The Role of Coaches during Recovery and Rehabilitation

THE INJURED RUNNER

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CONSIDERATIONS…

- Training process and its modification
- Complexity and team effort
- Common goals and milestones
- To-do’s
- Opportunity and risk
- Exercises and Loadings

THE TRAINING PROCESS

TRAINING EXERCISES

Quality
Execution
Loadings
Organisation

Improved Specific Skill

Improved physical abilities

Improved Performance Capacity

Understand & Individualise

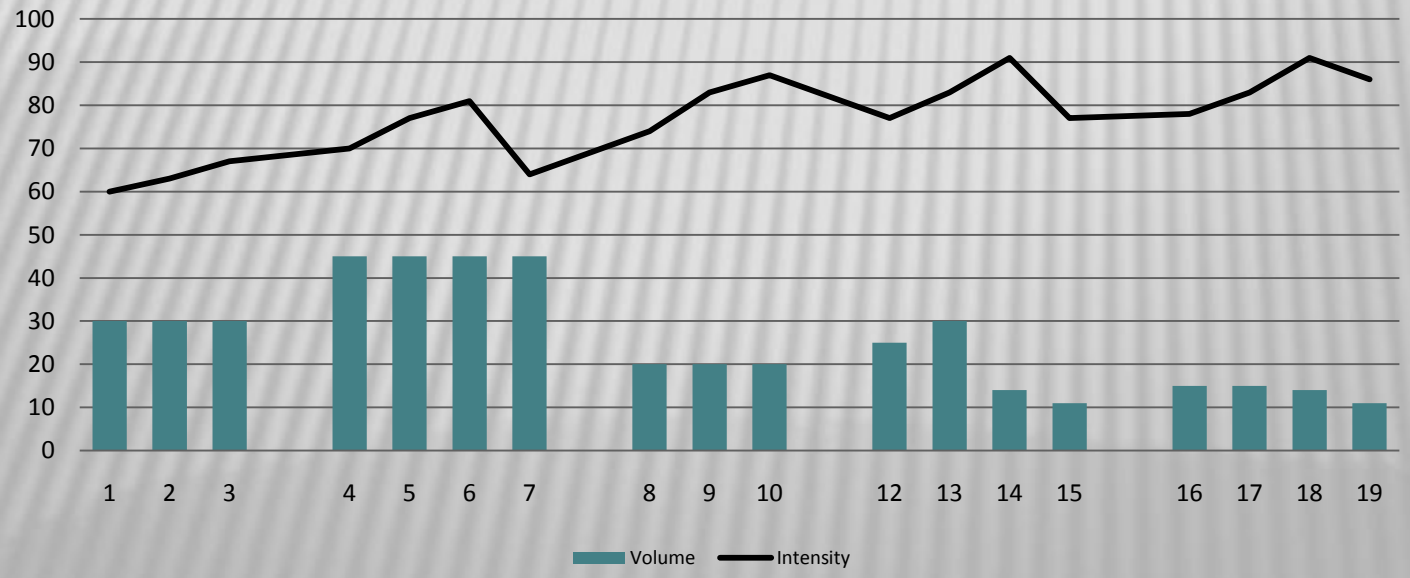
Monitor

COACH INTEL

- Necessary before rehab plan can be completed
- Provide information relating to athlete and injury
  - Provide information relating to training volumes, intensities and densities
  - Observations on movement patterns
  - Key competitions
  - Non-negotiable's relating to preparation for peak performance

PLAN B

- Can't simply miss part and expect to pick up where they left off or at where they should be now
- Part changed or missing = Process changes=New Process



