

Glutes to the Max

Exclusive ACE research gets to the bottom of the most effective glutes exercises

By Mark Anders

Okay, so how do we handle this one politely? *Gluteus maximus, rear end, tush, gluteals, butt, rump, “the sit” muscles, bottom, buttocks, boo-tay.* Nothing really seems to roll off the tongue. Other terms just seem downright improper. Still, no matter how you refer to it, this is one of the largest muscle groups in the body and, for better or worse, one of the biggest reasons people exercise.

Keli Roberts knows this firsthand. Whether she’s training Hollywood stars or everyday clients at Equinox in Pasadena, Calif., they’re all looking for the same thing, says Roberts, an ACE-certified personal trainer. “They don’t want it to look flat or saggy back there,” she adds. “People are looking for that nice curvaceous shape to their glutes—and to have that you need muscle.”

Muscle indeed, but what’s the fastest route to strengthen and develop your glutes? Back in 1999, *ACE FitnessMatters* conducted a survey of ACE-certified personal trainers and asked them that very question. The gold standard, by a resounding number of votes, was squats. Still, those results are only anecdotal, so we turned to the exercise scientists at the University of Wisconsin, La Crosse, to find out, once and for all, which exercise is most effective at building the glutes.

The Study

Led by John Porcari, Ph.D., and Blake Ristvedt, M.A., a team of researchers from the La Crosse Exercise and Health Program used electromyographic (EMG) analysis to compare the muscle recruitment patterns of eight common gluteal exercises.

They started by recruiting 12 volunteers (six women, six men) between the ages of 18 and 25. All were regular exercisers with strength-training experience, an important requirement to ensure consistent

lifting and exercise technique.

Subjects participated in three days of testing with five days of rest between each testing session. Test subjects were restricted from any sort of leg training or exercise for the 48 hours prior to testing.

The battery of tests given on the first day was used to evaluate each subject’s one-repetition maximum (1 RM) for the following lifts: traditional squats, vertical leg press, horizontal leg press, step-ups, lunges and four-way hip extension. Since single-leg squats and quadruped hip extensions utilize body weight for resistance, no 1 RM was required for those exercises.

On the following two days of testing, EMG electrodes were placed on the gluteus maximus, gluteus medius and the hamstring muscles of each subject. For day two, participants performed a 1 RM for the traditional squat, followed by a set of five repetitions of the various exercises, including single-leg squats, step-ups, lunges and quadruped hip extensions. On day three, researchers evaluat-

ed participants as they did squats, plus the remaining exercises (vertical leg press, horizontal leg press and hip extensions on the four-way hip extension machine). All exercises were performed at 80 percent of the 1 RM and conducted in random order with a five-minute recovery period between each lift.

The Results

After gathering EMG data for all 12 test participants, researchers compared the recorded amount of muscle activation for each exercise with that of the traditional squat.

For the gluteus maximus (Figure 1), squats elicited significantly more muscle activation than both the horizontal and vertical leg presses, but showed no significant differences in EMG activity when compared to the other exercises.

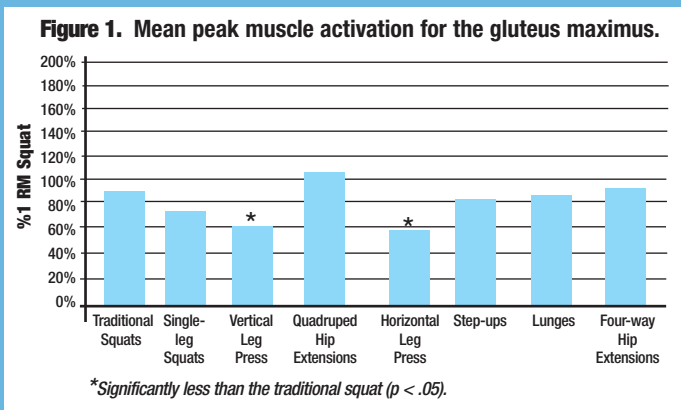
Results for the gluteus medius (Figure 2) showed that quadruped hip extensions, step-ups and lunges generated significantly more muscle activation than squats. And again, the horizontal and vertical leg presses elicited the least amount of activity.

Finally, for the hamstrings (Figure 3) quadruped hip extensions, step-ups, lunges and four-way hip extensions garnered significantly more EMG activity than squats, while the horizontal and vertical leg presses ranked lowest once again.

The Bottom Line

All in all, the glutes are a large muscle group and, fortunately for exercisers, not difficult to isolate.

