

Positive Results with Negative Training

Practical applications of eccentric training in the BFS program

BY **KIM GOSS, MS**

When performing core BFS exercises such as the power clean, bench press and hex bar deadlift, your focus is on pulling and pressing the weights explosively. After all, speed is king in sports, and if you want to be faster and more powerful, you need to lift fast. But sometimes to achieve physical superiority, or simply to add variety to your workouts to keep your motivation high, you need to consider not just how you lift a weight but also how you lower it.

When a muscle develops tension and creates movement, a concentric, or positive, muscle contraction occurs. An example would be pressing a barbell off the chest. Another type of contraction is called isometric, or static, in which a muscle develops tension while its length remains unchanged, causing no movement. Resting a barbell on the chest during a bench press is an example of an isometric contraction. The third type of contraction is called eccentric, or negative.

During an eccentric contraction a muscle lengthens but still produces tension, thus creating a braking effect. Slowly lowering the barbell during the bench press to the chest from extended arms is an example of an eccentric



Photo: www.Eagle-Studios.com, www.Facebook.com/EagleStudios.

Austin Ryf, the 2010 BFS High School Male Athlete of the Year, makes a powerful cut on the playing field. Such performance requires a high level of eccentric strength.

contraction. This could be classified as a *slow eccentric contraction*. And when a running back makes a “cut” during a play, the quadriceps must rapidly contract eccentrically to enable the athlete to stop and quickly change direction. This could be classified as a *fast eccentric contraction*. So although concentric contractions are associated with athletic performance, eccentric strength is also necessary to move quickly. There’s more.

Eccentric strength is necessary to

protect the joints. When a baseball pitcher throws a ball or swings a bat, the rotator cuff muscles of the upper body must eccentrically contract to decelerate the arm and protect the shoulder joint. Often, in rehabilitation programs, the focus is on eccentric contractions – which begs the question “Why not use eccentric training to prevent injuries from occurring in the first place?”

In the BFS program, eccentric training could be used on auxiliary

lifts for muscles that are frequently injured in a sport. A baseball player, for example, might use eccentric training on rotator cuff exercises for the posterior muscles of the shoulders, and a volleyball player might use lunges for the quadriceps. For these exercises, because the weight is lowered slowly, you should perform fewer reps than you would normally – so instead of 10 reps for lunges, you might descend into the bottom position in the count of 6 and perform just 5 reps.

Because it can take up to 10 days for a muscle to completely recover from an eccentric workout, athletes should probably avoid using an eccentric workout for core exercises such as squats, or at least avoid using it during an athletic season, as this soreness could affect performance on the field or court. And because heavier weights

are used, spotting is especially important when using eccentric training.

Finally, the development of muscle mass is primarily associated with the eccentric portion of an exercise. With machines that use hydraulics as a form of resistance, which are popular in middle school programs, little muscular soreness occurs because there is no eccentric contraction. From a physiological standpoint, concentric contractions do not produce as much muscle tension as an eccentric contraction, and it is this muscle tension that encourages muscle growth. It can also help with strength development, as research on powerlifters has shown that those who had the highest performances in the bench press were those who could lower the weights to their chest more slowly.

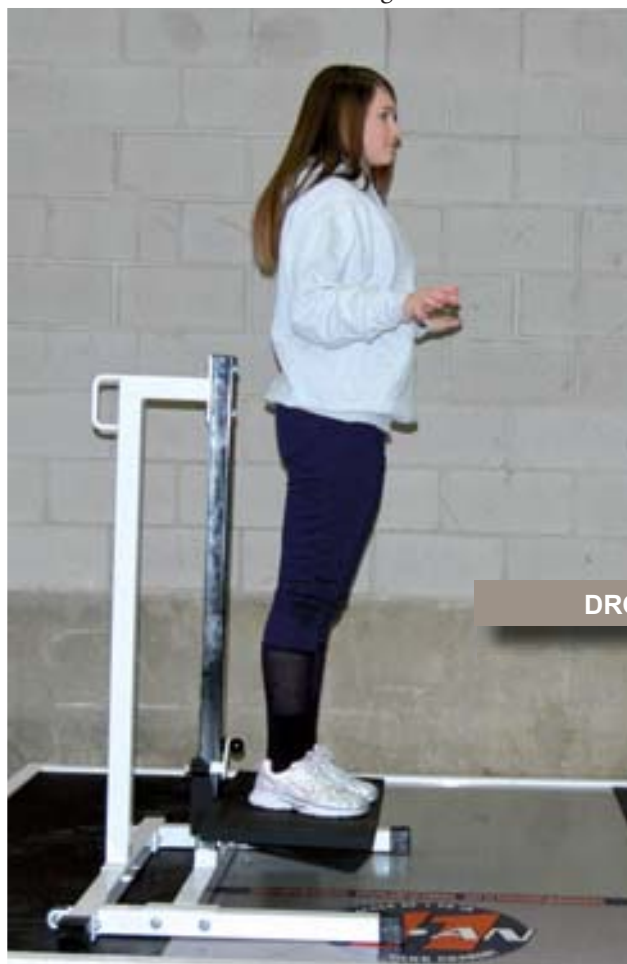
the most intense.

