

CLINICAL APPROACH TO HIP JOINT-RELATED GROIN PAIN

TEN TOP TIPS FOR BUSY SPORTS MEDICINE CLINICIANS

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INTRODUCTION

Groin pain accounts for a substantial proportion of consultations in sport and exercise medicine and rehabilitation practice, and is a frequent cause of time loss injury, impaired performance and recurrent symptoms. Diagnostic work-up is challenging due to complicated regional anatomy, the potential for multiple contributors to pain presentations, and the high prevalence of imaging abnormalities in asymptomatic athletes.

Against this background, consensus work has shifted the field toward shared terminology and transparent diagnostic criteria. The Doha Agreement¹ provided a clinically based taxonomy for groin pain in athletes (adductor-, iliopsoas-, inguinal-, pubic-related; hip-related; and other causes), reducing ambiguity. The Warwick Agreement² introduced the term ‘FAI syndrome’ and clarified that diagnosis

requires the triad of symptoms, clinical signs and imaging findings, cautioning against treating morphology alone. The Zurich 2018 International Hip-related Pain Research Network recommendations³⁻⁶ further clarified classification and diagnostic criteria for hip-related pain in young and middle-aged active adults. Two Oxford Consensus papers⁷⁻⁹ spotlighted primary cam morphology and femoroacetabular impingement syndrome and a prioritised research agenda for the field.

Recently, the 2024 ESSKA-EHPA-ESMA consensus synthesised evidence and expert opinion and proposed another reference frame for terminology, clinical examination and imaging requests for physically active adults with hip and groin pain. In parallel, conceptual and mechanistic work has refined how we communicate about morphology: the term ‘primary cam morphology’ emphasises

that cam morphology can develop as a normal physiological response to load during skeletal maturation, while a recent Nature Reviews Rheumatology¹⁰ synthesis reinforces cam morphology as a causal risk factor for hip osteoarthritis but highlights heterogeneous disease progression and interacting biomechanical factors.

This short paper spotlights ten top tips for sports medicine clinicians managing hip joint-related groin pain. We also provide summary tables and two relevant case examples to support implementation in busy sports medicine settings.

TEN TOP TIPS FOR BUSY CLINICIANS MANAGING ATHLETES WITH POSSIBLE HIP JOINT-RELATED GROIN PAIN

Tip 1: Begin with shared language and a working classification (reduce “groin mush”)
Clinicians should remember that

classification serves as the clinical starting point and not a final patient label. Use the Doha Agreement taxonomy to structure thinking and documentation, for example. It is useful to explicitly record the primary suspected groin pain entity, coexisting entities or conditions, and an irritability rating (high/moderate/low) to guide early load exposure and test selection during treatment / exercise rehabilitation. Classification is iterative; revisit it after imaging and following the response to initial management.

Tip 2: Use a hypothesis-driven history to distinguish hip joint-related groin pain from region-based symptoms

Hip joint-related symptoms often show a motion- and position-related pattern, provoked by hip flexion combined with adduction and internal rotation (deep squat, pivoting/cutting, prolonged sitting). Athletes may describe deep anterior groin pain, sometimes using the ‘C-sign. Mechanical symptoms (catching/clicking) may occur but are not specific. History should also estimate irritability (rest/night pain, gait pain), identify load spikes, and screen red flags (systemic symptoms, inability to weight bear, neurological deficit). Clinicians should carefully consider their language when discussing morphology, noting that cam morphology often develops during adolescence in response to high-load sport and is common in pain-free athletes. Specifically, clinicians should avoid terms like ‘deformity’, ‘lesion’ and ‘abnormality’^{2,7,11}. We acknowledge that, to date, we do not completely understand the type and volume of sporting load leading to primary cam morphology in the individual / susceptible athlete.

