# List of supplementary materials

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## Supplementary Appendix A1 Search strategies scoping review hip microinstability and FAI

### Search strategy Ovid (for MEDLINE)

- 1. hip.ab.
- 2. hip.ti.
- 3. exp Hip Joint/ or exp Femoracetabular Impingement/
- 4. 1 or 2 or 3
- 5. micro-instability.af.
- 6. microinstability.af.

7. exp Joint Instability/cl, di, dg, et, pa, pp, pc, rh, su, th [Classification, Diagnosis, Diagnostic Imaging, Etiology, Pathology, Physiopathology, Prevention & Control, Rehabilitation, Surgery, Therapy]

- 8. hip instability.af.
- 9. 5 or 6 or 7 or 8
- 10. 4 and 9

#### Search strategy CINAHL (EBSCO host)

#	Query	Limiters/Expanders	Last Run Via	Results
S10	S4 AND S9	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	Display
S9	(S5 OR S6 OR S7 OR S8)	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	Display
S8	joint instability	Expanders - Apply equivalent subjects Search modes - Find all my search terms	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	Display

S7	AB micro-instability OR TI micro-instability	Expanders - Apply equivalent subjects	Interface - EBSCOhost Research Databases	Display			
		Search modes - Find all my search terms	Search Screen - Advanced Search				
			Database - CINAHL Complete				
S6	AB microinstability OR TI microinstability	Expanders - Apply equivalent subjects	Interface - EBSCOhost Research Databases	Display			
		Search modes - Find all my search	Search Screen - Advanced				
		terms	Search				
<b>65</b>			Database - CINAHL Complete	Diala			
S5	MW instability	Expanders - Apply equivalent subjects	Interface - EBSCOhost Research Databases	Display			
		Search modes - Find all my search	Search Screen - Advanced				
		terms	Search				
			Database - CINAHL Complete				
S4	S1 OR S2 OR S3	Expanders - Apply equivalent	Interface - EBSCOhost Research	Display			
		subjects	Databases				
		Search modes - Find all my search	Search Screen - Advanced				
		terms	Search				
~~			Database - CINAHL Complete				
S3	femoroacetabular	Expanders - Apply equivalent	Interface - EBSCOhost Research	Display			
	impingement or femoral acetabular	subjects Search modes - Find all my search	Databases Search Screen - Advanced				
	impingement or hip	terms	Search				
	impingement		Database - CINAHL Complete				
S2	MW hip joint	Expanders - Apply equivalent	Interface - EBSCOhost Research	Display			
		subjects	Databases				
		Search modes - Find all my search	Search Screen - Advanced				
		terms	Search				
			Database - CINAHL Complete				
S1	TI hip OR AB hip	Expanders - Apply equivalent	Interface - EBSCOhost Research	Display			
		subjects	Databases				
		Search modes - Find all my search	Search Screen - Advanced				
		terms	Search				
			Database - CINAHL Complete				

### Search strategy EMBASE

No.	Query	Results
#20	#13 AND #19	2071
#19	#16 OR #17 OR #18	15694
#18	'hip instability'	634
#17	'joint instability'	12210
#16	#14 OR #15	148
#15	'micro instability'	27
#14	microinstability	145
#13	#11 OR #12	183224
#12	'femoroacetabular impingement'	3896
#11	hip:ab,ti	182669

### Supplementary Appendix A2 Data Charting Form Scoping Review Hip Microinstability and FAI

Author / Year	Title	Country	Type of Source	Торіс	Key Message(s)
Name(s) of author(s) and year of publication	Title of the study	Country where the study was run	What kind of article/study this is	Which of the following topics were covered in this article? Definition, Aetiology, Diagnosis, Treatment or Prevalence	Extraction of the key message(s) based on the respective topic(s)

