Squats Don't Beat Out Hip Thrusts for Building the Glutes:

Matheus Barbalho & Paulo Gentil Have Some Serious Explaining to Do to the Sports Science Community Bret Contreras, PhD, CSCS*D

Summary:

- This new squat vs. hip thrust study is cringeworthy
- The women surely did additional lower body training
- The initial starting strengths don't add up
- The strength gains doesn't add up
- The strength transfer doesn't add up
- The protocol is inferior
- The protocol is impossible to carry out
- The results don't jibe with real world findings
- The results don't jibe with biomechanics or physiology
- The head researcher has an ethical conflict of interest
- All of this group's research warrants major investigation

Before I delve into things, I want to give a huge shout out to everyone who was skeptical of this study. I'm now convinced that the average female lifter possesses a far greater understanding of glute training than the top male experts. A cursory look through the results would have yielded some serious red flags, but a majority of people, especially bros, took the paper at face value. Wake up and open your eyes fitness friends!

Hopefully this post elucidates why it's important for people who evaluate research to either have a PhD or be trained in the art of evaluating research and even more important, why it's mandatory to train people for a living and actually have sufficient experience with glute training.

I also want to say that it pains me to go down the path of questioning the author's academic integrity, as it ultimately causes people to be distrustful of science. Most of the time, you can trust researchers to be honest. But every once in a while a bad egg pops up, and they usually end up getting caught.

The Study

Unless you've been living in a cave this past week, I'm sure you've heard the buzz surrounding a recent study that was published titled <u>Back Squat vs. Hip Thrust Resistance-training Programs in</u> <u>Well-trained Women</u>. Here's what the study showed (I converted things to pounds for my fellow metric-system-challenged Americans):

	Back	Squat	Group	4.8yrs exp	Hip	Thrust	Group	5.1 yrs exp
	Bodyweight	Pre	Post	% Change	Bodyweight	Pre	Post	% Change
1RM				35.9%				4.3%
Squat	153.2 lbs	202.6 lbs	275.4 lbs	(72.8 lbs)	148.8 lbs	205.3 lbs	214.1 lbs	(8.8 lbs)
1RM				14.0%				19.5%
Hip Thrust		220.7 lbs	251.5 lbs	(30.8 lbs)		217.6 lbs	260.1 lbs	(42.5 lbs)
Quad				12.3%				2.0%
Thickness		59.5 mm	66.8 mm	(7.3 mm)		59.8 mm	61 mm	(1.2 mm)
Glute				9.4%				3.7%
Thickness		36.1 mm	39.5 mm	(3.4 mm)		35.5 mm	36.8 mm	(1.3 mm)

Results of the Barbalho Squat vs. Hip Thrust Paper

On the surface, this looks like a big win for squats. In this experiment, squats cleaned hip thrust's clock in almost everything measured. Squats were better for quad and glute growth, they built the squat far better than hip thrusts, and they transferred more favorably to hip thrusts than hip thrusts did to squats. Hell, squats built the hip thrust almost as much as hip thrusts built the hip thrust. If this study were legit, there'd barely be any reason to hip thrust. But upon further investigation, this experiment falls flat on its face, as does the rest of the research published by the same group.

Additional Training

Nowhere in the study does it mention that the women were instructed to refrain from carrying out additional lower body training throughout the week. This is a big problem. If they did carry out additional training, then that's a major confounding variable. The study wouldn't be looking at solely squats vs. hip thrusts, it would be looking at squats plus whatever else they did vs. hip thrusts plus whatever else they did. If they didn't carry out additional training, then why didn't the authors mention this in the study, given that it's standard language in papers of these kind?

Does anyone believe that Brazilian women with an average of 5 years of training experience just did 6 sets per week for legs/glutes for the entire week? You'll see a video in a subsection below where my niece Gaby performs one of the workouts; it lasts just under 8 minutes long. So these trained women were okay with training legs/glutes for less than 8 minutes per week and didn't do any additional glute or hammy work for the rest of the week, in Brazil where glute training is paramount? Years ago my friend and former Ms. Bikini Olympia winner Nathalia Melo told me that many gyms in Brazil have entire sections dedicated to glute training. So for 12 straight weeks, highly trained Brazilian women supposedly just trained legs/glutes one day a week for 8-30 minutes long and never did anything else for their lower bodies?

In <u>THIS</u> study, it was shown that women typically perform around 40 sets per week for their glutes (men only do 12 sets a week). This jibes with my experience as a personal trainer and online coach, and it's similar to what I prescribe in my programs.

Table 2.	Weekly	sets	volume	performed	per	muscle	groups
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Marala anna			Men					Women			D 1
Muscle group	Med	IQ	Min	Max	Var	Med	IQ	Min	Max	Var	<i>r</i> -value
Pec	30.0	8.0	12	48	36	10.5	4.5	0	32	32	< 0.001
Lat	24.0	10.0	16	48	32	12.0	5.8	0	24	24	< 0.001
Del	80.0	28.0	6	128	122	28.0	12.0	0	70	70	< 0.001
Bic	51.0	18.0	22	76	54	20.0	8.5	0	56	56	< 0.001
Tri	54.0	20.0	24	72	48	18.0	13.0	0	48	48	< 0.001
Qua	16.0	12.0	0	40	40	30.0	18.5	16	56	40	< 0.001
Ham	8.0	6.0	0	18	18	16.0	9.3	0	28	28	< 0.001
TS	8.0	2.0	0	24	24	8.0	8.5	0	26	26	0.042
Glu	12.0	16.0	0	40	40	41.0	21.5	8	92	84	< 0.001
Abd	20.0	12.0	0	48	48	20.0	8.0	0	60	60	0.678

Med: median; IQ: interquartile ranges; Min: minimal value; Max: maximum value; Var: variations range; Pec: pectoral; Lat: latissimus dorsi; Del: deltoid; Bic: biceps brachii; Tri: triceps brachii; Qua: quadriceps; Ham: hamstrings; TS: triceps surae; Glu: gluteus; Abd: abdominals

Bros do 12 sets of glutes per week whereas women do 40

If these women were in fact highly trained and could squat 205 lbs, and they went from performing tons of volume down to just 6-sets per week done on one training day for 12 weeks, they surely would have lost muscle size and strength (or at best maintained). But this wasn't the case, as you'll see below.

This casts serious doubt on the legitimacy of the study.

Starting Strength

As shown above, the study participants had a hip thrust 1RM of around 220 lbs. When I personally train women, even total beginners to lifting, I usually get them to hip thrust 225 lbs for several reps within 3 months. Barbalho's subjects had 5 years of training experience and could squat around 205 lbs, but their hip thrust strength was just 15 lbs greater than their squat.

Women who have sufficient experience with both squats and hip thrusts can typically hip thrust double what they can squat. Especially since the form has changed over the years, with the low scaps now resting against the bench (people are stronger this way, which partially explains why people are hip thrusting more weight than they were several years ago). The study utilized deep squats, which are harder than parallel squats, so this ratio of hip thrust to squat strength would be even more pronounced.

