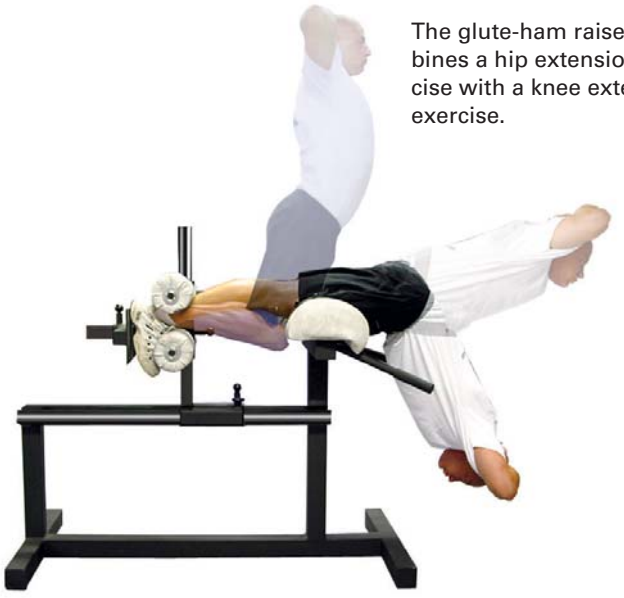


The glute-ham raise combines a hip extension exercise with a knee extension exercise.

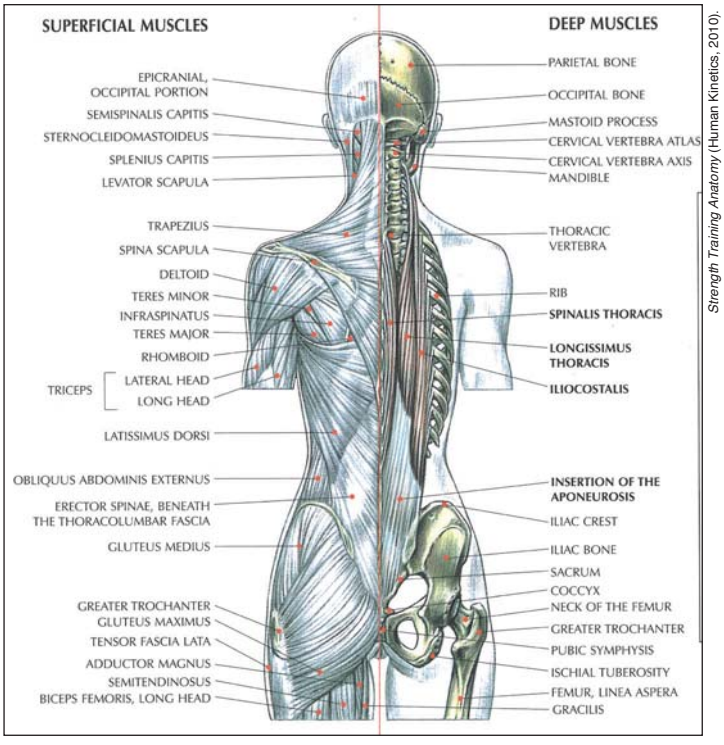
A New Slant on Back Training

A look at great, but often overlooked, back extension exercises

BY **KIM GOSS, MS**

While I was working on my master's degree, I was introduced to some complex and lengthy exercise protocols designed to prevent and rehabilitate lower back injuries. These protocols might be fine for the average population, but they are impractical to implement in a high school setting – and are often unnecessary. The fact is, for many athletes lower back problems can be traced to simple muscle imbalances and weaknesses that often can be corrected with a few simple exercises.

One of the basic concepts of corrective exercise is to stretch those muscles that are tight and strengthen those muscles that are weak.



Strength Training Anatomy (Human Kinetics, 2010).

Regarding athletes, if you focus on the strength aspect of this theory, a weakness in one muscle group could compromise technique in sports movements, and this could result in injury. For example, if the lower leg muscles of a volleyball player are weak, their knees could buckle when they land and place excessive stress on the ligaments of the knee. Likewise, a weakness in the lower back muscles could cause an athlete to round their back during the deadlift and place harmful stress on the disks of the spine.

Different angles used in the back extension bench affect different sections of the lumbar spine.

Incline Back Extension with Dumbbell

For athletes, strengthening the erector spinae produces an "irradiation effect," which means that if you strengthen this muscle group, this will help increase the strength of many other muscle groups. That is, strengthen your lower back, and your squat will increase, as will your military press and your power clean.

BFS has extensively promoted the glute-ham raise, which is one of the best exercises for knee flexion and hip extension functions of the hamstring. This article, however, will review other exercises that can be performed either on the glute-ham developer or on the incline back extension bench to help correct muscle imbalances. In the BFS program, these would be called auxiliary exercises, and they would be performed after core lifts such as power cleans and squats. Before getting into them, let's talk about some back muscles.

Getting Back to Anatomy Basics

The erector spinae consists of three parallel sets of muscles (iliocostalis, longissimus and spinalis) that run the entire length of the spine, from the sacrum to the base of the neck (occipital bone). The erector spinae is involved in extending and laterally flexing the vertebral column, and it helps maintain the proper posture of the spine when lifting.