#### Supplementary Table A1 general demographic and source information

author / year	title	country	type of source	topic
Abrams et al. (2016) (88)	Decreased Synovial Inflammation in Atraumatic Hip Microinstability Compared With Femoroacetabular Impingement	USA	prospective cohort study	Diagnosis
Agten et al. (2016) (78)		Switzerland	review article	Diagnosis
Atzmon and Safran (2022) (75)	Arthroscopic Treatment of Mild/Borderline Hip Dysplasia with	USA	review article	Diagnosis
	Concomitant Femoroacetabular Impingement-Literature Review			Treatment: surgical management Aetiology
Bayer et Sekiya (2010) (96)	Hip instability and capsular laxity Contemporary Hip Capsular Management and Closure Using a	USA	technical note	Treatment : surgical management
Beck et al. (2019) (123)	Suture Passing Device	USA	technical note	Treatment : surgical management
Bedi et al. (2011) (100)	Capsular management during hip arthroscopy: from femoroacetabular impingement to instability	USA	technical note	Aetiology
Bellabarba et al. (1998) (26)	Idiopathic Hip Instability An Unrecognized Cause of Coxa Saltans in the Adult	USA	prospective case series study	Aetiology Diagnosis
Berthelot et al. (2023) (63)	Update on contribution of hip labral tears to hip pain: A narrative	France	review article	Aetiology
Blakey et al. (2010) (103)	review Secondary capsular laxity of the hip	UK	prospective cohort study	Diagnosis Aetiology
	High Specificity of the Hip Dial Test to Diagnose Anterior Capsular			
Bolia et al. (2019) (39)	Insufficiency in Patients with FAI-Related Microinstability of the Hip	USA	Abstract: prospective diagnostic accuracy study	Diagnosis
Bolia et al. (2016) (20)	Microinstability of the hip: a previously unrecognized pathology	USA	review article	Definition Aetiology Diagnosis Treatment: conservative management / surgical management
Bowman et al. (2010) (97)	A clinically relevant review of hip biomechanics	USA	roulou articlo	Aetiology
			review article	Treatment : surgical management Aetiology
Boykin et al. (2011) (38)	Hip instability Periacetabular Osteotomy as a Salvage Procedure Early Outcomes	USA	review article	Diagnosis Treatment : conservative management / surgical management
Brusalis et al. (2020) (128)	in Patients Treated for latrogenic Hip Instability	USA	intervention study	Treatment: surgical management
Canham et al. (2016) (98)	Atraumatic Hip Instability The management of symptomatic femoroacetabular impingement:	USA	review article	Aetiology
Casartelli et al. (2016) (93)	what is the rationale for non-surgical treatment?	Switzerland	Editorial	Treatment : surgical management Definition
Cerezal et al. (2012) (18)	Emerging topics on the hip: ligamentum teres and hip microinstability	Spain	review article	Aetiology Treatment : conservative management / surgical management
Chahla et al. (2016) (116)	Ligamentum Teres Tears and Femoroacetabular Impingement: Prevalence and Preoperative Findings	USA	prospective cohort study	Aetiology
Charbonnier et al. (2011) (102)	Assessment of congruence and impingement of the hip joint in	Switzerland	prospective	Aetiology
	professional ballet dancers: a motion capture study Treatment of Hip Microinstability with		descriptive laboratory study	
Charles et al. (2023) (125)	Arthroscopic Capsular Plication: A Retrospective Case Series	Belgium	retrospective cohort study	Treatment: surgical management
Cohen et al. (2023) (73)	The Radiographic Femoroepiphyseal Acetabular Roof Index Is a Reliable and Reproducible Diagnostic Tool in Patients Undergoing	Canada	systematic review	Diagnosis
Cohen et al. (2023) (46)	Hip-Preservation Surgery: A Systematic Review Hip microinstability diagnosis and management: a systematic review	Canada	systematic review	Diagnosis
	Editorial Commentary: Evaluate for the Beighton Score	Canada	systematic review	Treatment: surgical management
Curley et al. (2023) (138)	and Additional Radiographic Signs of Instability Prior to Proceeding With Hip Arthroscopy in Patients With Combined Borderline Hip Dysplasia and Excessive Femoral Anteversion	USA	Editorial commentary	Treatment: surgical management
Curtis et al. (2022) (44)	Hip Microinstability: Understanding a Newly Defined Hip Pathology in Young Athletes	USA	Abstract: Info graphic	Aetiology Diagnosis
Curtis et al. (2023) (53)	Can Hip Passive Range of Motion Predict	USA		Treatment: conservative and surgical management
	Hip Microinstability? A Comparative Study		retrospective case control study	Diagnosis
Curtis et al. (2023) (83)	The diagnosis of hip microinstability is correlated with ease of intra-operative hip distraction	USA	retrospective case series study	Diagnosis
Curtis et al. (2022) (47)	Female gender, decreased lateral center edge angle and a positive hyperextension–external rotation test are associated with ease of hip distractability at time of hip arthroscopy	USA	retrospective case series study	Diagnosis
Cvetanovich et al. (2020) (77)	Assessment of Hip Translation In Vivo in Patients With Femoracetabular Impingement Syndrome Using 3-Dimensional	USA	prospective cohort study	Diagnosis
d'Hemecourt et al. (2019) (24)	Computed Tomography Can Dynamic Ultrasonography of the Hip Reliably Assess Anterior	USA	and a state of the second s	Definition
u nemecourt et al. (2013) (24)	Femoral Head Translation?	USA	prospective diagnostic reliability study	Diagnosis Definition
Dangin et al. (2016) (1)	Microinstability of the hip: A review	France	review article	Aetiology Diagnosis Treatment : conservative management / surgical management
Domb et al. (2013) (22)	Arthroscopic capsulotomy, capsular repair, and capsular plication of the bine relation to atraumatic instability.	USA	systematic review	Aetiology Treatment :
	the hip: relation to atraumatic instability The Application of the Novel Femoral-Epiphyseal Acetabular Roof		Abstract:	surgical management
Dusak et Ciatawi (2023) (74)	(FEAR) Index	Indonesia	systematic review	Diagnosis Diagnosis
Economopoulos et al. (2019) (7)	The Pull Test: A Dynamic Test to Confirm Hip Microinstability	USA	prospective diagnostic accuracy study	Diagnosis Prevalence
Eijer et Hogervorst (2017) (105)	Femoroacetabular impingement causes osteoarthritis of the hip by migration and micro-instability of the femoral head	Switzerland and Netherlands	expert article	Aetiology
Ejnisman et al. (2022) (121)	Effectiveness of Nonoperative Management of Hip Microinstability	USA	retrospective case series study	Treatment: conservative management
Featherall et al. (2022) (114)	Inverse Relationship of Hip Capsular Thickness on Magentic Resonance Imaging and Increased Axial Distraction Under Anesthesia: Further Characterization of Hip Laxity	USA	retrospective cohort study	Diagnosis
Featherail et al. (2021) (79)	Three-Dimensional Magnetic Resonance Arthrography of Post-Arthroscopy Hip Instability Demonstrates Increased Effective Intracapsular Volume and Anterosuperior Cassular Chanees	USA	prospective diagnostic case series study	Diagnosis
Foissey et al. (2023) (76)	Predictive radiological parameters of failure following surgical management of femoroacetabular impingement associated with borderline acetabular dysplasia	France	retrospective case series study	Diagnosis
Friel et al. (2017) (108)	Current Techniques in Treating Femoroacetabular Impingement: Capsular Repair and Plication	USA	technical note	Aetiology
Gowd et al. (2022) (67)	Evaluation of additional causes of hip pain in patients with	USA	review article	Aetiology
Graesser et al. (2020) (71)	femoroacetabular impingement syndrome Development and External Validation of a Novel Clinical Score to Quantify the Presence of Instability Characteristics in Patients with	USA	Abstract: retrospective cohort and prospective	Diagnosis Diagnosis
	Borderline Acetabular Dvsolasia The recognition and evaluation of patterns of compensatory injury		diagnostic validity study	-
Hammoud et al. (2014) (101)	ine recognition and evaluation of patterns of compensatory injury in patients with mechanical hip pain	USA	review article	Actiology
Harris (2019) (25)	Hypermobile Hip Syndrome	USA	review article	Definition Aetiology Diagnosis Treatment : conservative management / surgical
Harris et al. (2016) (23)	Microinstability of the Hip and the Splits Radiograph	USA	case report	management Definition Aetiology Diagnosis Treatment : conservative management / surgical
Hatem et al. (2020) (55)	Anteroinferior Hip Instability in Flexion During Dynamic Arthroscopic	USA	rotrocoactive care control study	Diagnosis
Hatem et al. (2020) (55)	Examination Is Associated With Abnormal Anterior Acetabular Horn	USA	retrospective case-control study	Diagnosis

