



SPORT SCIENCE WORKSHOPS

Injury Prevention and Management

Physiotherapy Department
NYSI

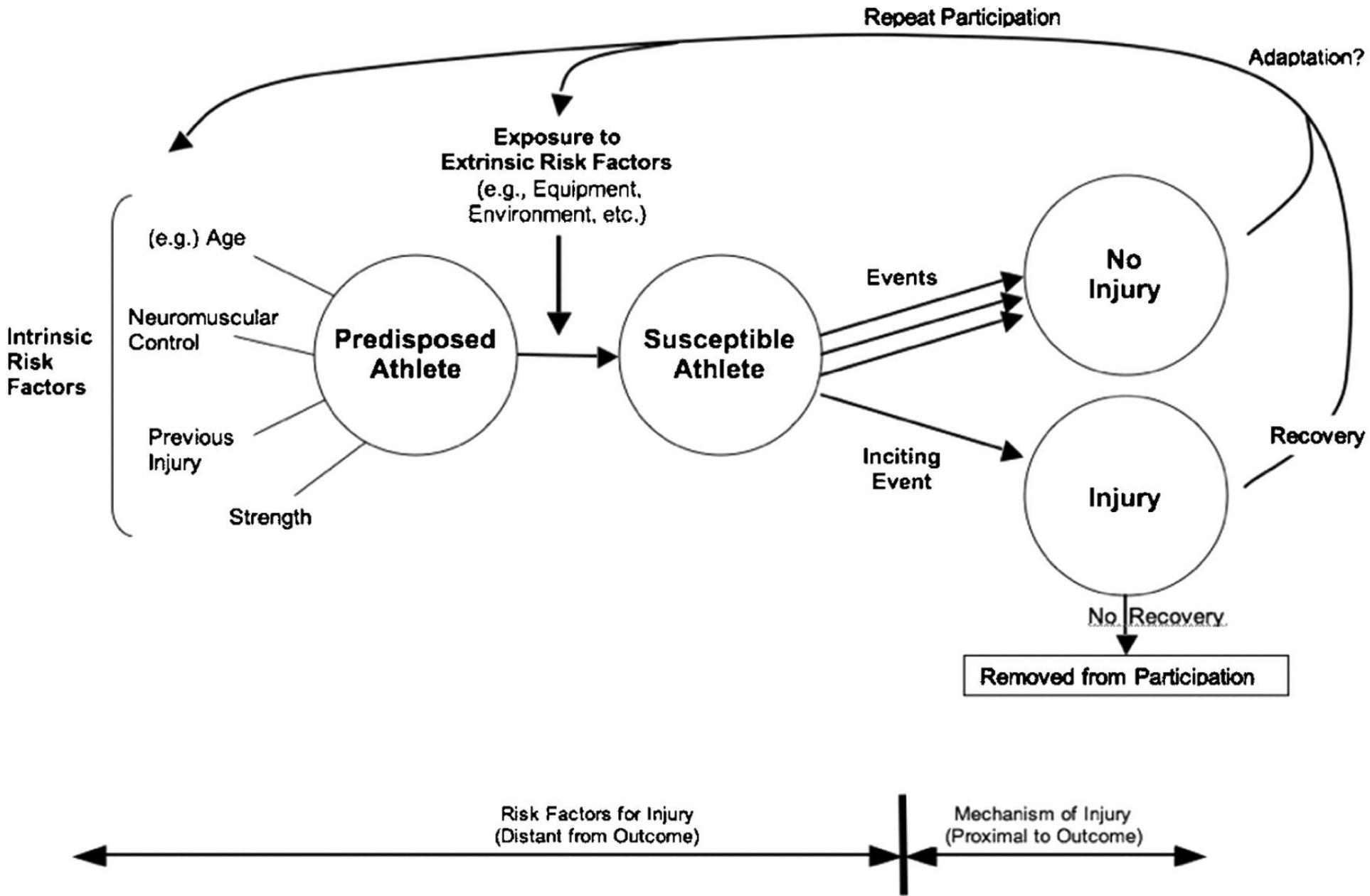
Content

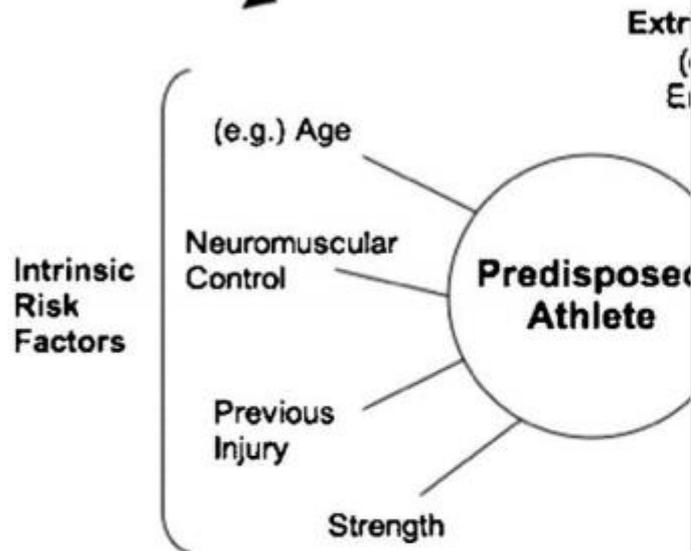
- How to prevent sport injuries
- Taping to reduce ankle injuries
- Recognising potential concussion

Injury Prevention

- Risk Factors
 - Understand Risk factors
 - What can be modified?