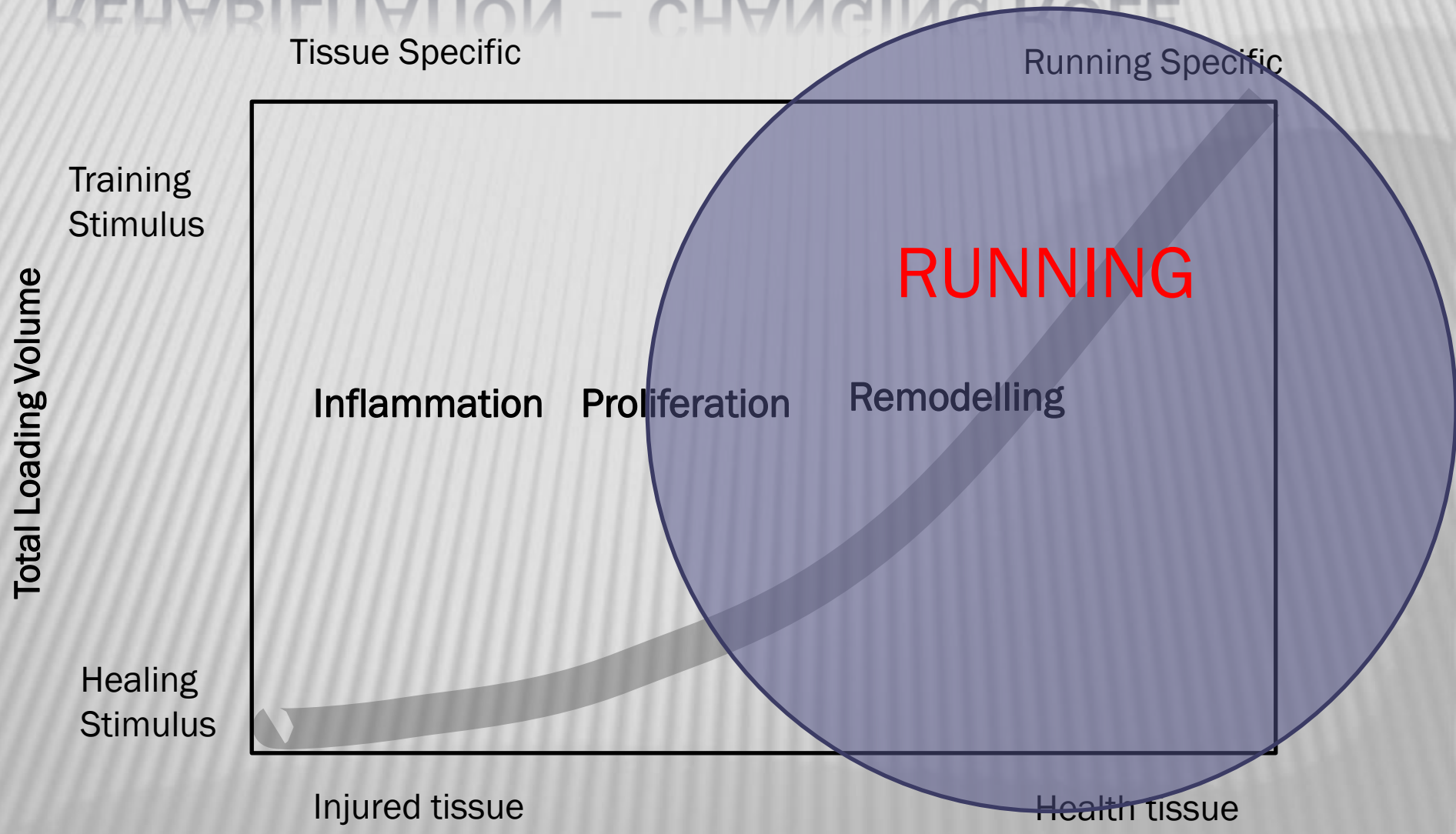
REHABILITATION – START OF PLAN B

- Coach is responsible for training process, therefore, they must be observed throughout its application
- If rehab returns athlete to 'normal' training then end phase is very event specific

  => Coach needs to observe, understand and evaluate it.

- Arriving after a stage of rehab
  - Only sees finished result
  - Can't understand the program and therefore how it leads into subsequent phases
  - Won't fully appreciate if elements of rehab should be maintained in program

REHABILITATION – CHANGING ROLE



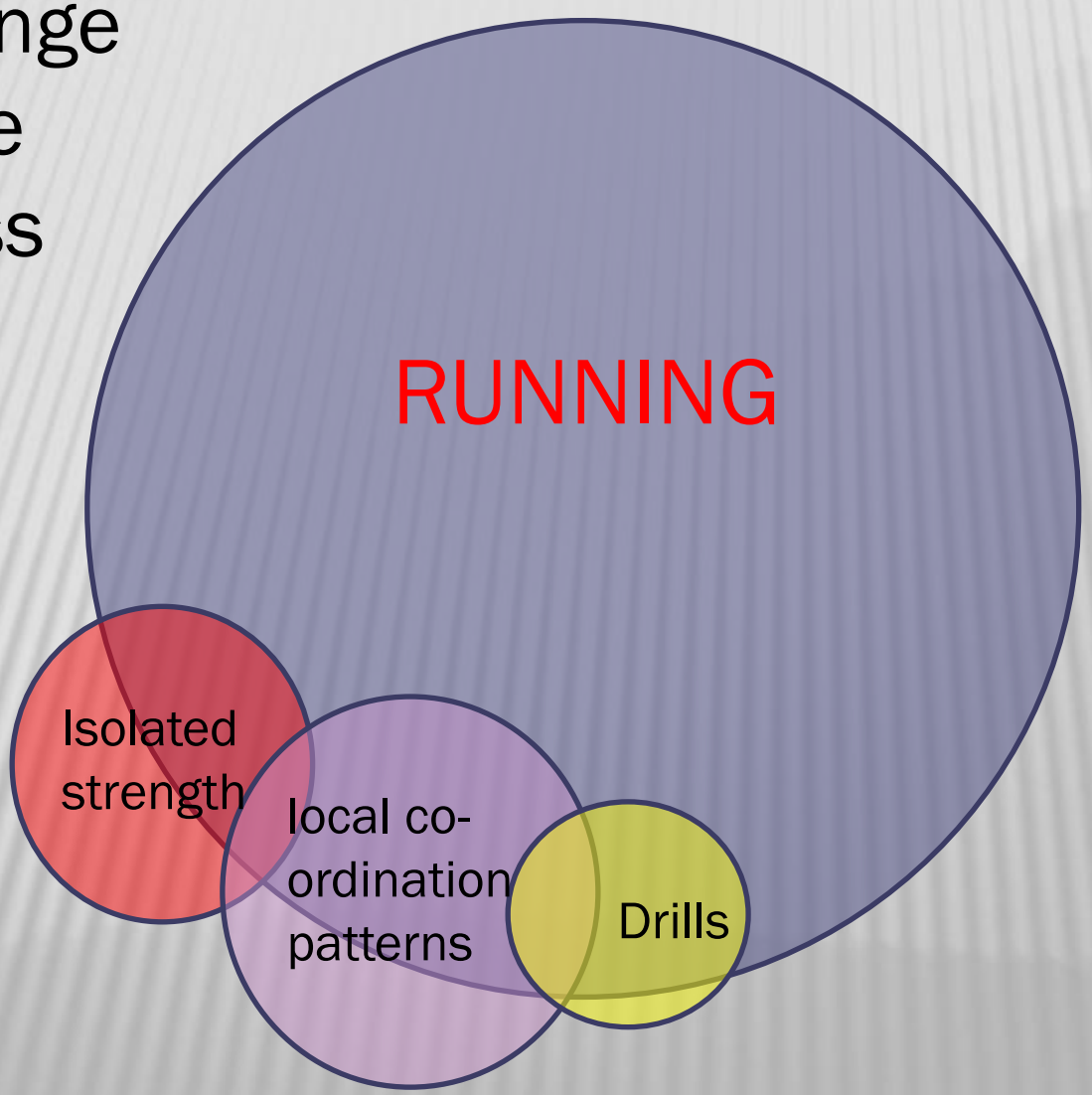
(1)