[	Editorial commentary: Hip Arthroscopy for Femoroacetabular			1
Hohmann 2022 (139)	Impingement in Patients With Borderline Dysplasia Does Not Result in Inferior Outcomes Compared With Outcomes in Patients Without	USA	Editorial commentary	Treatment: surgical management
	Dysolasia: Do Not Fear Diagnostic Accuracy of 3 Physical Examination Tests in the			Diagnosis
Hoppe et al. (2017) (5)	Assessment of Hip Microinstability	USA	prospective diagnostic accuracy study	Prevalence
Horton et al. (2020) (72)	Imaging Markers of Hip Instability are Associated with Worse Outcomes at Two to Four-year Follow-up in Female Patients Undergoing Hip Arthroscopy for Femoroacetabular Impingement	USA	retrospective cohort study	Diagnosis
Hunt (2021) (106)	Editorial commentary: Hip Cam Overresection May Result in Inferior Outcomes: The Goldilocks Paradox of Too Little, Too Much, or Just Right?	USA	Editorial commentary	Aetiology
Jackson (2021) (107)	Editorial commentary: Microinstability After Cam Osteochondroplasty Results From	USA	Editorial commentary	Aetiology
Jean et al. (2023) (35)	Over-Resection - Everything in Moderation Hip microinstability: fact or fiction? Achieving Successful Outcomes in High-Level Athletes With	Canada/USA	Editorial commentary	Diagnosis
Jimenez et al. (2021) (131)	Borderline Hip Dysplasia Undergoing Hip Arthroscopy With Capsular Plication and Labral Preservation A Propensity-Matched Controlled Study	USA	retrospective case-control study	Treatment: surgical management
Kalisvaart et al. (2017) (133)	Hip instability treated with arthroscopic capsular plication	USA	prospective cohort study	Treatment : surgical management Definition
Kalisvaart et Safran (2015) (8)	Microinstability of the hip-it does exist: Aetiology, diagnosis and treatment	USA	review article	Aetiology Diagnosis Treatment : conservative management / surgical management
Kaya et al. (2014) (118)	Factors contributing to the failure of conservative treatment for acetabular labrum tears	Japan	prospective cohort study	Aetiology
Khanduja et al. (2023) (36)	Diagnosing Hip Microinstability: an international consensus study using the Delphi methodology	ик	consensus paper	Diagnosis
Krych et al. (2012) (99)	Is posterior hip instability associated with cam and pincer deformity?	USA	retrospective cohort study	Aetiology
Lall et al. (2020) (45)	Teamwork in hip preservation: the ISHA 2019 Annual Scientific Meeting	Spain	scientific meeting	Aetiology Diagnosis Treatment: conservative and surgical management
Larson (2022) (61)	Editorial Commentary: Restoration of Hip Capsular Tension Is More Important Than Repair Construct Configuration	USA	Editorial commentary	Aetiology Diagnosis Treatment: surgical management
Maas et al. (2017) (65)	Posterior hip instability relocation testing: a resident's case report	USA	case report	Diagnosis
MacDonald et al. (2023) (70)	The posterior crescent sign on MRI and MR arthrography: is it a marker of hip dysplasia and instability?	New Zealand	retrospective cohort study	Diagnosis
Magerkurth et al.(2013) (64)	Capsular Laxity of the Hip: Findings at Magnetic Resonance Arthrography	Switzerland and USA	retrospective case-control study	Diagnosis
Maldonado (2019) (80)	CORR Insights*: Can Dynamic Ultrasonography of the Hip Reliably Assess Anterior Femoral Head Translation?	USA	commentary	Diagnosis
Martin et al. (2022) (33)	Pre- and intraoperative decision-making challenges in hip arthroscopy for femoroacetabular impingement	ик	expert article	Definition Aetiology Diagnosis Treatment: surgical management / conservative management
Martin et al. (2012) (117)	Ligamentum teres: a functional description and potential clinical relevance	USA	laboratory model and retrospective cohort study	Aetiology
Martin et al. (2019) (115)	Clinical Relevance Of The Ligamentum Teres: A Literature Review	USA	review article	Aetiology
Mascarenhas et al. (2021) (27)	Hip, Pelvis and Sacro-Iliac Joints	Portugal	book chapter	Definition Diagnosis
Matthewson et al. (2023) (120)	Effective Management Options for Treatment of Microinstability of the Hip: a Scoping Review	Canada	scoping review	Treatment: conservative management / surgical management
Meyer et al. (2022) (58)	FEARindex in predicting treatment among patients with femoroacetabular impingement and hip dysplasia and the	USA	retrospective validation study	Diagnosis
Mitchell et al. (2016) (30)	relationship of femoral version Radiographic Evidence of Hip Microinstability in Elite Ballet	USA	cross sectional study	Aetiology
Mortensen et al. (2021) (95)	Hip Capsular Deficiency—A Cause of Post-Surgical Instability in the Revision Setting Following Hip Arthroscopy for Femoroacetabular	USA	review article	Aetiology
Mortensen et al. (2022) (84)	Impingement Previous Arthroscopic Hip Surgery Increases Axial Distractibility Compared to the Native Contralateral Hip and May Suggest Instability	USA	prospective case control study	Aetiology
Neira et al. (2019) (41)	Evaluation of atraumatic hip instability measured by triaxial	Chili	review article	Diagnosis
Nepple (2020) (130)	accelerometry during walking Editorial Commentary: At the Intersection of Borderline Dysplasia and Femoroacetabular	USA	Editorial commentary	Treatment: surgical management
Nepple et al. (2021) (129)	Impingement. Which Way Should We Turn? Mid-term outcomes of combined hip arthroscopy and limited open execute reliastion in the name dreplactic hip.	USA	retrospective case series study	Treatment: surgical management
Nepple et al. (2021) (113)	capsular plication in the non-dysplastic hip Decision-making in the Borderline Hip	USA	review article	Aetiology Treatment: surgical management
Nwachukwu et al. (2018) (86)	Labral hypertrophy correlates with borderline hip dysplasia and microinstability in femoroacetabular impingement: a matched case- control analysis	USA	retrospective nested case-control study	Diagnosis
O'Neill et al. (2020) (134)	Clinical and Radiographic Presentation of Capsular latrogenic Hip Instability After Previous Hip Arthroscopy	USA	retrospective case series study	Treatment: surgical management
Ortiz-Declet et al. (2017) (109)	Should the Capsule Be Repaired or Plicated After Hip Arthroscopy for Labral Tears Associated With Femoroacetabular Impingement or Instability? A Systematic Review	USA	systematic review	Aetiology
Packer et al. (2018) (3)	The Cliff Sign: A New Radiographic Sign of Hip Instability	USA	prospective cohort study	Diagnosis Prevalence
Packer et al. (2020) (82)	Capsular thinning on magnetic resonance arthrography is associated with intra-operative hip joint laxity in women	USA	retrospective cohort study	Diagnosis
Parvaresh et al. (2022) (40)	Editorial Commentary: Axial Stress Examination Under Anesthesia	USA	Editorial commentary	Diagnosis
Parvaresh et al. (2021) (28)	Provides a Highly Reliable Test for Measurement of Hip Distraction	USA	review article	Definition Diagnosis Aetiology
	,			Treatment: conservative mangement / surgical management
Philippon et al. (2013) (50)	The hip dial test to diagnose symptomatic hip instability	USA	prospective diagnostic accuracy study	Diagnosis Aetiology
Philippon et al. (2007) (42)	Hip instability in the athlete	USA	expert article	Diagnosis Treatment: surgical management
Pullen et al. (2022) (89)	Central Femoral Head Chondromalacia Is Associated with a Diagnosis of Hip Instability	USA	retrospective case control study	Aetiology Diagnosis
Ranawat et al. (2017) (51)	Foot Progression Angle Walking Test: A Dynamic Diagnostic Assessment for Femoroacetabular Impingement and Hip Instability	USA	prospective diagnostic accuracy study	Diagnosis Prevalence
Ranawat et al. (2015) (52)	Foot progression angle walking test- an effective dynamic test for the diagnosis of femoroacetabular impingement and hip instability	USA	prospective diagnostic accuracy study	Diagnosis Prevalence
Reiman et al. (2019) (66)	Accuracy of Clinical and Imaging Tests for the Diagnosis of Hip Dysplasia and Instability: A Systematic Review	USA	systematic review	Diagnosis
Rosinsky et al. (2022) (32)	Editorial Commentary: Hip Joint Laxity, Microinstability, or Instability Require Precise Definition: No Matter What You Call It. It's Here to Stav!	USA	Editorial commentary	Definition
Rosinsky et al. (2020) (87)	The Femoral Head "Divot" Sign: A Useful Arthroscopic Sign of Hip Microinstability	USA	retrospective case series study	Diagnosis
Safran (2019) (6)	Microinstability of the Hip-Gaining Acceptance	USA	review article	Definition Aetiology Diagnosis Treatment: surgical management / conservative
Safran et al. (2021) (54)	Can hip microinstability be predicted by hip range of motion	USA	Abstract: retrospective case control study	management Diagnosis
	Criteria for the Operating Room Confirmation of The Diagnosis of Hip Instability: The Results of An International Expert Consensus	USA	consensus paper	Diagnosis
	Conference			

