Dr Leigh Golding

Sports & Exercise Medicine Physician

Low Back Pain in the Adolescent Athlete

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160 Belmore Road, Randwick

Athletic Load & Risk Context

- Growth spurts + repetitive extension/rotation ↑ lumbar load
- High risk: cricket fast bowling, gymnastics, diving, throwing
- Younger age, taller height, greater bowling frequency = ↑ risk

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Major Causes of LBP in Adolescent Athletes

- Pars BSI (leading cause)
- Lumbar disc herniation (rare, ~0.1–0.2%)
- Facet-related pain (synovitis/arthropathy)
- Other: posterior apophyseal ring injury, Scheuermann, SIJ, infection/tumour

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History & Examination

- Age, training hx, weekly volume, specialisation
- Hip & SIJ screen
- Full neurological exam
- Quadrant (Kemp's) test
- Stork test

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Red Flags & Imaging Indications

- Night/constant pain, systemic symptoms
- Neurological deficits
- Infection risk or trauma
- >4 weeks despite care → image/refer

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Risks if BSI Missed

- Complete fracture, non-union
- Contralateral stress fracture
- Progression to spondylolisthesis

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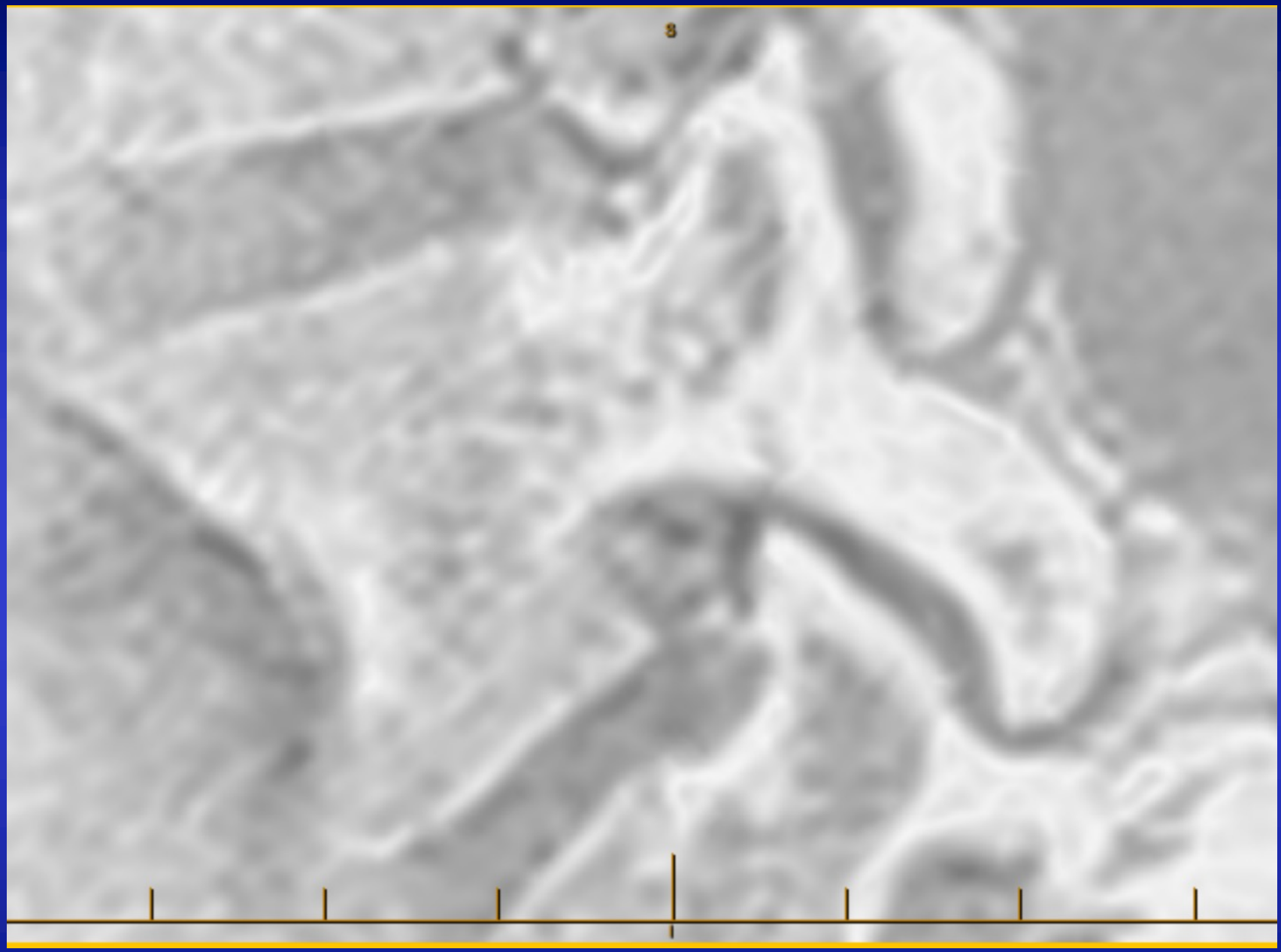
Imaging Approach