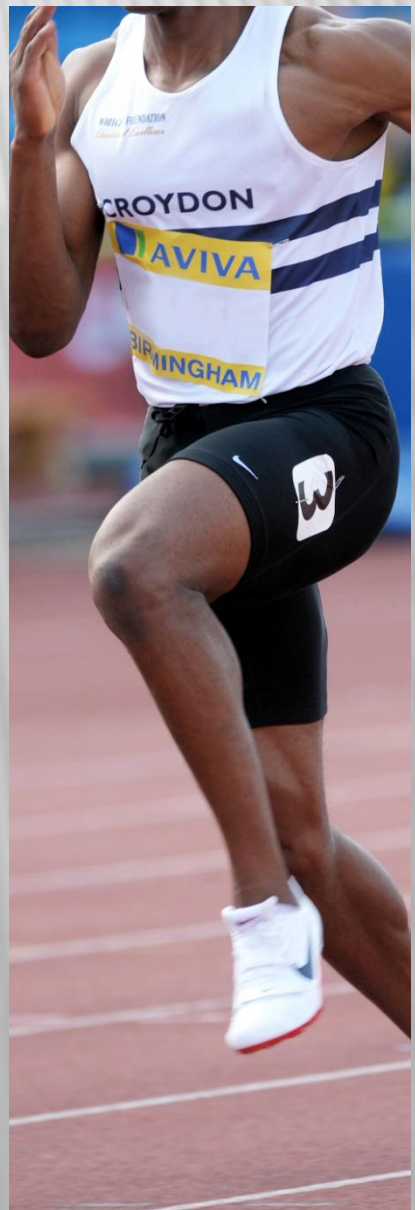
COMPLEXITY

- Complex systems consist of a large number of components interacting together.
- The human body is a complex system
- The overall function cannot be explained by examining the components alone

KEY MEMBER OF INTERDISCIPLINARY GROUP

- Challenge
- Debate
- Discuss





PERFORMANCE AND INJURY

Multi-faceted – no one fix

e.g. Passive foot contact results from lack of reactivity = lower back injury

- Stiffness / elasticity
  - Trunk, hip, hamstring, foot and calf
- Power and RFD
- Co-ordination
- Endurance
- Coach and ‘team’ need to what’s important and incorporate in rehab

PROPULSION

INITIAL SWING

TERMINAL SWING

ABSORPTION

EXCESSIVE TILT

LATE HIP FLEXION

SLOW HIP EXTENSION

LANDING DISTANCE

LOWER BACK ISSUES

BREAKING FORCES /
HAMSTRING STRESS

FORWARD LEAN / ROTATION

↓ POWER IN HIP EXTENSION

GOAL ORIENTATED

"A perfection of means, and confusion of aims, seems to be our main problem" Einstein

