A.T., 1996

Common Ski Injuries Cont...

- Of injuries due to falls, collisions, and overuse:
 - sprains and strains (45%)
 - fractures (30%)
 - lacerations (10%)
 - dislocations and contusions (3% and 5%)
- Injuries due to cold (20%)



Clinical Example: ACL injury

■ Features:

- Fairly common.
- Usually result from a valgus force to a planted foot.
- Usually associated with damage to other structures such as collateral ligaments or menisci.
- Anterior cruciate ligament rupture usually results from a severe rotary strain to the knee. This frequently occurs in skiing sports and in contact games such as soccer or rugby/football
- More common in females than males. This may be due to gender anatomical differences, such as an increased Q-angle and a narrower intercondylar notch.

Clinical Example: Skiers Thumb

- The joint strained is at the base of the thumb. There is usually also ligament damage.
- Often the result of the ski-pole being driven into the first web space as a result of a fall. The thumb is pulled away from the index finger causing ligament damage.
- Needs to be assessed by a doctor and may require X-rays. Treatment may include surgical ligament repair.
- Protection may be obtained by wearing gloves where the thumb and the index finger are joined together.

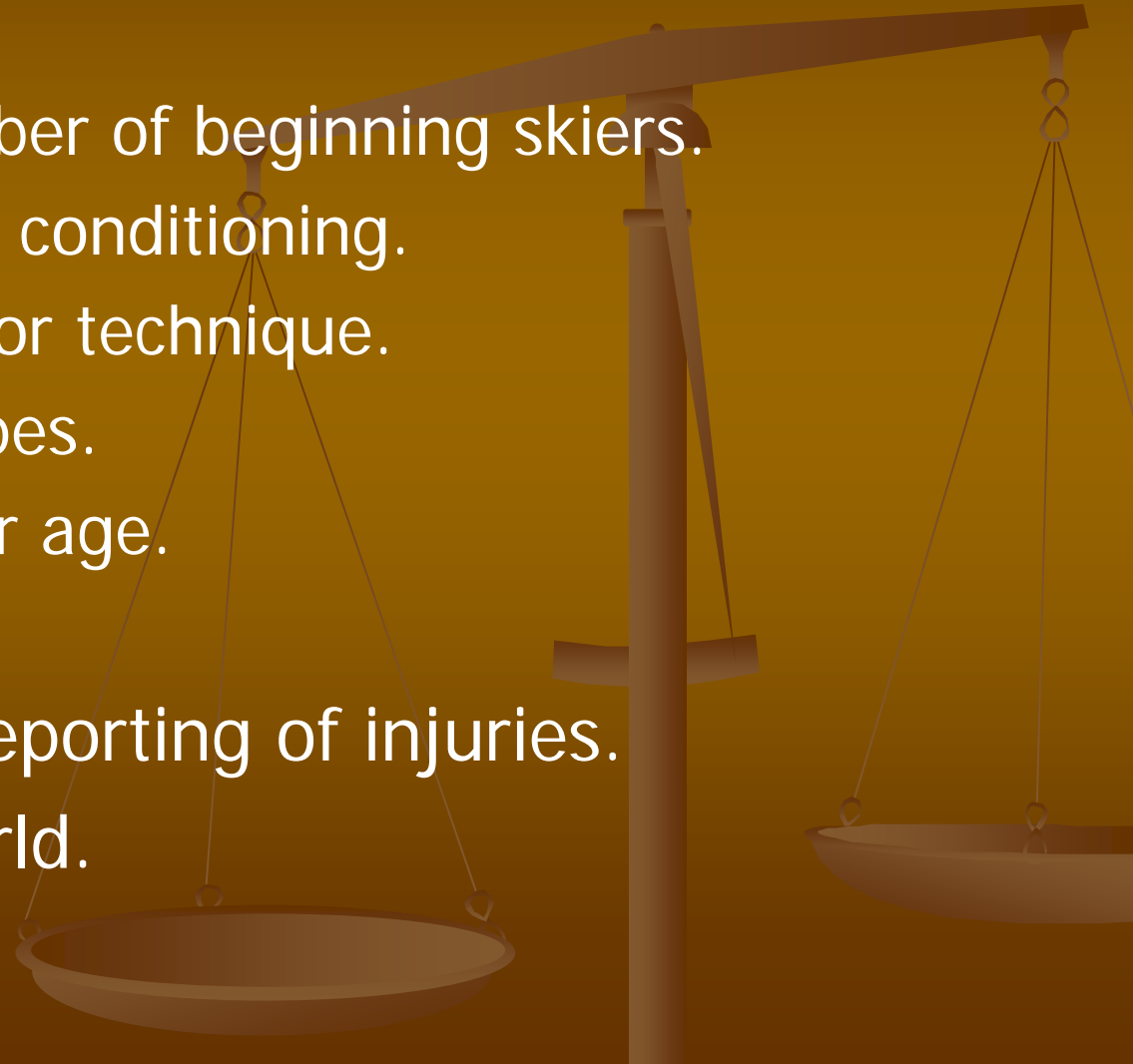
Trends



- Significant increase in upper extremity injuries (53% over nine years).
 - similar increase in thumb and wrist injury rates.
- Significant increase in axial skeleton injuries.
- Significant increase in total number of lower extremity injuries (60% over nine years).
 - **92% increase in knee related injuries over nine years in one study** (Davidson and Laliotis, 1996).

Reasons behind recent trends

- Increased number of beginning skiers.
- Poorer physical conditioning.
- Incorrect or poor technique.
- Crowded ski slopes.
- Increased skier age.
- Other:
 - increased reporting of injuries.
 - litigious world.



Parameters of Musculoskeletal Sports Medicine

- Mechanisms of injury
- Early consultation
- Accurate diagnosis
- Intensive goal oriented treatment
- Objective and functional assessment
- Safe plan for return to activity.
- Injury prevention strategies.



