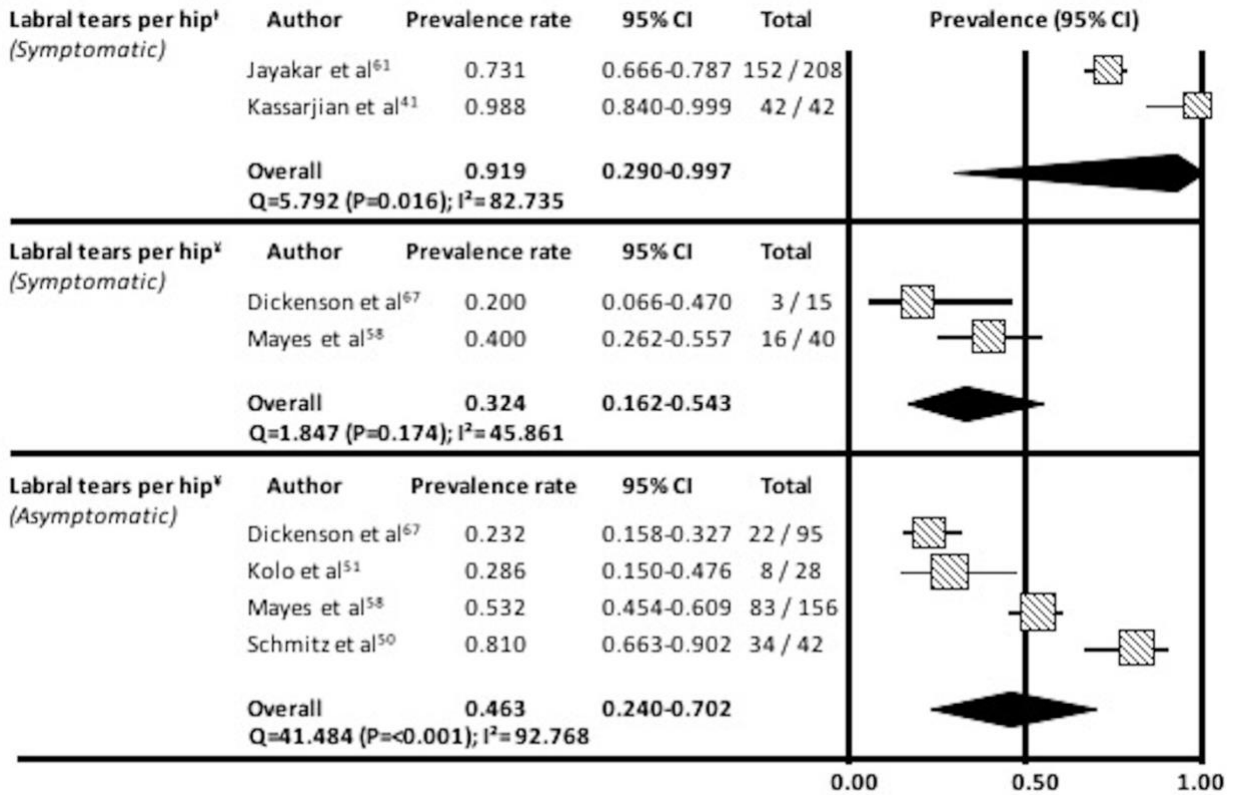
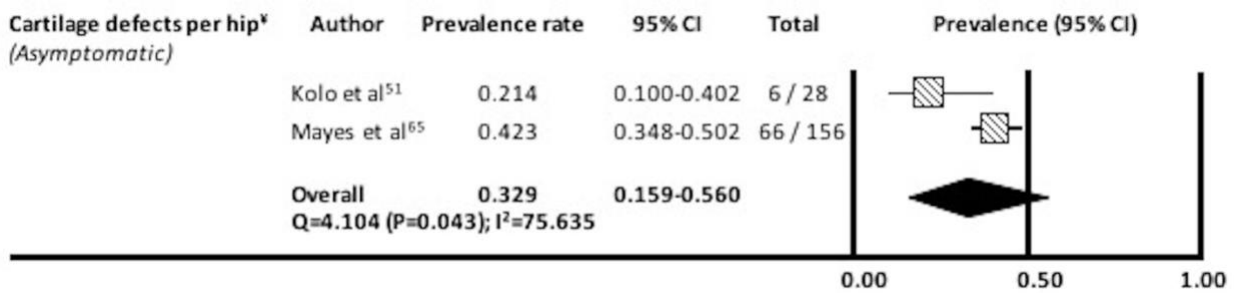