Even though this is common sense to lifters and coaches who train glutes regularly, I'll present you with several forms of evidence pertaining to this strange squat to hip thrust ratio seen in the study:

- a) Glute Squad
- b) Survey with > 8K responses
- c) Swedish Training Log App data with > 46K users

d) Examples from the Literature and my Lab



Here are some members of my own Glute Squad:

Click here to watch this video: https://youtu.be/f85EiqBsA8U

	Ashley	Kiana	Allegra	Sarah	Hannah	Carlie	Average
1RM Squat	220	245	200	225	220	275	230.8
1RM Hip Thrust	500	405	435	415	500	700	492.5

Glute S	quad S	Sample	of Squat	and Hip	Thrust	Strength
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This ends up amounting to a 2.13 hip thrust/squat ratio.

I surveyed my followers (before anyone says that my sample is biased, you must know that 1) I heavily program squats in all of my Booty by Bret and Glute Lab programs, 2) no other population is as proficient at both lifts than my followers, and 3) I didn't lead them with this survey; I simply asked them to report their strength ratios...so I feel this is the best possible sample to examine for this purpose) on Survey Monkey and here were the findings (links to women's results, men's results):



Survey Results: Hip Thrust : Squat Strength Ratios

As you can see, men have a lower hip thrust to squat ratio, probably due to 1) bigger quads, 2) greater concern with squat strength, 3) less concern with hip thrust strength, and 3) less overall targeted glute training.

Daniel Richter, CEO of StrengthLog, a Swedish training app with 46,288 users, noticed the strange data associated with the study and wrote me the following message:

We have a workout app that is really popular in Sweden. It is called <u>StrengthLog</u> ("Styrkelabbet" in Swedish) and we had 46,288 users registering over half a million workouts and 10 million sets last year. We looked at the median 1RM in squats and hip thrust for female users, and they were 85 kg for the squat, and 130 kg for the hip thrust. <u>That is 53% difference!</u> Also, I doubt that the typical squat our users perform is done to 140 degrees knee flexion.

This is good data as it's representative of almost 50K users, and as Daniel pointed out <u>HERE</u>, many of the users are probably squatting above or to parallel, not rock bottom as seen in this study. If only deep squats were recorded, the number would likely be closer to 2.0.

Hell, even in the literature you see 15 year old female soccer players with no resistance training experience with greater 1RM hip thrusts than Barbalho's group (and this study used a more challenging hip thrust variation with the feet elevated too - see the full study <u>HERE</u>). Barbalho's trained women with an average of 5 years of lifting experience hip thrusted around 220 lbs, which was approximately 1.5X bodyweight, whereas Millar's women with no lifting experience hip thrusted (estimated from 3RM) 217 lbs, which was 1.7X bodyweight.

In my <u>TWIN</u> experiment, the twins weighed 140lbs, had never done any resistance training (but were active and played sports), and their 1RM hip thrusts were 195 lbs and 225 lbs, which was

1.4X and 1.6X bodyweight (having never done a barbell hip thrust). The squat twin started out squatting 95 lbs and hip thrusting 225 lbs and ended up squatting 155 lbs (60 lb improvement) and hip thrusting 265 lbs (40 lb improvement). The hip thrust twin started out squatting 95 lbs and hip thrusting 195 lbs and ended up squatting 135 lbs (40 lb improvement) and hip thrusting 315 lbs (125 lb improvement). So 6 weeks of training with me under a sound DUP protocol yielded a 315lb hip thrust, but Barbahlo's group that had been training 5 years and could squat 205 lbs (1.4X bodyweight) could only hip thrust 220 lbs?

This doesn't seem real.

Strength Gains

Let's pretend that this data is legit and the women were in fact squatting 205 lbs and only hip thrusting 220 lbs. The only way that this could happen would if the women had virtually no experience with the hip thrust. If this was the case, then they would have been highly untrained in the hip thrust and therefore exhibited huge strength gains during the 12-week training regimen. Their squat strength, which was very high to begin with, wouldn't have risen as much. But this wasn't the case. The participants trained once per week with a crummy protocol (which you'll learn more about below) and gained 75 lbs on their squat.

I want you to realize how significant this is. I've been training women for well over 2 decades, I've owned gyms, I have a CSCS with distinction, a PhD in sports science, I've worked with over 2,000 women, I attract high level athletes and competitors, and yet I have never had an advanced lifter go from the low 200's in the squat to the high 200's in 12-weeks. I'd like to hear from powerlifting coaches – have any of you taken a team of 12 already proficient female lifters and put an average of 75 lbs on their squat by prescribing just 6 sets a week on one training day for 12 weeks? And mind you this is full squats!

Now, I don't mean to sound petty, but this is important to me. Other trainers and lifters feel the same way. We don't even know if Barbalho even lifts. I don't know if he's ever trained a single person in real life. I don't know if he's certified. I don't know if he's spent time in a gym. Here's an image of him below, and <u>HERE</u> is his Instagram account.



World's Greatest Squat Coach?

This cat somehow managed to pull off the most amazing strength gains in S&C history. His group of female participants averaged 153 lbs in bodyweight. This is a good weight to be at to compete in the 148 lb weight class, as you could easily diet down for a couple days and shed water weight to make weigh-ins. As you can see in the charts below, going from 205 lbs to 275 lbs would take you from middle of the road to elite in powerlifting.

	WOMEN'S SQUAT (Lbs)							
BW	CLASS IV	CLASS III	CLASS II	CLASS I	MASTER	ELITE		
97	100	115	135	150	165	180		
105	105	120	140	155	175	190		
114	110	130	150	170	190	205		
123	130	155	175	200	220	240		
132	135	160	185	205	230	250		
148	140	165	190	215	240	260		
165	155	180	205	230	255	280		
181	160	190	215	245	270	295		
198	165	195	225	250	280	305		
198+	180	210	245	275	300	330		

Female Squat Standards (Lbs)

Women's Squat

Wt. Class	97	105	114	123	132	148	165	181	198	198 +
ELITE	179	189	204	240	250	260	279	295	305	330
MASTER	163	172	186	218	228	237	254	268	278	300
CLASS I	147	155	167	197	205	213	229	242	250	271
CLASS II	131	138	149	175	183	190	204	215	223	241
CLASS III	113	119	129	151	158	164	176	186	192	208
CLASS IV	97	102	110	130	135	140	151	159	165	178

Women's Powerlifting Strength Standards for the Squat

And this is squatting to 140 degrees of knee flexion, which is even deeper than what's typically seen in powerlifting (which uses a parallel depth). All from doing just one leg day a week with 6 total sets on an inferior protocol (which you'll see below).

Anyone starting to roll their eyes and call bullshit yet?