Sahr et al. (2023) (81)	Dynamic ultrasound assessment of hip instability and anterior and posterior hip impingement	USA	technical note	Diagnosis
Savic et D'Angelo (2019) (122)	Exploring the role of microinstability of the hip: an atypical presentation of femoroacetabular impingement (FAI) and labral tear in a collegiate endurance athlete: a case report	Canada	case report	Treatment: surgical management
Schwabe et al. (2020) (59)	Acetabular Dysplasia: Three-Dimensional Deformity Predictors of the Diagnosis of Symptomatic Instability Treated with Periacetabular Osteotomv	USA	Abstract: prospective cohort study	Diagnosis
Schwabe et al. (2022) (60)	External Validation of the FEAR Index in Borderline Acetabular Dysplasia	USA	retrospective diagnostic accuracy and prospective reliability study	Diagnosis
Selley et al. (2021) (94)	Capsular Complications and Subsequent Instability on the Rise as Indications for Revision Hip Arthroscopy	USA	Abstract: retrospective cohort study	Aetiology
Shibata et al. (2017) (90)	Is there a distinct pattern to the acetabular labrum and articular cartilage damage in the non-dysplastic hip with instability?	Japan/USA	retrospective cohort study	Prevalence
Shindle et al. (2006) (37)	Diagnosis and Management of Traumatic and Atraumatic Hip Instability in the Athletic Patient	USA	expert article	Aetiology Diagnosis Treatment: conservative and surgical management
Shu et Safran (2011) (17)	Hip instability: anatomic and clinical considerations of traumatic and atraumatic instability	USA	expert article	Definition Aetiology
Smith et Sekiya (2010) (43)	Hip instability	USA	review article	Diagnosis Treatment: conservative and surgical management
Spiker et al. (2020) (68)	Radiographic and clinical characteristics associated with a positive PART (Prone Apprehension Relocation Test): a new provocative exam to elicit hip instability	USA	retrospective diagnostic accuracy study	Diagnosis
Suter et al. (2015) (19)	MR findings associated with positive distraction of the hip joint achieved by axial traction	Switzerland	retrospective cohort study	Definition Aetiology Diagnosis
Tahoun et al. (2023) (111)	Superior outcomes after arthroscopic treatment of femoroacetabular impingement and labral tears with closed versus open capsule	Spain	prospective case control study	Aetiology
Tibor et al. (2013) (104)	Anteroinferior acetabular rim damage due to femoroacetabular impingement	Switzerland	retrospective case series study	Aetiology
Tibor et al. (2013) (91)	Two or more impingement and/or instability deformities are often present in patients with hip pain	Switzerland	retrospective cohort study	Prevalence
Truntzer et al. (2019) (2)	Can the FEAR Index Be Used to Predict Microinstability in Patients Undergoing Hip Arthroscopic Surgery?	USA	retrospective validation study	Diagnosis Prevalence
Vera et al. (2021) (29)	Hip Instability in Ballet Dancers A Narrative Review	USA	review article	Definition
Watchmaker et al. (2021) (69)	Interrater Reliability of the Prone Apprehension Relocation Test	USA	retrospective reliability study	Diagnosis
		05/1	reciospective reliability study	
Westermann and Willey (2021) (92)	Femoral Version in Hip Arthroscopy: does it matter?	USA	expert article	Aetiology
Westermann and Willey (2021) (92) Wolff and Scanaliato (2022) (126)				
	Femoral Version in Hip Arthroscopy: does it matter? Feditorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's	USA	expert article	Aetiology Treatment: surgical management
Wolff and Scanaliato (2022) (126)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular	USA USA	expert article Editorial commentary	Aetiology Treatment: surgical management Treatment: surgical management Definition
Wolff and Scanaliato (2022) (126) Wong et al. (2022) (34)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a High Femoroacetabular Impingement Borderline Hip Dysplasia and Femoroacetabular Impingement Syndrome Do No theomostrate Inferior Outcomes Following	USA USA USA	expert article Editorial commentary review article	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis
Wolff and Scanaliato (2022) (126) Wong et al. (2022) (34) Wong et al. (2022) (132)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a Hiph Femoroepiphyseal Roof With Concomitant Borderline Hip Dysplasia and Femoroacetabular Impigement Syndrome Do Not Demonstrate Inferior Outcomes Following Arthroscopic Hip Surgery Persistent or recurrent symptoms after arthroscopic surgery for femoroacetabular impingement: A review of Imaging findings Microinstability of the hip: a systematic review of the imaging	USA USA USA	expert article Editorial commentary review article retrospective cohort study	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis Treatment: surgical management
Wolff and Scanaliato (2022) (126) Wong et al. (2022) (34) Wong et al. (2022) (132) Woodward et Philippon (2018) (110)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a High Femoroepiphyseal Roof With Concomitant Borderline Hip Dysplasia and Femoroacetabular Impingement Syndrome Do Not Demonstrate Inferior Outcomes Following Arthroscopic Hip Surgery Persistent or recurrent symptoms after arthroscopic surgery for femoroacetabular Impingement: A review of Imaging findings	USA USA USA USA New Zealand	expert article Editorial commentary review article retrospective cohort study review article	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis Treatment: surgical management Aetiology
