

Which Type of Squat Maximizes Glute Activation?

By: Bret Contreras

Which type of squat maximizes glute activation? I get asked this question from time to time, and the answer might surprise you. The kneeling squat actually maximizes glute activation.

I've never shown a video of this variation on my blog, so I decided to hit the gym today and bust out a few sets. I also decided to throw in some American deadlifts and dynamic effort back extensions (another variation I've never shown). Here's the video:

Kneeling Squat

As you can see, the kneeling squat elicits the highest glute EMG activity out of all squat variations. See the chart below.

Exercise	Resistance (lbs)	Mean Activation %	Peak Activation %
Full Squat	315	35.6	114.0
Sumo Squat	315	27.6	85.4
Front Squat	265	35.0	91.7
Low Box Squat	315	20.0	103.0
High Box Squat	345	28.9	105.0
Zercher Squat	295	45.0	92.7
Lever Squat	270	26.8	95.2
Kneeling Squat	495	66.8	159.0

Notice the superior mean and peak activation in the kneeling squat compared to the other variations. I presume that this is due primarily to the greater loading and secondarily to the greater bent knee position which places the hammies under active insufficiency, causing the glutes to do more.

Do I recommend that lifters employ the kneeling squat? No, I don't. If you're trying to maximize glute activation, do hip thrusts. See the chart below – notice that all bilateral hip thrust variations elicit greater mean and peak activity than all bilateral squat variations. Now, band hip thrusts aren't easy to set up, but even straight bar weight blows away the kneeling squat.

Exercise	Resistance (lbs)	Mean Activation %	Peak Activation %
Hip Thrust	Blue Band	94.5	224.0
Hip Thrust	405	84.1	180.0
Hip Thrust	275 plus 2 Red Bands	119.0	235.0

In other words, don't choose an awkward (and potentially dangerous) squat variation just because it elicits higher glute EMG activity. Instead, perform a standing squat variation, which will build your squat better than the kneeling squat and also lead to greater quadriceps activation, along with a hip thrust variation.

Don't get me wrong, I believe that coaches and lifters should possess a large tool-box. Most of the time a coach or lifter sticks to the basic variations that he or she likes best. But from time to time, he or she needs to reach into that toolbox and pull something else out for the job at hand. Is there a place for the kneeling squat? I suppose that it could help retain squat strength during times of rehabbing an ankle injury, but in general I don't feel like it's that worthwhile of an exercise. However, it's worth mentioning that Louie Simmons of Westside Barbell Club had some of his lifters performing these to develop their hip strength.

Perhaps the barbell kneeling squat could be combined with bands sort of like in the video below to elicit even greater levels of glute activation:

American Deadlift

In the video above, you'll also notice some American deadlifts. The point of this exercise is to practice simultaneous hip extension and posterior pelvic tilt – both of which are actions of the glutes. Think of the American deadlift as a "glute deadlift," exhibited by a short ROM and the hips pushing forward. In fact, you'll notice that the bar path actually shifts laterally up top as the hips push the bar forward. This exercise greatly outperforms the traditional RDL in glute activation.

Dynamic Effort Back Extension

I've gotten very strong at back extensions over the years, and sometimes I just don't feel like repping out to failure. I might be able to do 50 pound back extensions for 35 reps and 100 pound back extensions for 25 reps if I really wanted, but the mere thought makes me cringe. Therefore, I started doing them explosively, thinking of getting a big stretch in the hammies down low and a huge glute contraction up top. Notice that the lumbar spine does not hyperextend since the giant glute contraction finishes off hip extension and prevents anterior pelvic tilt (which influences lumbar mechanics). Think of pushing the glutes into the pad and posterior titling slightly at the top of the movement. If you do these right, it'll feel like a rapid glute contraction that raises the torso. These require some serious glute power!



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I typically just take a load that I can do for 20-30 repetitions and do it for 6-10 repetitions as explosively as possible on these.

Hope you enjoyed the article!

