

Mechanics of the Leg Press

by Tracy Anderson

To perform this exercise sit on the machine with back towards the padded support. Place feet on platform, then extend the hips and knees to release dock lever and grasp handles to sides. Lower the sled by flexing hips and knees until knees are just short of complete flexion and then return by extending knees and hips. Make sure to adjust the safety brace and back support to accommodate near full range of motion without forcing hips to bend at waist.

Instead of doing another exciting article on the biomechanics of an exercise, and since this is such an easy exercise to perform, lets look at how to use the leg press for different goals and to hit different muscles. So lets begin with two things: the angle of the leg press and foot placement.

We all know that someone can leg press a lot more than they can squat. This is for two reasons, first you are pushing the weight on an inclined plane on wheels or a guide rod, and second the angle of the leg press will determine the actual weight being pulled down by gravity. Most common are the 35, 45 and 90 degree presses. The way to get the actual resistance is the multiply the sine of the angle against the weight on the machine, including the sled. The sine for 35° is 0.573576436351046 or simply 57%, the sine for 45° is 0.7071067811865475 or 70.7% and the sine for 90° is obviously 1.0 or 100%. So to put this in practice lets assume that you have 650 pounds on each of the three leg presses. Simply multiply the sine in percentage form, by the weight.

The actual resistance on the 35° leg press would be 373 pounds. (.574 x 650=373.1)	The actual resistance on the 45° press would have 459 pounds. (.707 x 650=459.55)	The 90° leg press, or vertical press, would have 650 pounds. (1.00 x 650=650)
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Now as far as foot positioning, if you place your feet lower on the footplate, you will stress primarily the quadriceps. If you place your feet on the top of the footplate, you will shift more emphasis to the gluteus and hamstrings. If your legs are spread wide, your adductors will be more involved.

Feet high on the plate.



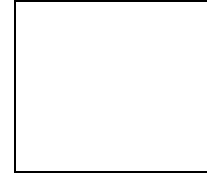
Feet low on the plate.



Feet high and apart.



Feet close together and in the middle.



Places stress on gluteus and hamstring.

Places stress on the quadriceps.

Primary stress on adductors and hamstrings.

Places stress primarily on the quadriceps.

The standard placement of feet is in the middle and slightly apart, simply because you are able to use most of the muscle in your legs.

If someone has a lower back muscular injury, the leg press may be the exercise they can do pain free. Be careful not to bounce the weight off of the lower braces, this displaces the force and takes away from the exercise. Using super heavy weight can cause a displacement in the sacroiliac joint, so make sure to move smooth and controlled. If you feel tightness or strain in the lower back during this exercise, then raise the lower braces higher so you won't come down as far. This will help reduce the stress on the hips and lower back.

The target muscles for this movement is the quadriceps, with assistance from the glutes, adductors, and hamstring, and is stabilized by the gastrocnemius and soleus. However when you change the placement of your feet, as written above, the role of these muscle will change also.

This article is for your personal information only and is NOT excerpted from Tracy Anderson's book **Movement Science for Personal Trainers**. Questions and comments are welcomed and can be given at www.LFNOnline.com.