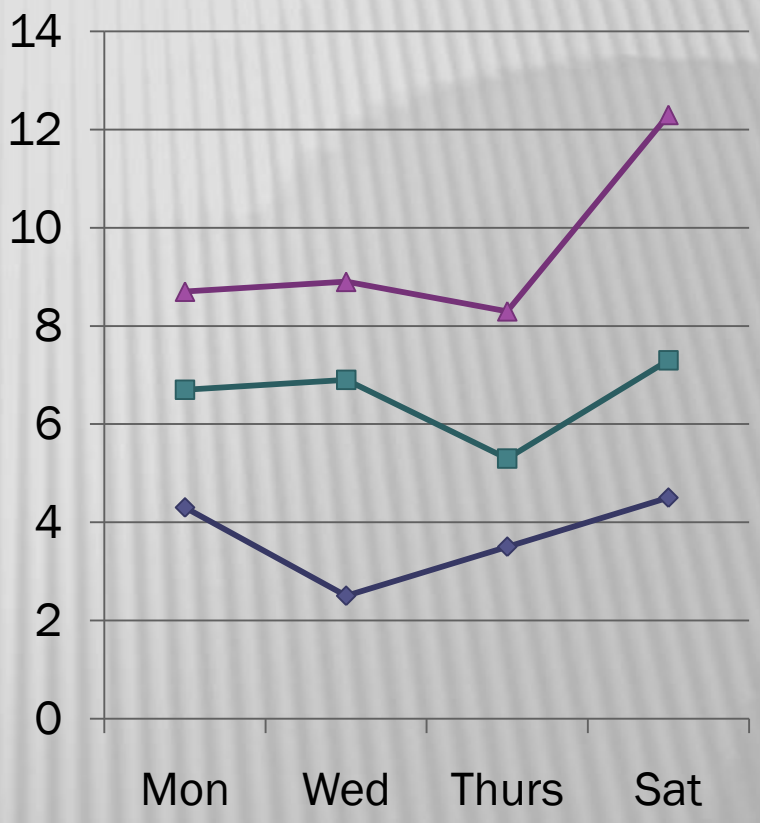
- Goals have to be clear and agreed
  - What milestone have to be achieved?
  - E.g. Isokinetic test or 10x50m
  - Specific targets become increasingly important
  - Depends on phase of rehab, time of year & performance goals
  - Do performance goals need to change?

REHAB MILESTONES

- Assessment spectrum
  - From slow, low load, low skill, isolated
    - SL bridge
  - To fast, high load, high skill, integrated
    - Scissor bounds
- Everything has its unique neural patterns specific to the activity
- Essential to hone specific neural circuitry
- Improve ability to maintain function under changing or increasing stress
- Relevance of each exercise /assessment will change
- Who has the appropriate skill set to best assess?

CONTINUOUS ASSESSMENTS AND TRENDS

- During all activities a coach should be assessed and monitored
  - Posture
  - Balance
  - Alignment
  - Range of Movement
  - Co-ordination
- Mechanical flaws eliminated
- Training responses (tightness and pain) used to guide training intensities, volumes and densities



FURTHER TO DO'S

- Pre-session
  - Have a session plan
  - Contingency and 'what ifs'
  - Collect relevant information from 'significant others'
- During
  - Affect learning / develop athlete insight & awareness
- Post-session
  - De-brief
  - Evaluate/Learn lessons
  - Broad 'plan' for next session
  - Communicate/feedback to the 'team'

BRAIN RE-BOOT

- Motivate
  - Athlete motivation is not important it is a requirement
  - Significant predictor of skill retention
- Explore activities
  - Drills to set up correct intent, focus and attention for running

IDENTIFY OPPORTUNITIES

- Being injured provides opportunity that wouldn't otherwise exist in normal training
- Improve qualities that are difficult to normally move forward
- Development can take place at a greater rate than possible under normal training loads
- Based on athlete, developmental needs and time of year