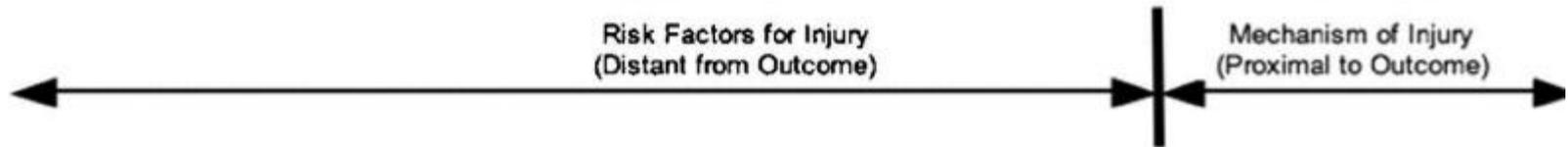






- Intrinsic Risk Factors
 - Age
 - Gender
 - Strength
 - Neuromuscular control (e.g. Balance)
 - Flexibility
 - Previous injury

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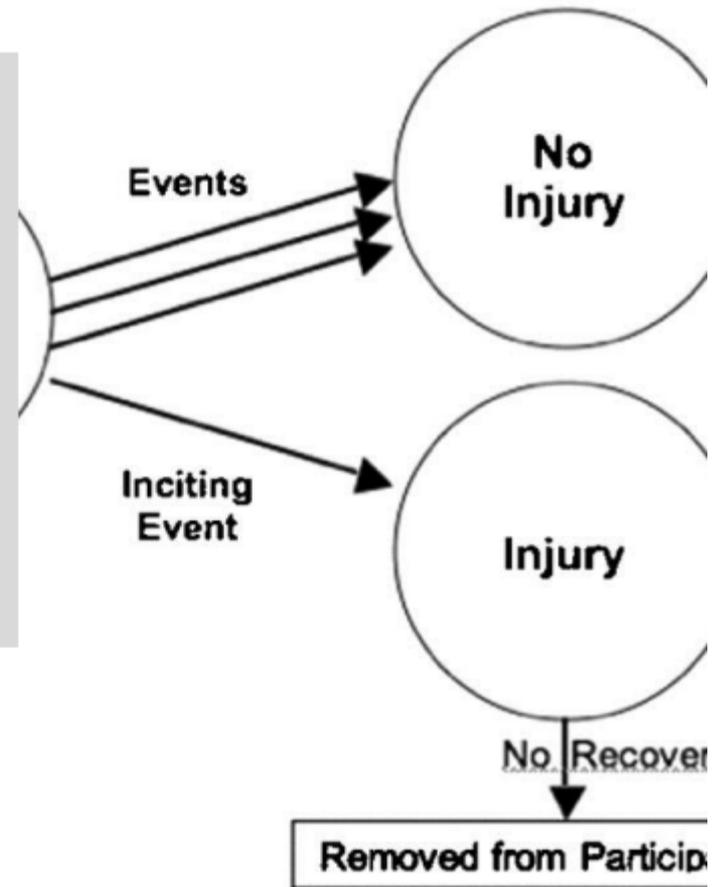


- Extrinsic Risk Factors
 - Environment
 - Inappropriate coaching/poor technique
 - Equipments (e.g. clothings, shoes)

Exposure to
Extrinsic Risk Factors
(e.g., Equipment,

- **Inciting events**

- Actual incident (e.g. bad tackle, ankle sprain)
- Training errors (over/under training)
- Psychosocial factors (Parents/BGR/Self)

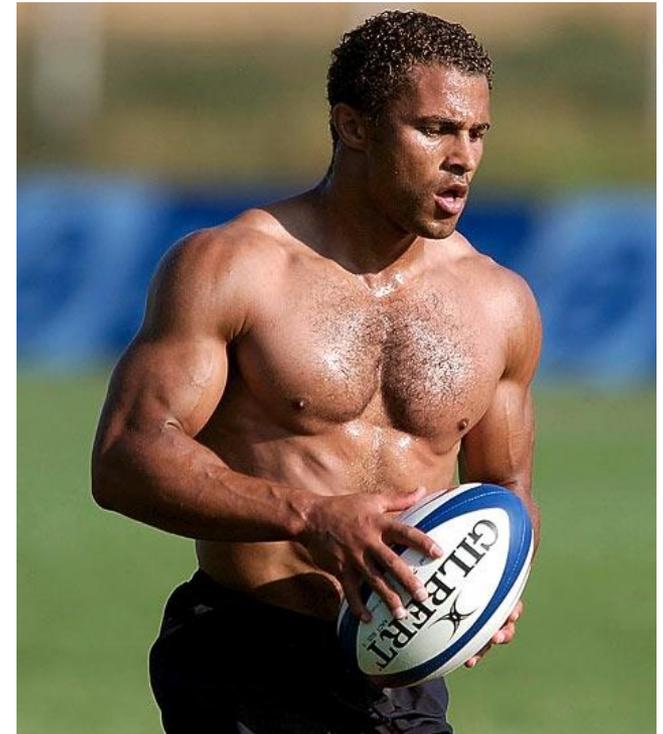


Intrinsic Risk Factors

- Intrinsic Risk Factors (E.g.)
 - Age
 - Gender
 - Strength
 - Neuromuscular control (e.g. Balance)
 - Flexibility
 - Previous injury

Prevention

- Intrinsic Factors
 - Strength
 - Increase strength decreases injury
 - Specificity



Prevention

- Neuromuscular control (e.g. Balance)
 - Balance training (Decreases ankle sprain)



Prevention

- Flexibility
 - Growth related
 - Stretches
 - Prevents overloading injuries



Prevention

- Intrinsic Factors
 - Previous Injuries
 - Take note of previous injury (what was done/how long out of training)
 - Preventive measures
 - Equipment
 - Training
 - Return to Sport vs Return to Compete
 - Pre-mature return increases injury risk
 - Holistic approach (Cardio, strength, agility, confidence)