- Avoid routine imaging unless red flags
- MRI (STIR + 3D T1-VIBE) preferred over CT
- STIR: oedema = active lesion
- VIBE: fracture line delineation



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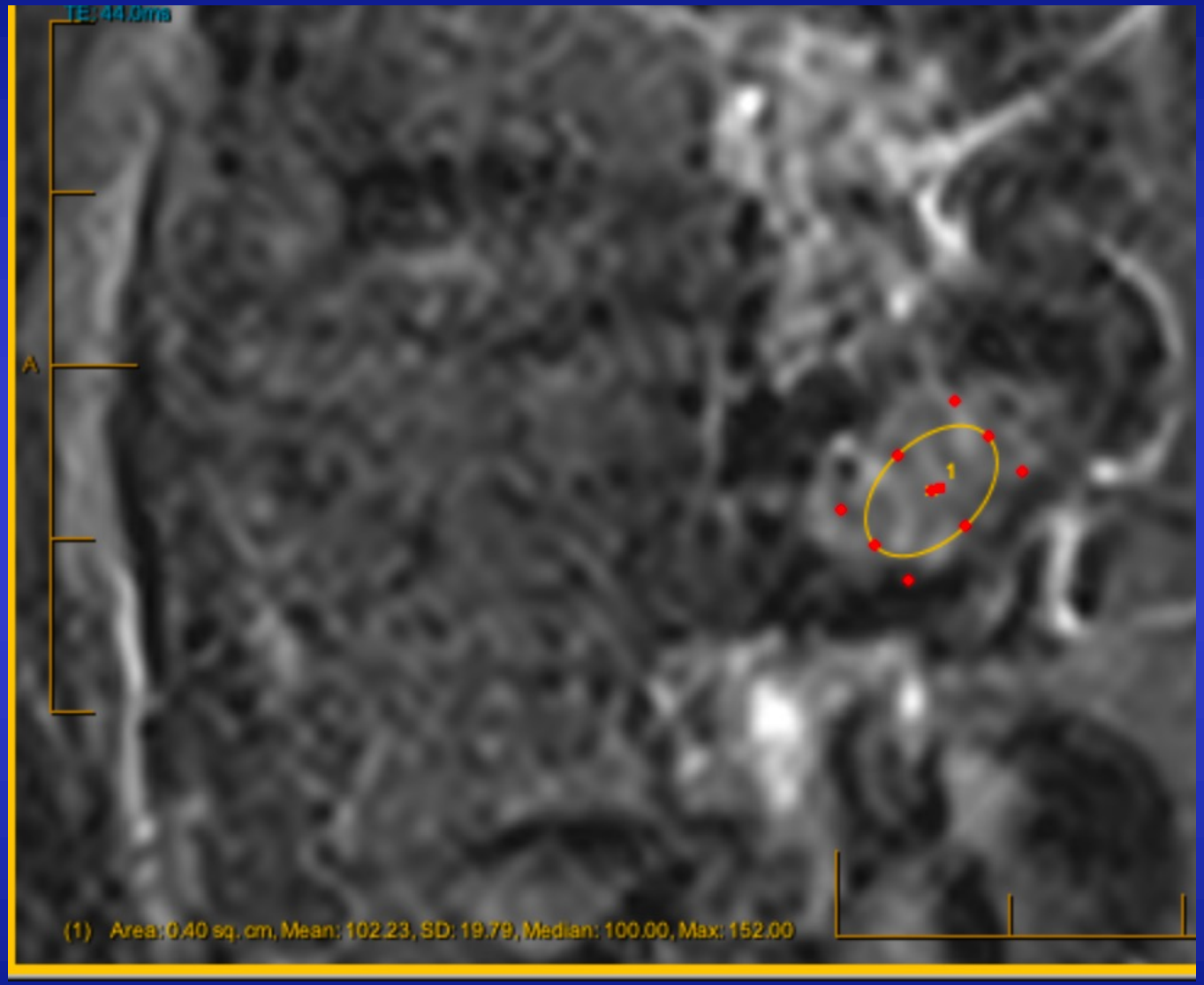