Figure 1. Prevalence and 95% CIs of labral tears in symptomatic and asymptomatic participants amongst studies that reported prevalence per hip



† = diagnosed with magnetic resonance arthrography; ‡ = diagnosed with magnetic resonance imaging

Figure 2. Prevalence and 95% CIs of cartilage defects in asymptomatic participants amongst studies that reported prevalence per hip



‡ = diagnosed with magnetic resonance imaging

Table 1. Prevalence of other pathologies not reported in ≥ 2 symptomatic and asymptomatic studies

Participant group	Per person	Per hip
Symptomatic	Avascular necrosis: 0% (<i>MR</i>) ⁶³ Diffuse signal increase in labrum: 6% (<i>MR</i>) ⁴⁵ Diminutive signal increase in labrum: 2% (<i>MR</i>) ⁴⁵ Degenerated labrum: 12% (<i>MR</i>) ⁶⁶ Labral intrasubstance degeneration: 13% (<i>MR</i>) ⁴⁵ Osteophytes: 32% (<i>MR</i>) ⁴⁵ Pigmented villonodular synovitis: 0% (<i>MR</i>) ⁶³ Subchondral bone cysts: 23% (<i>MR</i>) ⁴⁵ Subchondral sclerosis: 22% (<i>MR</i>) ⁴⁵ Synovitis: 1% (<i>MR</i>) ⁶³ Transient osteoporosis of the hip: 1% (<i>MR</i>) ⁶³	Avascular necrosis: 0% (<i>HR</i>) ⁵⁵ Bursitis: 0% (<i>HR</i>) ⁵⁵ Joint effusion: 7% (<i>MR</i>) ⁶⁷ Increased labral signal: 20% (<i>MR</i>) ⁶⁷ Labral degeneration: 41% (<i>MR</i>) ⁵¹ ¥ Labral fraying: 20% (<i>MR</i>) ⁶¹ Labral ossification: 3% (<i>MR</i>) ⁵¹ ¥ Os acetabuli: 40% (<i>MR</i>) ⁴¹ Osteophytes: 5% (<i>HR</i>) ⁵⁵ Subchondral bone cysts: 14.5% (<i>HR</i>) ⁵⁵ Transverse ligament tears: 3% (<i>HR</i>) ⁵⁵
Asymptomatic	Acetabular rim damage: 15% (<i>HR</i>) ⁵⁴ † Degenerated labrum: 10% (<i>MR</i>) ⁶⁶ Hip effusion: 0% (<i>HR</i>) ⁴⁸ Labral deformity: 10% (<i>LR</i>) ⁵² Labral ganglions: 21% (<i>LR</i>) ⁵² Labral ossification: 14% (<i>LR</i>) ⁶⁴ Osseous bumps: 20% (<i>MR</i>) ⁴⁰ ; 20% (<i>MR</i>) ⁴⁹ Rim fracture: 11% (<i>MR</i>) ⁴⁹ Subchondral bone cysts: 16% (<i>MR</i>) ⁴⁹	Acetabular rim damage: 0% (<i>HR</i>) ⁵⁴ ‡ Joint effusion: 8% (<i>MR</i>) ⁶⁷ Increased labral signal: 22% (<i>MR</i>) ⁶⁷ Labral degeneration: 43% (<i>MR</i>) ⁵¹ Labral ossification: 14% (<i>MR</i>) ⁵¹ Osseous bumps: 3% (<i>HR</i>) ⁵⁷

† = Study group only; ¥ = Study group included symptomatic and asymptomatic hips;

‡ = Control group only

Table 2. Additional study population characteristics for studies investigating asymptomatic participants