Extrinsic Risk Factors

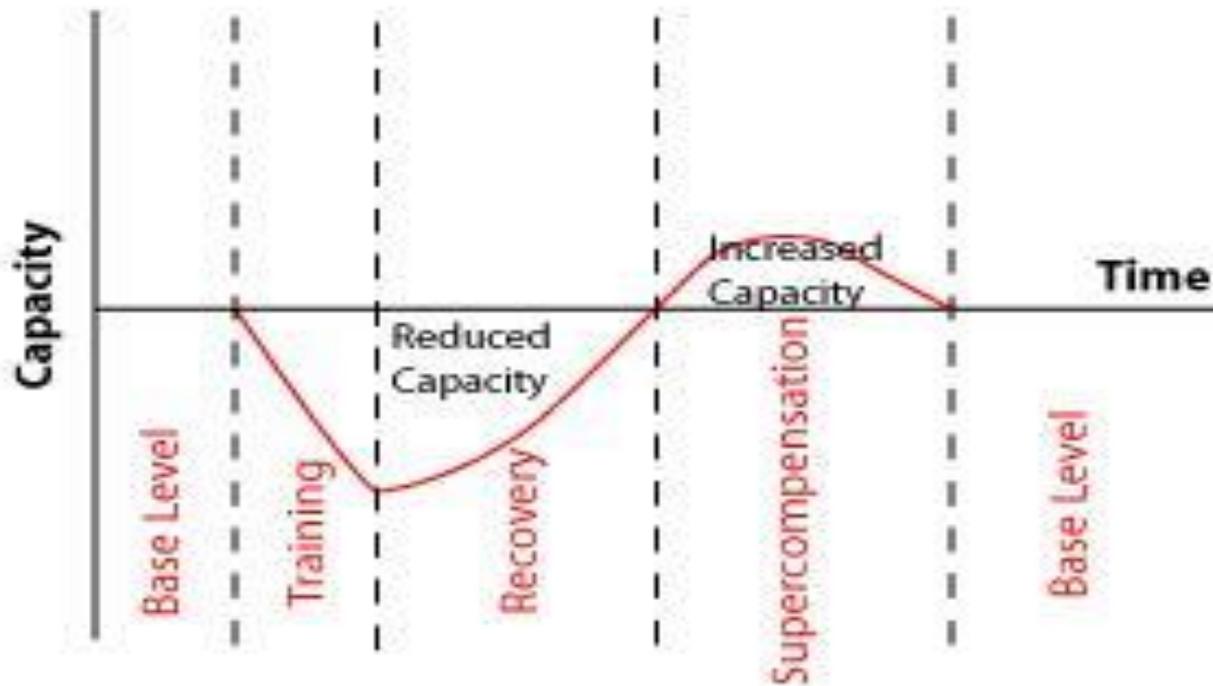
- Extrinsic Risk Factors (E.g.)
 - Environment
 - Appropriate weather, courts, field
 - Inappropriate coaching/poor technique
 - Age appropriate techniques/tactics
 - Proficiency in technique itself
 - Equipment (e.g. clothing, shoes)
 - Wrong apparels
 - Wrong sporting equipment