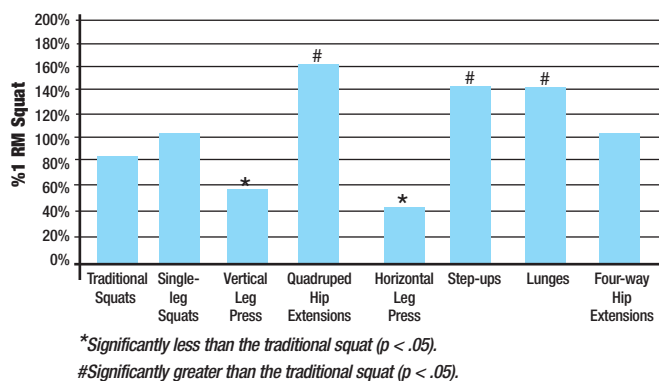
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“Our study showed that there are several exercises that work equally as well as the traditional squat at targeting the gluteal muscles,” says researcher Ristvedt. There was no clear winner, but this study did confirm the value of five exercises—single-leg squats, quadruped hip extensions, step-ups, lunges and four-way hip extensions—as effective alternatives to traditional squats.

Though researchers studied EMG activity in three different muscles, Porcari suggests focusing on the results for gluteus maximus because that muscle is most important to the strength development of the butt. Nearly all of the exercises showed statistically similar EMG recruitment patterns for gluteus maximus, but Porcari points specifically to the quadruped hip extension and squat as possibly having

Figure 2. Mean peak muscle activation for the gluteus medius.



the greatest butt-beautifying potential.

“Quadruped hip extension is the one that surprised me the most,” he says. “When you look at the EMG levels, that elicited the highest muscle activation, and we did it without any weight. I think if you used ankle weights, that exercise would be

even more effective in terms of targeting the buttocks.”

That could put quadruped hip extension in the pole position in terms of effectiveness. Similarly, the squat may have greater potential than these results suggest. While performing squats in this study, researchers required subjects to lower down until their thighs were parallel to the ground—and no further—because that depth is the most

commonly suggested range of motion for the squat due to safety concerns for the knees. Obviously, some exercisers choose to do deeper squats, which could in turn boost EMG activity and the strengthening results. “We were hypothesizing, based on the research of others, that had we gone

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Putting Research Into Practice

To show you how to put this research into action on your own, we asked ACE Master Trainer Keli Roberts to design a lower-body workout that incorporates the best of the butt exercises tested in our study.

If having a beautiful butt isn't enough motivation, Roberts recommends considering this: “It's really important to have strong glutes, but it's not just from a vanity point of view,” she says. “If you have a strong butt you're also going to have a strong back. Butts and backs go together, so you'll have good carryover into your back muscles. And that's a really useable functional strength.”

How it works:

This 15-minute workout is performed circuit-style and can be done in the gym or outside, anywhere there is a bench or low wall. All you need is a pair of dumbbells. Do one set per exercise (each side if the exercise is unilateral) and follow the workout through to the end. If you plan on doing two sets or more, go through to the end and then start again at the first exercise.

Squats (Warm-up)

Stand with your feet shoulder-width apart with your hips and knees inline. Slightly contract your abdominals to stabilize your torso and spine and slowly bend the knees and lower your body like you're sitting down in a chair. Lower your butt until your thighs are parallel to the ground. Slowly return to start. Repeat for 15 reps.



Front Lunges

Hold a dumbbell in each hand, standing tall with good posture (1a). Step forward with the right foot, keeping the head up and spine neutral (1b). Drop your left knee toward the floor by bending both knees, making sure to keep the front heel down and the knee directly over the center of the foot. Push down and forward through your heel to return to the starting position. Repeat on the other side, alternating for eight to 12 reps per side.



