THE GLUTE-HAM DEVELOPER

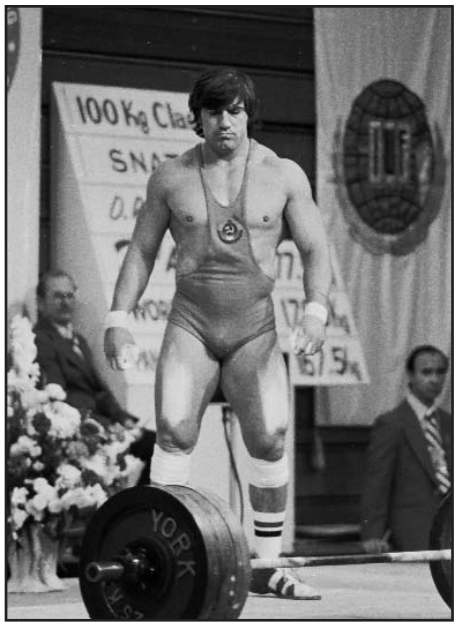
A BFS PUBLICATION

Time is a critical factor in a young athlete's life. Two hours of daily practice, busy competition schedules and weight training workouts are now the rule rather than the exception. Then there is school, perhaps a part-time job, and of course lots of time spent getting to school and to those practices, games and jobs - and did we mention a social life? With students having such a full plate of activities, coaches have to make the most of their athletes' time in the weightroom by selecting only the most effective exercises - exercises that will not only improve performance but also help avoid common injuries.

The glute-ham developer enables athletes to perform many effective exercises that work the important muscles of the abdominals, lower back and hamstrings. These exercises are described in Part III of this manual.

PART I: Introducing the Glute-Ham Raise

Former national-caliber weightlifter Don Reed says that when his training colleague Tommy Suggs attended the 1968 Olympics in Mexico City, Suggs saw that the Russian coaches had a unique way of assessing the competition. "When a Russian coach would greet a lifter from another country, he would always put his free hand on the lifter's back and quickly touch the athlete's spinal erectors and traps, checking muscle density and tone." Indeed, Reed says that the most impressive aspect of an elite Russian lifter was the muscular development of the lower back. Reed noted that the popular Olympic champion and world record holder David Rigert "had erectors that looked like semi-submerged truck tires!"

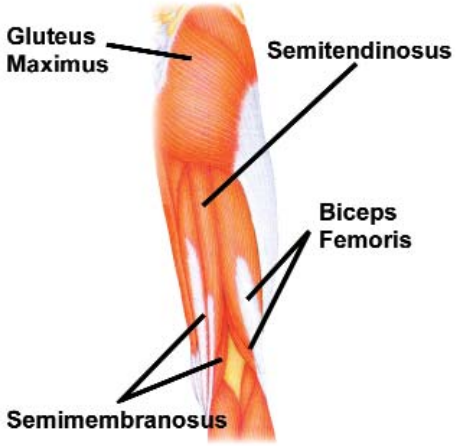


Thanks to powerful exercises such as the glute-ham raise, Russian weightlifters such as David Rigert were as strong as they looked!

(Bruce Klemens photo)

Russian athletes emphasize developing the glutes and hamstrings with squats, power cleans and specialized exercises such as the glute-ham raise. Just how important are these muscles? Canadian strength coach Charles Poliquin has designed workout programs for more than 400 Olympians, and he says that approximately 40 percent of the power for sprinting and jumping comes from the glutes and 25 percent from the hamstrings. "It's imperative that all athletes concentrate on strengthening these muscles with assistance exercises such as the glute-ham raise," says Poliquin.

The Anatomy of the Hamstrings



The glute-ham raise enables an athlete to work the entire length of the spine and both the knee- and hip-extension functions of the hamstrings. This is not possible with the back-extension benches found in most gyms. Says Poliquin, "The design of the glute-ham developer allows an athlete to strengthen the erectors especially in the middle portion, which, in most sports, is exposed to high forces."

