

Squat Deep: Research Review on the Effectiveness of Squatting Deep

The Brookbush Institute publishes a review and commentary on research comparing the effects of squat depth on hypertrophy, strength, and performance.

NEW YORK, NY, UNITED STATES, May 2, 2024 /EINPresswire.com/ -- The following is quoted from a new article (and research review) from the [Brookbush Institute](https://brookbushinstitute.com) in the category "[Strength and Athletic Performance](https://brookbushinstitute.com/articles/deep-squats-good-or-bad)": [Squat Depth Recommendations](https://brookbushinstitute.com/articles/deep-squats-good-or-bad)



To "Deep Squat" or not to "Deep Squat" - <https://brookbushinstitute.com/articles/deep-squats-good-or-bad>

A Better Squat Depth Recommendation:

The research on deep squats implies that a more nuanced recommendation

is needed for squat ROM than "squat deep." There are several benefits that may be achieved via deep squats, and deep squats are obviously necessary for sports that require deep squatting (powerlifting and Olympic lifting). However, the research suggests that the benefits of squatting can be achieved with quarter-squats, half-squats, parallel squats, or deep squats. Further, due to

“

Brookbush Institute's Position Statement on ROM: Exercise (including squats) should be performed through the largest range of motion (ROM) that can be attained with good form and without pain.”

Dr. Brent Brookbush, CEO of Brookbush Institute

the relationship between load (and potentially velocity), total work, and range of motion-specific strength, it is likely that the best recommendations will consider the goal, form (compensation), pain/discomfort, and risk of injury. Although there are more variables to consider, the recommendation does not need to be complicated. The following is the Brookbush Institute's recommendation for exercise range of motion, which is a very moderate/conservative (scientifically conservative, not a political statement) position that implies ROM can be challenged, but not at the expense of form or pain.

Brookbush Institute's Position Statement on ROM: Exercise

(including squats) should be performed through the largest range of motion (ROM) that can be attained with good form and without pain.

Research Findings:

Comparing Squats (Single Set/Session Comparisons)

- Research findings comparing squat ROM are not congruent, suggesting squats with any ROM may be beneficial, and/or that squat ROM is less influential than other variables (e.g. load, velocity, volume, etc.).
- Muscle electromyography (EMG) activity for quarter-squats, half-squat, parallel-squats, and full squats are similar. Glute activity may increase with deeper squats, quadriceps activity is likely similar throughout ROM, and calf activity is likely more influenced by the load.
- Less range of motion is likely to increase the load that can be lifted for a pre-determined rep range, as well as increase the average and peak amount of force and power per set. Increasing ROM is likely to result in more work (force x distance) per set
- The increase in load that can be achieved when performing squats with less ROM is likely to result in a larger increase in EMG activity than the increase in EMG activity noted with increasing ROM.

Comparing Training Outcomes (Weeks of Strength Training including Squats)

- Squat strength is ROM specific. Training a specific ROM will result in the largest increase in strength for that ROM; however, deep squats are likely to result in the widest range of increased strength.
 - Parallel and deep squats are likely to result in similar outcomes (strength, hypertrophy, and power).
- Although the differences are relatively small, the increase in work/set resulting from deep squats may result in larger improvements in hypertrophy, strength, and power.
- 0 The increase in load and velocity that can be achieved when performing quarter or half squats may result in larger improvements in power (e.g. vertical jump height).

Potential Issues with "Forcing Deep Squats" (also covered in "Foot Placement")

- Less dorsiflexion range of motion, hip flexion range of motion, and dorsiflexor strength is correlated with a decrease in squat depth. It is unlikely that cues during squat would address these issues.
- Knee valgus, knee varus, tibial external rotation (feet turn-out), and excessive pronation have been correlated with pain, dysfunction, and/or an increase in the risk of future injury.

Research Studies:

- da Silva, Josinaldo J., et al. "Muscle activation differs between partial and full back squat exercise with external load equated." *The Journal of Strength & Conditioning Research* 31.6 (2017): 1688-1693.
- Contreras B, Vigotsky AD, Schoenfeld BJ, Beardsley C, Cronin J (2016) A comparison of gluteus

- maximus, biceps femoris, and vastus lateralis electromyography amplitude in the parallel, full, and front squat variations in resistance-trained females. *J Appl Biomech* 32:16–22
- Bryanton MA, Kennedy MD, Carey JP, Chiu LZF (2012) Effect of squat depth and barbell load on relative muscular effort in squatting. *J Strength Cond Res* 26:2820–2828
 - Caterisano A, Moss RF, Pellinger TK, Woodruff K, Lewis VC, Booth W, Khadra T (2002) The effect of back squat depth on the EMG activity of 4 superficial hip and thigh muscles. *J Strength Cond Res* 16:428–432
 - Gorsuch J, Long J, Miller K, Primeau K, Rutledge S, Sossong A, Durocher JJ (2013) The effect of squat depth on multiarticular muscle activation in collegiate cross-country runners. *J Strength Cond Res* 27:2619–2625
 - Drinkwater, E. J., Moore, N. R., & Bird, S. P. (2012). Effects of changing from full range of motion to partial range of motion on squat kinetics. *The Journal of Strength & Conditioning Research*, 26(4), 890-896.
 - Bloomquist K, Langberg H, Karlsen S, Madsgaard S, Boesen M, Raastad T (2013) Effect of range of motion in heavy load squatting on muscle and tendon adaptations. *Eur J Appl Physiol* 113:2133–2142.
 - McMahon GE, Morse CI, Burden A, Winwood K, Onambele GL (2014) Impact of range of motion during ecologically valid European Journal of Applied Physiology 13 resistance training protocols on muscle size, subcutaneous fat, and strength. *J Strength Cond Res* 28:245–255
 - Weiss, L. W., FRX, A. C., WOOD, L. E., RELYEA, G. E., & MELTON, C. (2000). Comparative effects of deep versus shallow squat and leg-press training on vertical jumping ability and related factors. *The Journal of Strength & Conditioning Research*, 14(3), 241-247.
 - Rhea, M. R., Kenn, J. G., Peterson, M. D., Massey, D., Simão, R., Marin, P. J., ... & Krein, D. (2016). Joint-angle specific strength adaptations influence improvements in power in highly trained athletes. *Human movement*, 17(1), 43-49.
 - Hartmann, H., Wirth, K., Klusemann, M., Dalic, J., Matuschek, C., & Schmidtbleicher, D. (2012). Influence of squatting depth on jumping performance. *The Journal of Strength & Conditioning Research*, 26(12), 3243-3261.
 - Kubo, K., Ikebukuro, T., & Yata, H. (2019). Effects of squat training with different depths on lower limb muscle volumes. *European journal of applied physiology*, 1-10.
 - Pallarés, J. G., Cava, A. M., Courel-Ibáñez, J., González-Badillo, J. J., & Morán-Navarro, R. (2019). Full squat produces greater neuromuscular and functional adaptations and lower pain than partial squats after prolonged resistance training. *European journal of sport science*, 1-10.

Brent D Brookbush
Brookbush Institute
+1 201-206-9665

[email us here](#)

Visit us on social media:

[Facebook](#)

[Twitter](#)

[LinkedIn](#)

[Instagram](#)

[YouTube](#)

[TikTok](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/708348577>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2024 Newsmatics Inc. All Right Reserved.