Tip 3: Treat clinical tests as probabilistic tools: use clusters rather than single “magic tests”

Many hip provocative tests (eg, FADIR/ anterior impingement) have higher sensitivity than specificity, making them better for screening than confirmation. Use test clusters: symptom reproduction on impingement tests plus restricted hip internal rotation (especially in neutral) plus functional provocation consistent with sport demands. Interpret results probabilistically and only increase diagnostic confidence when symptoms and signs are concordant. Ensure to differentiate between neuromuscular drivers of loss

of range of motion or “impingement” symptoms such as iliopsoas, deep rotators and lateral muscles of the hip which may mimic hip symptoms.

Tip 4: Measure what matters: function and severity (HAGOS plus a simple provocation measure, for example)

Clinicians could pair classification with outcome measurement. Outcome tools like iHOT-33¹² and HAGOS¹³ captures symptoms, function, and sport participation. In addition, the Copenhagen 5-second squeeze (pain 0–10) is reliable and responsive (but often negative in most hip-driven symptoms!) and correlates with sport-related function; it could be used to monitor severity and response to load rather than as a hip-specific diagnostic test. It is important to repeat measures regularly (every 2–4 weeks, for example) to guide progression and shared decision-making.

Tip 5: Examine beyond the hip: coexisting groin entities and referred sources are common

A hip-only examination risks missing the primary pain generator. Clinicians

should integrate assessment of defined Doha entities (adductors, iliopsoas, pubic symphysis, inguinal region) and screen for referred pain from the lumbar spine or pelvis when symptoms are diffuse or atypical. Functional assessment should mirror sport demands (squat/hinge, cutting, skating stride, kicking) and document what reproduces familiar pain versus non-specific discomfort.

Tip 6: Image wisely: radiographs first; MRI answers different questions than morphology

Clinicians should use imaging to confirm or refine a clinical hypothesis. Plain radiographs (AP pelvis plus an appropriate lateral view such as Dunn) are a pragmatic first-line step to assess morphology and osteoarthritic features². MRI (± MR arthrography depending on local practice) evaluates labrum, cartilage and bone marrow stress responses, while helping to exclude alternative diagnoses. Interpret im

Tip 7: Use diagnostic injections selectively to clarify pain generators (not as a shortcut)