Inciting Events

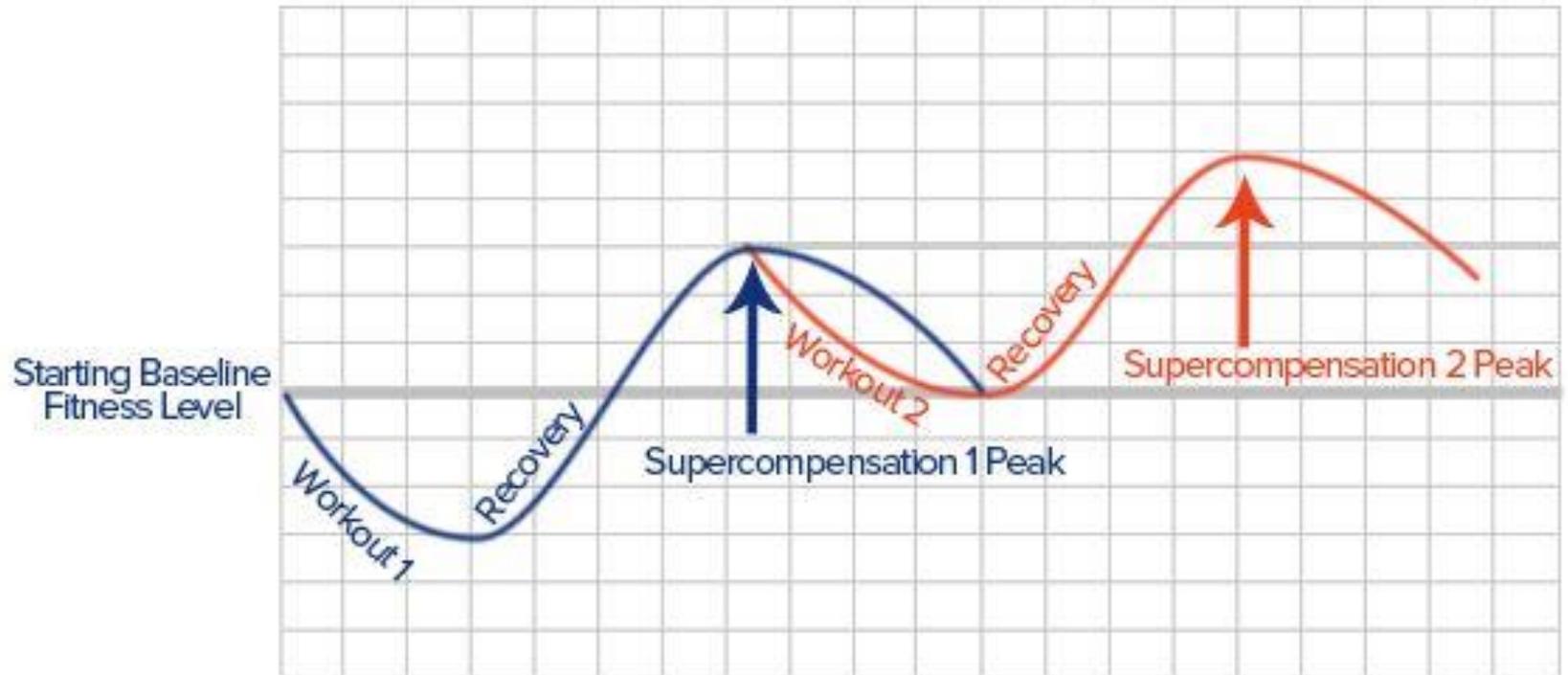
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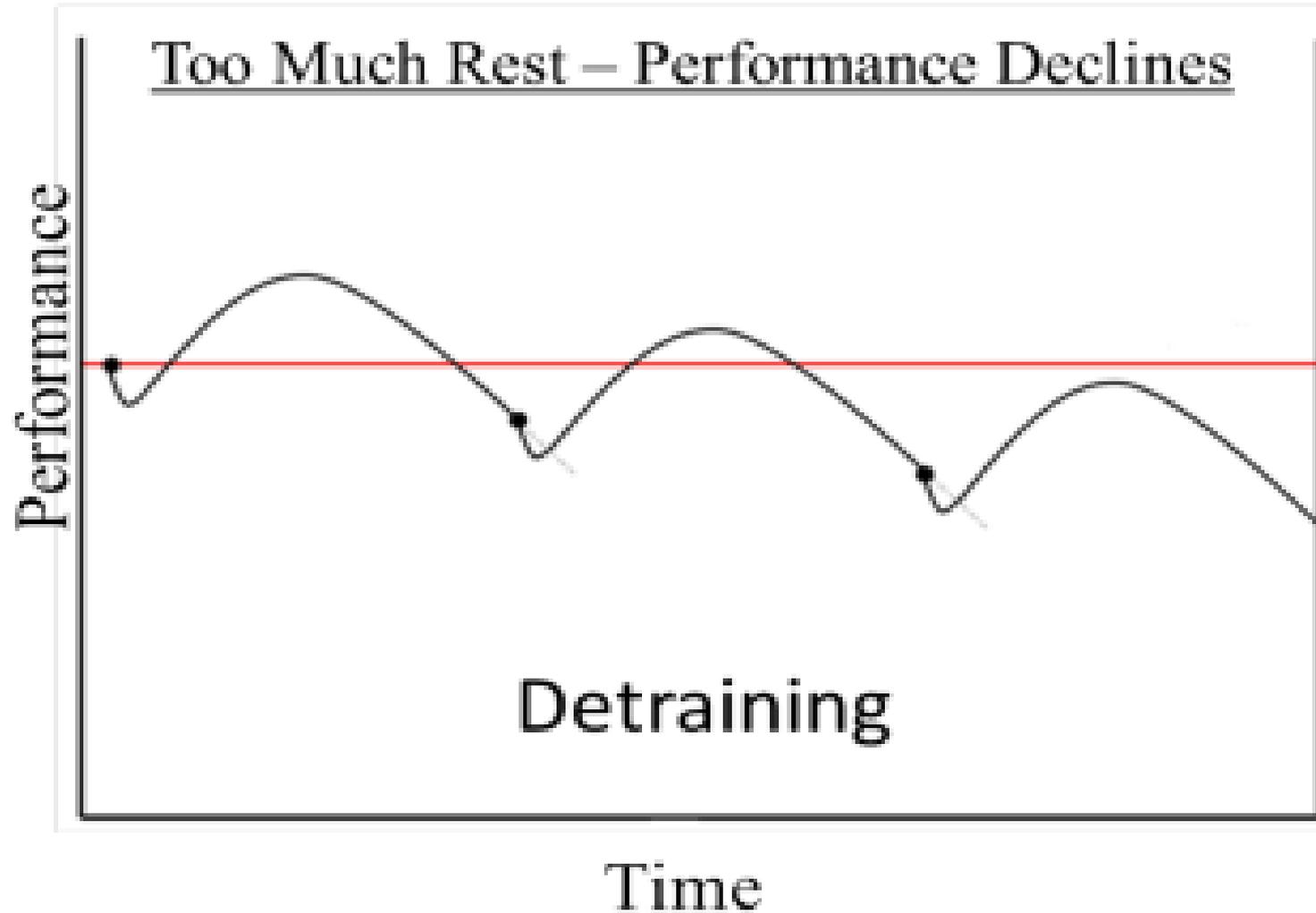
Training Load

- Why train?
 - “Supercompensation”