Wolff and Scanaliato (2022) (126) Wong et al. (2022) (34) Wong et al. (2022) (132) Woodward et Philippon (2018) (110) Woodward et al. (2020) (62)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a High Femoroacetabular Impingement Syndrome Do Not Demonstrate Inferior Outcomes Following Arthroscopic Hip Surgery Persistent or recurrent symptoms after arthroscopic surgery for femoroacetabular Impingement: A review of Imaging findings Microinstability of the hip: a systematic review of the imaging Indings Ligamentum teres tears and increased combined anteversion are associated with hip micro-instability in patients with borderline dysplasia Arthroscopic labral debridement versus labral repair for patients with Femoroacetabular Impingement. A meta-analysis	USA USA USA USA New Zealand New Zealand	expert article Editorial commentary review article retrospective cohort study review article systematic review	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis Treatment: surgical management Aetiology Diagnosis
Wolff and Scanaliato (2022) (126)           Wong et al. (2022) (34)           Wong et al. (2022) (132)           Woodward et Philippon (2018) (110)           Woodward et al. (2020) (62)           Wu et al. (2023) (112)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsmar's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a High Femoroepiphyseal Roof With Concomitant Borderline Hip Dysplasia and Femoroacetabular Impingement Syndrome Do Not Demonsatule Inferior Outcomes Following Arthroscopic Hip Surgery Persistent or recurrent symptoms after arthroscopic surgery for femoroacetabular Impingement: A review of Imaging findings Microinstability of the hip: a systematic review of the Imaging findings. Ligamentum teres tears and increased combined anteversion are associated with hip micro-instability in patients with borderline dopslasia Arthroscopic labral debridement versus labral repair for patients with femoroacetabular imgingement: A meta-analysis The Femoro-epiphyseal Acetabular Roof (FEAR) Index: A New Measurement Associated With Instability in Borderline Hip Dysplasia?	USA USA USA USA New Zealand New Zealand China	expert article Editorial commentary review article retrospective cohort study review article systematic review retrospective case control study	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis Treatment: surgical management Aetiology Diagnosis Aetiology
Wolff and Scanaliato (2022) (126)           Wong et al. (2022) (34)           Wong et al. (2022) (132)           Woodward et Philippon (2018) (110)           Woodward et al. (2020) (62)           Wu et al. (2023) (112)           Wu et al. (2020) (127)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip Arthroscopydeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a High Femoroacetabular Impingement Syndrome Do Not Demonstrate Inferior Outcomes Following Arthroscopic Hip Surgery Persistent or recurrent symptoms after arthroscopic surgery for femoroacetabular Impingement: A review of the Imaging findings Microinstability of the hip: a systematic review of the Imaging findings Ugamentum teres tears and increased combined anteversion are associated with hip micro-instability in patients with borderline dysplasia Arthroscopic Ibaral debridement versus labral repair for patients with Femoro-Epiphyseal Acetabular Roof (FEAR) Index: A New Measurement Associated With Instability in Borderline Hip Dysplasia? Capsular repair for instability following hip arthroscopy for femoroacetabular impingement: Preliminary outcomes and describition of Swical Lebridowing you comes and descriation of swical technique	USA USA USA USA New Zealand New Zealand China	expert article Editorial commentary review article retrospective cohort study review article systematic review retrospective case control study meta-analysis	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis Treatment: surgical management Aetiology Diagnosis Aetiology Treatment : surgical management
Wolff and Scanaliato (2022) (126)           Wong et al. (2022) (34)           Wong et al. (2022) (132)           Woodward et Philippon (2018) (110)           Woodward et al. (2020) (62)           Wu et al. (2023) (112)           Wu et al. (2020) (127)           Wyatt et al. (2017) (56)	Femoral Version in Hip Arthroscopy: does it matter? Editorial Commentary: The Importance of Capsular Closure Following Hip ArthroscopydLeave No Trace: An Outdoorsman's Ramblings Physical Examination of the Hip: Assessment of Femoroacetabular Impingement, Labral Pathology, and Microinstability Patients With a High Femoroepiphyseal Roof With Concomitant Borderline Hip Dysplasia and Femoroacetabular Impingement Syndrome Do Not Demonstrate Inferior Outcomes Following Arthroscopic Hip Surgery Persistent or recurrent symptoms after arthroscopic surgery for femoroacetabular impingement: A review of Imaging findings Microinstability of the hip: a systematic review of the imaging findings Ugamentum teres tears and increased combined anteversion are associated with hip micro-instability in patients with borderline dysplasia Arthroscopic labral debridement versus labral repair for patients with femoroacetabular innignement: A meta-analysis The Femoro-Epiphyseal Acetabular Roof (FEAR) Index: A New Measurement Associated With Instability in Borderline Hip Dysplasiar Capsular repair for instability following hip arthroscopy for femoroacetabular innignement: Preliminary outcomes and	USA USA USA USA New Zealand New Zealand China China Switzerland	expert article Editorial commentary review article retrospective cohort study review article systematic review retrospective case control study meta-analysis retrospective diagnostic accuracy study Abstract:	Aetiology Treatment: surgical management Treatment: surgical management Definition Diagnosis Treatment: surgical management Aetiology Diagnosis Aetiology Treatment : surgical management Prevalence