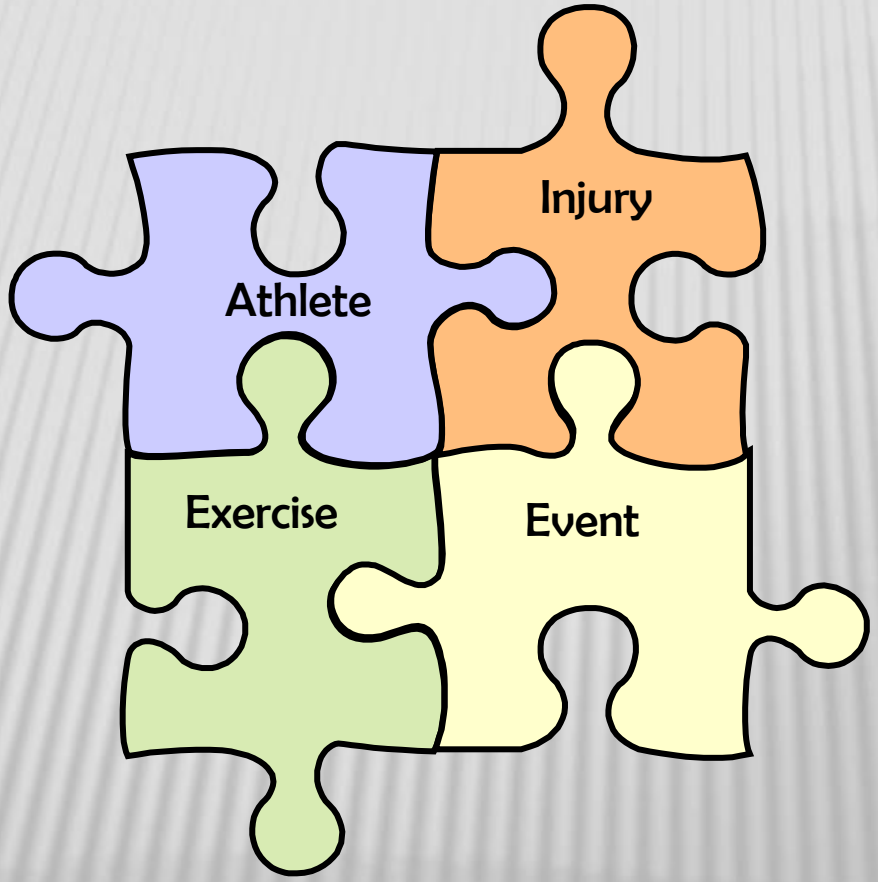
RISK

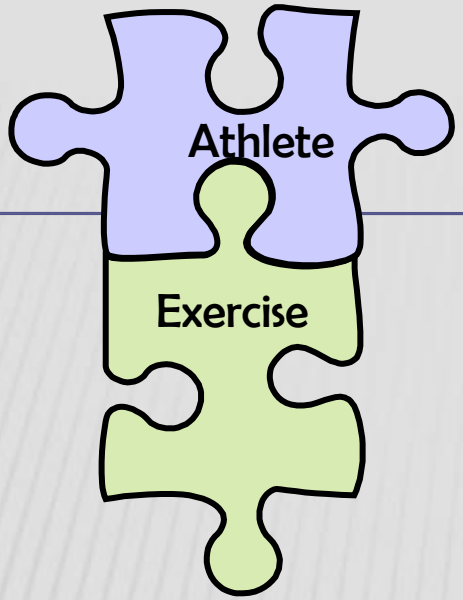
- Preparing for best performance involves decision making relating to
  - Exercises
  - Organisation
- Both influence risk of injury
- Reduce risk of injury in all aspects of training
  - Anticipate and evaluate risk
  - Mitigate risk

LOW RISK PROGRAMMING FROM COACH

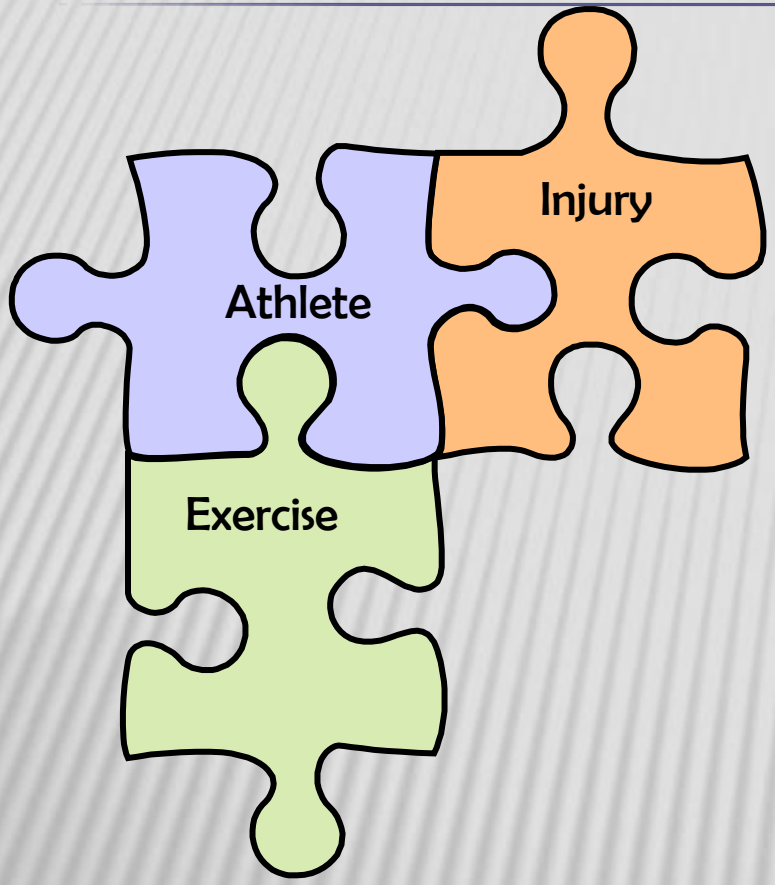
- Exercises away from injury
  - Strength training
  - Bike, aqua, cross trainer, nordic skier
  - Maintenance of fitness
    - Biochemical properties stable
    - Influence neuromuscularpathways
    - Cardiovascular function
    - Hormonal responses