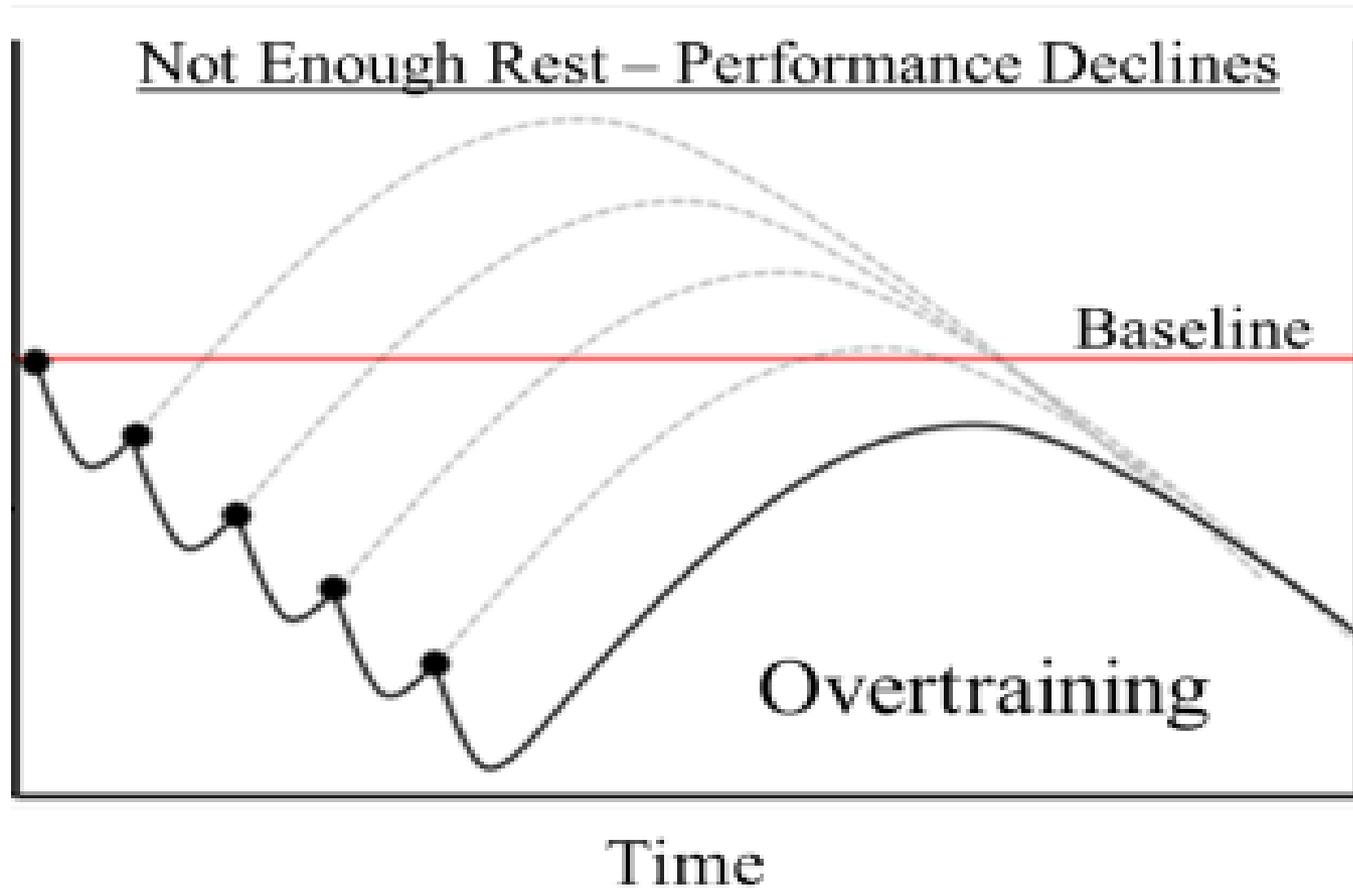


Proper Training: Supercompensation





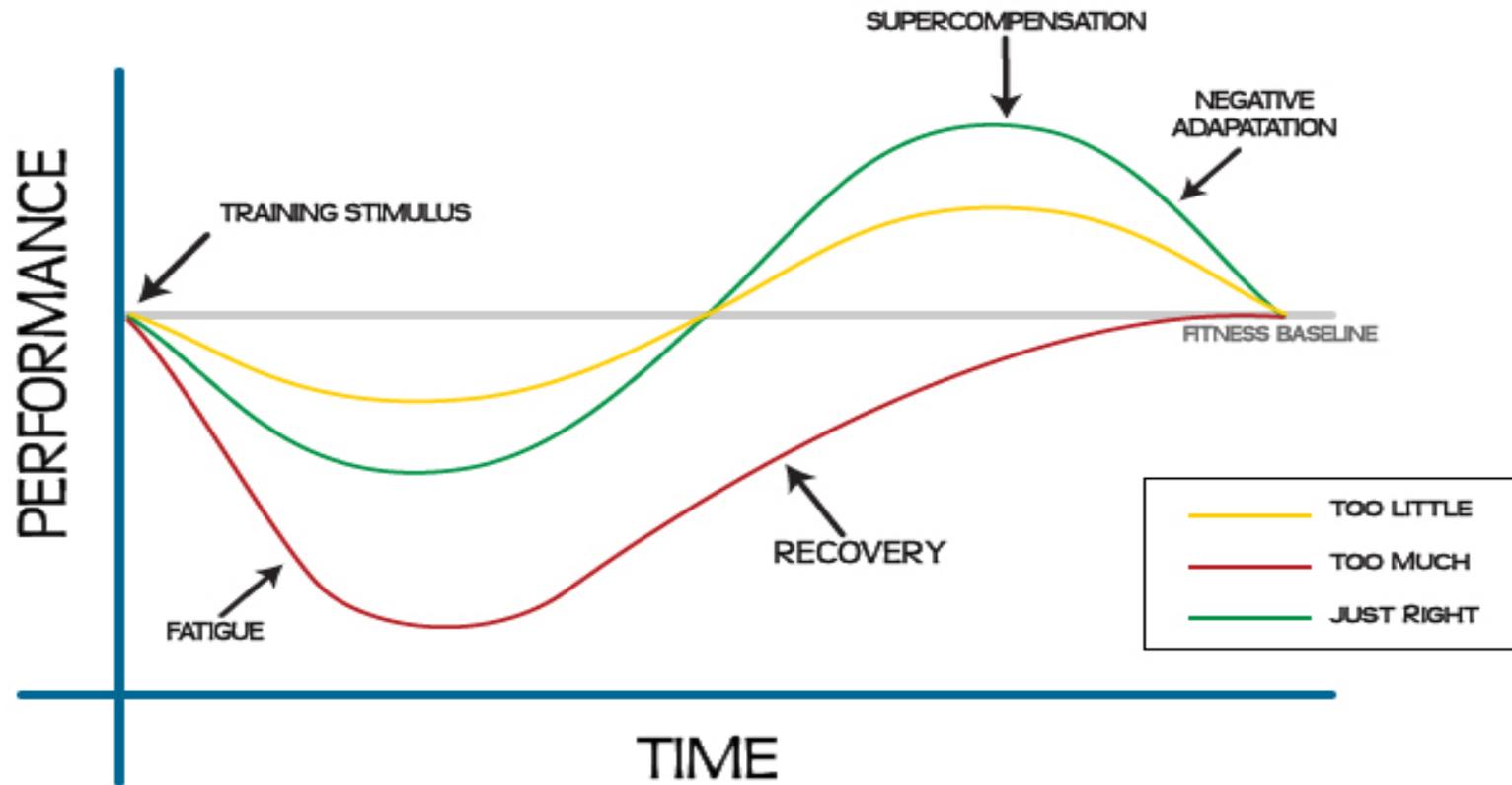
- E.g. Exams, Injuries



- E.g. Tight competition schedule, training camp

Training Load

THE GOLDBLOCKS PRINCIPLE



How to we know what works best?

- Experience?
- What used to work?
- I think this should help?
 - Every athlete is different
 - Every generation is different

New way of looking at things...