Strength Transfer

One thing that amazed me when I conducted the <u>TWIN</u> experiment was that the hip thrust twin put 40lbs on her squat (from 95 lbs to 135 lbs) in 6 weeks despite having never performed a single repetition of a squat. We didn't even do bodyweight squats during the warm up. Not only that...her form improved markedly. 6 weeks of hip thrusts put 40 lbs on her squat, but 12 weeks of hip thrusts in the Barbalho study put only 9 lbs on the subjects' squats.

Check out the chart below. You'll note that out of all 6 published training studies involving hip thrusts and squats, the Barbalho paper showed the lowest absolute strength gains in the hip thrust, by far the greatest absolute strength gains in the squat, the lowest absolute strength transfer from hip thrusts to squats, and the lowest absolute strength transfer from squats to hip thrusts.

Study/ Length	Bodyweight/ Subjects	Hip Thrust to Hip Thrust Gains	Squat to Squat Gains	Hip Thrust to Squat Gains	Squat to Hip Thrust Gains
Contreras et al. 2017 6-weeks	172 lbs & 179 lbs Adolescent male athletes	109 lbs 43%	21 lbs 13% *front squats	12 lbs 7%	52 lbs 21%
Lin et al. 2017 8-weeks	154 lbs College baseball players	95 lbs 29%	were used	52 lbs 28%	
Fitzpatrick et al. 2019 12-weeks	153 lbs Female college athletes	71 lbs 33%			
Hammond et al. 2019 4-weeks	183 lbs & 168 lbs Trained males	55 lbs 15%	17 lbs 7%	17 lbs 7%	42 lbs 13%
Millar et al. 2020 6-weeks	124 lbs & 125 lbs Adolescent female athletes	51 lbs 24% *feet elevated hip thrusts were used	29 lbs 23%	31 lbs 25%	35 lbs 19%
Barbalho et al. 2020 12-weeks	149 lbs & 153 lbs Trained women	43 lbs 20%	73 lbs 36%	9 lbs 4%	31 lbs 14%

Summary of Existing Research on Squats & Hip Thrusts

Either Brazilian women don't respond well to hip thrusts, or the researchers are hiding something.

Please note that in the <u>Lin</u> paper, college baseball players took their squat from around 185 lbs to 235 lbs by just hip thrusting (no squats) for 8 weeks. A 29% increase in hip thrust strength lead to a 28% increase in squat strength. Also please note that in the <u>Millar</u> paper, the hip thrust group experienced better squat gains than the actual squat group (31 lbs/25% vs. 29 lbs/23%).

This isn't just something you see in the research but not in real life. I can't tell you how many DMs I receive on a daily basis from lifters who inform me that their squats and deadlifts improved since they started incorporating hip thrusts into their regimen.

These data don't make sense!

Inferior Protocol for Hip Thrusts

If you truly wanted to see how effective hip thrusts are at growing the glutes, wouldn't you design a study that had the subjects hip thrusting 3X per week? One of the benefits of the hip thrust is that it doesn't create a lot of muscle damage or induce a ton of overall fatigue, so it can be performed more frequently. You definitely wouldn't just hip thrust once a week. For example, here's the protocol I designed for the twin study, which resulted in 28% and 21% increases in glute size (thickness) in just 6 weeks (in contrast to the 4% and 9% increases seen in the Barbalho paper):

Day 1			Day 2			Day 3		
Set	Repetitions	Load	Set	Repetitions	Load	Set	Repetitions	Load
1	10	~75%	1	6	~85%	1	15	~65%
2	10	~75%	2	6	~85%	2	15	~65%
3	10	~75%	3	6	~85%	3	AMRAP	~65%
4	AMRAP	~75%	4	6	~85%			
			5	AMRAP	~85%			

DUP design for the Twin Experiment

Moreover, wouldn't you want the tempo to better reflect what's seen in the real world? When people perform hip thrusts, they tend to explode up with the glutes then lower the weight back down quickly. Below is my rockstar client Carlie (whose glutes grew an inch in a month when I started having her crush hip thrusts twice a week) hammering out 500 lbs x 10 reps. She does it in less than 20 seconds:

https://www.instagram.com/p/B3IUny7AK2J/

In my experience, the glutes grow better when you don't cue the concentric phase and just aim to perform the movement explosively while under control through the full range of movement. Using a 2 seconds up/2 seconds down tempo is perfect for the squat but it short-changes the hip thrust (yes, I'm aware of my buddies' Brad Schoenfeld and James Krieger's meta-analysis on tempo <u>HERE</u>, but the hip thrust and glutes are different in my opinion).

More important than the tempo issues, however, is the strange linear periodization model used in the study. With a 2 up/2 down tempo to failure, subjects performed 6 sets as follows:

Week	Repetition range	Rest interval
1, 5, 9, 13, 17, 21	12–15 RM	30–60 s
2, 6, 10, 14, 18, 22	4–6 RM	3–4 min
3, 7, 11, 15, 19, 23	10–12 RM	1–2 min
4, 8, 12, 16, 20, 24	6–8 RM	2-3 min

Table 2 Training Periodization

Abbreviation: RM, repetition maximum.

Strange Periodization Schedule Used in Barbalho's Studies

I'm not a big fan of changing up the rep ranges AND rest periods. What's really strange is the week 1, 5, 9 protocol. Assuming 15 reps at 4 seconds per rep, this comes to a 60-sec set. If resting 30-sec, this equates to a 2:1 work to rest ratio (at best it's a .8 work to rest ratio if performing 12 reps and resting 60 sec). This is an endurance protocol, not a strength protocol. It may be decent for building muscle (far from ideal though), but definitely not strength.

In the video below, you'll see my niece Gaby performing this protocol. She's a 195 lb squatter, so pretty close to the subjects in this study. You will note that here were her loads and reps for the 6 sets:

Set 1: 115 lbs x 14 reps Set 2: 95 lbs x 11 reps Set 3: 65 lbs x 12 reps Set 4: 45 lbs x 15 reps Set 5: 45 lbs x 10 reps Set 6: 45 lbs x 8 reps



Click here to watch this video: https://youtu.be/JLGP08Aw6Bw

The loading for almost half the reps in this protocol was 23% of 1RM. This isn't building any strength folks!

And the week 3, 7, 11 protocol isn't great for maximum strength either. You'll definitely never see a powerlifter ever perform a protocol like this.

Somehow, with a 12-week plan where half the weeks are poorly suited for building strength, Barbalho pulled off a miracle and turned average squatters into elite powerlifters.

Can anybody say "too good to be true"?

Impossible Protocol

Up until this point, I've provided a lot of evidence to cast doubt on the legitimacy of this study. However, after seeing this video, I'm sure you'll agree that either the study never took place, or the authors aren't telling the entire story.

In <u>THIS</u> paper, the authors (which includes Paulo Gentil) went through a great deal of trouble to convince people that resistance training studies should carry out sets to failure to the point of actual failure, meaning that during squats the participant would have to lower the bar onto the supports. The recent hip thrust vs. squat study claimed to have trained to momentary failure in such fashion. They also claim to have at least 1 supervisor for every 5 subjects. What they did NOT say is that there was 1 supervisor for every 1 subject. If they did that, one would think they'd have made that claim.

