

Lower leg, Foot & Ankle

Common Joint & bone injuries

- Lateral Ligament
- Joint capsule
- Medial ligament
- Tarsal fracture

Risk Factors?

- Common Muscle injuries:
- Calf strain achilles tendon sprain



Complexity Continuum

Think in terms of:

- Motor Complexity
- Applied Loads/Exercise intensity
- Frequency of exercise or programme
- Repetition of exercises
- Within realms of healing stage
- Direction of movement
- Isolation/integration
- Eccentric/concentric/isometric
- Stable base needed?

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UPPER LIMB INJURIES AND MANAGEMENT

Common Upper Limb Injuries

Impact

- Dislocation - GH/AC/SC
- Fracture – Clavicle/Acromion/Humerus
- RC tear
- Biceps rupture
- SLAP lesion
- Bankart
- Hill Sachs
- Reverse Hill Sachs

Non – Impact

- Subacromial impingement
- Long head of biceps
- RC tear
- RC tendinopathy
- Adhesive Capsulitis
- Elbow tendinopathy

Functional Training some guidelines

- Use bodyweight before adding external resistance
- Stress “core” before extremity
- Initial load should be eccentric to teach the athlete force reduction before force production
- Ability to reduce and absorb external forces is essential to both performance and injury prevention

Functional Training

Must build from slow to fast:

- Involve as many faster activities as possible. Takes advantage of eccentric load to help produce a stronger, more powerful and efficient movement
- Training with unstable surfaces - Most important sporting feats take place in unstable/unpredictable environments

The combination of ‘balance’ with ‘stabilisation’

Balance & Stability training guidelines

- Safe, but challenging
- Stress multiple planes of motion
- Incorporate a multi-sensory approach
- Eyes open/eyes closed (if appropriate!)
- Increase proprioceptive demand
- Static/bilateral/stable surfaces progressed to dynamic/unilateral/unstable surfaces
- Progress to sport specific performance drills

Train in multiple ‘environments’

- By training and practicing movements in various environments and under various conditions the athlete becomes more versatile in handling the forces and stresses involved in sport
- Variety is key! - The body responds well to differing stimuli
- SAID principles
- functional conditioning activities must involve all 3 planes, and all joints at the same time

Progression

- Always consider how you would progress to, and from, each activity and....
- Where that activity fits into the big scheme of things Remember! Every activity is a test Every test is an activity
- Stress correct execution of skills and movement patterns
- Motor learning first
- Movement speed comes later

3 P's and 3 M's (Vern Gambetta)

Is it Practical? = Can it be done given the development of the athlete and the facilities available?

Is it Personal? = Does it meet the needs of the individual athlete?

Is it Proactive? = Does it anticipate possible roadblock to progress and provide possible methods to overcome these?

Is it measurable? = See and quantify the results

Is it manageable? = Accomplished in the context of the personnel

Is it motivational? = Both parties look forward to doing

Plyometrics

- Specialised training to increase explosive power
- Used alongside other power training modalities, not a stand alone technique
- Must be highly specific to the sport
- Requires excellent technique to avoid injury/re-injury
- Improves
 - NM reactions
 - Explosiveness
 - Quickness
 - Rapid force generation
- E.g. throws, skips, jumps, bounds

Acceleration training

- ▣ Involves
 - 50/90's repeated acceleration, jogs between
 - Get up and reaction drills
 - Sports loading
 - E.g parachute sprints, weighted vest, harness running

Technique training

- ▣ Involves
 - Sprint drills (heel flicks, high knees)
 - Frankenstein run (straight leg run)
 - Mini hurdle steps

Lateral speed

- ▣ Essential for
 - Changing direction
 - Side stepping
 - E.g side to side hop drills, W sprints, Lateral shuffle with hurdles

SAQ Theory

- ▣ Ability to decelerate and accelerate via rapid force acceptance/ generation – increased eccentric RFD and concentric RFD
- ▣ Neuromuscular efficiency through the 3 CNS levels of control
- ▣ Efficient motor execution patterning/feedforward mechanisms
- ▣ Neuromuscular overload for short, high intensity durations

SAQ – foot quickness

- Essential for
 - First 5-7m of sprint
 - Changing direction whilst on run
 - Side stepping
 - E.g. line hops, ladder runs/shuffles