EXERCISES



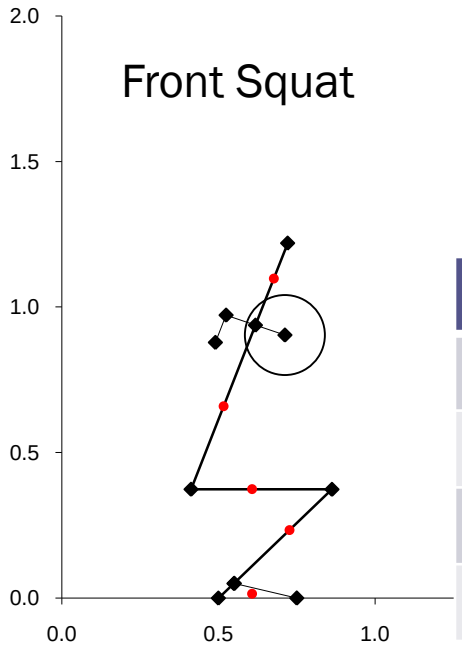


Technical	Physical	Psychological
• Skill acquisition • Co-ordination • Body awareness	• Weakness • Mobility • Body dimensions Posture	• Focus • Intent • Effort • Experience



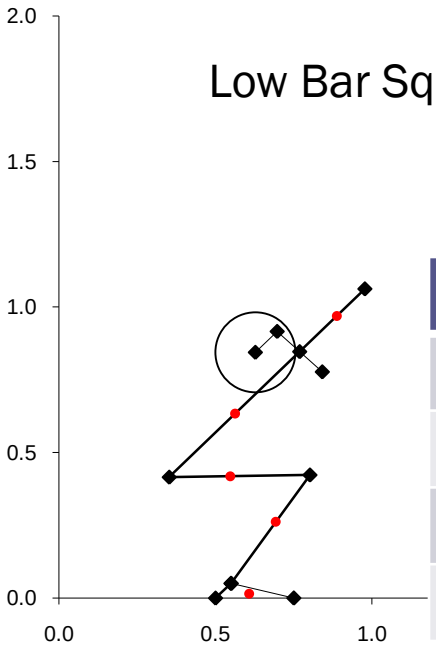
- Where is the greatest stress seen in the exercise?
  - Area of body
  - Position
- Can the exercise be modified to reduce risk?
  - Reduce loading of valuable area
- If not, are there alternative exercises?
- Depending on injury and athlete a permanent alternative may have to be found

