

What We'll cover

- Anatomy of the hip and related structures
- Assessing the hip joint & SI Joint motion, role of core in hip motion
- Corrective strategies, mobility vs. stability
- Specific skills: hip hinge, squat, frontal plane movements, rotations



Anatomical Differences



Syfy



BRAZZER



Seriously, WTF Hunter???

















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Those shorts aren't regulation length. Fail Fred. Fail.



























Table-2 Distribution of femoral anteversion angle										
Angle of		Ferr	ale			M	ale		Total %	
Anteversion	Le	ft	Rig	ght	b	eft	Riį	ght		
(In degree)	No.	%	No.	%	No.	%	No.	%		
< 0	1	3.7	1	4.3	1	4.5	3	15	6.5	
-1 to +1	1	3.7	1	4.3	2	9	1	5	5.4	
+1 to +5	4	14.8	2	8.6	0	0	2	10	8.6	
+5 to +10	3	11.1	3	13	3	13.6	2	10	11.9	
+10 to +15	3	11.1	14	60.8	3	13.6	11	55	33.6	Zalawadia et al
+15 to +20	11	40.7	2	8.6	9	40.9	1	5	25	Vol. 1(3), July-
>20	7	25.9	0	L _o	4	18.1	0	0	11.9	Sept.











Normal range of hip ROM Variable Measurement Gender (male/Female) 104/96 28(mean), 34(median), 19-89 (range)

- Age
- True hip flexion
- Hip Extension
- Active straight leg raise Leg raise (w spine flex)
- 5-40 (mean 25)

80-140 degrees (mean 85)

- 30-90 (mean 70)
- 50-90 (mean 86)

Ison & Aspinal (2008) Measurement of hip range of flexion-extension and straight-leg raising. lin Orthop Relat Res. 2008 Feb;466(2):281-6

What's the Point?

- Femoroacetabular anteversion ++ flexion, -- extension
- 45 degrees Acetabular abduction (lateral placement) ++ flexion, >45 degrees decreased rotation & adduction. 45-55 degrees gave best overall mobility
- Thicker femoral necks decreased ROM D'Lima et alJ Bone Joint Surg Am. 2000 Mar;82(3):315-21.







Prevalence of FAI

- Asymptomatic cam deformities: 37% → 54.8 in athletes & 23.1% general population
- Asymptomatic pincher deformities: 67% → 76 in athletes & 61 in GP
 - Frank et al (2015) Arthroscopy Jan 28 (epub ahead of print)
- Post-op, retroversion has clinically significant reductions in outcome measures vs. anteversion
 Fabricant et al (2015) <u>J Bone Joint Surg Am. 2015 Apr 1;97(7):537-43</u>

The Hip and SI Joint



- Radiographs of hips in patients with SI joint pain:
- 33% had cam impingements, 47% had deep hip sockets or medial protrusion into pelvis
 Morgan et al (2013) <u>Hip Int. 2013</u> <u>Mar-Apr;23(2):212-7</u>

What the Hell Was The Point of That??

- Everyone is different
- Not everyone should or ever will squat ATG
- Forcing a range of motion on someone who can't achieve it results in bad things.
- Varying foot position, width, depth, front/back alignment is necessary to find individual optimal









"The failure of an individual you're working with to deep squat, in many cases, cannot be corrected." -Dr. Stuart



ſED	Stratifying Hips					
ROVER	V. LIMITED FLEX, NO ++ w/ ABD, GOOD EXTEN. GLOBALIY LIMITED	RESTRICTED FLEX, GREAT EXTEN. FEW LIMITS				
RETI	RESTRICTED FLEX, BEST w/ ABD, GOOD EXTEN. GLOBALIY LIMITED	NOT FULL FLEX, BEST w/ABD, GOOD EXTEN. FEW LIMITS				
ERIED	NOT FULL FLEX, NO ++w/ABD, LIMITED EXTEN. FEW LIMITS	≤ FULL FLEX, GREAT EXTEN. NO MOB LIMITS				
NTEVI	BEST FLEX w/ ABD, GOOD EXTEN. FEW RESTRICTIONS	FULL FLEX, ER, GOOD EXTEN, HIGH MOBILITY				
Y	THICK NECK, DEEP SOCKET	THIN NECK, SHALLOW SOCKET [≿]				







