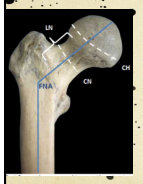
Why We Can't All Squat The Same and What To Do About It





Dean Somerset, BSc. Kinesiology, CSCS, CEP, MES

Who am I?

What industry professionals say about Dean Somerset...

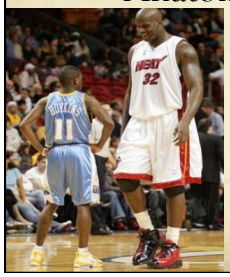
Dean Somerset has quickly emerged as an outstanding resource in the fitness industry. I really enjoy reading his stuff, and I'm sure you will, too.

Eric Cressey, ericcressey.com

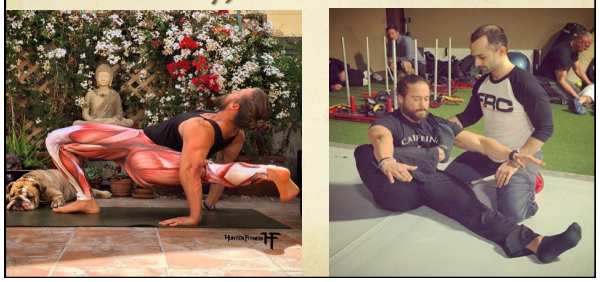
Dean Somerset is a movement genius. What does that mean? He is the opposite of why most people become frustrated with fitness. He will make you better and remove your pain-all while helping you see more results. It's what the best coaches know how to do, and Dean is part of an elite group.

Adam Bornstein, New York Times Best-Selling Author, Bornfitness.com

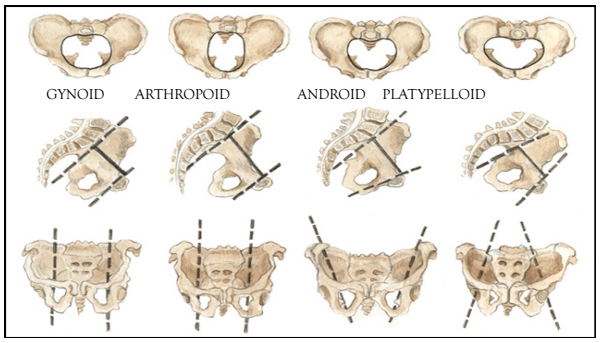
Anatomical Differences

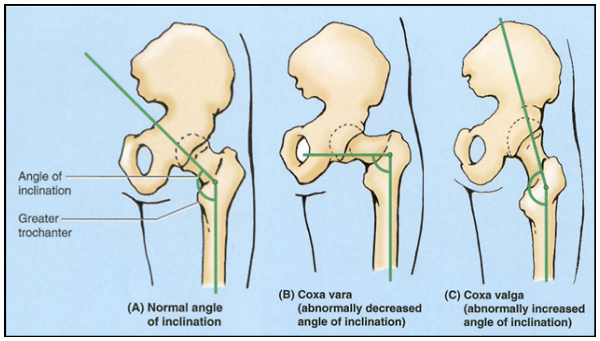



Seriously, WTF Hunter???



WARNING!! Nerd Alert





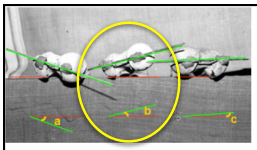
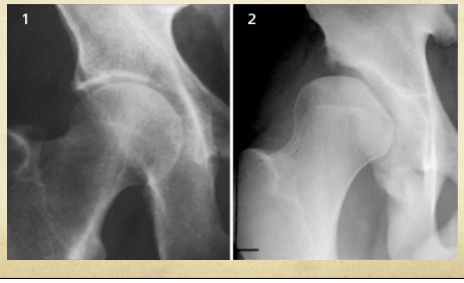


Figure-2 Femur retroversion = a (-13.7°), Normal anteversion = b (9.6°), Neutral version = c (–1° to 1°) in three specimens

Zalawadia et al (2010) NJIRM; Vol. 1(3), July-Sept.

Courtesy paulgrilley.com



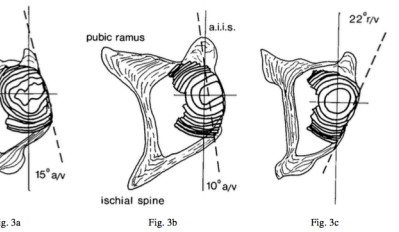
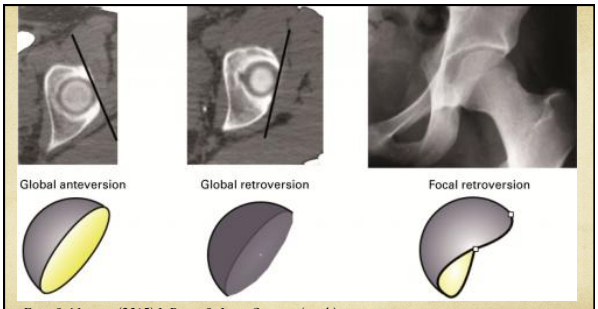