Front Squat



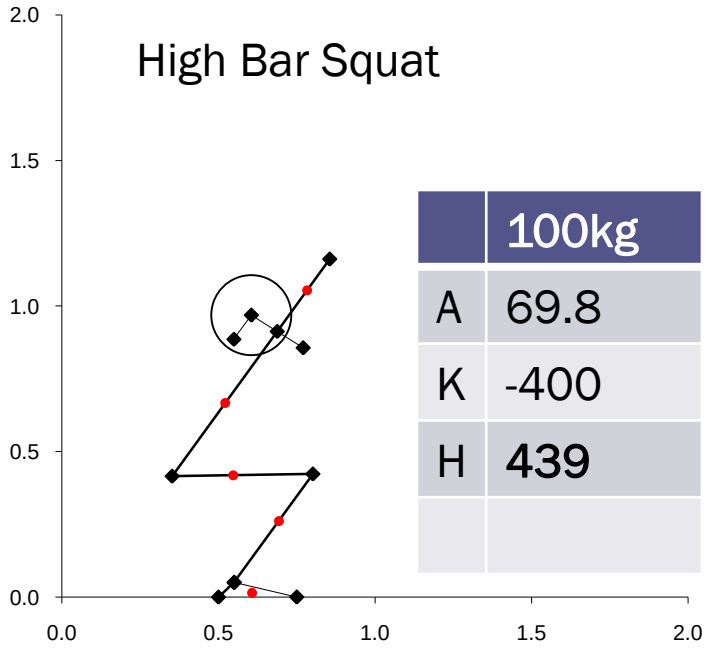
	100kg
A	191
K	-392
H	446

Low Bar Squat



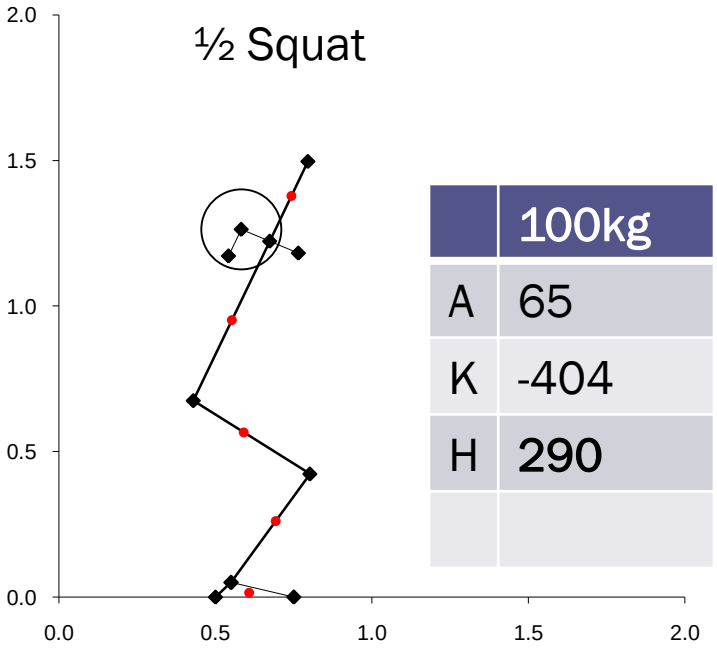
	100kg
A	118
K	-351
H	487

High Bar Squat



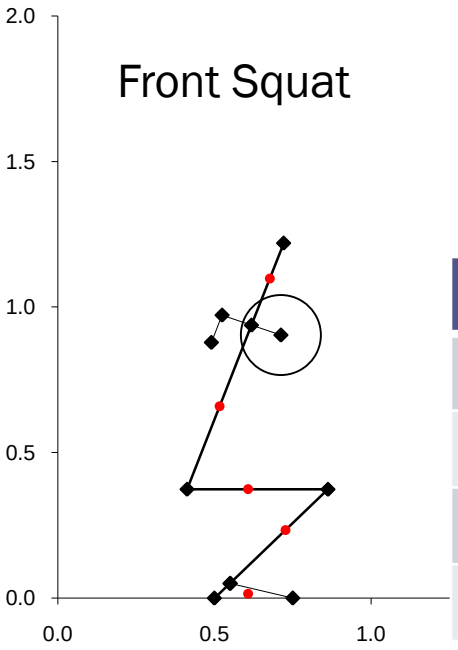
	100kg
A	69.8
K	-400
H	439

½ Squat



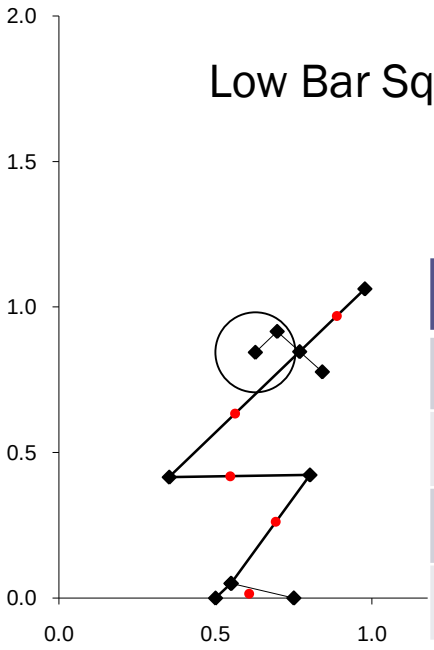
	100kg
A	65
K	-404
H	290

Front Squat



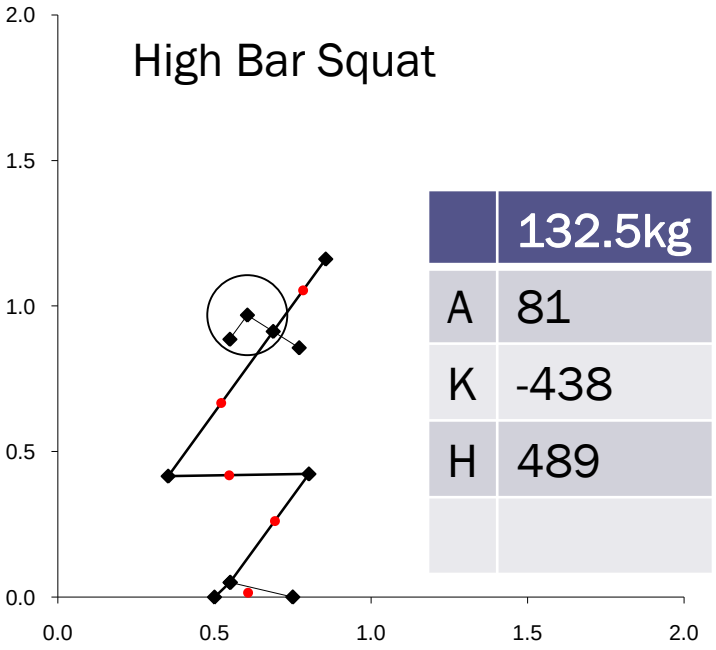
	100kg
A	191
K	-392
H	446

Low Bar Squat



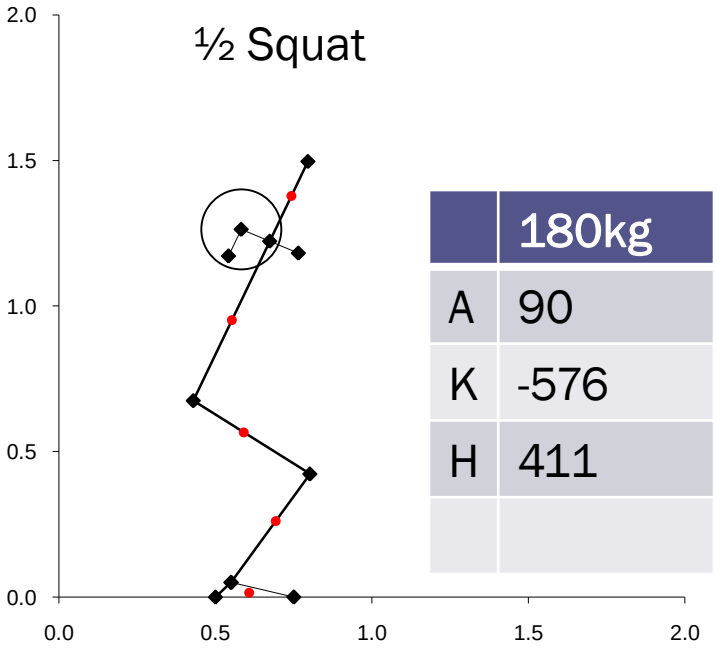
	132.5kg
A	143
K	-406
H	575

High Bar Squat



	132.5kg
A	81
K	-438
H	489

½ Squat



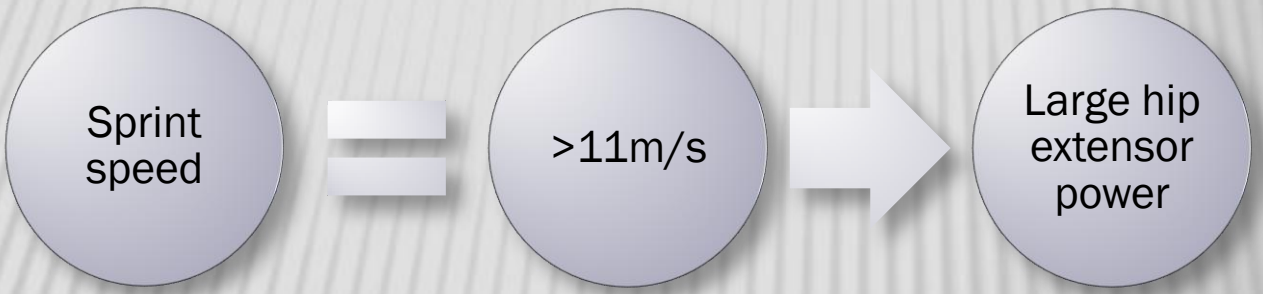
	180kg
A	90
K	-576
H	411

EXAMPLE: LOWER BACK

- Positions and posture very important
- Reduce loading through lower back reduces risk
  - Step ups, SL squat, Front squat
  - Hip snatch
- Ankle mobility will affect exercise choice
- Develop correct movement patterns (physical & psychological learning)
- Progressions
  - Pulls from blocks – AK & DB Snatch/SL Snatch before OL lifts
  - Low load slower full ROM co-ordinated movement , e.g. muscle snatch 1st
  - Slow lifts to fast lifts
- Order within a session
  - Slower heavier, controlled loading before explosive lifts e.g Pulls from blocks before hang snatch

NOT ALL PARTS ARE EQUAL

- Level of difficulty through the body not equal
  - Power athletes lower body abilities have developed and may have left their back behind in terms of the qualities required for explosive lifting



  - Power clean also requires large hip extensor moments & powers
  - But is also require high level of lower back maximal strength
- Relative stress greater at vulnerable areas
  - E.g. planned 6x3 80% - 18 reps at 80% for legs and hips, but this may be 18 reps at 95% for lower back capabilities
- Risk can increase further
  - what state is the lower back pre weights?
  - Technique?

ORGANISATION OF TRAINING

ORGANISATION OF TRAINING

- All stressors are additive
- What is a significant increase in load?
- Rest and recovery