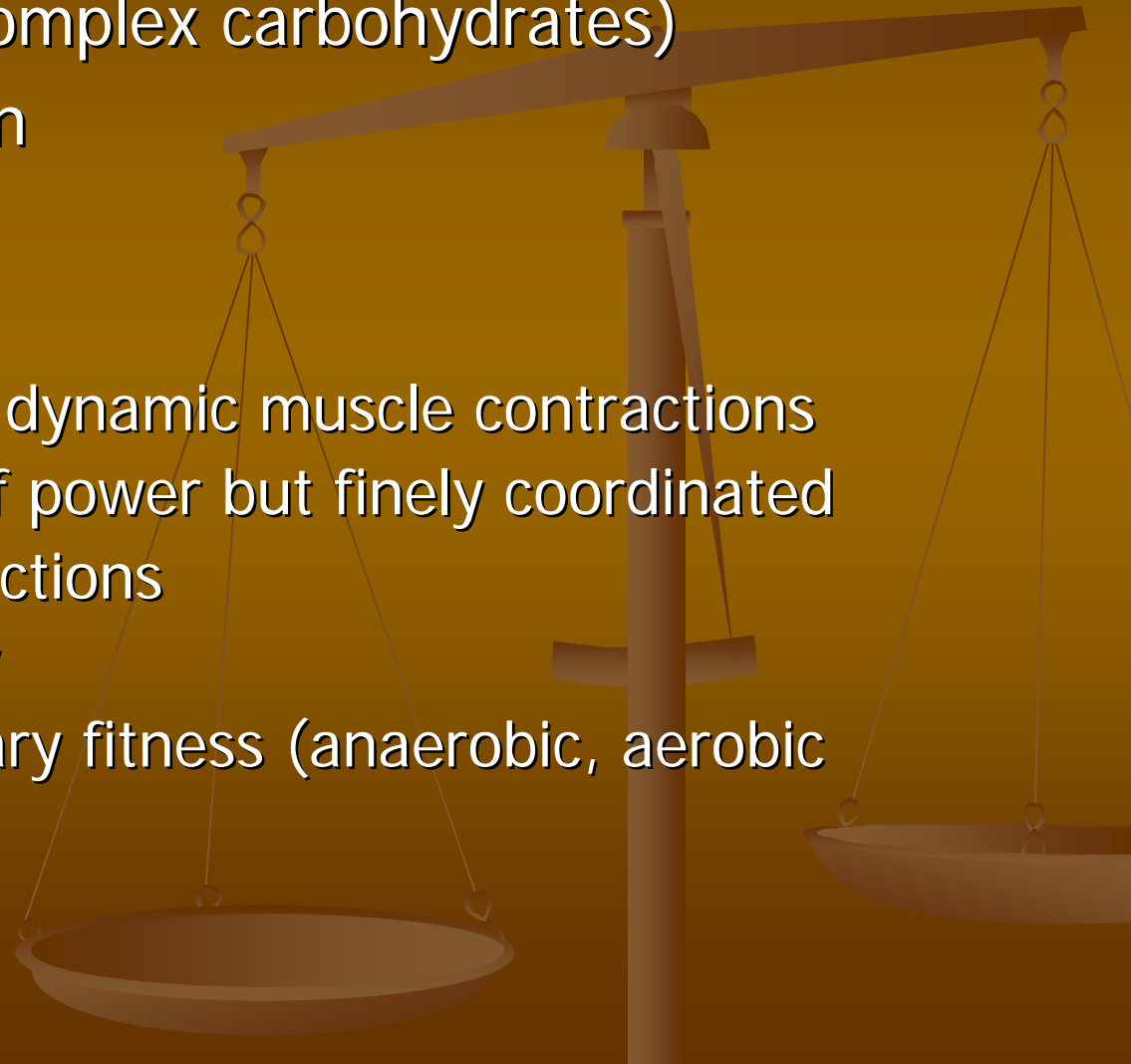
Prevention



- Ski lessons (good technique)
- No drinking/alcohol
- Common sense (ski in control)
- Allow enough time for climatization to occur
- Good equipment; should meet CSA approval
- Proper fit of ski gear (e.g.. boots, bindings, skis)
- Maintenance of ski gear and equipment
 - especially binding and boots (reliable store, good fitter, orthotics, etc....)
 - between seasons and every time you ski

Prevention Cont...

- Nutrition (high in complex carbohydrates)
- Medical examination
- Conditioning
 - skiing requires:
 - sustained and dynamic muscle contractions
 - quick bursts of power but finely coordinated muscle contractions
 - good flexibility
 - cardiopulmonary fitness (anaerobic, aerobic fitness)



So what do you do if you get injured?

- Remain calm!!!
- Keep warm until help arrives
- Use basic principles:
 - **P** → Protection
 - **R** → Rest
 - **I** → Ice
 - **C** → Compression
 - **E** → Elevation
- Seek medical attention



Stretching

Principles:

- Relaxing and non-competitive.
- Warm up first (e.g.. calisthenics).
- Wear comfortable clothing.
- Should not feel pain.
- Use correct technique.
