

Beyond the Injury

The science, strategy and reality of sports medicine

Made by: Ghazi AlQasem
ghazithephysio@gmail.com

Sports medicine webinar · From injury to performance ·





The sideline dilemma

A player goes down after a collision. The crowd is watching, the coach wants an answer, and the player is desperate to carry on.



No MRI

No full test battery

Incomplete medical history

You have seconds to decide.

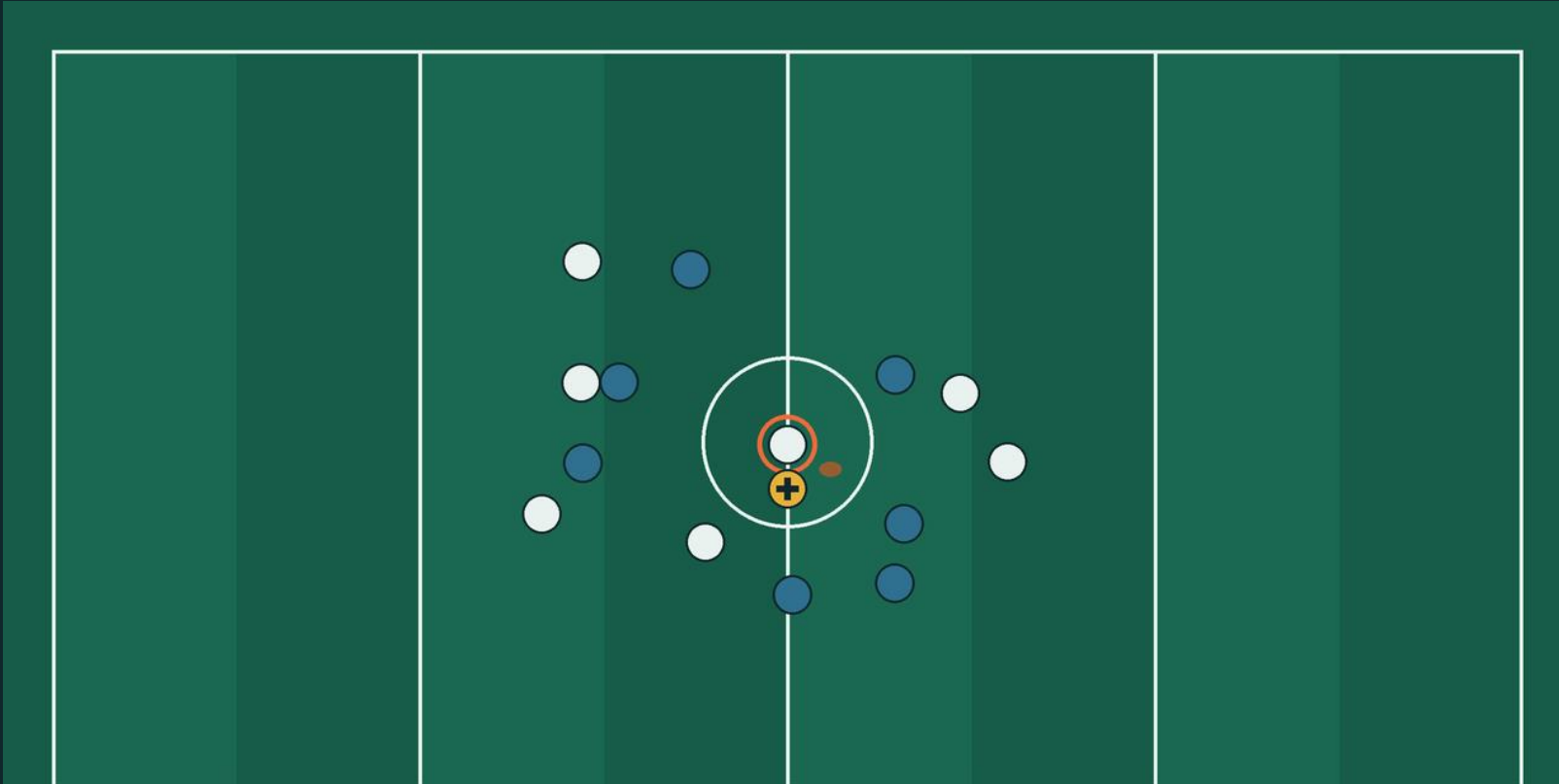
What do you do?