Another plus for the glute-ham raise is that it is one of the most important exercises for preventing back and knee injuries, especially to the anterior cruciate ligament (ACL). "The spine is exposed to great compressive forces in many sports," says Poliquin. "I've found that athletes who are weak in the hamstrings, glutes and lower back not only are more likely to injure the lower back but also are especially prone to tearing the ACL. Because the glute-ham exercise increases muscle mass and strength in the back, glutes and hamstrings, those athletes who include this exercise in their programs are

better able to withstand the compressive loads on the spine and those forces that occur with sports such as football and alpine skiing," says Poliquin.

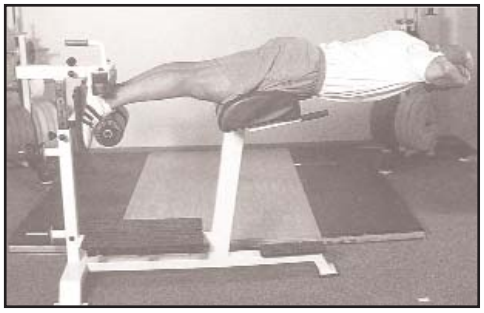
BFS Founder and CEO Greg Shepard says that the value of such exercises is clear from the reduction of injuries reported by those who attend BFS Clinics, which teach a number of assistance exercises such as the straight-leg deadlift and glute-ham raise. "After one year, schools that have sponsored a BFS Clinic average a 50 percent decrease in injuries," says Shepard.

The Glute-Ham Raise strengthens the lower back and both the knee and hip-extension functions of the hamstrings.

Paul Chek, one of the world's foremost experts on strength training exercises for the spine, says that the glute-ham exercise is superior to the back extension for rehabilitation. Chek explains that because it works both functions of the hamstrings, the glute-ham exercise is a more functional exercise than the seated back-extension machine (and is considerably less expensive). Further, Chek says the glute-ham raise places minimal compressive forces on the spine, forces that can exacerbate lower back pain.

The BFS Program and the Glute-Ham Raise

Core lifts such as the power clean and the squat are basics in a BFS workout; proper performance of these movements is described in BFS books and courses and is also demonstrated hands-on at BFS Clinics. The power clean and squat are essential for developing strength, but a poorly conditioned back can be a weak link that reduces an athlete's ability to transfer force from the legs in both these lifts. The result is the athlete will be forced to use lighter weights. This also places potentially harmful stresses on the ligaments and disks of the back. Although an exercise such as the glute-ham raise doesn't create the same stress on the muscles as a power clean or a squat, the additional work helps correct these weak links that may be preventing athletes from achieving their ultimate training goals.



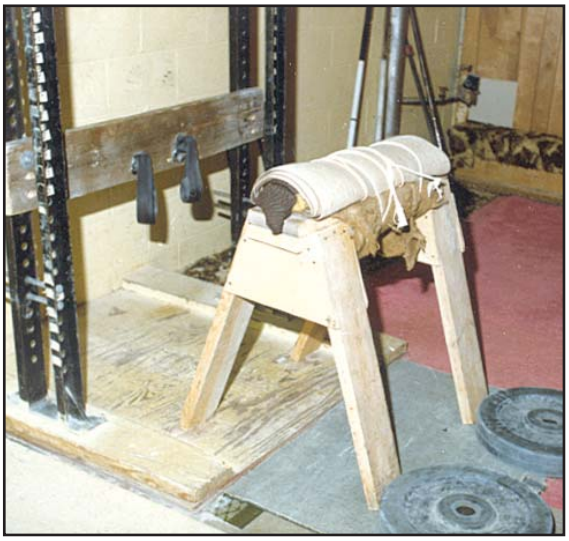
The limited range of the back extension exercise does not allow it to adequately work the hip extension function of the hamstrings

Dr.Mel Siff (left) with Russian Olympic Weightlifting Champions Urik Vardanian (middle) and Sultan Rockmanov.