How to Tell

Passive table assessment

- Bip Scour McGill, Low Back Disorders 2nd ed (2007)pg 199
- B Look for hip movement limits, painful spots, mapping their mobility → DON'T DIAGNOSE!!
- Supine abduction/ER- FABER test
- Prone extension femoral nerve test
- Prone rotations Craigs test

How to Tell

Active Assessment

Rockbacks – alter knee position to observe hip flexion

- Big Hip bridging, 3-point hip extension
- Supported squat depth before butt wink
- Unsupported squat depth before butt wink

How to Tell

Stuff that gets in the way:

Soft tissue restriction, degenerative changes, injuries, fear/guarding

- Test, corrective exercise, re-test to see change
- If change occurred, you just found your warm up.
- If no change, move on

Check for	Test	What it means
Structure	Passive Mobility	Theoretical limitation to active range available
CNS, motor patterns	Stability series, Novel movement	If (+) with stabilization then (-) when removed, work more with ++ stability. If movement gets easier with reps, could be novely
Strength & Conditioning	Reps and More Reps	Train hard, and stop when fatigue disrupts movement quality

Corrective Options

- Mobility vs. Stability?
- If basic core exercises ++ ROM in any test, they need stability as their warm up
- If stability work doesn't ++ ROM, they'd benefit from active mobility & pattern grooving
- If ROM doesn't ++ with corrections, red light situation. Work within limits

Ask One Simple Question

What did that do??









Correctives

- Proximal Stability Affects Distal Mobility
- External Hip Rotation Front planks
- Internal Hip Rotation Side planks
- Straight Leg Raise Active hip flexion
- Deep Squat High Tension Dead Bugs



OVERHEAD PRESS BACK SQUAT FRONT SQUAT DEADLIFT BENCH PRESS HIGH PULLS, CLEANS OVERHEAD SQUAT JERKS, SNATCHES PUSHUPS, CHIN UPS



















Breathing

- Diaphragm roof & main anchor point for most core muscles.
- Inhalation: diaphragm distally, ++ pressure in abdominal cavity → distention "pressure belly
- Diaphragm & abs drive into abdomen, create
- pressure gradient around spine to increase stability.
- Solution = Stability → -- hip mobility.







Breathing

- Mobility requires more parasymathetic stimulation than sympathetic, but needs to build off sympathetic stabilization
- Long, slow breathing with more of a "release" of breath versus expulsion
- Syden version of the second se

Active Mobility - Isolated

- Clamshells
- Hip bridges, pelvic tilting
- Pigeon, seated rotations
- Ankle grab baby breathing, goalie stretch
- \circledast $\frac{1}{2}$ kneeling glute pulse, hip rotations

Table Instantaneous hip extension torque at selected ranges in 3 different straight-leg hip extension exercises					
	Instantaneous hip extension torque, Nm				
Exercise	90 °	135°	180 °		
Good morning	478	338	0		
45° Back extension	338	478	338		
Horizontal back extension	0	338	478		
Contreras et al (2013) JSCR, 35(2), April 2013					

Active Mobility - Integrated

- Flow mobility seated, pigeon, ½ kneeling swings
- Hip Hinge progressions
- Squat progressions
- 🏵 TGU
- crawling

Strength & Conditioning

- Squat back & front, single leg, skater
- Hip Hinge pull through, single leg, DL conventional & Sumo, swing, hip thrust
- Lunge matrix
- Loaded carries

Speed & Power

- Jumps
- Throws
- Olympic lifting
- Sprints
- COD agility

Big Rocks

- SASSESS their range of potential, work within it.
- Correctives should correct, otherwise they're fillers
- Use multiple approaches to strengthening & mobility
- Saggital plane strength transfers to other planes, but more specific movements offer much better transfer.
- Skill movements require rehearsal and practice, not more weight until ready.