TM 0

Watch the scene



Can he go back on?

Pause at the collision

- What do you want to know first?
- What can you assess in seconds?
- Who else needs to be involved?

What is sports medicine?



Injury prevention

How do we reduce injury risk?



Diagnosis and management

What is happening, and what should we do about it?



Rehab and return to sport

How do we restore the capacity to take part safely?



Performance optimisation

How do we help athletes tolerate and excel at the demands of their sport?

These areas overlap: rebuilding an ACL-injured knee is also performance work.



The multidisciplinary team



Sports physician / Surgeon

Diagnosis, medical care, coordination



Physiotherapist

Assessment, rehab, return-to-sport decisions



S&C coach

Strength, power, speed, conditioning



Sports scientist

Testing, load analysis, biomechanics



Psychologist

Confidence, motivation, mental skills



Dietitian

Nutrition for health, training, recovery



Team medical staff

On-field care and emergency response

Know your own discipline, and when to bring in someone else's.

Why do injuries happen?

CAPACITY

What the athlete can currently tolerate

vs

DEMAND

What training and competition impose

Example

A footballer handles straight-line running easily but struggles with repeated high-speed changes of direction. Great general fitness is not the same as capacity for that specific task.

What shapes the balance

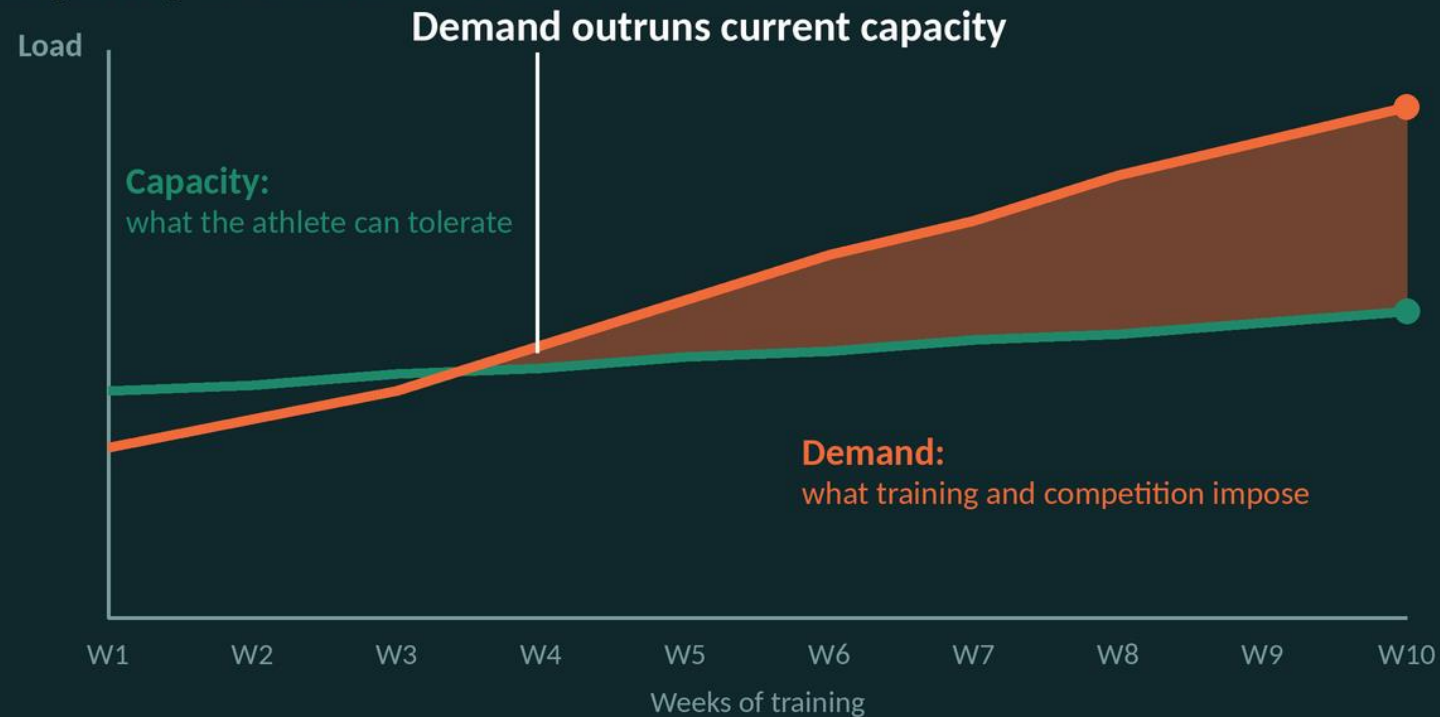
- Previous injuries and current symptoms
- Training exposure and recovery
- Demands of the sport
- Environmental factors
- Chance events: a collision, an awkward landing