Fig. 3a Fig. 3b Fig. 3c

Contour maps of superimposed CT cuts of acetabulae and surrounds showing anteverted (a,b) and retroverted (c) alignment. The RE line is indicated for each (broken line). Its reference points are the prominences on the posterior and anterior halves of the acetabular edge. In a retroverted acetabulum each is always clearly identifiable. In an anteverted or lateral-facing acetabulum the anterior prominence may not always be distinct, in which case it is the mid-point anteriorly which is taken as reference (b). The axes shown are centred over the apices of the underlying femoral heads which, for clarity, are not included in the diagrams.

Retroverted acetabulums concentrate pressure on posterior Acetabulum.

Reynolds et al (1999). J. Bone & Joint. 81-B, 2

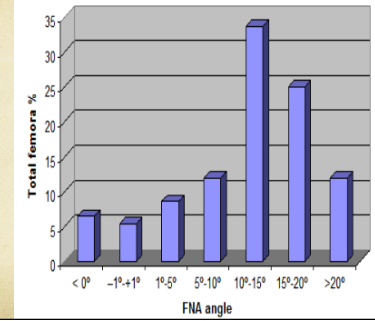


Fern & Norton (2015) J. Bone & Joint Surgery (epub)

Table-2 Distribution of femoral anteversion angle

Angle of Anteversion (In degree)	Female				Male				Total %
	Left		Right		Left		Right		
	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
+15 to +20	11	40.7	2	8.6	9	40.9	1	5	25
>20	7	25.9	0	0	4	18.1	0	0	11.9

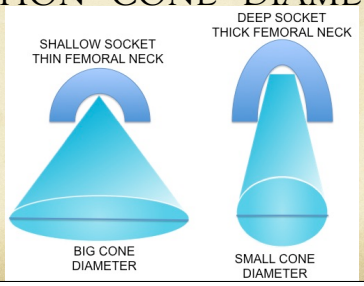
Zalawadia et al (2010) NJIRM; Vol. 1(3), July-Sept.



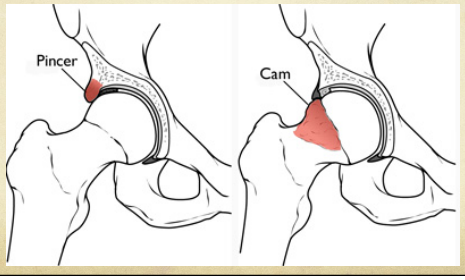
What's the Point?

- 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.

MOTION "CONE" DIAMETER



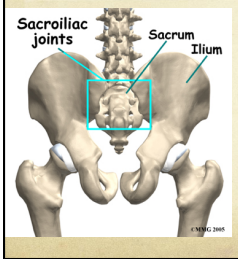
Bone Blocks - FAI



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) J Bone Joint Surg Am. 2015 Apr 1;97(7):537-43

The Hip and SI Joint

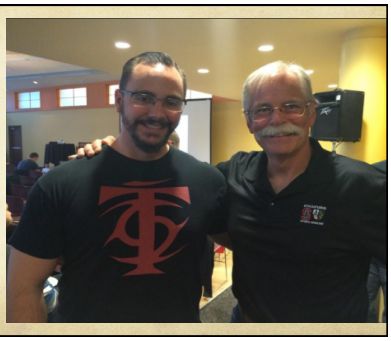


- Radiographs of hips in patients with SI joint pain:
- 33% had cam impingements, 47% had deep hip sockets or medial protrusion into pelvis
  - Morgan et al (2013) Hip Int. 2013 Mar-Apr;23(2):212-7

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 McGill



Stratifying Hips

RETROVERTED	V. LIMITED FLEX, NO ++ w/ ABD, GOOD EXTEN. GLOBALLY LIMITED	RESTRICTED FLEX, GREAT EXTEN. FEW LIMITS
	RESTRICTED FLEX, BEST w/ ABD, GOOD EXTEN. GLOBALLY LIMITED	NOT FULL FLEX, BEST w/ ABD, GOOD EXTEN. FEW LIMITS
	NOT FULL FLEX, NO ++ w/ ABD, LIMITED EXTEN. FEW LIMITS	≤ FULL FLEX, GREAT EXTEN. NO MOB LIMITS
ANTEVERTED	BEST FLEX w/ ABD, GOOD EXTEN. FEW RESTRICTIONS	FULL FLEX, ER, GOOD EXTEN. HIGH MOBILITY
	THICK NECK, DEEP SOCKET	THIN NECK, SHALLOW SOCKET

INFERIOR LATERAL INFERIOR LATERAL

How to Tell

Passive table assessment

- Hip Scour – McGill, *Low Back Disorders* 2nd ed (2007)pg 199
- 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
- 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 novelty
Strength & Conditioning	Reps and More Reps	Train hard, and stop when fatigue disrupts movement quality