Downloaded from <http://bjsm.bmj.com/> on December 6, 2016 - Published by group.bmj.com

BJSM Online First, published on January 12, 2016 as 10.1136/bjsports-2015-095788

Review



OPEN ACCESS

The training-injury prevention paradox: should athletes be training smarter *and* harder?

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ABSTRACT

Background There is dogma that higher training load causes higher injury rates. However, there is also evidence that training has a protective effect against injury. For example, team sport athletes who performed more than 18 weeks of training before sustaining their initial injuries were at reduced risk of sustaining a subsequent injury, while high chronic workloads have been shown to decrease the risk of injury. Second, across a wide range of sports, well-developed physical qualities are associated with a reduced risk of injury. Clearly, for athletes to develop the physical capacities required to provide a protective effect against injury, they must be prepared to train hard. Finally, there is also

injury, fitness and performance is critical to sports medicine/physiotherapy and sport science practitioners. In this paper I use the term ‘practitioners’ to refer to the wide gamut of health professionals and also sport scientists who work with athletes/teams (ie, strength and conditioning coaches, certified personal trainers, etc). Our field—sports performance and sports injury prevention is a multidisciplinary one and this paper is relevant to the field broadly.

Injuries impair team performance, but any injuries that could potentially be considered ‘training load-related’ are commonly viewed as ‘preventable’, and therefore the domain of the sport science and

New way of looking at things....

- Acute:Chronic Workload ratio
 - This week workload/Average of last 4 weeks
 - >1.5 increase chance of injury this week
 - Higher chronic workload (Better fitness) = Lesser injuries
 - Best to keep between 0.8 – 1.3
 - How to measure workload.....
 - Distance ran/distance sprinted, time to complete the distance
 - Session RPE x Session Duration
 - Weights lifted

Gabbett T, The training—injury prevention paradox: should athletes be training smarter *and* harder? Br J Sports Med 2016;**50**:5 273-280

TRAINING LOAD & INJURY

By Jones, Griffiths & Mellalieu, Sports Medicine 2016

Designed by @YLMsportScience

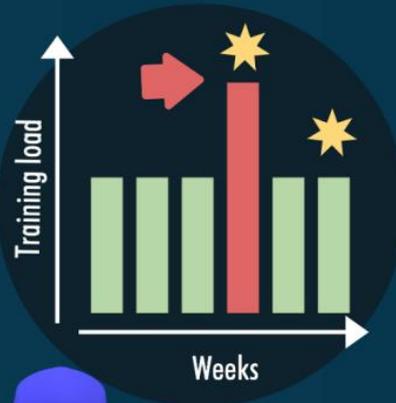
PERIODS OF TRAINING LOAD INTENSIFICATION