A useful model, not a universal injury predictor.



Capacity vs demand in motion

Capacity vs demand over time



Illustrative only. A useful lens, not a tool for predicting every injury.

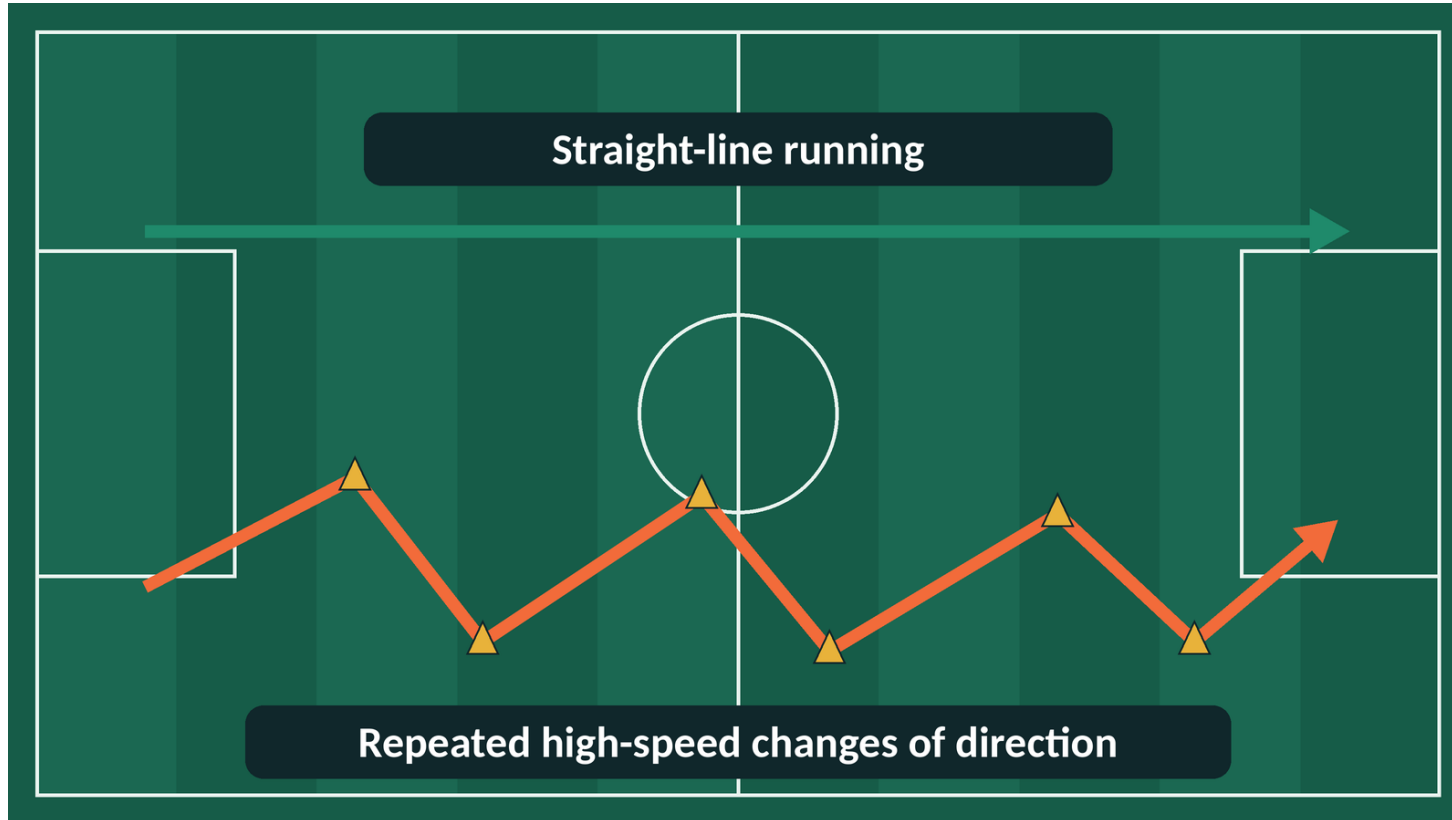
Does this explain every injury?