When the clinical picture remains unclear after a thorough history, examination

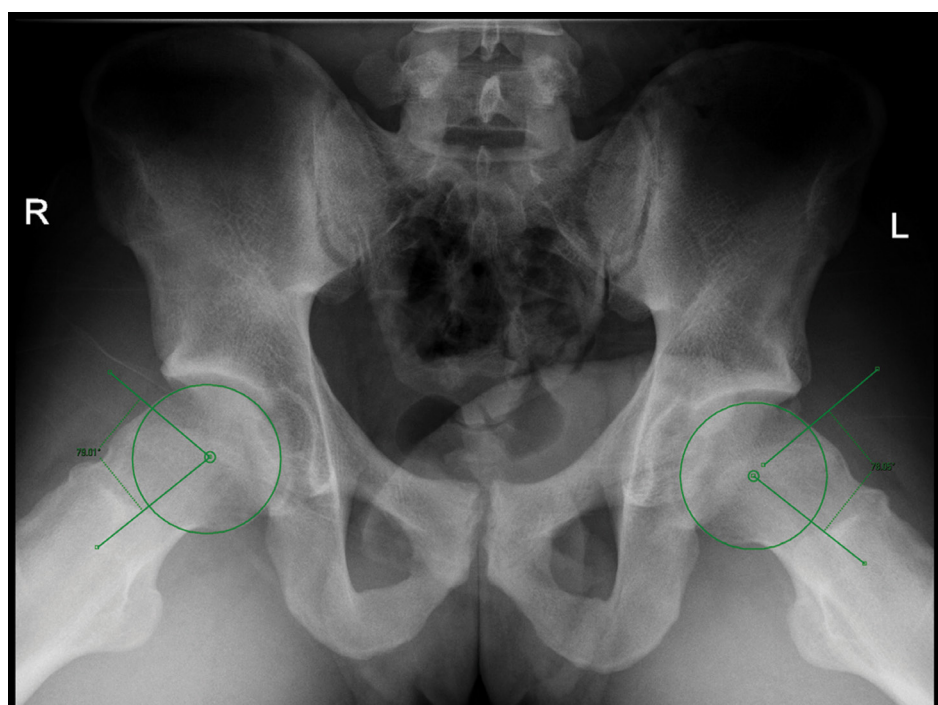


Figure 1: Cam morphology radiographs and measured alpha angles. Dunn 45° pelvic radiograph demonstrating osseous prominence at the anterior femoral head-neck junction bilaterally, resulting in increased alpha angles consistent with cam morphology. The alpha angle measures 79° on the right and 78° on the left.