Please watch the video I posted above of my niece Gaby performing the week 1, 5, 9 protocol and tell me how in the world this could be accomplished without a spotter for every lifter. And not just any spotter; there needs to be a strong and tall lifter who can curl or hang clean the barbell back to the J-cups and rapidly change the weights as needed. And if you don't have 1:1 supervision, then you CANNOT ensure that subjects hit full squat depth and locked out their hip thrusts (or ensure good form in general). When I did the twin study, I was all over the twins for every squat and hip thrust rep making sure they used good form and full ROM – that's necessary for a good study.

If there wasn't 1:1 supervision for the subjects, this study never took place in the manner the authors described. My guess is that they didn't truly go to failure (assuming this study actually took place).

Their volume papers utilized this same protocol, so this calls into question all of their published papers. For example, their other studies used the leg press. So they'd fail and need 1-2 spotters to help push the weight back up and then change the loads. 1 supervisor for every 5 lifters wouldn't be enough...hell 1 to 1 wouldn't be enough in the leg press for the men who were using around 500 lbs for some of their sets. THIS Barbalho study initially had 420 subjects using

the protocol...how in the hell could this have been achieved – does this university have hundreds of personal trainers and coaches supervising the participants?

This is a really big deal here. The authors have some SERIOUS explaining to do.

Doesn't Reflect Real World Results

We've made unbelievable gains in glute training in the past decade. Little to nothing has changed for calves, quads, hams, abs, lats, pecs, quads, and arms. But glute training is 180 degrees different than it was in the years BC (before Bret Contreras). Crazy glute development used to be a rare thing, but now it's much more common. What changed? It definitely wasn't the squats.

Before 2009, people mainly did squats, lunges, leg press, and deadlifts for glute development. Nowadays people do these same lifts with the addition of glute bridges, hip thrusts, frog pumps, pull throughs, back extensions, reverse hypers, seated hip abduction, cable hip abduction, banded work, and more.

And just look what this revolution has done for the Ms. Bikini Olympia evolution. Here are the winners from 2010 – 2019:



2010 – 2019 Ms. Bikini Olympia Winners

There's no doubt about it, bikini competitors possess the best glute development in the world. Not powerlifters who do squats and deadlifts all the time (if you think PLers have amazing glutes, please attend a local meet...I've been to 20+ and am never ceased to be amazed at the lack of superior glute development on a majority of competitors), and not CrossFitters who also do tons of squats and deadlifts. To build the best glutes, you have to do more than just squat. You need to hit multiple vectors to develop all the fibers and subdivisions of the glutes. Bikini competitors definitely squat, but they're not obsessed with their squat strength. They also hip thrust, hinge, abduct, etc.

I make a living by producing results. Not just with my Glute Squad, but also with my Personalized Programming and Booty by Bret members. If I switched to prescribing just 6 sets of squats once a week, all of my clients would backslide and atrophy. There are some great glute coaches out there just like me who are getting awesome results as showcased in their before/after pictures. Guess what? They all learned from me and have an almost identical system of training. We are getting the best results in the world for glute development. Let me repeat that. WE ARE GETTING THE BEST RESULTS IN THE WORLD. Until some other system starts outperforming us, why would we change it up? You can't learn about glute training in a lab. You have to be in the trenches lifting and training others.

My members and followers know what works. I have amassed over a million of them over time on my social media channels. They will tell you that they used to just squat and had no glutes to show for it. They will tell you that their glutes didn't begin to grow until they started hip thrusting and performing additional movements for the glutes.

I encourage all of you have transformed your glutes to speak up to the individuals who bought into this study and posted about it without ever taking the time to scrutinize it properly. You know what works and you know it's not just squatting. Don't doubt yourselves. Share this article, voice your opinion, and demand better from the biased bros.

Doesn't Reflect Biomechanical and Physiological Rationale

Squats are indeed a good glute exercise. They work the glutes through a large range of motion, stretch the glutes, and produce a decent amount of glute activation (more ROM is often good, but not always – see <u>HERE</u>). However, simultaneous hip and knee extension decreases the workload on the glutes (this is shown <u>THIS</u> key paper back in the day), and you won't get maximum tension on the glutes unless you're working hard during end-range hip extension when the glutes are at short muscle lengths. The hip thrust is as close as optimal as you're going to get for a glute building exercise. The knees stay bent which shortens the hammies and forces more contribution onto the glutes. It's very stable and requires very little coordination. It leads to the highest levels of activation and tension (something my colleagues listed below all fail to understand). And it can be performed frequently because it doesn't beat you up and is easy to learn. This greatly fast-forwards the hypertrophy process.

If you believe that mechanical tension is the sole driver of hypertrophy, then hip thrusts win. I can and will come up with a detailed biomechanical explanation for this in a future post, but all you have to do is palpate the glutes during squats and hip thrusts and you'll feel the difference. It's not rocket science.

If you believe that metabolic stress and muscle damage add to the hypertrophy formula, then hip thrusts would be better for metabolic stress whereas squats would be better for muscle damage. But too much damage is counterproductive, so squats are limited in their efficacy in that regard. All in all, biomechanically-speaking, hip thrusts are the better exercise for glute building compared to squats. But anyone with common sense would do variations of both in their routines.

The Aftermath

Now let's have some fun and discuss the aftermath of the publication of this shady study. Immediately upon this article's appearance on the internet, various articles, videos, and infographics emerged, all from male experts in the industry (see <u>Menno Henselmans</u>, <u>Lyle</u> <u>McDonald</u>, <u>Physeaque</u>, <u>Coach Kassem</u>, <u>Paul Carter</u>, and <u>Ben Carpenter</u>), with none of them scrutinizing it in the slightest degree. What's crazy is that you'd think that these guys would trust my judgment given that I own a gym, train a ton of women, and have numerous before/after pictures showing great gluteal results. I guess they think I'm deluding hundreds of thousands of clueless people every day. Do they respect women enough to ask them about their experiences? They must think that women aren't smart enough to determine what works best, which is really sad.

These are all big named people in the field, and yet none of them questioned this study or discovered all of the red flags that exist. For example, if a study was published showing that leg extensions greatly outperformed squats for quad growth, their bullshit meters would be on high alert. If the average weight lifted for squats was super light in comparison to the leg extension loads, they would NOT have bought into it. But they didn't even bat an eye when the same was true with hip thrusts vs. squats. And women were posting great points in the comments, only to be completely ignored by the bros.

ineke_pa The participants used almost the same weight for squats and hip thrusts in the study. No one would come up with the idea to compare the hypertrophy effects of 10 kg biceps curls with 10 kg deadlifts. If a study is thrust more than twice as much as I can squat. HT and BS are two completely different exercises. My BS 1RM is 90 kg, my HT 1 RM >200 kg. The design and interpretation of the results lacks common sense and logic. Of course you are not gonna make progress with HT if you're only using baby weights, half-assing your workout. If 200 kg weights, half-assing your workout.