- No. It is a lens, not a prediction tool
- Capacity can grow too, gradually
- Demand is more than total load

Press play, and pause whenever you want to ask the room.



Same fitness, different demand



Capacity is task-specific

Straight-line running is one task.
Repeated high-speed changes of direction are another.

Excellent general fitness does not
guarantee capacity for the specific
demand.

How would you test for it?

Clinical reasoning in practice

1

History

What happened,
and what followed?

2

Screening

Any red flags
needing urgent
care?

3

Examination

Which findings point
to diagnosis and
severity?

4

Clinical reasoning

What are the most
plausible
explanations?

5

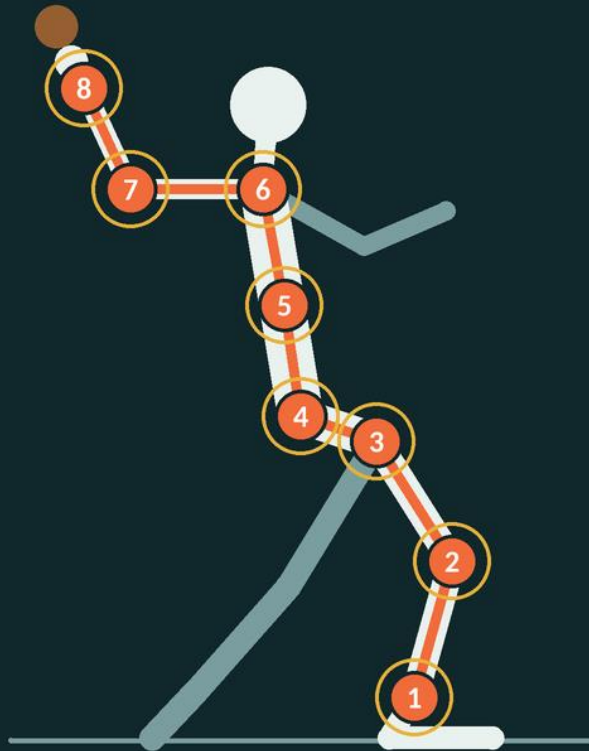
Management

What does the
athlete need now?

Good reasoning is not spotting the most interesting diagnosis. It is recognising what matters, knowing what you don't yet know, and deciding safely.



The body is a kinetic chain



1 Foot and ankle

2 Knee

3 Hip

4 Pelvis

5 Trunk

6 Shoulder

7 Elbow

8 Wrist and hand

A coordinated, dynamic system, not a row of dominoes

Interdependence

Movement at one segment can change the demands on another.

Force transfer

Forces are generated, transmitted, redirected and absorbed across segments.

Task specificity

Each segment matters differently by movement, sport, speed and demand.

Press play and watch force travel from foot to hand. Illustrative figure.



How force travels through the body



A football kick

Supporting foot and ankle	Ground contact, balance, stability
Supporting leg	Regulates posture and support
Pelvis and trunk	Whole-body positioning and coordination
Kicking hip	Major contributor to limb acceleration
Knee and foot	Striking-foot speed and distal motion

Limited hip mobility, pain or weakness may change kicking mechanics, but it does not necessarily cause a specific injury.



An overhead throw

Lower body, pelvis, trunk, shoulder, elbow and wrist coordinate to produce velocity.

Elbow pain? Look at the whole throwing task, not only the elbow.



Sprinting

Foot, ankle, knee, hip, pelvis and trunk coordinate force into the ground, limb timing and tolerance of repeated high-intensity loading.

Performance depends on what each segment can do, and on how well they coordinate.

When one link changes, the rest may adapt



Restricted ankle dorsiflexion

After an ankle sprain, the squat and landing strategy differs from usual.