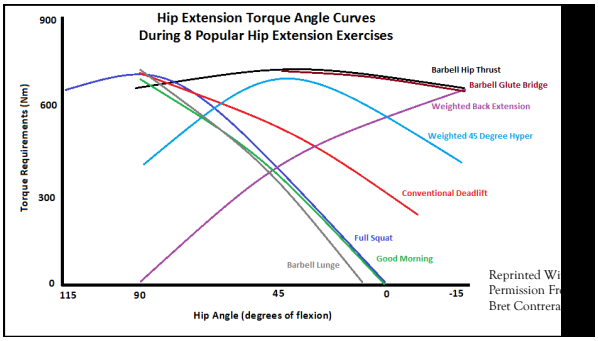
Corrective Options

- 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

Table
Instantaneous hip extension torque at selected ranges in 3 different straight-leg hip extension exercises

Exercise	Instantaneous hip extension torque, Nm		
	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



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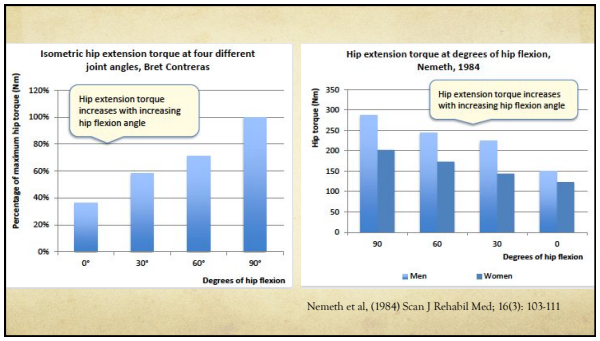
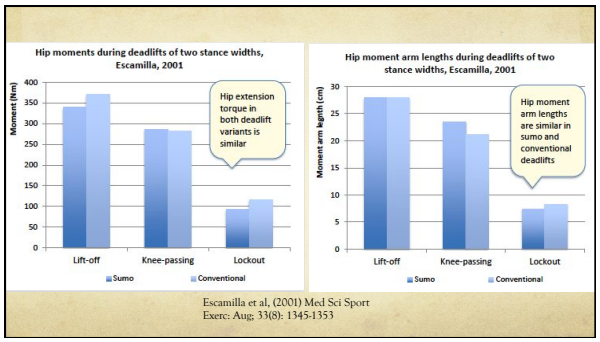
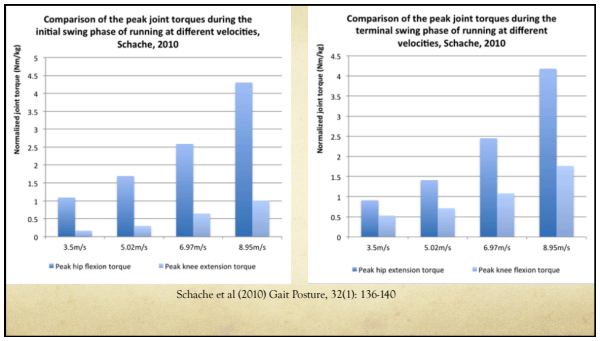


Nemeth et al, (1984) Scan J Rehabil Med; 16(3): 103-111



Escamilla et al, (2001) Med Sci Sport Exerc: Aug; 33(8): 1345-1353



Schache et al (2010) Gait Posture, 32(1): 136-140

To Recap

- Assess CLIENTS individual ROM, determine if structural or control limitations
- Find positions to best train client within their own limits
- Provide & remove stability to test ROM outcomes, use appropriate intervention
- Use a variety of exercises to get benefits from torque development through entire range of motion.

It's Time to Make Choice

- You could keep reading random websites, books, and blogs to try and figure out how the core functions

Or You Could Have it All Laid Out for You on a Silver Platter

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What's in "Advanced Core Training"

What are the components?

- 4:10 of condensed training knowledge
- All 5 components of core training
- Digital video series – Instant access + watch from anywhere in the World whenever you have time

Highlights

- Detailed outline of core / hip function
- Simplified approach to core training used for all clients (rehab to elite)
- All exercises and coaching cues

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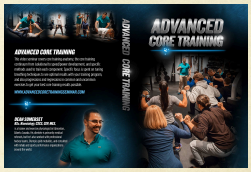
Who is this for?

- Trainers and group-ex instructors who have clients that desire a stronger and nicer core
- Anybody who trains people in pain or post-rehab
- Coaches looking to improve athlete performance



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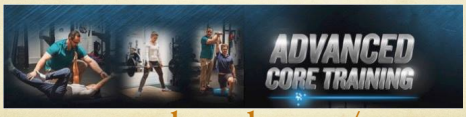
What Should This Cost?

- If you were to see Dean live it would cost $499, and that doesn't include flights and hotel.
  - Regular price for this video series is $99 …



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