

# Mechanics of the Hack Squat

By Tracy Anderson

To execute this exercise, lie supine on the platform with your shoulders against the pad. Place your feet on the platform. Extend your hips and knees to release the dock levers. While you are at the extended position keep your hips and knees slightly bent to keep the pressure off the joint and on the muscles. Flex your hips and knees to descend until your knees are just short of complete flexion. When you go down on this exercise your knees should follow the direction of your toes. For example, if your toes are slightly pointed outward, then as you flex the knees, they should follow the path that your toes are pointing. Then return to the starting position by extending the knees and hips.

As you perform the concentric portion of this movement, push your back against the pad and allow the rollers to move the sled. Don't try and stand straight up, this will cause compression of the lower back. Adjust the machine to accommodate your near full range of motion without forcing your hips to rise at the waist.

The prime mover of this exercise are the quadriceps muscles, with assistance coming from the hamstring muscles. The four heads of the quadriceps muscle are the rectus femoris, vastus lateralis, vastus intermedius and vastus medialis. All four have a common insertion point at the tibial tuberosity via the patellar tendon. This tendon crosses the knee joint and inserts onto a bony process of the tibia called the tibial tuberosity. However, all four have different origination points, with the rectus femoris being the only one to cross the hip joint. These muscles perform knee extension and the rectus femoris also performs hip flexion.

During this exercise your hips are flexed during the eccentric portion (going down) and extended during the concentric portion (back up). Because all three heads of the hamstring cross the hip joint, they will assist in the hip extension portion of the movement. The three heads of the hamstring muscle are the semimembranosus, semitendinosus and the biceps femoris. Only the short head of the biceps femoris doesn't cross the hip joint. The semimembranosus, semitendinosus and the long head of the biceps femoris originate from the ischial tuberosity and then cross the knee and insert at different points on the back and sides of the knee. The gluteus maximus also assists during hip extension and thus this exercise.

## **Tips:**

- \* Inhale as you descend and exhale as you push and extend your knee and hip joints.
- \* As you begin to push yourself back up, keep your feet flat and push off of the heel without raising your toes. Imagine that you are pushing the platform, your feet are on, away rather than pushing yourself back up.
- \* Going down slowly will reserve energy and make it easier to reverse direction and then ascend upward. The faster you go down, the more energy and strength it will take to stop your momentum and reverse direction.
- \* If you feel any pain or discomfort during this exercise, then don't do it. Make sure your form is correct and your not using too much weight.
- \* Don't bounce the machine at the bottom, this will take away from your muscles and may damage the machine.

\* Make sure to stretch in between sets to ensure you maintain your the proper resting length of your muscles.

**Sport Uses:**

Strong legs are required in most sports, from tennis to football, from soccer to basketball. Just because you have strong legs doesn't mean you will be fast or jump high. To transfer to strength you develop in the gym onto the field will require the use of plyometrics and practical training. But by incorporating strength training in your sports training regimen, you will be able to add much more power and strength than by just practicing and plyometrics alone.

This article is excerpted from Tracy Anderson's book Movement Science for Personal Trainers. Questions and comments are welcomed and can be given at [www.LFNOnline.com](http://www.LFNOnline.com).