#### Supplementary Table A2 diagnostic accuracy of tests for microinstability

Author year Bolia 2019 (39)	Name of test Hip Dial Test (with feeling of instability)	Population FAI and labral tear, with feeling of instability	Microinstability	No instability	Total n	TP	FP FN	N TN	Hips Persons	SN (95% CI)	SP (95% CI)	LR-	LR + 2.05 ( NA to NA)	Cut off	OR	AUC	Reference test	Comments
Bolia 2019 (39)	Hip Dial Test (with capsular insufficiency)	FAI and labral tear, with capsular insufficiency				-	-			0.34 (0.26 to 0.43)	0.82 (0.77 to 0.83)	0.82 ( NA to NA)	1.75 ( NA to NA)				intraoperative testing	
Bolia 2019 (39)	Hip Dial Test (with feeling of instability and capsular	FAI and labral tear, with feeling of instability and								0.14 (0.09 to 0.18)	0.97 (0.95 to 0.99)	0.88 ( NA to NA)	4.68 ( NA to NA)				feeling of instability and intraoperative testing	
Curtis 2023 (53)	insufficiency) passive range of motion flexion + rotation arc > 200°	capsular insufficiency patients who undergo hip arthrosocpy	119	50	169	82	10 37	7 40	Hips			0.39 (0.29 to 0.53)	3.45 (1.95 to 6.08)				intraoperative criteria: ease of hip distraction (≤11 turns (<44 mm of traction)), residual hip subluxation after release of traction, straight anterior or lateral chondral and labral pathology	N per group was chosen
Economopoulos 2019 (7)	the pull test	patients with labral tear, undergoing hip arthroscopy	32	68	100	30	3 2	65	Persons	0.94 (0.80 to 0.98)	0.96 (0.88 to 0.98)	0.07 (0.02 to 0.25)	21.25 (7.00 to 64.48)	> 1.3 cm			at least one microinstability test positive out of three (ab-HEER, prone instability, HEER)	
Hatem 2020 (55)	anterior-sector-angle below 58° on axial MRI	30 symptomatic unstable hips in flexion under dynamic intraoperative examination were compared to 60 control hips	30	60	90	24	19 6	41	Hips	0.80 (0.63 to 0.90)	0.68 (0.56 to 0.79)	0.29 (0.14 to 0.61)	2.53 (1.67 to 3.82)			0,76	-axial MRI scans	N
Hoppe 2017 (5)	anterior-horn-angle over 50° on axial MRI	30 symptomatic unstable hips in flexion under dynamic intraoperative examination were compared to 60 control hips	30	60	90	23	17 7	43	Hips	0.77 (0.59 to 0.88)	0.72 (0.59 to 0.81)	0.33 (0.17 to 0.63)	2.71 (1.73 to 4.24)			0,78	-axiai MRI scans	N per group was chosen
Hoppe 2017 (5)	Ab-HEER	patients with suspicion of microinstability who underwent hip arthroscopic surgery	62	47	109	50	5 12	2 42	Persons	0.81 (0.69 to 0.89)	0.89 (0.77 to 0.95)	0.22 (0.13 to 0.36)	7.58 (3.28 to 17.52)				intraoperative, 1 or more of the following criteria: (1) distraction of the	
Hoppe 2017 (5)	prone instability	patients with suspicion of microinstability who underwent hip arthroscopic surgery	62	47	109	21	1 41	1 46	Persons	0.34 (0.23 to 0.46)	0.98 (0.89 to 1.00)	0.68 (0.56 to 0.81)	15.92 (2.22 to 114.15)				hip under general anesthesia with body weight alone; (2) adequate distraction of the hip joint with less than 11 turns offine traction.	
Hoppe 2017 (5)	HEER	patients with suspicion of microinstability who underwent hip arthroscopic surgery	62	47	109	44	_		Persons	0.71 (0.59 to 0.81)	0.85 (0.72 to 0.93)	0.34 (0.23 to 0.51)	4.76 (2.36 to 9.61)				equivalent to 44 mm ofscrew traction (MIS Hip Interventions table; Maquet); (3) inability of the hip to fully reduce the joint after negative	
Hoppe 2017 (5)	≥1 test with positive results	patients with suspicion of microinstability who underwent hip arthroscopic surgery	62	47	109	54	_		Persons	0.87 (0.77 to 0.93)	0.79 (0.65 to 0.88)	0.16 (0.08 to 0.32)	4.09 (2.34 to 7.15)				intra-articular pressure is released and traction is removed; and (4) arthroscopic confirmation of microinstability, including tearing of the	
Hoppe 2017 (5)	≥2 tests with positive results	patients with suspicion of microinstability who underwent hip arthroscopic surgery	62	47	109	42	_		Persons		0.96 (0.86 to 0.99)		15.92 (4.06 to 62.46)				ligamentum teres, straight anterior labral tears, and an anterior inside- out chondral wear pattern.	
Hoppe 2017 (5)	All 3 tests with positive results	patients with suspicion of microinstability who underwent hip arthroscopic surgery	62	47	109	19	1 43	3 46	Persons	0.31 (0.21 to 0.43)	0.98 (0.89 to 1.00)	0.71 (0.60 to 0.84)	14.40 (2.00 to 103.78)					
Meyer 2022 (58)	FEAR index ≥ 3°	patients aged <40 years who underwent peri-acetabular osteotomy (PAO) for DDH or hip arthroscopy for FAI	99	116	215	79	22 20	94	Hips	0.80 (0.71 to 0.87)	0.81 (0.73 to 0.87)	0.25 (0.17 to 0.37)	4.21 (2.85 to 6.21)		17.05	0.86	Participants were defined as having unstable (DDH group) or stable (PAI group) higs and grouped according to the surgical procedure that they had. It is assumed that the correct surgical procedure was performed. The indications for PAO were an LCEA of <20° or an LCEA of 20-25° hindhschub, or probability.	
Packer 2018 (3)	cliff sign	patients who underwent hip arthroscopy for acetabular labral tear (MRI), cartilage defect (MRI), femoroacetabular impingement (radiographs or MRI), and/or hip microinstability (based on the 6 provocative hip instability tests)	44	52	96	39	14 5	38	Persons	0.89 (0.76 to 0.95)	0.73 (0.60 to 0.83)	0.16 (0.07 to 0.36)	3.29 (2.08 to 5.22)				Intraoperative, any of the following: (1) minimal traction required to distract the hip (often just manual traction by the senior author) after the administration of general anesthesia and muscular paralysis; (2) lack othip reduction after release of negative intraarticular pressure and traction prior to the start of hip attrinscopy; or (3) intraoperative findings of microinstability such as straight anterior or straight lateral labral tears	
Philippon 2013 (50)	Hip Dial Test (in whole study population)	patients undergoing hip arthroscopy			426				Persons	0.65 (NA to NA)	0.84 ( NA to NA)	0.42 ( NA to NA)	4.06 ( NA to NA)					