Sara Hayden The hip thrusts they were doing seem super light in comparison to their squat weight. No wonder there wasn't much growth. I can thrust more than double what I squat and that seems to be pretty standard. Sounds like the thrusts weren't heavy enough to produce gains.

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Great points made by women to bros but left unanswered

Let's test these guys' integrity. Forward this link to them (and all the other people who shared it) and see if they make any correctional posts to their followers after seeing how crummy and shady this study truly is. My guess is that none of them actually care about their followers knowing the full story. We shall see. One thing is for certain. If these individuals don't make a

correctional post to their followers, then they do not care about their followers' results and should not be taken seriously as fitness professionals.

In the study, the authors mention greater tension on the glutes with squats compared to hip thrusts. In the posts linked above, many of the bros mentioned the same thing, and also hammered EMG as a predictive tool for hypertrophy (despite none of them having ever conducted an EMG experiment on the glutes to my knowledge). Why can't people just stay in their lanes? It is clear to me that they do not understand biomechanics and glutes. Some serious Dunning-Kruger Effect going on here.

The advantage of BS in relation to HT might be related to range of motion. In general, a larger range of motion is associated with higher muscle hypertrophy [26, 27]. If we analyze both exercises, HT has a short range of motion (~45°), because it starts from around 135° of hip flexion and ends with the hip extended. During the BS, on the other hand, the hip approaches the near full range of motion. In addition to the greater range of motion, the BS promotes greater stretching of the hip extensors, which can result in greater muscle tension [27–29], whereas the HT works with shorter muscle lengths, which might compromise muscle tension. This quote portrays a lack of biomechanical understanding and training experience

Even more alarming was the head researcher's quote following the publication of the study. Any good researcher knows that one study is just a piece of the puzzle. But not Paulo Gentil. He went straight to social media and proclaimed: "I am one of the greatest researchers in the world." Typical language for an athlete, but certainly not for a scientist. I honestly feel sorry for Brazilians to have to be misled by such a biased individual.



drpaulogentil In our study conducted by @matheusbarbalho trained women (> 3 years) were divided into a group that did pelvic elevation and another that squats for 3 months. The measurements involved a maximum repetition in the squats and pelvic elevation and hypertrophy in the quadriceps and quadriceps (measured by ultrasound). The Strength Gains in the squats were greater for those who squats, but there was no difference between groups for strength in pelvic elevation. Now, for hypertrophy, those who kneeled further increased the thickness of the quadriceps (12,2 vs 2 %) and for the gluteal the gains were more than double for those who ducked (9,4 vs. 3,7 %)! That is, pelvic elevation offers no advantage in anything, not even in the specific force! Now say: I knew! . I'm not condemning those who do or prescription I know a lot of people don't do it out of bad will, but they are led to mistake by people who distorts information just to create intrigues, confusion This nonsense needs to stop! The thing is so ugly that some criticize electromyography and then use studies with electromyography to defend the exercise Electromyography is not always good and is not always bad, it is a tool to be used in a context (as I explain in the class on selection of exercises at #nerdflix, https:// aulas.paulogentil.com/ link on profile). And the context in which it has been used to defend pelvic elevation is ridiculous, because it hides basic problems with signal standardization, motion amplitude, execution control, etc. Another sad point is this beast mania of wanting to decrease who is Brazilian! Just see how many posts about the subject are indirect to me or my group... I am one of the greatest researchers in the world in the area, but instead generate pride, it generates anger How long will it take to try to belittle this study. I feel a little sorry for those who read the article and say "it proves that pelvic elevation works", but I really feel sorry for the students of these people. So follow the dance and we will strive to continue offering the best to society, independent and picky. (the link to the article is in my stories) . #teamcerebro #nobrainnogain

"I'm one of the greatest researchers in the world" - Paulo Gentil

Ethical Conflict of Interest

There are many types of conflicts of interest. Hell, all of my research should be heavily scrutinized simply because I'm the inventor of the barbell hip thrust. Obviously I'm secretly rooting for the hip thrust to come out ahead in my papers (but ultimately, I'm a true scientist at heart and am seeking the truth). For this reason, I've taken necessary precautions to ensure my research is legit and taken seriously. For example, I didn't handle or analyze the data with my published EMG papers ($\underline{1}, \underline{2}, \underline{3}, \underline{4}$) – my colleague Andrew Vigotsky did, I was blinded with the rugby training study (HERE) and had New Zealand coaches (including my colleague Travis McMasters) carry out the experiment, and I collaborate with others. I've never analyzed data for any study I've published just so I'm not accused of impropriety (my supervisor John Cronin and I agreed that this would be the best policy).

Now, Paulo Gentil possesses a different type of bias. He's been bashing hip thrusts for many, many years. In fact, he's just like the late Charles Poliquin in that he follows 4 simple rules (the hater M.O.): 1) never mention Bret Contreras, 2) never call them hip thrusts (Poliquin called them glute bridges, Paulo calls them pelvic elevations), 3) bash hip thrusts constantly while injecting humor into the mix, and 4) refuse my debate challenges. See <u>HERE</u> where I challenged Paulo to a respectful debate in 2015...he refused.



By Bret Contreras | July 28, 2015 | Grill the Guru

Unfortunately, it's time to grill another fitness professional. I can't tell you how disappointed I am from this person's recent statements, because they come from a member of the sports science community. I thought that we sports scientists were on the same team. I assumed that we all share the same goal: the truth. Unfortunately, this doesn't appear to be the case.

The fitness professional's name is Dr. Paulo Gentil. My American friends probably haven't heard of him, but in Brazil he has a rather large following, which makes his comments especially upsetting to me. HERE is Paulo's website – note the highly impressive résumé, HERE is his Facebook channel – note the 70,000 followers (HERE is the post he made that as of right now has 2,577 likes and 800 shares), and HERE is his Instagram page – note the 139,000 followers (HERE is the post he made that as of right now has 2,577 likes and so f right now has 2,994 likes).

The post contains a video showing an absolutely idiotic way of performing a hip thrust – with someone standing on another person's thighs, in addition to some pictures of dogs and some annoying music, presumably to mock the exercise (I don't speak Portuguese so it's hard for me to understand some of this). Maybe this is funny in Brazil? It seems stupid to me, but even though the individual in the picture is positioning the bench too far up on her back and even though it's poor loading placement, you can still see her glutes contracting very hard.

Paulo will not debate me

For example, see <u>HERE</u> and <u>HERE</u> for examples of Paulo bashing the hip thrust. Please do yourself a favor and actually click on the first link; it's actually pretty funny. Notice there's always some dog looking all crazy in the videos LOL. But seriously, what PhD researcher spends their time making these videos mocking hip thrusts? And he made these despite all of these before/after pictures, anecdotes, logical rationale, and EMG-evidence that existed. Not typical behavior of a good, unbiased scientist.