- Control breathing.



Strengthening

Principles:

- Exercise load.
- Number of repetitions.
- Number of sets.
- Frequency of exercise.
- Type of exercise.
- Speed at which exercise is done.



What do I Strengthen and Stretch?

■ Stretch:

- Hamstrings
- Quadriceps
- Groin
- Back
- Calf

■ Strengthen:

- Hamstrings
- Quadriceps
- Adductors/Adductors
- Back and Abdominals
- Calf
- Tibialis anterior

Note: *It is a good idea to consult a physiotherapist before beginning any exercise program.*

What To Stretch and Strengthen?



■ Stretch:

- Pectorals (chest)
- Triceps
- Biceps
- Rotator cuff
- Wrist flexors/extensors

■ Strengthen:

- Pectorals (chest)
- Triceps/Biceps
- Rotator cuff
- Deltoids
- Wrist and fingers
- Latissimus dorsi

Note: *It is a good idea to consult a physiotherapist before beginning any exercise program.*

Equipment

- Bindings
- Boots
- Goggles
- Ski suite
- Undergarments
- gloves
- Orthotics
- helmet
- **YOU !!!**



Summary

- Maximize pleasure and minimize risks
- Ensure good physical conditioning:
 - Stretching
 - Strengthening
 - Aerobic fitness
- Have proper equipment and maintain it well.
- Remember basic "PRICE" principles
- Use common sense