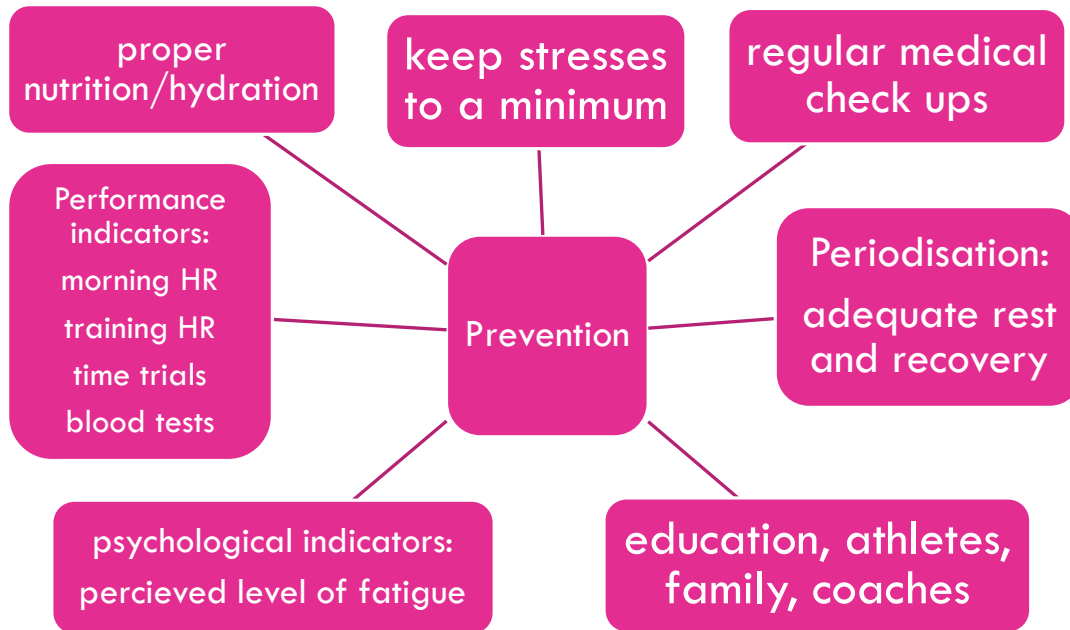
Explosive power training

- High intensity - Quickness of execution with maximal effort is essential. Rate of force development is far more important than magnitude of the stretch
- Moderate rest - Essential for intensity and quality. Minimum 2 mins between sets, 3-16 sets, 2-4 days
- Maximal force/minimise time and Progressive and Highly specific

Over speed training

- ▣ Sensation of moving faster than normally capable
 - Trains nervous system to cope with faster speeds
 - Increases stride frequency (possibly length also)
 - Increases relaxation at top speeds
 - Helps maintenance of these speeds
 - Must be performed early in workout, when fresh
 - Allow full recovery

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Rehabilitation??

- Little research to support Rx and rehab from overtraining
- Combination of psychological and physiological intervention
- Rest, change of training patterns, nutrition, reduce stress
- Resumption of training should be individualised and carefully monitored
- Implications beyond sporting life

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HOME EXERCISE PROGRAMMES

<p>Aims</p> <ul style="list-style-type: none"> • Continue the effects of treatments • Establish tissue strength with exercises • Correct flexibility • Re-learn Motor control patterns/correct poor habits • Self manage and develop self awareness • Educate and understand how the basics of the body work in relation to their injury • Advise fitness 	<p>Adhering to Programmes</p> <p>Reasons for not adhering:</p> <ul style="list-style-type: none"> – Time – Schedule – Equipment – Forgetting – Motivation – Intermittent performance of HEP 	<p>How to address:</p> <ul style="list-style-type: none"> - Explain, educate, gain trust and good rapport - Inter-personal skills - Convenience - Efficiency - Accessible
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Non clinical skills

- Clarity
- Goal set
- Motivate – a patient in clinic may have different motivations for adhering to your programme than a professional athlete
- Accountability

Exercise prescription

Considerations

- Capability of individual
- Complexity
- Replicate exercises/movements encountered in everyday life
- Reps/sets – need to be absolutely clear!
- Progression

Initial assessment

- Screening tools/methods are paramount
- Understanding of posture and ability to classify are important
- Vital that these are objective as measurement of speed, power and strength are not necessarily needed

Equipment

- Equipment available is much more limited than in professional sports
- Any equipment used needs to be carefully considered
- When applying resistance utilise other medical props
- E.g. Theraband
- May have to consider households objects
- E.g. 1kg=bag of sugar/can of Baked Beans or broom handle

Progression

- Will be much more gradual than with elite athletes. For 2 reasons: (i) The contact time with your patient is vastly reduced (once every 2 weeks) (ii) The end goals/criteria for return to “fitness” are much lower
- Exercises are still functional
- Still require increase in strength, mobility and function
- Early rehabilitation is key!
- This may actually make up the entire rehabilitation process
- May not require components such as:
 - Plyometrics
 - Advanced neuromuscular control
 - Sprint, SAQ, Foot quickness training

Goal setting

- The end/outcome goals will be totally different to professional athletes
- Much more varied so have to be adaptable
- Consequently your “end stage” rehabilitation principles will change
- Consider the patient’s goals
- E.g. for an office worker is the ability to perform a single leg drop and depth jump essential to their outcome?

Stretching and their effects

Stretching

- Essential component in a comprehensive rehabilitation programme
- Should always look to increase mobility prior to working on strength aspects
- Useful to incorporate into all aspects of rehabilitation depending upon the aim of the exercises

Therapeutic stretching

Typically, four types of stretching are used:

Static

Dynamic

Ballistic

Proprioceptive Neuromuscular Facilitation

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