- Altered ankle and foot mechanics
- Changes in knee flexion
- Changes in trunk inclination
- Compensation elsewhere, depending on the task

Is the restriction relevant to the limitation we see?



Reduced thoracic rotation in a thrower

A baseball player with shoulder discomfort and limited thoracic rotation.

- Assess shoulder, thoracic spine, trunk and pelvis
- Consider workload and technique
- Direction and significance of any adaptation vary

Does thoracic mobility influence mechanics, symptoms or performance?



Single-leg landing control

Reduced control when landing on one leg.

- Hip strength and capacity
- Trunk position and control
- Knee and ankle function
- Balance, fatigue and task difficulty

What is the underlying cause?
Watching the knee move inward cannot tell you.

An observed movement is the starting point for reasoning, not proof of the cause.



The kinetic chain: believe vs demonstrate

What we often hear

"The site of pain is not the source of the problem."



"Poor hip mobility causes knee pain."



"Everything is connected."



"We must always treat the entire kinetic chain."



"Correcting movement prevents injury."



A more defensible reading

Pain may arise from the symptomatic structure, but assessment should consider relevant contributing factors elsewhere.

Hip mobility may influence movement in some individuals, but its relationship with knee pain is not universal or necessarily causal.

Segments interact mechanically and neurologically, but not every segment is equally relevant to every clinical problem.

Assess broadly enough to find relevant factors, but treat the impairments and demands that matter for the individual.

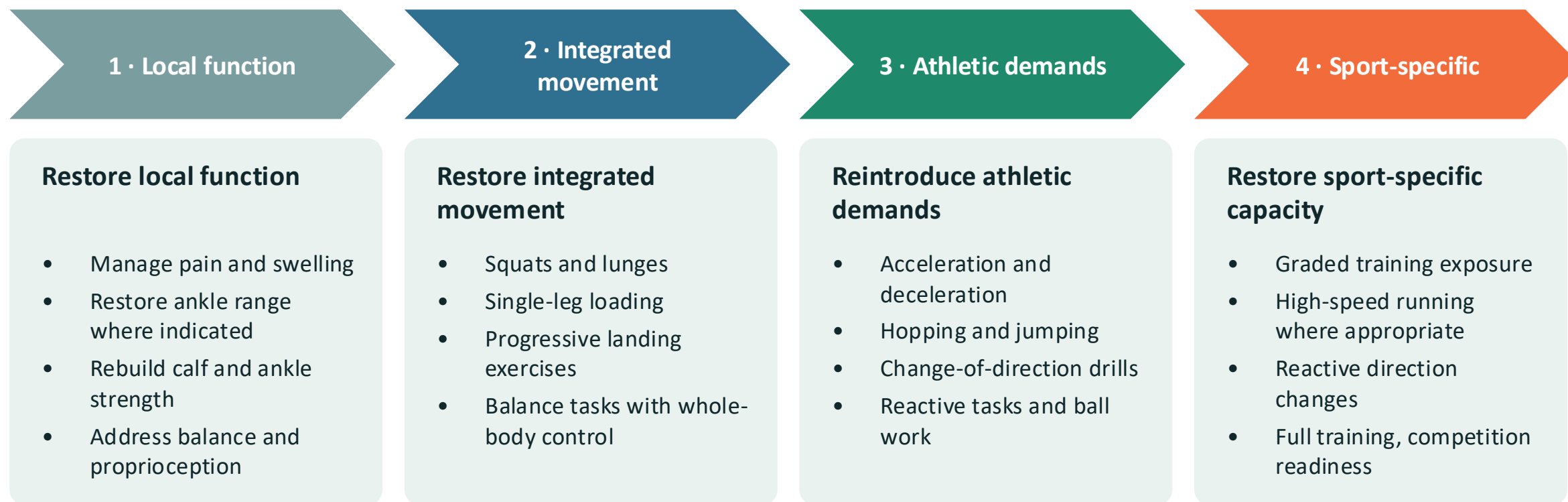
Movement changes may help, but prevention depends on many factors and cannot be guaranteed by correcting one pattern.

Understand the local pathology, assess the wider movement system, and find what matters for this athlete.



From local treatment to whole-body rehab

Example: a footballer returning after an ankle sprain



Local and whole-body rehab are complementary stages of one process. Progress by function and findings, not days elapsed.

