



## about the AUTHOR

*Dr. Frounfelter is a staff physical therapist at Baldwin Area Medical Center, Baldwin, WI. He has been a sport medicine professional for over 13 years in various settings and patient demographics. In addition to his clinical duties, he has been active with the NSCA at the state level in Wisconsin since 2001.*

# Triple Extension: The Key to Athletic Power

Greg Frounfelter, DPT, SCS, LAT, CSCS

## Introduction

Whenever one is training in preparation for sport, we are always looking for a secret; an “Edge” if you will. This is something that will give you an advantage over your opponent. After looking at the literature for many years, I have found what it is. It’s power. This is the ability to move an object as quickly as possible over a given distance. In athletics this can range from moving your body mass quickly to moving an external load. In general, all other factors being equal, the athlete who can produce greater power, more often than not, wins.

So what does triple extension have to do with power? If you think of athletic power, consider the vertical jump. It is the most often used method to assess lower body power. In its liftoff phase, the body needs to explosively extend at the ankle, knee, and hip. This is how the body can propel itself upward. I know of no other way you can do it and jump any great distance, or in other words demonstrate power. This explosive extension of the knee, hip, and ankle is triple extension, and this is the key to athletic power or explosiveness if you wish to call it that. In my example of the vertical jump, the motion is up and down and with both legs. Triple extension is also performed in all planes and often with one leg as evidenced by agility needs that are seen throughout all athletics.

There are many ways to train triple extension. If you pick any type of athletic training regime, you will see that it is in there in one form or another. Triple extension training is basically explosive motion of the three major lower extremity joints of at least one leg in any direction. One of the basic ways to train triple extension is through the use of weightlifting. Weightlifting is different than weight training. Weightlifting is a sport where two lifts are contested. They are the snatch and the clean and jerk. These lifts involve raising a barbell from the floor to an overhead position. Beside the competitive lifts, there are many associated training movements that can be utilized. Luckily, they all involve the use of triple extension in their proper

performance. But why chose weightlifting movements? Well to be honest, if you want to develop maximal explosiveness, these lifts are unparalleled in their ability to develop and train power (1).

Let’s take a look at the basics of each of the most two common weightlifting movements used to train for sport; they are the power clean and power snatch.

## The Power Clean

Begin by standing with your shins close to the bar on the ground. Your feet should be feet even and about hip-width apart. Squat down to grab the bar with a grip that is a little wider than shoulder-width (Figure 1). Ideally you should use a hook grip where your thumb is laid against the bar and encircled by your first two fingers (It takes some getting used to). Make sure you maintain an arch in your low back. The angle of your torso should be about 45 degrees in relationship to the floor. Keep your chest up and look straight ahead. Your elbows should be held firmly straight.

Use your legs to push your feet through the floor. This will cause you to lift up the bar. Keep your arms and chest tight. Your torso should remain at 45 degrees in relationship to the floor. The bar should be close to your body as you are lifting it. From the side view, your chest should be over the bar and the bar almost dragging up your legs. Once you get the bar to about mid thigh, explode by driving/extending your hips, ankles, and knees (the triple extension motion) as well as shrugging your shoulders to your ears (Figure 2). This snaps the bar into acceleration upward.

All that is left to do is catch the bar. To do this, snap your elbows under and in front of the bar. This lets you catch the bar on your deltoids (Figure 3). It is important to have a loose grip at this point so your wrists can bend and allow you to more easily catch the bar. Your knees also need to



Figure 1. Power clean starting position



Figure 2. Power clean triple extension



Figure 3. Power clean catch



Figure 4. Power snatch high thigh position

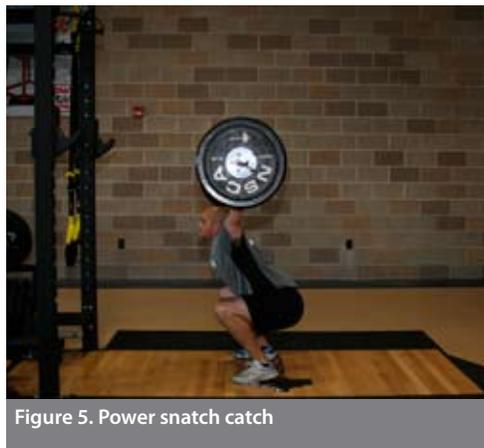


Figure 5. Power snatch catch



Figure 6. Power snatch finish position

bend a little to help you absorb the energy from catching the bar. Carefully lower the bar and perform the lift again. Often rubber plates are used so dropping the weight produces less noise and damage to the training surface.

## The Power Snatch

The power snatch is essentially the same concept as the power clean, but the bar is brought overhead in one motion from the floor. Your grip on the bar is wider than with the power clean. There are several ways to measure how wide this grip should be. One is to measure from the tip of one shoulder to the fingertips of the opposite hand with it held outstretched and parallel with the ground.

You really need to make sure to keep the bar close to the body. The triple extension and shoulder shrug are done when the bar is about level with the pubic bone of the pelvis (Figure 4).

Snap under the bar and catch it in an overhead position (Figure 5). Complete the lift by extending the hips and knees to a full standing position (Figure 6).

The weightlifting movements are great ways to improve your triple extension power; however, you do need to realize that these lifts can be dangerous if not executed properly and in a safe environment. Someone who is skilled in teaching these lifts should help guide you in how to perform them. With proper coaching, weightlifting movements are no more dangerous than other sporting activities (1).

## Conclusion

The ability to move powerfully and explosively is a critical aspect in developing athletic success. Training triple extension ability is a critical factor

to this success. Use of weightlifting movements is an important bridge to this. By using weightlifting movements such as the power clean and power snatch, you can begin to unlock explosive power that can help propel you to increased athletic success. ■

## References

1. Hendrick A, Wada H. (2008). Weightlifting movements: do the benefits outweigh the risks? *Strength and Conditioning*. 30(2):26 – 34.