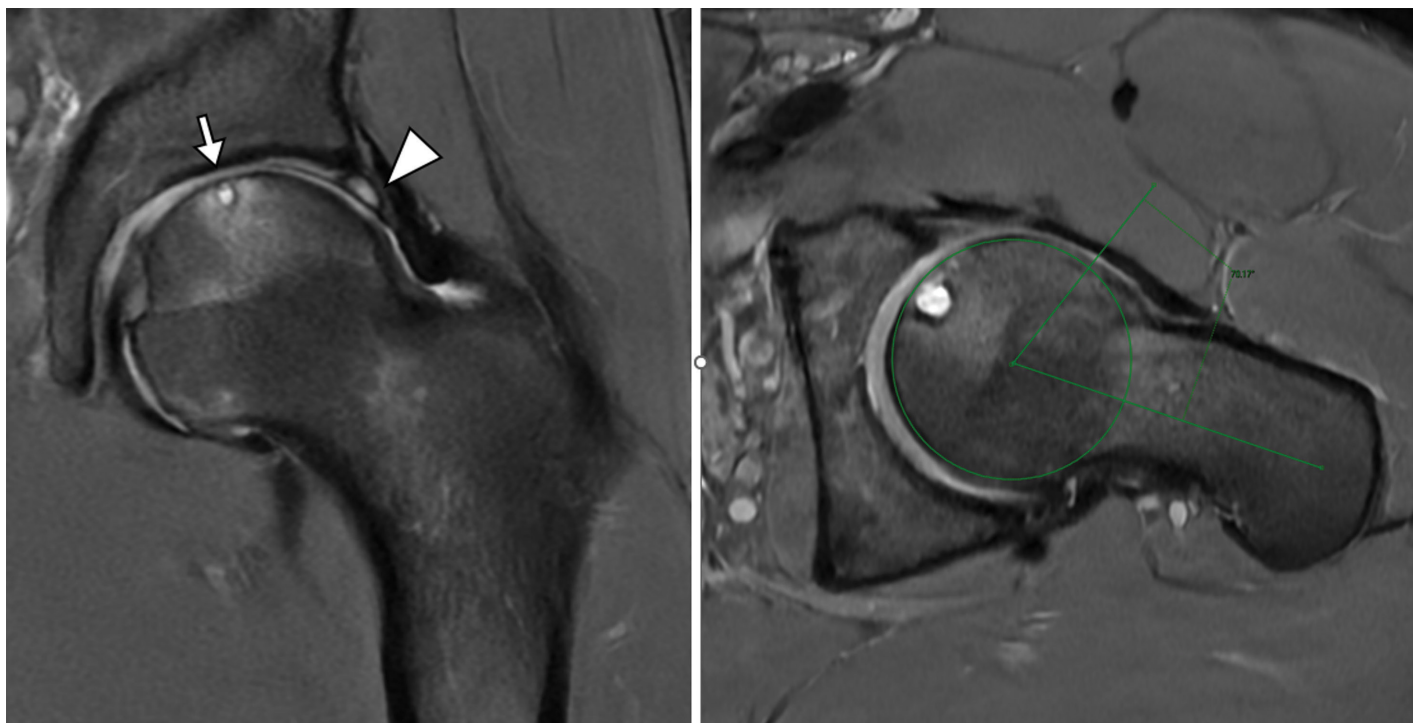


Figure 2: Labral and chondral injuries. Magnetic resonance imaging (MRI) of the left hip in a football player. (A) Coronal T2-weighted and (B) axial oblique T2-weighted fat-suppressed images demonstrate an intrasubstance tear of the left acetabular labrum (arrowhead) and a deep chondral defect involving the superior femoral head with an underlying subchondral cyst (arrow). The alpha angle measures 70°, consistent with cam morphology.

and imaging—particularly in mixed presentations—an image-guided intra-articular local anaesthetic injection can clarify whether the hip joint is the dominant pain generator. A clinically meaningful reduction in familiar pain supports an intra-articular contribution, while non-response prompts reconsideration of extra-articular or referred sources. However, clinicians should interpret diagnostic injection results cautiously. Factors including technique, distribution, and pain processing could all influence results.

Tip 8: *Start with exercise rehabilitation for nearly all athletes: treat capacity–load mismatch and movement behaviour*

Consensus statements endorse non-surgical care and clinician-led incremental exercise rehabilitation as suitable first-line treatment for most athletes with hip-related pain and FAI syndrome. Importantly, exercise rehabilitation and activity modification should be for as long as 3 to 6 months duration as findings from the physioFIRST study⁴ suggest! Here, it is important to align evidence-based timelines with factors like rehabilitation

quality, the athlete-specific context (for example, the type and size of cam morphology), and sport-specific factors (for example, the type and level of sport participation). Key components include education, load modification (temporarily reduce high-irritation positions), progressive strengthening of hip abductors/extensors/adductors and trunk control, and movement retraining for squat/hinge and cutting/deceleration. Progress using criteria (tolerance and next-day response) and monitor with provocation measures and evidence-based outcome tools like HAGOS / iHOT-33 (see excellent papers on rehabilitation elsewhere in this edition).

Tip 9: *Know when to refer for further specialist care or another opinion: establish explicit thresholds for specialist referral*

Escalate when disability persists despite high-quality, well-adhered rehabilitation (often 12 weeks or more, adjusted for irritability and sport demands), when symptoms/signs/imaging are strongly concordant for clinically meaningful intra-articular pathology, or when diagnostic uncertainty remains despite appropriate

work-up. Consider earlier referral if red flags exist or when imaging demonstrates features that require specialist interpretation in the athlete's context.

Tip 10: *Return to sport should be criteria-based and contextual (specifically not time-based)*

Use staged exposure from modified training to competition with monitoring and rapid adjustment if symptoms flare. Suggested criteria include: (1) controlling symptoms during key sport positions with acceptable next-day response; (2) maintaining hip range of motion; (3) maintain motor control of the hip (including restoring strength/capacity and tolerance of repeated cutting/skating/kicking); (4) monitoring (and acting upon) morning after response to activity changes; (5) ensuring performance readiness at match intensity. Clinicians should use shared decision-making to align with athlete goals and season timing (see below).

A NOTE ON SHARED DECISION MAKING

Shared decision-making (SDM) is a collaborative process in which clinicians

TABLE 1

Domain	Key features	Clinical use
Symptom pattern	Motion-related anterior groin pain; pain with deep flexion/adduction/IR; "C-sign"	Raises suspicion; not diagnostic alone
Provocative tests	FADIR, anterior impingement and FABER tests are often positive (higher sensitivity than specificity)	Useful to rule out when negative; interpret in clusters
Range of motion	Restricted hip internal rotation (especially in neutral). Important: test hip internal rotation in supine and prone (reduced internal rotation in supine and normal in prone points to a possible neuromuscular driver of the restriction rather than articular/capsular e.g. deep rotator dysfunction)	Supports rule-in when concordant
Functional provocation	Symptoms reproduced during squat, cutting, sprint acceleration	Aligns exam with sport demands
Patient-reported outcomes	Reduced HAGOS Sport/Participation	Quantifies impact and monitors progress

Table 1: History and examination features suggesting hip joint-related groin pain.