Case 1: The rugby player

- 1 Winded and nauseated after the first impact
- 2 Then a blow to the groin
- 3 Then a head impact: dizzy, nauseated, distressed
- 4 No diplopia or obvious confusion reported

Would you allow this player to return to the match?

A Yes

B No

C Not sure



Case 1: Remove from play

ANSWER

1

Not one explanation

Symptoms before the head impact do not rule out concussion. No diplopia or obvious confusion does not rule it out either.

2

Safety first

Suspected concussion means removal from play and assessment. Escalate urgently for deteriorating consciousness, seizure, worsening headache, repeated vomiting or neck pain. Do not leave him alone.

3

Wanting to play is not evidence

The clinician's responsibility is to the athlete's health, not the scoreboard.

The desire to continue playing is not evidence that it is safe to do so.

Educational scenario. Use current World Rugby concussion guidance and the competition's protocols.



Case 2: Pain-free, but ready?

22-year-old footballer · 12 weeks after ACL reconstruction



What the athlete reports

- No pain in daily activities
- Full knee range of motion
- Confident when jogging
- Strong desire to return to team training



What the assessment shows

- Quadriceps strength well below the other limb
- Inconsistent single-leg landing control
- No progressive change-of-direction work yet
- Football-specific training not yet tolerated

Pain-free and feeling ready: return to unrestricted football?



Case 2: Not yet

ANSWER

Why not yet

- Pain-free and confident is not the same as ready
- Twelve weeks is generally far too early for unrestricted pivoting sport
- Progression follows the surgical and rehab team's guidance

What builds the case

- 1 Strength rebuilt
- 2 Landing control
- 3 Change-of-direction progression
- 4 Football-specific training tolerated
- 5 Psychological readiness

No single test settles it, and the other limb is not always a perfect reference.



The return-to-sport continuum



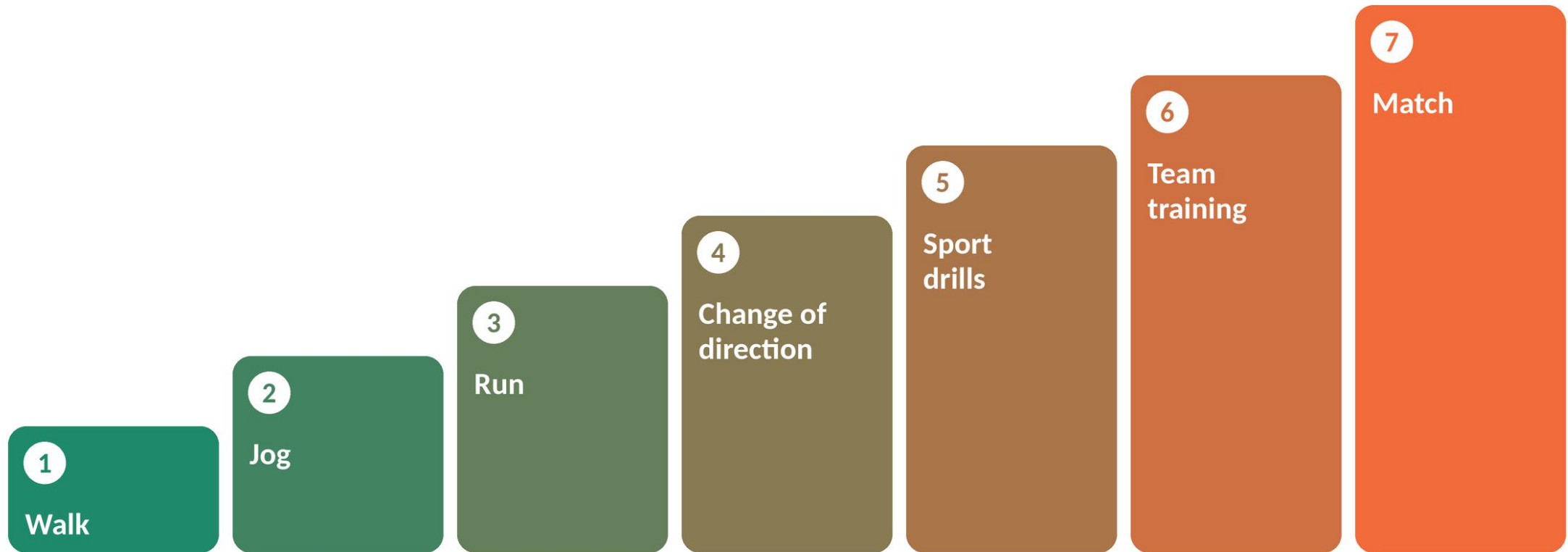
What a return decision should consider



Returning to sport is not a date on the calendar. It is a decision informed by recovery, capacity, sport demands and risk.