The late Dr. Mel Siff, a sport scientist who conducted considerable research on weight training exercises during his lifetime, had an opportunity to train with the late Serge Reding back in 1971. This Belgian behemoth was the first man to snatch 400 pounds and was considered the greatest rival of the most famous weightlifter of all time, Vasily Alexeyev. Siff saw Reding squat, all the way down, without wraps, 880 pounds for 5 reps and also perform repeated jumps a foot off the ground while holding 286 pounds in his hands! "When Serge Reding stayed with our family, he shared an enormous amount of material with me," recalls Siff. "He stressed that 'core' exercises (such as the squat and power clean) were of little value if even one minor muscle group is weak and lets you down in competition."

From Pommel Horse to Car Seat

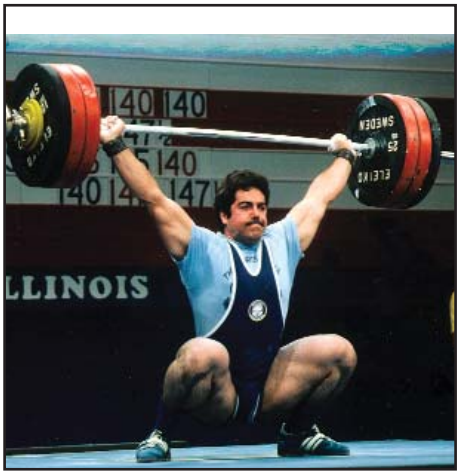
Although the glute-ham raise had been used by European athletes since the turn of the century, American athletes were first introduced to it in 1971 through Strength and Health magazine. The magazine showed pictures of Russian weightlifters performing the lift on a pommel horse in front of wooden stall bars. American weightlifter Bud Charniga saw the article and decided to include the new exercise in his exercise arsenal. "What I did was take a padded car seat and nail it to a carpenter's bench. I then placed it in front of my power rack and hooked my ankles underneath my barbell so that I wouldn't tip over."



After visiting Russia over 30 years ago, American weightlifter Bud Charinga designed a personal glute-ham bench using a pommel horse and a car seat.

Because the car seat Charniga used was padded and had a much sharper curve than the pommel horses the Russians were using, he noticed something unusual. "I noticed that when I did the exercise, the curved surface of the car seat helped me flex my knees more so that I could get a greater range of motion." Although you can't directly attribute all his lifting success to one exercise, it should be noted that in 1974 after Charniga began performing the exercise, he snatched 352 pounds, only 5 pounds off the American record in his bodyweight division.

In 1979 Charniga visited Russia and found that every gym he looked in had a glute-ham station and that the exercise was an integral part of the training of Russian weightlifters. He saw that weightlifters would often perform some variation of the exercise twice in a workout, once before the workout with light weights as a warm-up, and again at the end of the workout with heavy weights as a strengthening exercise. This sensible practice was also followed in the US. In fact, six-time national weightlifting champion Ken Clark, whose picture appears in the BFS Total Program book, began every workout with several sets of back extension exercises. In 1983, at a bodyweight of 220 pounds, Clark cleaned and jerked 470 pounds, an American record that has yet to be equaled.



Ken Clark, one of America's greatest weightlifting champions, always performed light exercises for the lower back before he lifted. (Bruce Klemens photo)

While in Russia, Charniga noticed that not much had changed in regard to how the exercise was performed since that first Strength and Health article, with the exception that some gyms had positioned straps to secure the feet. "They simply didn't have access to materials, or the budget, to have someone make a sophisticated glute-ham developer for them." When Charniga returned to the US and told others of his findings and his own success with the exercise, resourceful equipment manufacturers began experimenting with designs for a glute-ham developer. The BFS glute-ham developer, with its adjustable foot plate and rounded pelvic support, represents the latest in the evolution of this apparatus.

Glute-Ham Developer Stock Version

PART II: How to Develop Powerful Abdominals

A defined, hard midsection sends out a powerful signal about the shape you're in. For example, in tennis much of the power in the serve and ground strokes come from the abdominal muscles. In fact, there are estimates that rotational movements of the hips and shoulders can produce up to 50 percent of the total force generated in a baseball or tennis swing! But before you grind out another crunch or devote any more time, effort and money in search of the perfect waistline, understand that a little training knowledge can go a long way towards getting you a six-pack that is as powerful as it looks.