TABLE 2

Clinical question	Preferred imaging/step	Rationale
First-line structural context	AP pelvis ± lateral (e.g., Dunn)	Initial assessment of morphology and OA features
Soft tissue/chondrolabral detail	MRI (± MR arthrogram)	Evaluates labrum/cartilage/bone marrow and alternative diagnoses
Uncertainty persists / mixed sources	Image-guided intra-articular anaesthetic injection	Clarifies hip joint contribution as pain generator
Red flag symptoms (e.g., systemic symptoms; inability to weight bear; neurological symptoms; night pain)	Urgent targeted imaging	Exclude fracture, infection, tumour or serious pathology

Table 2: Imaging strategy for suspected hip joint-related groin pain.

TABLE 3

Component	Practical actions	Monitoring
Education & load management	Modify deep flexion/impingement positions early; maintain conditioning	Within- and next-day symptom response
Strength & capacity	Progress hip abductors/extensors/adductors; trunk control	Strength symmetry; tolerance of adduction/abduction demands
Movement retraining	Squat/hinge strategy; cutting & deceleration mechanics	Functional provocation tasks and sport drills
Outcome tracking	HAGOS; five-second squeeze pain (0–10)	Trends in function and symptom severity

Table 3: Non-operative management priorities for hip joint-related groin pain.

and athletes combine the best available evidence and clinical expertise with the athlete's values, preferences and goals to reach healthcare decisions. It is particularly relevant to athletes with hip joint-related groin pain, where the clinical uncertainty and variability described above may mean that more than one course of action is reasonable. When clinical equipoise exists, decisions become particularly preference-sensitive, as the absence of a clearly superior option places greater importance on the athlete's individual circumstances, values and goals. This may apply to decisions about whether further imaging is warranted, as well as rehabilitation, modification of sporting participation or surgical management, where the potential benefits and disadvantages of different approaches may vary between athletes. In such circumstances, involving the athlete in decision-making is not simply desirable, but an essential component of ethical, patient-centred care. SDM provides a framework for discussing the available options, the uncertainty surrounding their potential outcomes and what matters most to the individual athlete. Rather than viewing uncertainty as a limitation to decision-making, SDM allows it to be acknowledged and navigated collaboratively, supporting evidence-informed decisions that are responsive to the athlete's preferences, circumstances and goals.

DISCUSSION

A systematic approach to athletes with possible hip joint-related groin pain reduces both under- and over-diagnosis. Under-diagnosis occurs when anterior groin pain is attributed solely to regional entities without considering intra-articular contributions. Over-diagnosis occurs when morphology or labral findings dominate the narrative in the absence of concordant symptoms and signs. Consensus guidance mitigates both risks: Doha Agreement structures classification, Warwick Agreement defines FAI syndrome through symptoms, signs and imaging, Zurich Agreement provides hip-related pain diagnostic criteria, Oxford Consensus further enlightens primary cam morphology and FAI syndrome, and ESSKA Agreement supports coherent multidisciplinary examination and imaging requests.

Clinician communication about morphology is evolving. Conceptual work emphasises that cam morphology can be a normal physiological response to adolescent

TABLE 4

Trigger	Rationale
Failure of 12 weeks or more of high-quality clinician-led incremental exercise rehabilitation (see Physio FIRST study protocol)	Common threshold before escalation
FAI syndrome based on symptoms, signs and imaging	Meets consensus definition of hip joint-related groin pain/FAI syndrome: patient needs a multidisciplinary team approach to care
Persistent mechanical symptoms with functional compromise	Consider significant labral/chondral pathology
Ongoing diagnostic uncertainty	Injection and/or specialist review may clarify pain source and plan

Table 4: Indications to escalate care (diagnostic injection or specialist referral).