The rehab ladder

Each step is earned by meeting criteria, not by reaching a date

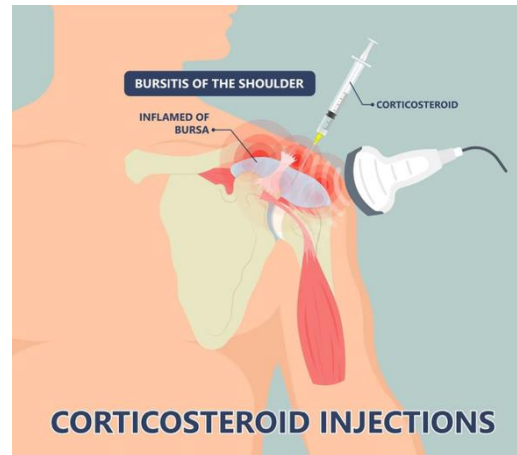


Medical Interventions

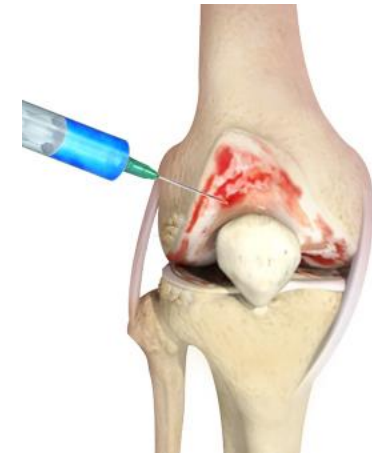
Platelet-Rich Plasma (PRP)



Corticosteroid Injections



Hyaluronic Acid Injections



When Medications Become Part of the Intervention

- **Non-steroidal Anti-inflammatory Drugs: short term pain and inflammation**
- **Other analgesics**
- **Local anaesthetics for certain procedures**
- **Other medications for underlying health issues.**



MDT Case: Anterior Arthro-fibrosis vs Tight ALL Post ACL-R

Risk factors:

- Timing of surgery
- Pre-operative motion loss
- Surgical graft placement: too far forward
- Graft material selection: allografts have a higher risk



Can we measure recovery?



Sleep

Quantity and quality



Training load

Volume and intensity



Nutrition

Energy, carbohydrate, hydration



Life stress

Psychological and non-sport demands

HRV

Variation in the time between heartbeats. Not a direct measure of stress, recovery or readiness.