Level 1 involves just lowering the weights you lifted concentrically. Examples of levels 3 and 4 would be to increase eccentric work by having a training partner push down on the barbell during the lowering portion of an exercise, a method that requires a highly skilled training partner. Level 6 requires using weights that are 25 to 40 percent of your maximum for 1 repetition, and lowering it for 2-3 reps – training partners would help lift the weight concentrically in an exercise such as the bench press. Coach Poliquin believes that eccentric training is an advanced training method and that athletes should have at least two years of weight training experience before progressing to level 2 and higher workouts, especially in core lifts such as the squat and bench press.

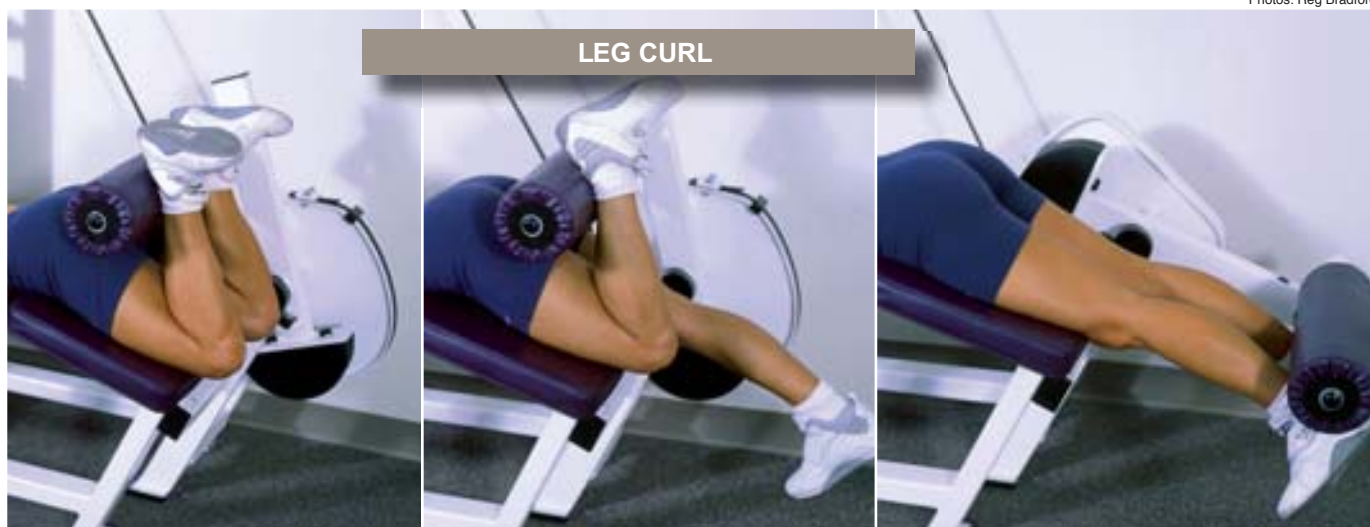
Below are examples of several auxiliary exercises using eccentric training protocols. I'm not suggesting that high schools use eccentric training with all auxiliary exercises, but using it on one or two exercises during a training week could prove to be a valuable addition to an athlete's strength and conditioning program.

Taking It Slow with Eccentric Training

Strength coach Charles Poliquin has developed a rating system of eccentric exercises; level 1 is the easiest and level 6 is



DROP LUNGE



LEG CURL

Lunges. Holding dumbbells at your side, step forward and then slowly descend into the bottom position to a count of 6; then return to the start quickly. Another version is to stand on a low step-up platform, about 4-6 inches high, and then step forward so you have control of the landing before you descend into the squat. With this type of training, which includes a fast eccentric component when you break your fall, less weight is needed because the drop increases the tension on the muscles.