  - Better to load a muscle or rest it?
  - Combining running with heavy tissue loading?
- What are the best ways to manipulate volumes, intensities and densities?
- Prioritise sessions /exercises
  - Awareness and agreement of priorities
  - Ensure less important sessions are not adversely reducing tolerance / capacity

LOADING CONSIDERATION IN THE GYM

- Manage a gradual increase in load
- Don’t compromise correct posture and technique for load
- Design progression around weakest part not on what they have lifted before
- Undulate loading through week – L, M, MH, H, VH
- Match stress from weights with stress and training response from track sessions
- Consider 12x2-3 once intensity is >70 to 75%
  - Rediscover/develop correct motor patterns
  - Maintain strength volume but reduced fatigue per set in vulnerable areas
- Clusters - 5 to 10 x 1 undulating
- Drop down sets to achieve desired volumes
  - Heightened neuromuscular function
  - Reinforce and enhance correct patterns

TRAINING RESPONSES TO WEIGHTS

- Areas that need to be addressed post weight
- May have implications for future track sessions
- A lot of weight exercises will cause stiffness in thoracic, lower back, hip flexors and quadriceps
- Without considering these responses injury risk / time to return from injury may be increased

COMPETITION PERIODS

- Agreed goals
  - Injury free on start line may not equal performance
  - Coach has to identify key periods of essential development in order for successful performance
  - Can something be worked out?

SUMMARY

- Process is multi-faceted and complex
- Coaches are integral throughout
- Awareness of risks throughout whole program
- Coach to work with team and to seek opportunities
- Coach has to maintain leadership
  - "Leadership is ultimately about creating a way for people to contribute to making something extraordinary happen.“ (Alan Keith)

REFERENCES

(1) Matt Lancaster – Running injuries: how to approach recovery training. Peak Performance