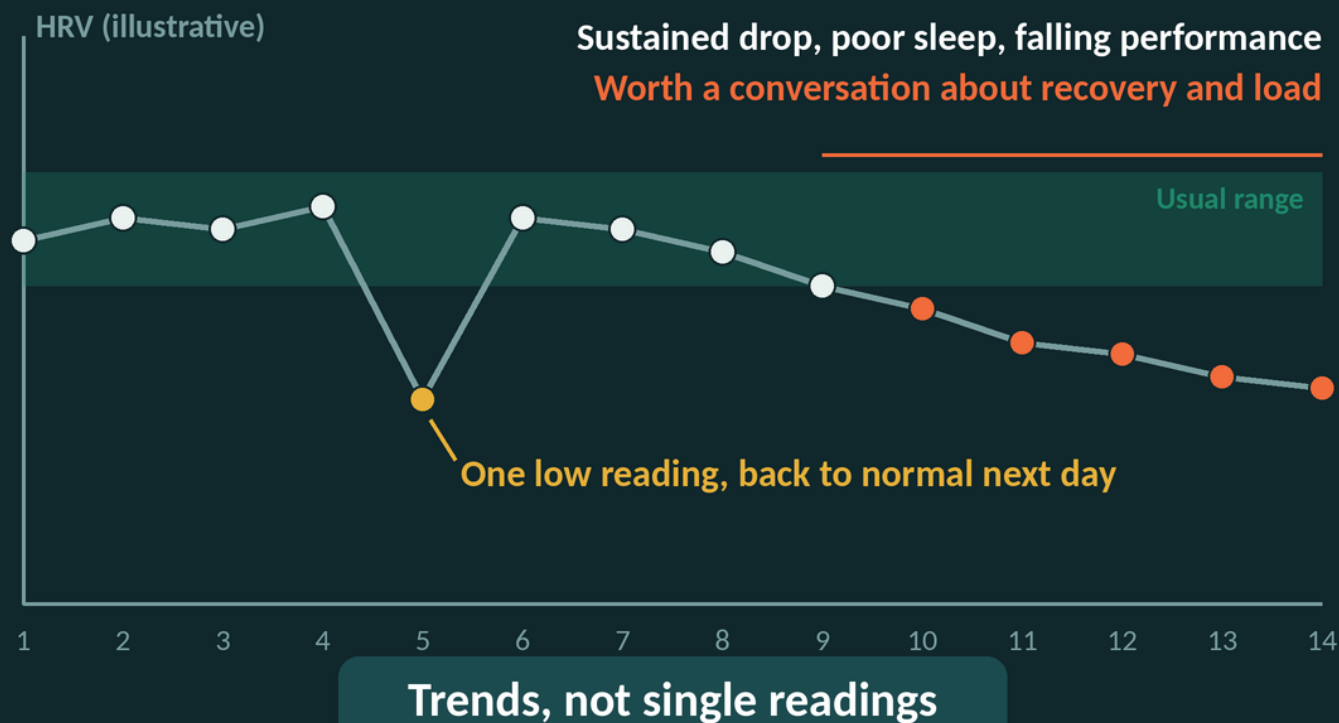
Look at trends, not single readings.

More data does not automatically mean better decisions.



HRV: one reading or a trend?

Morning HRV across two weeks



Which dip deserves a conversation?

- The single low day?
- Or the sustained decline?
- What else would you ask about?

Press play, and pause whenever you want to ask the room.



The foundations of performance



Sleep

Consistent sleep and enough opportunity to sleep



Energy and protein

Enough energy and protein to support training



Carbohydrate

Fuels high-intensity work and refills muscle glycogen



Hydration

Supports training quality and recovery



Progressive load

Gradual build-up in training and rehab



Stress management

Manage psychological and life demands

Technology supports the fundamentals. It does not replace them.



How do you enter sports medicine?



High-school students

- Compare medicine, physio, sports science and S&C
- Shadow professionals in real settings
- Build basic anatomy and physiology
- Ask people in the field, not only social media



Medical students

- Strong anatomy, MSK and emergency care base
- Seek placements and supervised event cover
- Learn how physicians and physios work together
- Get involved in research and audit



Physiotherapists

- Sharpen MSK assessment and rehab skills
- Progress athletes from rehab to sport-specific work
- Learn the demands of different sports
- Gain supervised sporting experience

You don't need to start at the top of elite sport. You need to start building the skills that get you there.



My journey and lessons learned

01

Where I started

Physiotherapy training and early clinical practice.

02

What I discovered

Covering rugby and attending the Isokinetic football medicine conference in Madrid showed how complex athlete care really is.

03

What I'm working towards

Performance, recovery and lifestyle factors alongside rehabilitation.

The aim isn't to look like I've mastered the field. It's to keep building knowledge and experience.



Final case

19-year-old footballer, back in training after an ankle sprain

- Minimal pain walking and jogging
- Feels unstable changing direction at speed
- Coach wants them available this weekend

What information would you want before clearing this athlete?



Answer in the chat

or unmute and tell us

60 to 90 seconds

Pain-free jogging is not readiness

ANSWER

- 1 Diagnosis and injury status** Has it been properly assessed, and what structures may be involved?
- 2 Physical capacity** Have strength, balance and function been regained?
- 3 Sport-specific demands** Can they accelerate, decelerate, jump, land and change direction at intensity?
- 4 Training exposure** Have they progressed through relevant training without an adverse response?
- 5 Clinical decision** What risks remain, and what does the overall picture say?

Think beyond the injury · Decide with evidence · Never stop learning



Questions?

Thank you for joining