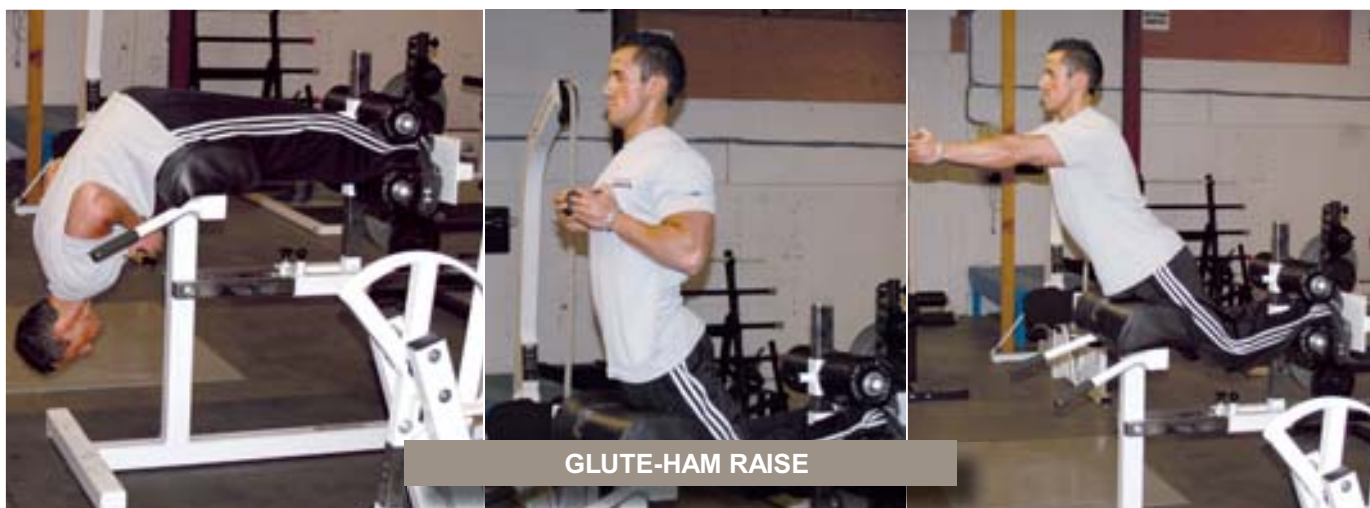
Leg Curl. With many exercise machines that offer greater stability while lifting, you can lift a weight with two limbs and lower it with one. Examples include the leg curl and the

leg extension. However, this method should not be used with a leg press due to the high shearing forces it places on the pelvis.

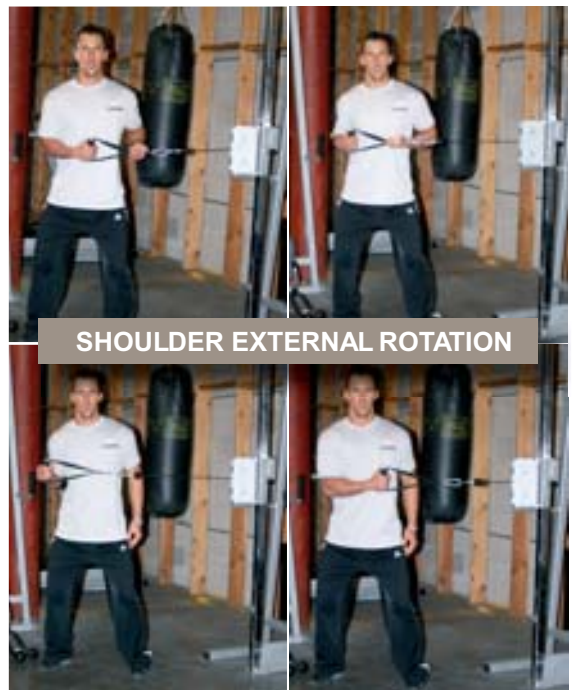
Glute-Ham Raise. To increase the eccentric overload on a glute-ham raise, hold a dumbbell close to your chest, proceed to the top position of the exercise, and then extend the dumbbell in front of you. Lower slowly. By changing the leverages during this exercise, you increase the resistance. Also, consider that the glute-ham raise is a difficult exercise for many athletes to perform even without additional resistance, so use a light weight (such as 2 ½ to 5 pounds) when first attempting this variation.

Chin-ups. A lot of young athletes,

especially women, cannot do a single chin-up (palms facing the body) or pull-up (palms facing away from the body). Eccentric training is ideal for achieving this goal. Simply have a training partner lift one of your legs (keeping it back, behind you) and have them assist so you can lift your chin over the bar. At this point the partner lets go (or holds on lightly without providing assistance) and you lower yourself to extended arms. Another version is to set a second bar at hip height (or slightly lower) in a power rack, and then place the toes of your rear foot over the bar – this will reduce the amount of bodyweight you have to lift. Perform a chin-up and then slowly lower to the count of 6 or 8.