e.g. preseason & congested fixtures period



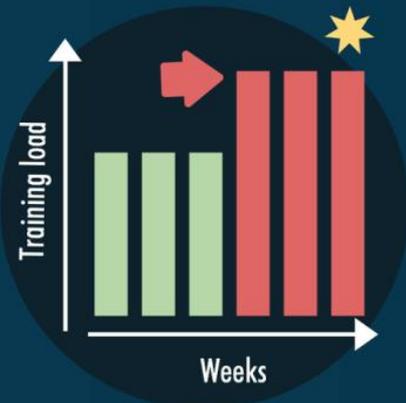
CHANGES IN ACUTE TRAINING LOAD

e.g. return to competition



ACCUMULATED TRAINING LOAD

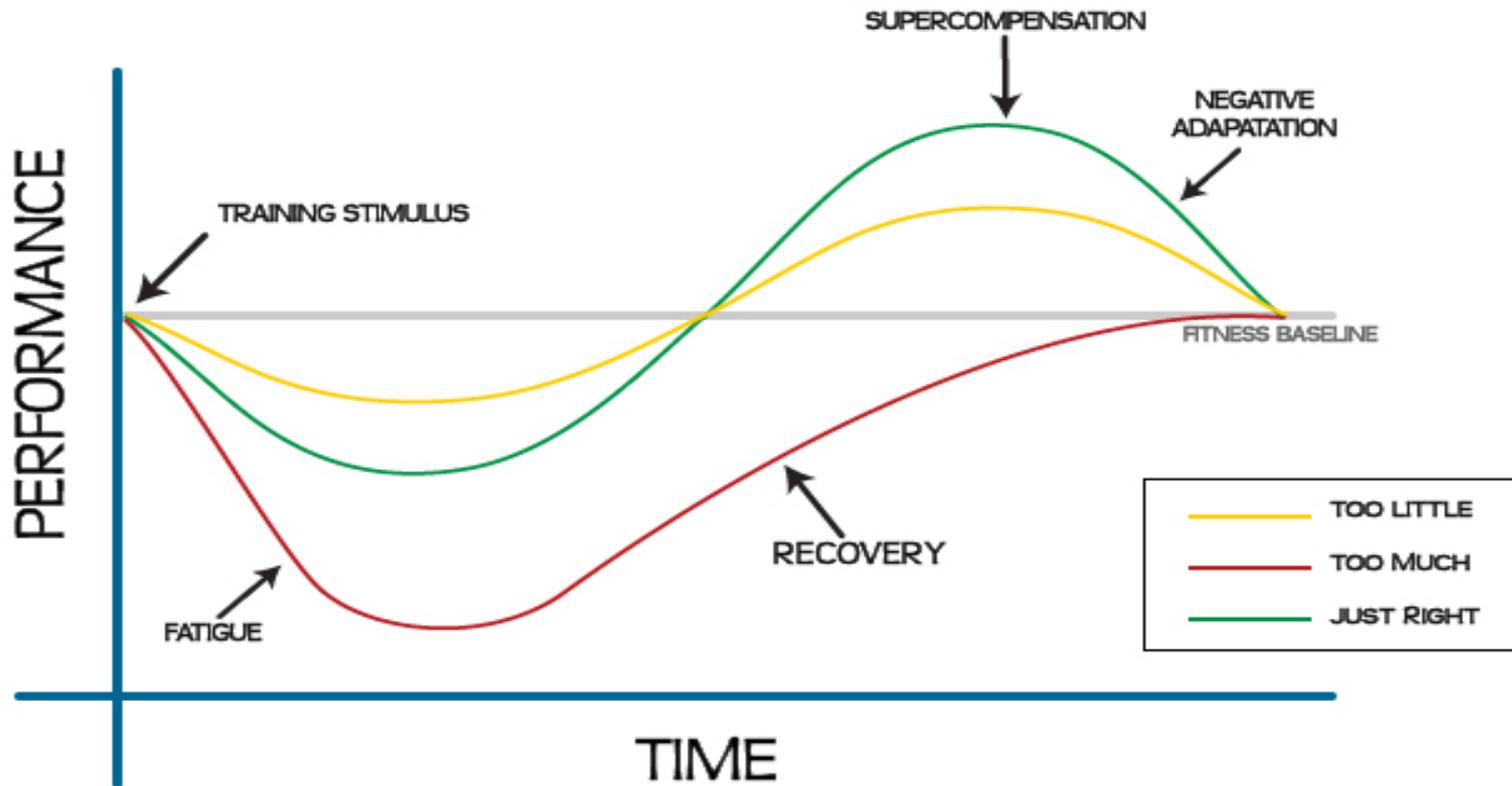
e.g. intensified training block



- Risk of injury
 - Sudden increase in intensity
 - Sudden increase in training load
 - Sudden bout of increase in training

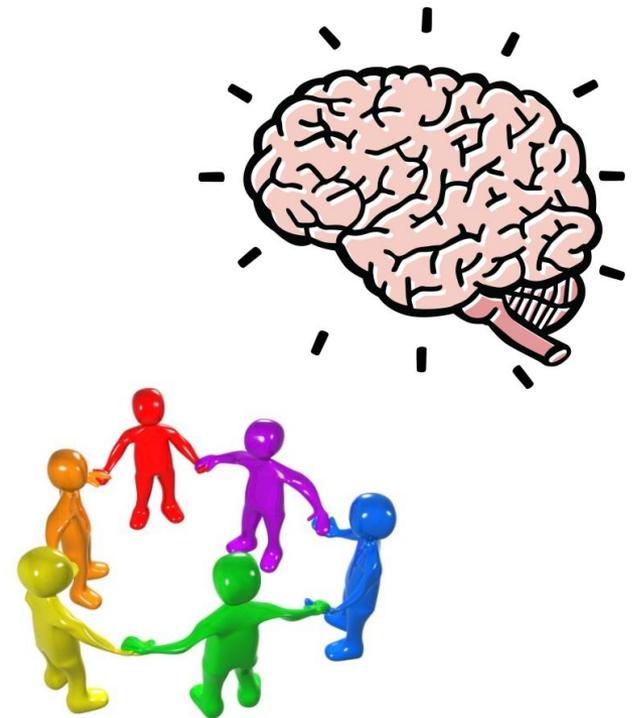
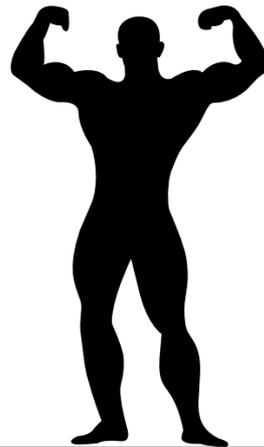
Training Load

THE GOLDILOCKS PRINCIPLE



Recovery

- What is recovery?
 - To allow the body to recover from the demands of training
 - Components of recovery
 - Physiological
 - Psychosocial



Taping

- Taping workshop
 - Ankle

<http://gameday.com.sg>



Different kinds of tapes



- 4 main types
 - Rigid or non stretchable
 - PTape, brown tape,
 - Elastic or stretchable
 - Leukolite, Tear-lite Elastic, Stretch M Tape
 - Underwrap
 - Kinesiology tape
 - Kinesio tape, K tape, KT tape
- 3 main roles
 - Corrective, Supportive and Compressive



Purpose of Taping

- Corrective
 - Realign joints to work with lesser pain (McConnell taping for the knee)
 - Kinesiotape



Purpose of Taping

- Supportive
 - Support weakened joints



Purpose of Taping

- Compressive
 - Light support
 - Cover of other tapes



wiseGEEK

Steps to Taping

1. Skin Preparation

- Dry, clean. No oil/lotion
- Open wounds plastered
- Check for allergic history
- Shaving?

2. Tape Application

- Functional position
- Use correct tape and size
- Smooth and firmly

3. Post Taping

- Check for blood flow and if it's too tight
- Give warning about itch and slow removal

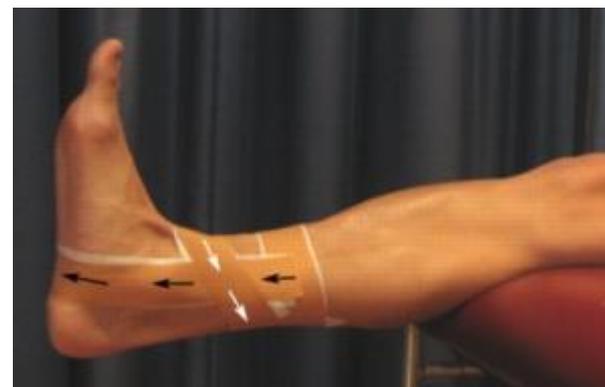
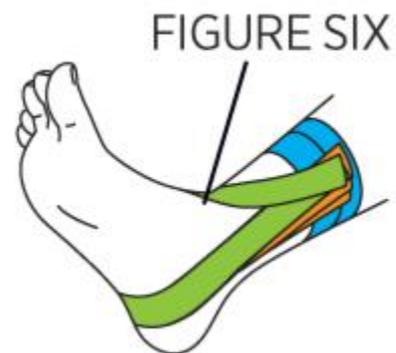
Ankle Taping