Definitely funny but why is a scientist going so far out of his way to bash an exercise?

Gee...Paulo Gentil...the guy who bashes hip thrusts constantly comes out with a study...what would you expect it to show? Evidence in support of the hip thrust? Yeah right.

Shady Data and Stats

Last year, I printed and read the first Barbalho <u>study</u> on training volume. I reviewed the paper with my staff members. I was really scrutinizing the data and it dawned on me that their data is just too perfect. I've been involved in numerous studies as a coauthor and peer-reviewer, and data never comes out this clean. It fit this nice beautiful pattern, and perfectly told the story they wanted to tell. All the studies Brad and I conduct are all over the place. We joke how we're below 50% in our hypotheses predictions. We're constantly trying to explain why this intervention worked for one muscle but not another, for example, or why one group saw superior results for one outcome but not another. The data is never this neat!



Our studies are NEVER this neat...this isn't how sports science research looks

I called my buddy James Krieger that night and told him something really bold. I said, "James, this study seems fabricated. The data is too neat. Is there any way to test it?" He looked into it and agreed, but didn't know of a way to call them out on it with absolute certainty. A few months later, Barbalho published another <u>paper</u> on training volume and the data was even more clean than the first! I began joking with my colleagues about Barbalho's research. Here's what's crazy...I'm not an overly strict peer-reviewer, I'm not some staunch researcher, and I'm not overly suspicious. Hell, a few years ago there was a sports science researcher out of Florida who was publishing remarkable studies left and right. My colleagues caught onto it and started talking about it, and I defended him. I couldn't believe that someone would fabricate data. For what? Fame? It's not like you get raving fans for publishing stuff in sports science. But then his students started coming forward with accusations, and the professor was forced to resign. Now he's shunned from the sports science community. But I digress...

This was the only time I've suspected a study of being fabricated. Then this hip thrust study comes out and I immediately suspected fabrication again. I no longer trust any of Barbalho's work, nor the work of Gentil. Gentil seems more concerned with confirming his biases than uncovering truth. And Barbalho is cranking out studies left and right. The lab is extremely prolific and is amassing quite the body of research. I think he's published 11 training studies in 2 years. Some of these are 6 month long studies, and one initially involved over 400 subjects. The rest of us struggle to acquire ample subjects, but not them. How are they doing this? The man hours needed to pull this off would be astounding given their supervisory requirements. And they have such few dropouts. Their standard deviations are very low compared to other papers. And nothing is ever surprising. It all fits their same beautiful narrative: low volume trumps high volume, and single joint exercise is frivolous (except in the case of their buddy James Fisher's PAPER on machine lumbar extensions – these are somehow okay but not additional glute, arm, or leg isolation work LOL). As if anyone believes this in the real world or completely omits single joint training for muscles they seek to improve. And they label the hip thrust a single joint movement...even though it works a ton of muscles simultaneously and you see movement at the ankles, knees, hips, pelvis, spine, and head/neck.

Check out the images below...does anyone think this is legit? 5-10 sets on one leg day a week smokes 15-20 sets? Virtually every bodybuilder, male and female, does the latter, not the former. So they're all doing it wrong?

				Numbe	r of sets	
Mondays	Thursdays	Fridays	G5	G10	G15	G20
Barbell bench press	Lat pulldown	45° leg press	2	4	5	7
Inclined barbell bench press	Cable row	Barbell squat	2	4	5	7
Military press	Upright barbell row	Stiff-legged deadlift	1	2	5	6

Table 1	Training	Programs
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Abbreviations: G5, 5 sets per week per muscle group; G10, 10 sets per week per muscle group; G15, 15 sets per week per muscle group; G20, 20 sets per week per muscle group.

TABLE 4. Pre- and postintervention measures of 10RM tests and MT for each group.												
	G5			G10			G15			G2 0		
	Pre	Post	Changes (95% CI)	Pre	Post	Changes (95% CI)	Pre	Post	Changes (95% CI)	Pre	Post	Changes (95% CI)
10RM tests (kg)												
Bench press	24.2 ± 4.6	36.7 ± 5.6	12.5 (10.32-14.7)	24.8 ± 3.7	38.4 ± 6.1	13.6 (11.4-15.8)	25.4 ± 3.4	36 ± 4.9	10.6 (8.4-12.8)	24.2 ± 3	30.1 ± 3	5.9 (3.7-8.7)
Lat pulldown	21.4 ± 4.2	32.7 ± 5.6	11.3 (9.4-13.2)	23 ± 3.6	35.9 ± 6.6	12.9 (10.9-14.8)	23.8 ± 3	32.6 ± 4.6	8.8 (6.9-10.7)	23.4 ± 2.1	28.9 ± 2.2	5.5 (3.6-7.4)
45° leg press	71.6 ± 3.0	112.8 ± 8.1	41.2 (36.9-45.4)	75 ± 4.0	119.3 ± 9.9	44.3 (40.1-48.5)	73.2 ± 4.6	92.8 ± 7.3	19.6 (15.4-23.8)	74.4 ± 3.4	85.7 ± 3.4	11.3 (7.1-15.5)
Stiff-legged deadlift	34.2 ± 6.2	56.2 ± 6.4	22 (19.7-24.3)	34.6 ± 2.3	56.8 ± 4.0	22.2 (19.9-24.5)	34.1 ± 4.4	44.3 ± 5.3	10.2 (7.9-12.5)	34 ± 2.1	39.7 ± 2.9	5.7 (3.4-8.0)
MT (mm)												
Biceps brachii	26.8 ± 3.4	30.5 ± 3.8	3.7 (3.1-4.3)	26.8 ± 3.4	30.7 ± 3.8	3.9 (3.3-4.5)	26.7 ± 5.8	28.8 ± 6.3	2.1 (1.5-2.7)	26.2 ± 4.0	27.3 ± 4.7	1.1 (0.5-1.7)
Triceps brachii	35.4 ± 3.4	40.5 ± 4.0	5.1 (4.4-5.7)	35.8 ± 2.7	40.3 ± 3.4	4.5 (3.8-5.1)	35.3 ± 5.6	38.1 ± 5.9	2.8 (2.1-3.4)	35.2 ± 3.8	36.6 ± 4.6	1.4 (0.7-2.1)
Pectoralis major	35.4 ± 2.8	41.4 ± 3.6	6 (5.2-6.8)	35.6 ± 2.8	40.9 ± 3.4	5.3 (4.5-6.1)	35.5 ± 5.1	38.4 ± 5.5	2.9 (2.1-3.7)	35 ± 3.7	36.4 ± 5	1.4 (0.6-2.2)
Quadriceps femoris	57.6 ± 4.2	64.2 ± 4.8	6.6 (5.7-7.5)	59.2 ± 3.4	67.2 ± 4.3	8 (7.1-8.9)	59.1 ± 4.3	62.6 ± 4.7	3.5 (2.6-4.4)	57 ± 5.2	58.8 ± 5.4	1.8 (0.9-2.7)
Gluteus maximus	$\textbf{33.6} \pm \textbf{3.7}$	38.1 ± 4.6	4.5 (3.9-5.1)	34.4 ± 3.9	39.6 ± 4.6	5.2 (4.6-5.8)	34.3 ± 4.7	37 ± 4.8	2.7 (2.1-3.3)	33 ± 4.6	34.1 ± 4.7	1.1 (0.5-1.7)