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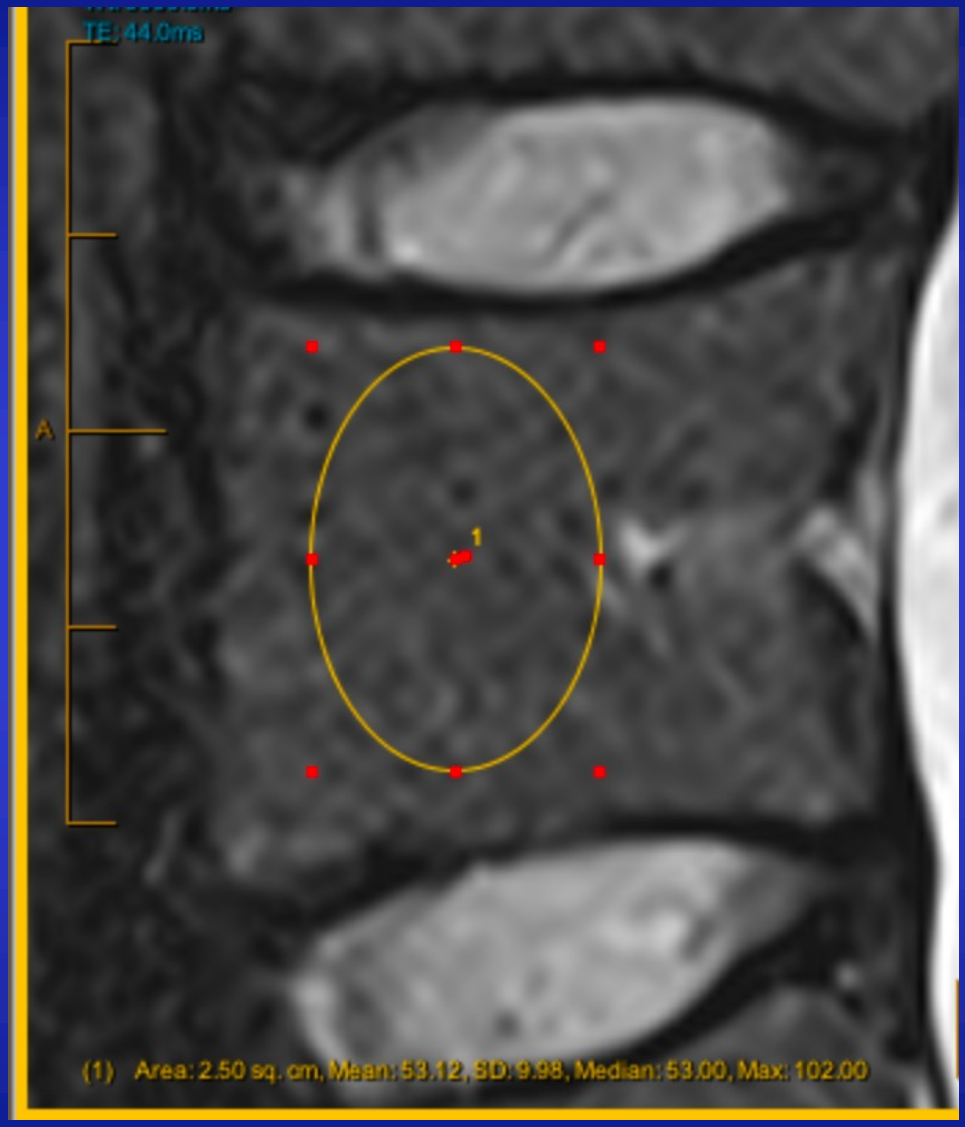

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MRI LUMBAR SPINE

Reason for MRI	Asymptomatic MRI (screening)					
Test Type	STIR					
Lumbar level - Left	**T12**	**L1**	**L2**	**L3**	**L4**	**L5**
Bone oedema pars - Left			99	132	130	134
Bone oedema vertebral body - Left			65	66	72	64
Bone oedema ratio - Left			**1.52**	**2**	**1.81**	**2.09**
Lumbar level - Right	**T12**	**L1**	**L2**	**L3**	**L4**	**L5**
Bone oedema pars - Right			79	95	101	115
Bone oedema vertebral body - Right			65	66	72	64
Bone oedema ratio - Right			**1.22**	**1.44**	**1.4**	**1.8**
Cortical breach visible on Vibe?	No					
Cortical breach visible	**T12**	**L1**	**L2**	**L3**	**L4**	**L5**
Left	No	No	No	No	No	No
Right	No	No	No	No	No	No

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Prescribing Load Using MRI

- Match load to STIR oedema severity
- Serial MRI to confirm healing trajectory
- Symptom + imaging-based progression