Philippon 2013 (50)	Hip Dial Test (in people without global laxity)	patients undergoing hip arthroscopy, without diagnosed global laxity (< 4 criteria described by Beighton)			374				Persons	0.70 ( NA to NA)	0.90 ( NA to NA)	0.33 ( NA to NA)	7.00 ( NA to NA)				Arthroscopic findings of capsular laxity	
Pullen 2022 (89) Ranawat 2017 (51)	central femoral head chondromalacia	patients who underwent hip arthroscopy for FAI and/or instability with femoral head chondromalacia	31	33	64	26	6 5		Persons				4.61 (2.20 to 9.67) 2.21 (1.62 to 3.02)			0.67	Diagnosis of microinstability was defined as patients with symptoms of intra-articular hip pain with conconstinat taxly of the symptomatic joint. Patients were determined to have an intra-articular source of hip pain if over 50 % relief of the hip pain following diagnostic intra-articular diagnosis, and ultimate confirmation was made at surger. Ease of distractibility was used to confirm the diagnosis. History, physical examination (discontroit associated with terminal history, physical examination (discontroit associated with terminal history, physical history).	
Ranawat 2017 (51)	external FPAW FABER	patients who had unilateral groin or hip pain patients who had unilateral groin or hip pain	54	145			14 25		Persons Persons	0.54 (0.41 to 0.66)	0.90 (0.84 to 0.94)	0.51 (0.38 to 0.69)	5.52 (3.17 to 9.63)			0.7	range of motion, as a result ofcapsular laxity), structural bony	
Ranawat 2017 (51)	combined: external FPAW + FABER FPAW	patients who had unilateral groin or hip pain	54	145	199 80		04 46		Persons	0.54 (0.05 to 0.74)	0.04 (0.40 += 0.70)	0.70 (0.47 + 4.00)	4.00 (0.05 to			0,77	abnormality related to dysplasia (lateral center-edge angle of < 25°) or	
Ranawat 2015 (52) Ranawat 2015 (52)	FABER	patients who presented with hip pain patients who presented with hip pain	26	54	80	14	21 12 2 15	2 33 5 52	Persons Persons	0.42 (0.26 to 0.61)	0.96 (0.87 to 0.99)	0.60 (0.43 to 0.84)	1.38 (0.85 to 2.26) 11.42 (2.73 to 47.84)				x-ray and/or MRI	
Safran 2021 (54)	Hip range of motion : flexion + rotation arc > $197.5^{\circ}$	patients undergoing arthroscopic surgery: 25 with isolated hip microinstability, 25 with isolated FAI, and 25 patients had combined microinstability with FAI	50	25	75	42	6 8	19	Persons	0.84 (0.71 to 0.92)	0.76 (0.57 to 0.89)	0.21 (0.11 to 0.41)	3.50 (1.72 to 7.10)				any patient requiring capsular plication for instability based on previously published intra-operative parameters at institution.	N per group was chosen.
Schwabe 2022 (60)	FEAR index ≥ 5°	patients diagnosed with borderline hip dysplasia (LCEA 20°-25°) and surgical treatment	70	106	176	23	8 47	7 98	Persons	0.33 (0.23 to 0.44)	0.92 (0.86 to 0.96)	0.73 (0.61 to 0.86)	4.35 (2.07 to 9.18)				surgical treatment with either arthroscopy (no instability) or	
Schwabe 2022 (60)	FEAR index ≥ 2°	patients diagnosed with borderline hip dysplasia (LCEA 20°-25°) and surgical treatment	70	106	176	27	12 43	3 94	Persons	0.39 (0.28 to 0.50)	0.89 (0.81 to 0.93)	0.69 (0.57 to 0.84)	3.41 (1.85 to 6.27)				periacetabuläre osteotomy (instability)	
Schwabe 2020 (59)	femoral version on low-dose CT	seventy consecutive hips with borderline acetabular dysplasia (LCEA 20°-25°) undergoing surgical treatment	44	26	70				Hips						1.1 (p=0.02)			
Schwabe 2020 (59)	alpha angle at 1 o'clock on low-dose CT	seventy consecutive hips with borderline acetabular dysplasia (LCEA 20°-25°) undergoing surgical treatment	44	26	70				Hips						0.91 (p=0.02)		symptoms of instability	
Schwabe 2020 (59)	radial acetabular coverage RAC at 1 o'clock on low-dose CT	seventy consecutive hips with borderline acetabular dysplasia (LCEA 20°-25°) undergoing surgical treatment	44	26	70				Hips						0.46 (p=0.003)			
Truntzer 2019 (2)	FEAR index	nondysplastic patients (LCEA $\gtrsim 25^\circ$ ) undergoing hip arthroscopic surgery	71	96	167	21	7 50	) 89	Hips	0.30 (0.20 to 0.41)	0.93 (0.86 to 0.96)	0.76 (0.65 to 0.89)	4.06 (1.83 to 9.01)	> -5°			Intraoperative, 2:1 of: (1) distraction of the hip under general anesthesia with body weight alone; (2) adequate distraction of the hip joint with s11 turns of fine traction, equivalent to 44 mm of screw traction (MIS Hip Interventions table, Maquet); (3) inability of the hip joint to fully reduce after engative intra-articular pressure was released and traction was removed; and (4) arthroscopic confirmation of microinstability, including tearing of the ligamentum trees, direct anterior labral tears, direct lateral labral tears, and an anterior inside- out chondral wear pattern.	
Wyatt 2017 (56)	FEAR index in borderline and dysplastic hips	surgically treated symptomatic borderline radiographically dysplastic hips	20	18	38	16	4 4	14	Hips	0.80 (0.58 to 0.92)	0.78 (0.55 to 0.91)	0.26 (0.10 to 0.64)	3.60 (1.48 to 8.78)	> 5°			on under the patient, migration of the femoral head either already visible on conventional radiographs or contenting of the head on AP abduction views, a break of Shenton's line, or the appearance of a crescent-shaped accumulation of gadolinium in the posteroinferior joint space at MR arthrography	information from table 3: they had missing values. The reason we have n = 38 we calculated SN and SP. Values are in line with their discussion part.
Zurmühle 2021 (57)	The crescent sign in axial plane on MRA	56 hips in the instability group (treated with PAO) and 70 hips with femoroacetabular impingement (FAI) as control group	56	70	126	38	8 18	3 62	Hips	0.68 (0.55 to 0.79)	0.89 (0.79 to 0.94)	0.36 (0.25 to 0.54)	5.94 (3.02 to 11.68)				all hips who had a PAO for symptomatic hip instability with an LCE angle < 20° and AI > 10° or unstable symptomatic borderline dysplasia with an LCE between 20 and 25° were located into the instability	
		56 hips in the instability group (treated with PAO) and 70													1		group. The FEAR-index and presence of a hypertrophic labrum were	