65-5 sets per week per muscle group, G10-10 sets per week per muscle group, G15-15 sets per week per muscle group, G20-20 sets per week per muscle group

Gluteus maxi	mus		
G5	4.2 (3.5 to 4.9)	1.0 (0.4 to 1.6)	5.2 (4.4 to 6.0)
G10	4.2 (3.5 to 4.9)	0.3 (-0.3 to 0.9)	4.5 (3.7 to 5.3)
G15	3.2 (2.5 to 3.9)	-0.4 (-1.1 to 0.2)	2.8 (1.9 to 3.6)
G20	2.6 (1.9 to 3.4)	-1.6 (-2.3 to -0.9)	1.0 (0.1 to 1.9)

Abbreviations: 10RM, 10-repetition maximum; CI, confidence interval; G5, 5 sets per week per muscle group; G10, 10 sets per week per muscle group; G15, 15 sets per week per muscle group; G20, 20 sets per week per muscle group. Note: Values are presented as Annean (95% C1s).

Data from Barbalho's volume papers Top image: the protocol Middle image: women's results Bottom image: men's results

If you buy into Barbalho's research, then you believe that 5-10 sets per week per muscle is optimal, that one training day a week per muscle is highly effective, that crazy fluctuating set/rep/rest period schemes are highly effective, and that you should never waste your time with single joint exercises.

Something is off. I can smell it. I'm telling you all...Barbalho and Gentil's work is shady, and we need to get to the bottom of it.

How to Get the Results You Want if You're Willing to Sell Your Soul to the Devil

Let's say you no longer cared about being honest and ethical. If you wanted the world to believe something and were willing to commit academic fraud, you could:

- 1. Never even conduct the study and completely make up the data
- 2. Conduct the study but doctor the data
- 3. Conduct the study but formulate a plan to produce the desired outcome (for example, teach the subjects terrible form on a particular lift, encourage limited range of motion, fail to utilize progressive overload with one of the groups, fail to encourage one of the groups, give one group protein supplements but not the other, have one group carb/creatine/sodium load prior to imaging, etc.)

The thing is, if you want to take route #1, then you need to 1) have a good understanding of strength and conditioning to make it believable to coaches/trainers/lifters, and 2) have a good understanding of statistics to make it believable to scientists.

Barbalho doesn't even seem to possess enough training knowledge to make his data seem legit to other lifters. For example, in <u>THIS</u> paper, 20-year old males bench pressed more than they leg pressed. WTF?

	MJ group			MJ+SJ group		
	Pre	Post	р	Pre	Post	Р
Bench press 10RM (kg)	28.0±5.4	38.8±4.3	<0.001	28.4±4.1	39.0±4.3	<0.00
Triceps 10RM (kg)	14.2±4.8	18.4±5.3	<0.001	15.2±3.2	19.4±3.4	<0.00
Pull down 10RM (kg)	22.6±5.8	30.8±5.5	<0.001	23.8±3.3	31.8±3.5	<0.00
Biceps 10RM (kg)	14.2±5.9	19.6±5.3	<0.001	15.2±3.7	20.8±4.1	<0.00
Leg press 10RM (kg)	25.4±7.3	36.6±7.7	<0.001	26.8±5.3	37.2±5.1	<0.00
Knee extension (10RM)	20.8±6.2	27.0±6.1	<0.001	22.0±3.2	27.6±3.3	<0.00
Biceps skinfold (mm)	12.8±0.4	12.3±0.4	<0.001	12.9±0.5	12.4±0.5	<0.00
Triceps skinfold (mm)	13.7±0.5	13.2±0.5	<0.001	13.8±0.4	13.4±0.4	<0.00
Flexed arm circumference (cm)	30.4±0.6	31.6±0.6	<0.001	30.6±0.5	32.2±0.6	<0.00

Bros benching more than they leg press???

Here's another remarkable result by Barbalho that men will scoff at right away. In the men's 24week volume study, 25-yr old men weighing an average of 179 lbs with over 5 years of training experience who could already bench press an average of 212 lbs (1.2X BW) for 10 reps increased their 10RM bench press strength by 53 lbs (ended at 265 lbs for 10 reps, which is 1.5X BW) by doing just 5 sets of pressing per week (all done on one pressing day) as follows:

Monday

2 sets of bench press 2 sets of incline press 1 set of military press

To all the bros reading this, please participate for a minute. What's the most weight you can bench press for 10 reps? Now add .3X your bodyweight to that number. For example, I weigh 245 lbs. The most I've ever benched for 10 reps is 275 lbs. My bodyweight times .3 is 74 lbs. 275 lbs plus 74 lbs is 349 lbs. That's 4 lbs more than my all-time best 1RM of 345 lbs. According to this study, if I just did 5 sets of pressing (only 2 of those sets being actual bench press) once a week to failure as shown in above, I'd be benching 349 lbs for 10 reps in less than 6 months. It's very safe for me to say I will never bench 349 lbs for 10 reps in my entire life.

Their 179 lb men started with an estimated 1RM of 283 lbs and finished with an estimated 1RM of 353 lbs. Basically, they put around 70 lbs on their max bench in 24 weeks and ended up being pretty close to master's status in the bench press in powerlifting.

Men's Bench Press											
Wt. Class	114	123	<i>132</i>	148	165	181	198	220	242	275	275+
ELITE	235	258	275	314	358	387	415	440	462	483	500
MASTER	214	235	253	289	329	356	382	405	425	444	462
CLASS I	193	212	226	257	294	317	340	361	379	396	412
CLASS II	169	186	198	226	258	279	299	317	333	348	363
CLASS III	148	163	173	198	226	244	261	277	291	304	315
CLASS IV	129	142	151	173	197	213	228	242	254	266	275

Male Bench Press Standards (Lbs)

MEN'S BENCH PRESS (Lbs)											
BW	CLASS IV	CLASS III	CLASS II	CLASS I	MASTER	ELITE					
114	130	150	170	195	215	235					
123	145	165	190	215	235	260					
132	155	175	200	230	255	275					
148	175	200	230	260	290	315					
165	200	230	260	295	330	360					
181	215	245	280	320	360	390					
198	230	265	300	340	385	415					
220	245	280	320	365	405	440					
242	255	295	335	380	425	465					
275	270	305	350	400	445	485					
275+	275	315	365	415	465	500					

Men's powerlifting standards for the bench press

This is another example of impossible data.