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Management – Pars BSI

- Early recognition critical
- Off-load from extension/rotation
- Short-term brace if required
- Rehab: trunk endurance, hip–pelvic control
- Surgery only for persistent non-union

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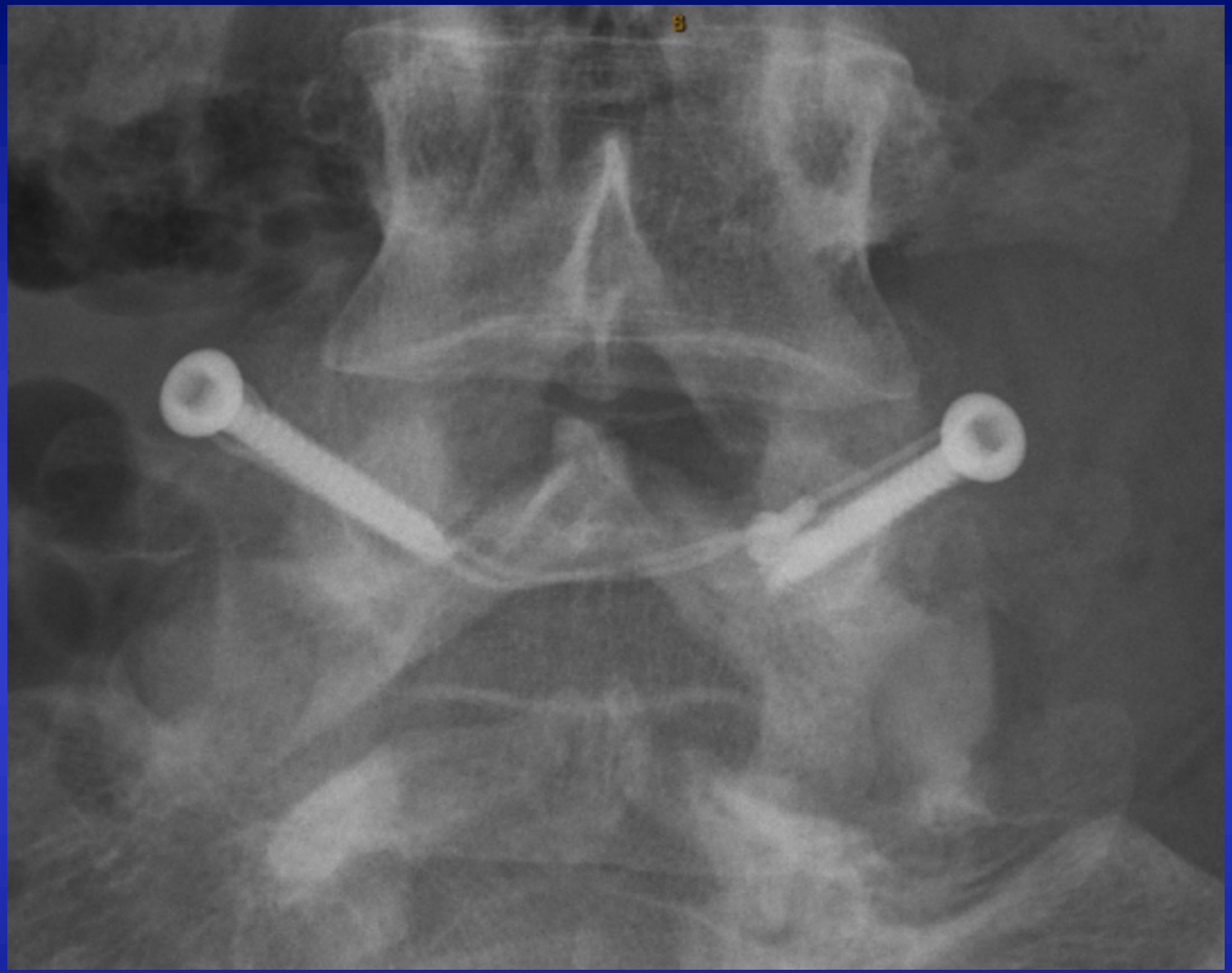

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Follow-Up & Monitoring

- Review ~6 weeks
- Repeat MRI selectively (8–12 weeks if slow)
- Expect STIR reduction, VIBE signal normalisation
- Timeframe may be 6-12 months

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Workload & Prevention

- Follow Cricket Australia Junior Fast-Bowling Guidelines
- Avoid consecutive heavy-load days
- Regular low-load & off weeks
- Gradual pre-season progression

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Practical Clinical Pathway

- Triage red flags → consider pars early
- MRI (STIR + VIBE) if needed
- Stage injury + graded rehab
- Criteria-based RTP: ADLs → sport → training → match

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