GLUTE-HAM RAISE



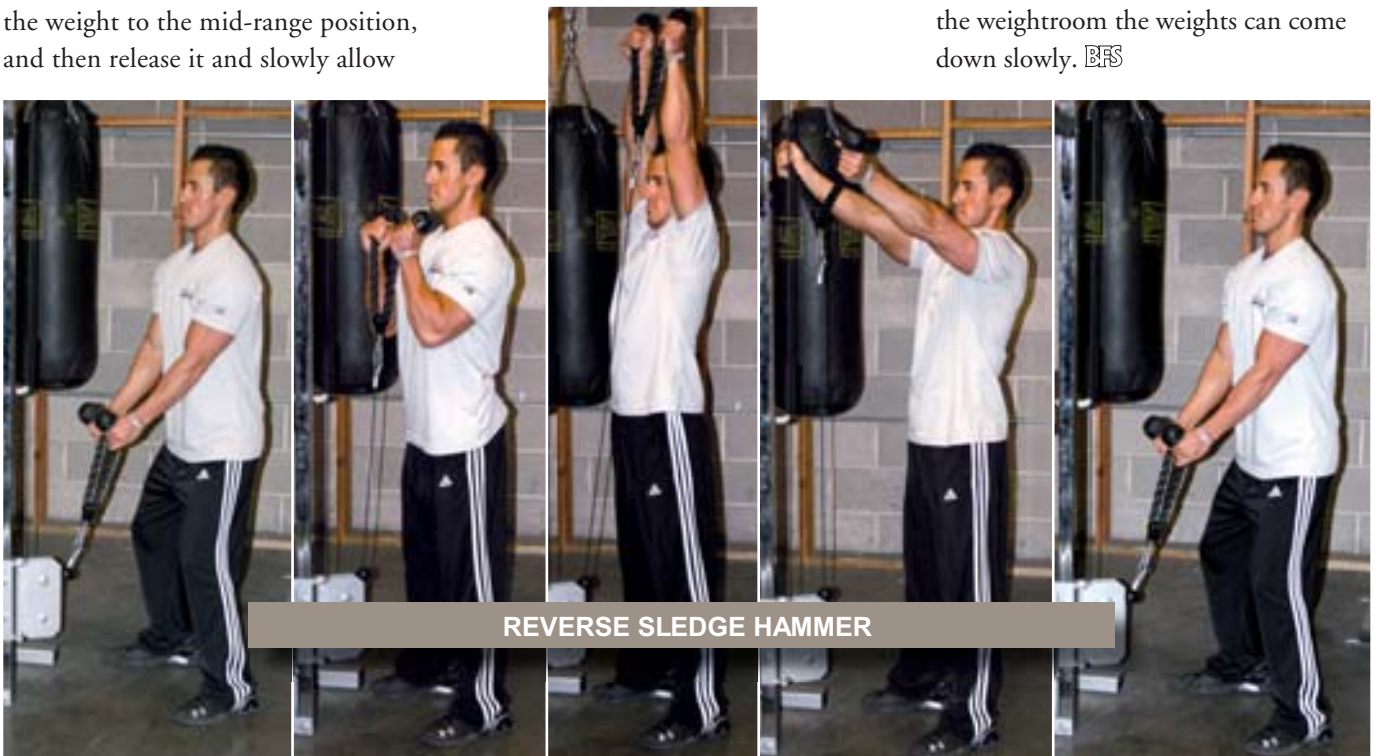
Shoulder External Rotation. The rotator cuff muscles are important for sports that involve throwing, but also for sports such as swimming in which there is little eccentric movement; in such sports, muscle imbalances develop that can increase the risk of injury. With this variation of a standing external rotator cuff movement, you use the free hand to help you pull the weight to the mid-range position, and then release it and slowly allow

the cable handle to return to the start position.

Reverse Sledge Hammer. This exercise works the upper back muscles that are involved in maintaining good posture. For sports such as volleyball, this exercise will develop upper back muscles that are involved in blocking and serving. Rather than lifting a cable overhead with straight arms, you bend

the arms (thereby improving your leverage) and keep the rope handles close to your body as you lift your arms overhead. Then you keep your arms straight as you lower the weight.

If you want to add variety to your strength training program while getting amazingly strong quickly, give eccentric training a try. It's true that what goes up must come down, but in the weightroom the weights can come down slowly. **BFS**



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