FAI, femoroacetabular impingement; N, number; SN, sensitivity; SP, specificity; IR, Ilielihood ratio; OR, odds ratio; AUC, area under the curve; Cl, confidence interval; MRI, magnetic resonance imaging; Ab-HEER, badvaction hyperextension external rotation; IEEA, femoro-epiphyseal ocetabular roof; DDH, developmental dysplasia of the hip; FPAW, foot progression angle walking; FABER, flexin abduction interval; MRI, magnetic resonance imaging; Ab-HEER, badvaction hyperextension external rotation; IEEA, hyperextension external rotation; IEEA, hyperextension external rotation; HEER, hyperextension external rotation; IEEA, femoro-epiphyseal ocetabular roof; DDH, developmental dysplasia of the hip; FPAW, foot progression angle walking; FABER, flexin abduction hyperextension external rotation; IEEA, hype

Author/year	Title	Population	Confirmation	Unit	Prevalence of hip micro- instability	Gender of micro- Instability group	Mean age of micro- Instability Group in years	Prevalence of hip micro- instability <u>and</u> FAI (pincer or cam)	Type of source
Economopoulos 2019 (7)	The Pull Test: A Dynamic Test to Confirm Hip Microinstability	100 patients with labral tear, undergoing hip arthroscopy	32 had hip micro- instability, 68 no micro- instability (confirmation with clinical tests)	Patients	0.32	28 female 4 male	31.8 ± 17.5		Prospective diagnostic accuracy study
Hoppe 2017 (5)	Diagnostic Accuracy of 3 Physical Examination Tests in the Assessment of Hip Microinstability	109 patients with suspicion of microinstability who underwent hip arthroscopic surgery	62 had micro- instability (intra- operative confirmation)	Patients	0.57	91.9% female	26.3		Prospective diagnostic accuracy study
Packer 2018 (3)	The Cliff Sign - A New Radiographic Sign of Hip Instability	96 patients who underwent hip arthroscopy	44 had micro- instability (intra- operative confirmation)	Patients	0.46	N/A	31.4 ± 10.9		Prospective cohort study
Ranawat 2017 (51)	Foot Progression Angle Walking Test A Dynamic Diagnostic Assessment for Femoroacetabular Impingement and Hip Instability	199 patients who had unilateral groin or hip pain	54 had hip instability (confirmation by history, physical exam, radiographs, or posttraumatic	Patients	0.27	N/A	N/A		Prospective diagnostic accuracy study

## Supplementary Table A3 Prevalence of hip microinstability

Author/year	Title	Population	Confirmation	Unit	Prevalence of hip micro- instability	Gender of micro- Instability group	Mean age of micro- Instability Group in years	Prevalence of hip micro- instability <u>and</u> FAI (pincer or cam)	Type of source
			sequelae leading to subluxation or dislocation)						
Ranawat 2015 (52)	Foot Progression Angle Walking Test- An Effective Dynamic Test for the Diagnosis of Femoroacetabular Impingement and Hip Instability	80 patients with hip pain	26 had instability (confirmation by radiographs and/or magnetic resonance imaging (MRI))	Patients	0.33	N/A	N/A		Prospective diagnostic accuracy study
Schwabe 2022 (60)	External validation of the fear index in the setting of borderline acetabular dysplasia	176 hips diagnosed with borderline hip dysplasia (LCEA 20–25°) and surgical treatment	70 hips had instability (confirmation by surgical treatment with either arthroscopy (no instability) or periacetabular osteotomy (instability))	Hips	0.397	N/A	N/A		Retro- spective diagnostic accuracy and prospective reliability study
Schwabe 2020 (59)	Acetabular Dysplasia: Three- Dimensional Deformity Predictors of the Diagnosis of Symptomatic Instability treated with Periacetabular	70 consecutive hips with borderline acetabular dysplasia (LCEA 20°-25°) undergoing surgical	44 hips had instability (confirmation by symptoms of instability)	Hips	0.629	N/A	N/A		Prospective cohort study

Author/year	Title	Population	Confirmation	Unit	Prevalence of hip micro- instability	Gender of micro- Instability group	Mean age of micro- Instability Group in years	Prevalence of hip micro- instability <u>and</u> FAI (pincer or cam)	Type of source
	Osteotomy	treatment							
Shibata 2017 (90)	Is there a distinct pattern to the acetabular labrum and articular cartilage damage in the non-dysplastic hip with instability?	953 hips for primary arthroscopy	279 hips with instability of which 204 had pincer, cam or mixed type morphology (73%) (intraoperative confirmation of micro- instability)	Hips	0.29	N/A	N/A	0.21	Retro- spective cohort study
Tibor 2013 (91)	Two or More Impingement and/or Instability Deformities Are Often Present in Patients With Hip Pain	112 hips undergoing MR arthrography of the hip for any reason Hips were excluded if presented: with pain after impingement or dysplasia surgery (28 hips) or for evaluation of high-grade dysplasia (defined as patients with	<ul> <li>57 of 112 hips had at least 1 radiographic instability factor</li> <li>47 of 112 hips had at least 1 radiographic instability and 1 radiographic impingement factor</li> <li>Each radiographic parameter was categorized as normal</li> </ul>	Hips	0.51	N/A	N/A	0.42	Retro- spective cohort study

Author/year	Title	Population	Confirmation	Unit	Prevalence of hip micro- instability	Gender of micro- Instability group	Mean age of micro- Instability Group in years	Prevalence of hip micro- instability <u>and</u> FAI (pincer or cam)	Type of source
		subluxation) or Legg-Calve'- Perthes disease (8 hips) or if radiographic information was incomplete (31 hips); 9 hips were excluded for combinations of exclusion criteria	or abnormal based on previous literature and, if abnormal, whether it was more characteristic of impingement or instability.						
Truntzer 2019 (2)	Can the FEAR Index Be Used to Predict Microinstability in Patients Undergoing Hip Arthroscopic Surgery?	167 nondysplastic hips (LCEA > 25°), undergoing hip arthroscopic surgery	71 hips had microinstability , of which 57 hips (80.3%) had cam, pincer or mixed morphology. (intraoperative confirmation of micro- instability)	Hips	0.43	83.1% female	29.7	0.34	Retro- spective validation study
Wyatt 2017 (56)	The Femoro- Epiphyseal Acetabular Roof (FEAR) Index: A New Measurement Associated With Instability in Borderline Hip Dysplasia?	39 surgically treated symptomatic borderline radiographically dysplastic hips	21 were unstable (confirmation by radiographs or MRA)	Hips	0.54	N/A	N/A		Retro- spective diagnostic accuracy study

LCEA lateral center-edge angle, MR magnetic resonance, MRA magnetic resonance arthrography