CASE 1

Elite football player with insidious anterior groin pain (hip-dominant presentation)

Athlete profile: Professional female footballer, mid-20s, right-foot dominant striker.

History: Six-month insidious right anterior groin pain, worse with deep squats, cutting and prolonged sitting; uses a “C-sign”. No red flags. Symptoms began during a congested competitive period with a clear load spike.

Examination: Hip internal rotation reduced compared with contralateral side while FADIR test reproduces familiar pain. Adductor squeeze minimally provocative; resisted adduction strength preserved. Lumbar screening examination is unremarkable.

Imaging: AP pelvis and Dunn lateral show cam morphology (primary cam morphology as the player has no previous groin pain history and started to play competitive football when she was 8 years old); MRI demonstrates an anterosuperior labral tear without advanced chondral damage.

Management: Criteria-based physiotherapist-led incremental exercise rehabilitation programme: load modification, progressive hip/trunk strengthening, movement retraining for cutting/deceleration. Monitoring: iHOT-33, HAGOS and five-second squeeze.

Outcome & teaching point: HAGOS Sport improves and athlete returns to full competition without surgery. Demonstrates concordant symptoms + signs + imaging and the role of high-quality non-operative care as first-line.

Shared decision-making: SDM is particularly valuable in this scenario because concordant symptoms, clinical and imaging findings do not necessarily determine the optimal treatment. Where rehabilitation and surgery may both be reasonable options, the decision is preference-sensitive and should consider the athlete's sporting goals, preferences and tolerance of risk alongside the available evidence.

CASE 2

Semiprofessional ice-hockey player with mixed groin symptoms (hip not dominant)

Athlete profile: Semiprofessional male ice-hockey player, late-20s. He plays goal keeper.

History: Three-month bilateral medial groin pain during skating accelerations and resisted adduction; no sitting pain, catching or locking.

Examination: Hip ROM symmetric; Five-second squeeze provokes significant pain (6/10). Palpation and resisted adduction reproduce focal symptoms. FADIR test: mild, non-specific discomfort.

Imaging: Radiographs incidentally show large bilateral primary cam morphology; MRI deferred initially due to lack of concordance for hip-dominant pain.

Management: Rehabilitation focuses on adductor capacity and skating-specific load management with progressive strengthening and monitored re-exposure. Track squeeze pain and HAGOS.

Outcome & teaching point: Symptoms resolve over ~8 weeks with full return to training. Reinforces avoiding over-attribution of symptoms to morphology and the value of structured Doha-based classification.

Shared decision-making: SDM is particularly valuable in this scenario because the incidental cam morphology creates uncertainty about the need for further investigation, rather than providing an indication for imaging or treatment. Discussing the potential value and limitations of further imaging with the athlete, allows the decision to reflect the clinical presentation, available evidence and the athlete's preferences and goals.

sports loading (called primary cam morphology), and contemporary synthesis reinforces cam morphology as a causal risk factor for hip OA while emphasizing heterogeneous progression. Clinicians should therefore communicate risk without determinism and focus on symptom-guided management.

Finally, diagnostic testing should be explicitly probabilistic. The evidence supports FADIR as a screening tool but warns against over-reliance on positive tests due to limited specificity. Integrating test clusters, function-based assessment and targeted imaging supports diagnostic accuracy and aligns care with the clinician's core task: enabling safe and durable sporting participation.

CONCLUSION

Hip joint-related groin pain demands structured clinical reasoning and disciplined communication. Begin with shared terminology and classification, use a hypothesis-driven history, interpret clinical tests in clusters, image wisely (radiographs first), and select diagnostic

injections when uncertainty persists. Conservative management focusing on load optimisation, strengthening and movement retraining is appropriate for many athletes, with explicit thresholds guiding escalation. Return to sport should be criteria-based and aligned with athlete goals.

For the two clinical case examples, see the boxes for Case 1 and Case 2.

References

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