Author	Study population	Level of activity			Radiographic osteoarthritis			Cam morphology	Pincer Morphology
		Elite athlete	Non-elite athlete	Non-athlete	Not reported	Present (%)	Absent (%)	Not reported	Prevalence (%)
Ayeni et al ⁴⁰	Subjects	x						x	AA >50°: 55% [¥] LCEA >40°: 10% [¥] Acetabular depth ≤0.0mm: 0% [¥] Cranial AV <15°: 25% [¥]
	Controls			x				x	AA >50°: 25% [¥] LCEA >40°: 10% [¥] Acetabular depth ≤0.0mm: 10% [¥] Cranial AV <15°: 25% [¥]
Farrell et al ⁵⁹	Subjects	x						x	AA ≥50.5°: 55% [¥] Not reported
	Controls		x					x	Not reported Not reported
Georgiadis et al ⁶⁰	Subjects							x	Not reported Not reported
Lahner et al ⁴²	Subjects		x					x	AA >55°: 59% [¥] Not reported
	Controls		x					x	AA >55°: 40% [¥] Not reported
Lahner et al ⁵⁷	Subjects	x						x	AA >55°: 34% [¥] LCEA >40°: 0% [¥]
	Controls					x		x	AA >55°: 2.7% [¥] LCEA >40°: 4.5% [¥]
Lee et al ⁶⁴	Subjects		x					x	Not reported Not reported
Leunig et al ⁵²	Subjects							x	Gr ≥1: 22% [¥] Gr ≥2: 0% [¥] Acetabular depth ≤ 3mm: 10% [¥]
	Controls					x		x	Gr ≥1: 71% [¥] Gr ≥2: 24% [¥] Acetabular depth ≤3mm: 6% [¥]

Mineta et al ⁶²	Subjects		x		x [#] 100%	AA >55° or FHNO ratio <0.15: 45% [□]	LCEA >40° or AI <0° or central AV <15° or cranial AV <0°: 37% [□]
Panzer et al ⁴⁶	Subjects		x		x	Not reported	Not reported
Philippon et al ⁵³	Subjects		x		x	AA ≥55°: 75% [¥]	Not reported
	Controls		x		x	AA ≥55°: 42% [¥]	Not reported
Register et al ⁴⁹	Subjects		x		x	Not reported	Not reported
Schmitz et al ⁵⁰	Subjects		x		x	Not reported	Not reported
Silvis et al ⁴⁸	Subjects	x	x		x	AA >55°: 39% [¥]	Not reported
Yuan et al ⁵⁴	Subjects		x		x [‡] 100%	AA >55°: 68% ^λ AA >55°: 55% [¥]	+ve crossover sign: 32% ^λ +ve ischial spine sign: 41% ^λ
	Controls		x		x	AA >55°: 8% [¥]	Not reported

AA, alpha angle; ¥, determined with magnetic resonance imaging; LCEA, lateral centre edge angle; mm, millimetres; AV, acetabular version; Gr, grade; †, Kellgren and Lawrence grade 0 and 1; FHNO, femoral head-neck offset; □, determined with computed tomography; AI, acetabular index; AV, acetabular version; ‡, Tonnis grade 0; λ, determined with x-ray

Table 3. Additional study population characteristics for studies investigating symptomatic participants

Author	Study population	Symptoms	Level of activity			Radiographic osteoarthritis			Cam morphology Prevalence	Pincer Morphology Prevalence	
			Elite athlete	Non-elite athlete	Non-athlete	Not reported	Present (%)	Absent (%)			Not reported
Domb et al ⁵⁵	Subjects	Hip pain	x						x	AA >55°: 73% ^{¥†}	Not reported
Jayakar et al ⁶¹	Subjects	Hip pain				x	x [‡] 35.6%	x [‡] 64.4%		AA >55°: 28% [†]	Not reported
Kassarjian et al ⁴¹	Subjects	Clinical signs of FAIS				x			x	AA >55°: 93% [†]	Not reported
Narvani et al ⁴⁴	Subjects	Groin pain	x	x					x	Not reported	Not reported
Neiman et al ⁶³	Subjects	Hip pain				x			x	Not reported	Not reported
Neumann et al ⁴⁵	Subjects	Mechanical symptoms of the hip				x			x	Not reported	Not reported
Pizzolatti et al ⁴⁷	Subjects	Suspicion of labral tear				x			x	33%*	12%**