Transparency

I'm calling bullshit on these guys. Why didn't they include pictures of the form used in their hip thrusts? What was the bench height? Are there any video clips that any of the subjects took and posted on their social media (my subjects are always posting clips to IG and Snapchat...can we see some of theirs)? How many supervisors are there per client? Are the supervisors actual trainers? Are they certified? Has Gentil or Barbalho ever done a hip thrust? Do they train regularly? Do they train other people? If so, have they ever transformed any of their client's glutes? Do they have evidence of this? I could easily post 100 pictures of actual clients and 1000 online clients. Or is all of their wisdom gleaned from reading research? How in the hell are they cranking out so many studies with so many subjects with so little dropouts that require so much supervision? Why does their research not jibe with other research? What's with the low standard deviations. Are they even conducting these studies?

Anyone out there have any insight as to what's going on at Universidade Federal de Goiás Brazil?

I don't have double standards here. I put my stuff out there for everyone to critique. Just go to my <u>Instagram</u> and you'll see videos of me lifting, training other people, and teaching my methods. I detailed my whole system in <u>Glute Lab</u>.

Based on the results of this paper and their volume papers, Barbalho/Gentil's recommendations for glutes would be to just do squats (or maybe other stretched-position exercises like deadlifts, lunges, or leg press) one day a week for 5-10 total sets and no abduction movements, no thrusts/bridges, no back extensions, etc. This is what people were doing before I came around, and now the entire world is seeing much better gluteal results.

Please check out some of my Glute Squad members' results. And by the way, all of these ladies think the Barbalho recommendations are bogus (most of them are coaches and they'd never prescribe just 5 sets of lower body per week for glute gains):

Jade, Brianna, Mahsa, Ashley, Kiana, Gaby, Alexis, Kat, Angela, Amanda, Carlie, Hannah, Ashley, Allegra, Dom, Chrisanna, Nicole

Researchers like these don't make any sense to me. I could start a thread and get 1,000 women to post pics of when they were just squatting and lunging compared to when they started doing thrusts, bridges, back extensions, and abductions. The evidence would be astounding. And yet it still wouldn't change their minds because they're not seeking the truth. They're trying to manipulate people and I don't really understand why. Because they're jealous of me and hip thrusts? What else would explain it? What's in it for them? Anyone have any insight?

Research in the Grand Scheme of Science

I never even considered for one second that the study is true. You see, I've been doing this (personal training) a long time, and I've learned through trial and error what works best. It's funny, for the past decade, I've been trying to convince my fellow personal trainers and strength coaches to care more about the research, but sometimes people don't understand how to properly place published research in the grander scheme of scientific truth. Now, I'm advising my followers to utilize common sense and write this study off completely. You might be thinking, "Bret's just biased and bitter because he invented the barbell hip thrust and wants it to be superior."

When I came up in strength and conditioning, everybody practically worshiped the ground that Louie Simmons, the founder of the Westside Method, walked on. I've spent a good deal of time learning about the Westside Method, and have incorporated much of Louie's techniques and strategies into my own system. Some of you might have seen the documentary *Westside Against the World.* If you haven't seen it yet, I highly recommend you check it out. Picture Louie Simmons back in the day. His powerlifters are crushing it, his team holds all sorts of records and titles, and he's at the top of the game. Now picture some study being published saying that box squats don't build the squat as effectively as squats. Or that reverse hypers and glute ham raises don't transfer to the deadlift. Say the study gets posted and shared all over the place and people start doubting the efficacy of Louie's system. Do you think that Louie would give a flying crap about this study? The answer is: no. Louie cares about winning. As long as he's at the top and his lifters are setting records, he's not going to change up his system. What would cause Louie to change up his system would be if some other team came along with a new method and started beating his lifters.

You might be wondering at this point why I'm talking about Louie Simmons when I'm supposed to be discussing the study. Well, at the risk of sounding cocky, I consider myself the Louie Simmons of glute training. I've built a little empire based on one thing – results. As long as my Booty by Bret members are seeing great results, they keep recommending it to their friends. As long as my followers see results, they share my work to the masses. If some other glute guy comes along with a new method and starts posting better before/after pictures than me, then I'll pay really close attention. But my glute training system has evolved to be quite spectacular, and I know what does and does not work for the masses. Hell, my followers know what works too.

Do squats build the glutes better than hip thrusts? There's no way. I know this because I work with 50 Glute Squad members every week. I know this because I receive feedback from thousands of lifters every week. Most of my followers used to squat like crazy and their glutes never grew substantially until they started hip thrusting and performing more variety in movement patterns. What's funny is that thousands of bros have shared this article and their female followers are calling bullshit. They're scrutinizing the study properly, but the biased bros don't want to hear it.

Part of being a scientific person involves simply observing the way the world works. Conducting scientific experiments is absolutely critical, but you should care if the experiment doesn't match what's seen in the real world. And if it doesn't, you definitely shouldn't go around making bold claims about a single study.

The fact of the matter is, glute development has improved massively over the past decade. This has coincided with a massive shift in training methodology from mostly vertical exercises (squats, deads lunges) to a blend of horizontal, vertical, and lateral/rotary exercises for glute development. I'm very proud to have played a pivotal role in the shift in glute training by introducing all of the barbell glute bridge, hip thrust, and frog pump variations to the strength conditioning community. In addition, I introduced glute dominant back extensions (rounded back and feet turned out) and helped popularize various abduction movements, not to mention helped make abduction moves more prominent and acceptable. One thing is certain, lifters all around the world have better glute development and it's not from squatting. Squats definitely play a role, but the increase in muscle mass has more to do with hip thrusting.

Debate Challenge

Once again, I'd like to formally challenge Paulo Gentil to a debate. If he stands behind his work and character, he will accept. If not, then this is another huge red flag!

I also challenge Barbalho to a debate and look forward to teaching the listeners about the merits of proper glute training.

Thank You!

Now I'd like to thank the hip thrusting pioneers. While I was shouting from the rooftops back in the day about the benefits of hip thrusts, there's no way they would have spread in popularity if it weren't for people like <u>Sohee Lee</u>, <u>Ben Bruno</u>, and <u>BJ Gaddour</u>. In addition, people like <u>Katie</u> <u>Sonier</u>, <u>Lauren Simpson</u>, <u>Hattie Boydle</u>, and <u>Lucy Davis</u> have helped spread the glute gospel. Also, major props to <u>The Rock</u> for promoting hip thrusts.

Future Research

In the future, I would love to see more research conducted on glute training. It would be great if these studies:

- 1. Were actually legit
- 2. Utilized MRI and not just ultrasound (I own an ultrasound unit but don't fully trust ultrasound for glutes)
- 3. Utilized better protocols that better reflect what's actually being done in the field
- 4. Examined bilateral glute training in addition to unilateral glute training (with unilateral, you can use a within-subject crossover design that has advantages)
- 5. Were carried out for long durations while examining multiple time-points
- 6. Looked at just squatting vs. variety
- 7. Looked at vertical vs. horizontal vs. lateral/rotary