Infographic. Consensus recommendations on the classification, definition and diagnostic criteria of hip-related pain in young and middle-aged active adults from the International Hip-related Pain Research Network, Zurich 2018

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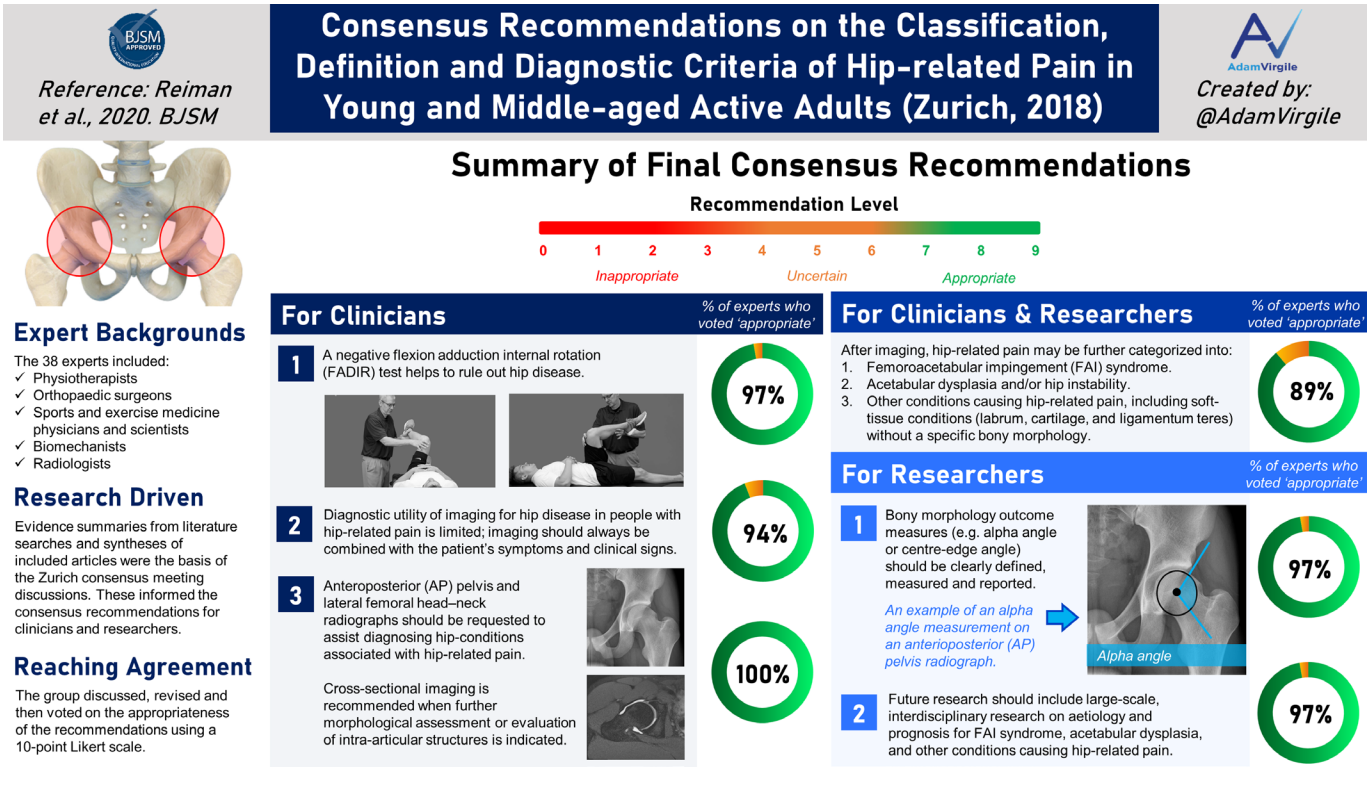
Young and middle-aged active adults with hip and groin pain often present with a confusing overlap of signs and symptoms. There is no consensus on how to define or classify hip disease with different and overlapping intra-articular and extra-articular contributors to symptoms in an anatomically complex region. Several researchers and consensus groups have previously attempted to define aspects of hip and groin pain.[1–4] In 2017, the International Hip Pain Research Network (IHiPRN) was established to facilitate collaboration across research groups and disciplines and to improve knowledge dissemination of hip-related pain to clinicians. In this paper,[5] published in the *British Journal of Sports Medicine*, we first describe the general consensus process applied to all topics in this series. We then make recommendations on the first topic on how to classify, define and diagnose hip disease in young and middle-aged active adults, with hip-related pain as the main symptom. Other papers in this series used this classification of hip-related pain in the assessment of (1) patient-reported outcome



measures,[6] (2) standardised measurement of physical capacity[7] and (3) physiotherapist-led treatment.[8]