From a functional standpoint, back extensions target more of the mid-part of the lumbar spine (above L3), as opposed to a reverse back extension exercise, which targets the lower part of the lumbar spine (below L3). For most individuals, the lower part of the lumbar spine is relatively weaker than the upper spine.

The erector spinae consists of both high-threshold motor units (fast-twitch muscle) and low-threshold motor units (slow-twitch muscle). This means that for complete development, an athlete should perform back extension exercises for low reps with heavy weights and also high reps with relatively lighter weights. In fact, from the standpoint of back pain management for the average population, many back pain specialists believe it's more important to train the slow-twitch muscle fibers than the fast twitch. Stay with me on this.

Whereas a weightlifter may have no problem deadlifting 500 pounds, it's possible that this same athlete can have pain bending over a sink when brushing their teeth. I saw this firsthand with one of my weightlifters, who went on to break world records in the masters division (along with winning the bronze medal in the senior national championships while in his late 30s). Although this man could perform reps in the back squat, all the way down, with over 550 pounds, he could not hold his upper body stationary (think planking!) on a back extension bench for 30 seconds. So, the takeaway point here is that what you're looking for is balance.

Although the straight bar deadlift is not used as much as in the past for training athletes, it's a great exercise to work the erector spinae. The problem is that because the barbell is in front of the body, the athlete needs to bend over further, and this increases the compressive forces on the spine. To reduce the risk of injury, it would be better to perform hex bar deadlifts, as the torso is more upright and there is less compressive force on the lower back. And if additional work for the lower back is needed, it's important to perform other exercises that work the erector spinae but do not create these high compressive forces. The basic exercise to accomplish this is the back extension.

Another Look at Back Extensions

Because gravity tends to exert its effects downward rather than horizontally, the highest level of resistance during the back extension exercise is reached at the point the torso is held parallel to the floor.

When I was a competitive weightlifter, I could perform 10 reps in the back extension with 225 pounds held across my shoulders. It wasn't that I had super strong lower back muscles (my best deadlift at the time was 540 pounds), but I found that I could get a lot of momentum built up at the start

Incline Back Extension with Weight Plates

of the movement to help me complete the exercise – this exercise was not without value, but it did have limitations.

Rather than holding a weight across your upper back, which is difficult to balance and might be a good way to strain your neck, you can perform a variation that is described in *Running: Biomechanics and Exercise Physiology Applied in Practice*, a book by Frans Bosch and Ronald Klomp. With this exercise, you place a straight barbell or a hex bar with Olympic plates on the floor in front of the glute-ham developer, with the bar aligned with your shoulders.

Grasp the bar with straight arms, and then straighten your torso until it is parallel to the floor. The height of the Olympic plates limits the range of motion of the exercise, but to increase the range you can use smaller-diameter plates or use a wider grip. The exercise also can be performed emphasizing one leg at a time by placing one leg on top of the roller pad (with the other leg underneath). As with any back extension exercise, you should only go to parallel (horizontal to the floor) and not hyperextend the spine.

Another type of back extension, and one that is seldom used, is the type that is performed on an incline back extension bench. Recently I had an interesting conversation with Canadian strength coach and posturologist Paul Gagné about the types of back extensions that can be performed on this bench. Says Gagné, "One of the initial advantages of this bench is that it creates a different sense of body awareness in the individual such that they are more easily aware if they go into hyperextension. Because so many athletes have a posture that is characterized by a forward rotation of the pelvis, going into hyperextension can easily result in back spasms and possible pain."

Gagné says that the sequence in which the muscles are activated in both the back extension and the incline back extension is as follows: calves, hamstrings, glutes, and erector spinae. At the start of the movement these exercises produce traction on the spine and as such help strengthen the muscles, making either one an effective warm-up exercise at the start of a workout. In fact, 1984 Olympian Ken Clark, who clean and jerked 469.5 pounds weighing 220 pounds, would always start his workouts with unweighted back extensions – and he had a long career that included six national championships.

Another advantage of the incline bench, says Gagné, is that the muscle tension is less and the angle allows for a greater range of motion of the trunk. "Having an increased range of motion is good, but the downside is that you have to be careful about not rounding the lower back at the start of the movement, as this can place excessive stress on the disks of the lower back. It would be equivalent to performing a rounded-back deadlift."

According to Gagné, one of the most effective ways to add resistance to the incline back extension exercise is to use a dumbbell to vary the leverage throughout the exercise so that it is greater at the top of the movement. This is accomplished by holding a dumbbell close to your chest, proceeding to the top position of the exercise, then extending the dumbbell in front of you. Lower slowly with arms outstretched. When the dumbbell is extended, the resistance is increased because the lever arm is longer – as an analogy, compare it to settling back further on a teeter-totter. In fact, don't be surprised if a 5-pound dumbbell is a challenge for many young athletes.

Another method is to hold two weight plates close to your shoulders, proceed to the top position of the exercise, and then extend the weights in front of you. Lower slowly. This variation enables the weights to be in line with the spine, whereas with a dumbbell the weight is always slightly below the line of the shoulders. Also, this version more actively works the rhomboids and lower trapezius, and as such could help with those athletes prone to having round shoulders, such as swimmers.

There are countless exercises available for athletes, and it can be overwhelming to sort through them to find the best ones for your situation. One thing is certain, however: Back extensions can be a valuable asset in any athletic training program. BFS

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