- Anchor
- Stirrups



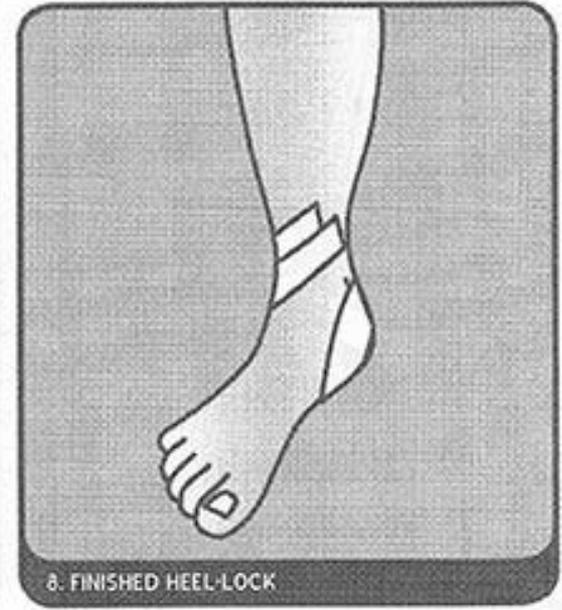
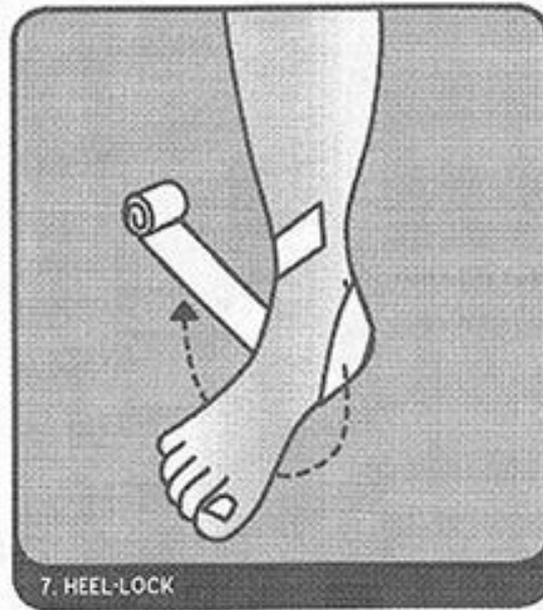
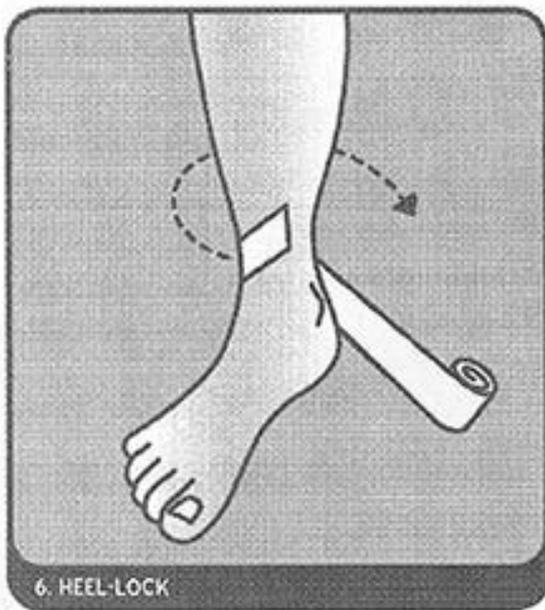
Ankle Taping

- Figure of 6



Ankle Taping

- Heel Lock
 - Behind, Under, Over and Up



“Anything that can go
wrong **will go wrong.**”

–Murphy's Law



Acute injury

- What to do
 - POLICE
 - No HARM
 - Safe to go back to train/compete

First 72 hours.....

P.O.L.I.C.E



Protect

Stop the activity you were doing to prevent further injury



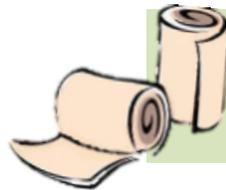
Optimal Loading

Start exercises as soon as you can without feeling much pain



Ice

Cold contracts the blood vessels, thus reducing the swelling around the injured area



Compress

Prevent further swelling by wrapping the area with a bandage



Elevate

Elevate the limb to reduce pooling of fluids to the injured area

No H.A.R.M....First 72hrs



Heat



Alternative
medicine



Rigorous
activity



Massage

*** Alcohol for above 18yo**

Please seek *medical attention* if you experience any of the symptoms mentioned below:

Inability to put weight on the limb

It looks deformed

Giddiness or headache after a blow to the head

Difficulty in breathing

Concussion

- A traumatic brain injury caused by a sudden blow to the head or to the body which cause the head and brain to move

Concussion



Primary impact (contrecoup)

Concussion

- Signs (What you see)
 - Appears dazed or stunned.
 - Forgets an instruction, is confused about an assignment or position, or is unsure of the game, score, or opponent
 - Moves clumsily.
 - Answers questions slowly.
 - Loses consciousness (even briefly).
 - Shows mood, behavior, or personality changes.
 - Can't recall events prior to or after a hit or fall.
- Symptoms (How the person feel)
 - Headache or “pressure” in head.
 - Nausea or vomiting.
 - Balance problems or dizziness, or double or blurry vision.
 - Bothered by light or noise.
 - Feeling sluggish, hazy, foggy, or groggy.
 - Confusion, or concentration or memory problems.
 - Just not “feeling right”, or “feeling down”.

Oh no....

- If you suspect the player may have a concussion,
 - Take the player out immediately
 - Monitor symptoms. (Do not leave the player alone)
 - Inform the parents/teacher in charge
 - Look out for behaviour changes
 - Vomiting
 - Drowsiness
 - Send to A&E if any of the symptoms are present

If in doubt....

- Scenerio

- Player had a bad knock 2 days ago, didn't have any real complains since but as a coach you noticed a delay in his [movements](#)

If in doubt, Sit it Out...

Useful links

- Headsup
 - A initiative by CDC (USA) to address concussion injuries
 - Fact sheets for teachers/coaches/parents
 - Infographics



www.cdc.gov/headsup/youthsports

Useful Links

- You can't see a concussion
 - Recognise, Remove & Refer
- Done by Sport Medicine Australia (WA)
- Fact sheets



<http://sportconcussion.com.au/>