Quadruped and Step-up (Super Set)

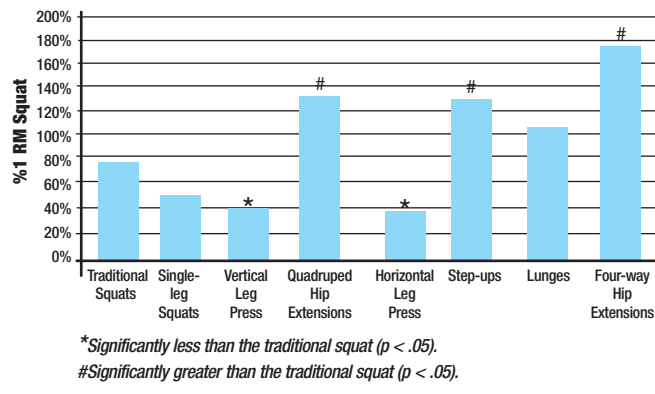
Start with the quadruped: On your hands and knees, slightly contract your abdominals to stabilize your torso and spine (2a). Lift one leg up, keeping the knee bent at 90 degrees. Lift the leg until the bottom of the foot is pointing toward the ceiling and the leg is lined up with the body (2b). Repeat on the same side for eight to 12 reps. If you are outside you can do this exercise kneeling on a park bench, then use the bench for the step-up.

beyond 90 degrees in a traditional squat, the squat may have come out on top,” says Porcari.

The researchers also recommend against discounting the horizontal and vertical leg presses simply because they didn’t measure up in the EMG results. The data were not surprising since those lifts don’t require you to balance or support your own body weight. Still, both exercises have value, especially for beginning exercisers or those with joint or balance and stability problems. “I wouldn’t totally dismiss the presses,” warns Porcari. “Those machines give exercisers a good stable environment where you have complete control over the range of motion.”

Exercisers should look to the most effective

Figure 3. Mean peak muscle activation for hamstrings.



exercises from this research as a menu of moves that they can pick and choose from to develop the muscles of the butt.

Mix and match moves to avoid boredom or overuse injuries and to tailor workouts to your body’s particular quirks or limitations. No access to a gym? Stick with moves like

step-ups and lunges. Those with back problems should avoid exercises that could load the spine such as squats with weights. Lunges, step-ups and squats can be tough on those with bad knees, so the quadruped hip extension may be a better choice.

Bottom line: “You don’t just have to do only squats-squats-squats,” says Ristvedt. “Sure, traditional squats are obviously a great exercise for the glutes, but some people are limited [because of] different joint problems or other reasons, and you can just substitute these other exercises and still get an equally great workout for your glutes.”

This study was funded solely by the American Council on Exercise (ACE) and conducted by Blake Ristvedt, M.A., and John P. Porcari, Ph.D., at the La Crosse Exercise and Health Program of the University of Wisconsin, La Crosse.

WORKOUT



2a



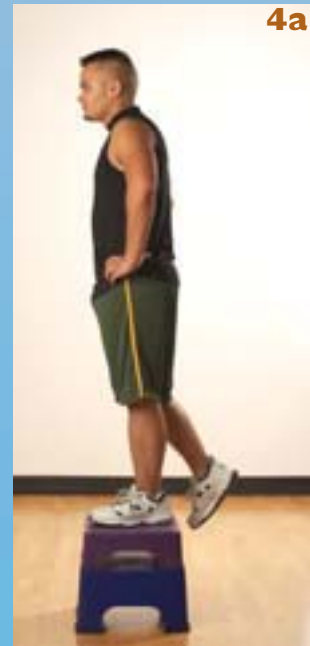
2b



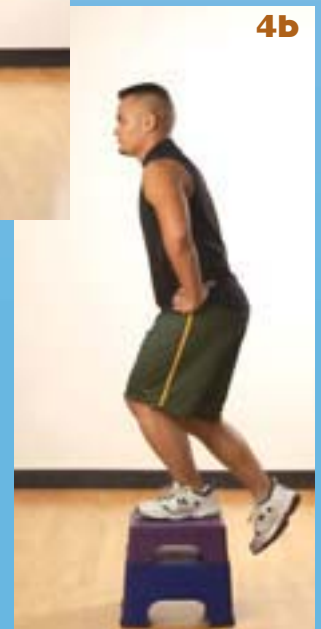
3a



3b



4a



4b

Next, the step-up: Stand with good posture behind a tall step or box [approximately 15 inches (38 cm) high] while holding a dumbbell in each hand (3a). Place your left foot on top and transfer your weight to that leg. Push down with your left foot (especially the heel), straightening your leg, to come up on top of the box (3b). Use the left leg only; keep the right leg passive, especially as you initiate the step-up. Repeat for eight to 12 reps on the same side, then change legs and start with the quadruped exercise on the other side.

Single-leg Squat

Stand on a box or bench with your weight on your left leg and your right leg hanging off the side (4a). Bend the weightbearing knee and lower while pushing the hips back (4b). Push down through the heel to come up. Repeat for eight to 12 reps and change sides. If you are exercising outside, you can use a park bench or a low wall.