For this paper, the working group used a scoping review framework to search the literature for systematic reviews, intervention and observational studies (prospective or retrospective) with a study population of at least 10 young and middle-aged active adults and published in English language, peer-reviewed journals. Evidence summaries and consensus recommendations were then presented to and discussed by the whole group of IHiPRN participants. We reached consensus on three clinical recommendations, one clinical and research recommendation, and two research recommendations (infographic), all of which were an amalgamation of best available evidence and expert opinion. Following discussion, each participant was asked to perform a blinded vote on the recommendation (infographic). Both non-musculoskeletal and serious hip pathology conditions (eg, tumours, infections, slipped capital femoral epiphysis), as well as competing musculoskeletal conditions (eg, lumbar spine) should first be excluded before categorising hip disease in young and middle-aged active adults presenting with hip-related pain. Once these are excluded, hip-related pain should be categorised into (1) femoroacetabular impingement syndrome, (2) acetabular dysplasia and/or hip instability and (3) other conditions without bony morphology causing hip-related pain, such as chondral, labral and ligamentum teres conditions.

The diagnostic clinical utility for the various clinical and radiological measures was stratified according to magnitude of the pretest to post-test probability shift, precision (repeatability of the results), and study quality. Each of these values were represented on a 2×2 quadrant (magnitude×precision) as *not recommended* (red quadrant), *cautiously recommended* (yellow quadrants) or *recommended* (green quadrant) if the study quality was high.

We determined that the diagnostic utility of clinical examination and diagnostic imaging in isolation are limited and recommend a comprehensive diagnostic approach of patient symptoms, clinical signs and diagnostic imaging. We recognise that the diagnostic capability of matching symptoms, clinical signs and diagnostic imaging is unknown for patients with hip-related pain and recommend that future studies be considered in determining such diagnostic utilities.

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REFERENCES

1 Weir A, Brukner P, Delahunt E, *et al*. Doha agreement meeting on terminology and definitions in groin pain in athletes. *Br J Sports Med* 2015;49:768–74.
2 Griffin DR, Dickenson EJ, O'Donnell J, *et al*. The Warwick agreement on femoroacetabular impingement syndrome (FAI syndrome): an international consensus statement. *Br J Sports Med* 2016;50:1169–76.
3 Nepple JJ, Prather H, Trousdale RT, *et al*. Clinical diagnosis of femoroacetabular impingement. *J Am Acad Orthop Surg* 2013;21:S16–19.
4 Reiman MP, Thorborg K, Covington K, *et al*. Important clinical descriptors to include in the examination and assessment of patients with femoroacetabular impingement syndrome: an international and multi-disciplinary Delphi survey. *Knee Surg Sports Traumatol Arthrosc* 2017;25:1975–86.
5 Reiman MP, Agricola R, Kemp JL, *et al*. Consensus recommendations on the classification, definition and diagnostic criteria of hip-related pain in young and middle-aged active adults from the International Hip-related pain research network, Zurich 2018. *Br J Sports Med* 2020.
6 Impellizzeri FM, Jones DM, Griffin D, *et al*. Patient-Reported outcome measures for hip-related pain: a review of the available evidence and a consesnsus statement from the International Hip-related pain research network (IHiPRN) meeting, Zurich, 2018. *Br J Sports Med* 2020.
7 Mosler AB, Kemp J, King M, *et al*. Standardised measurement of physical capacity in young and middle-aged active adults with hip-related pain: recommendations from the first international Hip-related pain research network (IHiPRN) meeting, Zurich, 2018. *Br J Sports Med* 2019.
8 Kemp JL, Risberg MA, Mosler A, *et al*. Physiotherapist-led treatment for young to middle-aged active adults with hip-related pain: consensus recommendations from the International Hip-related pain research network, Zurich 2018. *Br J Sports Med* 2019.