AA, alpha angle; ¥, determined with magnetic resonance imaging; †, determined with magnetic resonance arthrography; †, Tonnis grade 1-3; ‡, Tonnis grade 0; FAIS, femoroacetabular impingement syndrome; *, no quantitative measure reported for determining cam morphology; **, no quantitative measure reported for determining pincer morphology

Table 4. Additional study population characteristics for studies investigating symptomatic and asymptomatic participants

Author	Study population	Symptoms	Level of activity			Radiographic osteoarthritis			Cam morphology Prevalence (%)	Pincer Morphology Prevalence (%)
			Elite athlete	Non-elite athlete	Non-athlete	Not reported	Present (%)	Absent (%)		
Dickenson et al ⁶⁷	Subjects	Hip pain	x					x	Not reported [§]	Not reported [§]
	Controls	No hip pain	x					x	Not reported [§]	Not reported [§]
Ji et al ⁵⁶	Subjects	Mechanical hip pain for 3/12 +ve clinical examination			x			x	AA >50°: 7% [‡]	LCEA >39° or central AV <10° or cranial AV <0°: 59% [‡]
	Controls	No hip pain			x			x	AA >50°: 14% [□]	LCEA >39° or central AV <10° or cranial AV <0°: 37% [□]
Kolo et al ⁵¹	Subjects	Hip pain and no hip pain	x					x	AA >55°: 2% [¥]	Acetabular depth (+ve/normal if centre of femoral head is lateral to line connecting ant/post acetabular rim)/Acetabular version (determined by the angle between the sagittal direction and lines drawn between the ant/post acetabular rim; +ve when inclined medially/-ve when inclined laterally): 0% [¥]
	Controls	No hip pain				x		x	AA >55°: 0% [¥]	Acetabular depth (+ve/normal if centre of femoral head is lateral to line connecting ant/post acetabular rim)/Acetabular version (determined by the angle between the sagittal direction and lines drawn between the ant/post acetabular rim; +ve

when inclined medially/-ve when inclined laterally): 4%[‡]

Mayes et al ⁵⁸	Subjects	Hip pain in last 3 months	x	x		x	Not reported	Not reported
	Controls	No hip pain	x	x		x	Not reported	Not reported
Mayes et al ⁴³	Subjects	Hip pain in last 3 months	x	x		x	Not reported	Not reported
	Controls	No hip pain	x	x		x	Not reported	Not reported
Mayes et al ⁶⁵	Subjects	Hip pain in last 3 months	x	x		x	Not reported	Not reported
	Controls	No hip pain	x	x		x	Not reported	Not reported
Teichtahl et al ⁶⁸	Subjects	Hip pain with radiographic hip OA			x	x [‡] 100%	Not reported	Not reported
	Controls	No hip pain			x	x [‡] 100%	Not reported	Not reported
Tresch et al ⁶⁶	Subjects	Symptomatic individuals (groin pain >3/12, +ve FADIR test and hip int rot <20°) with FAIS			x		52% ^{†*}	16% ^{†**}
	Controls	Asymptomatic individuals (-ve FADIR test and hip int rot >25°)			x		Not reported	Not reported

§, information regarding prevalence of morphology relative to symptoms not reported in original data paper; AA, alpha angle; ¶, determined with computed tomography arthrography; □, determined with computed tomography; ¥, determined with magnetic resonance imaging; OA, osteoarthritis; ‡, Kellgren and Lawrence grade 2 to 4; †, never had a diagnosis of hip osteoarthritis made by a medical or allied health professional; FADIR, flexion adduction internal rotation; int rot, internal rotation; FAIS, femoroacetabular impingement syndrome; †, determined with magnetic resonance arthrography; *, no quantitative measure reported for determining cam morphology; **, no quantitative measure reported for determining pincer morphology