Tag Bozied used the glute-ham developer to strengthen his torso muscles for baseball. He went on to play professional baseball.

Although most coaches and athletes are aware of the importance of abdominal training for their sports, few know how to train the abdominals for maximum results. If you're an athlete who is tired of performing countless crunches with little or no results to show for your effort, it's time to take an even closer look at the glue-ham developer.

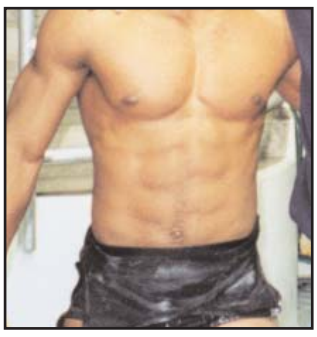
Although primarily associated with the glute-ham raise and back extension exercises, the glute-ham developer offers athletes several ways to develop powerful abdominal muscles for their sports. These exercises are described in Part III. But first, let's address the myth that you must perform isolation exercises for the abdominals.

The Truth about Abdominal Training

"Far too many 'experts' on abdominal training stipulate trunk exercises that attempt to 'isolate' the abs and minimize all involvement by the hip flexors, as if the latter are some sort of enemy to trunk strength and health," said the late Dr. Mel Siff. "The hip flexors, like the hip extensors and back extensors, are meant to work in patterns of appropriate collaboration with the abdominal muscles, so it is quite unnecessary to proclaim that the hip flexor muscles be taken out of all trunk exercises by banning sit-ups with feet held or with almost straight knees."

Abdominal exercises performed on a flat surface do not work the full range of motion of the abdominals. (Courtesy PPC)

Another problem with abdominal training is that many exercises are often performed on a flat surface. The primary abdominal muscle located on the front of the torso, the rectus abdominus, extends from the sternum to the top of the pelvis. When properly developed, this muscle gives you that "six-pack" appearance. As you lie on your back during sit-ups, this muscle can flex your trunk forward approximately 30 degrees, the angle at which your shoulder blades just begin to lift off the floor. At this point any additional movement comes primarily from the muscles that flex your hips.



Richuel Massey, a record-breaking powerlifter and running back from Texas, possesses impressive abdominals. (Courtesy BFS)

Most "ab roller" devices do a good job of working the first 30 degrees of motion of the rectus abdominus, and many of these devices enable you to increase the resistance with weights. But the anatomy of the rectus abdominus is such that the torso

needs to bend backwards approximately 15 degrees to develop maximum tension in the abdominal muscles, although a further stretch may be better for spinal health. This requirement isn't possible with ab roller devices or, for that matter, most conventional exercises.

In volleyball the abdominals are stretched through a full range of motion, and as such must be trained through a full range of motion. (Courtesy BFS)

When you train on a flat surface such as a floor, you begin in a neutral position; and this restriction makes it impossible for you to get a full stretch of the rectus abdominus. For an athlete who plays tennis or volleyball, if the rectus abdominus is not trained throughout its full range of motion, it will not be able to contribute maximum power, especially when the athlete arches at the top of the serve.

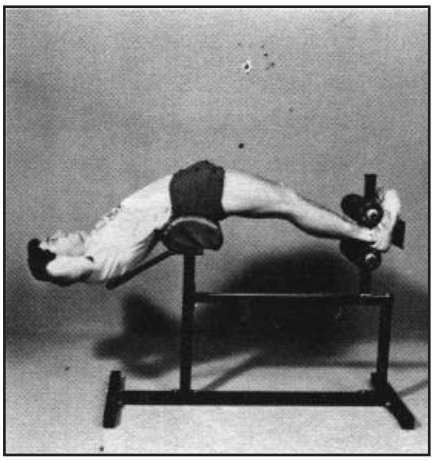
Another problem with starting from the neutral position is that the abdominals will not learn how to properly contract when you bend backwards. One reason some athletes develop back pain is that their abdominal muscles simply do not know how to protect their backs when the torso is extended backward. As Paul Chek, one of the world's foremost authorities on abdominal training, has said, the abdominals become "stupid."

Developing Athletic Abs

One answer to flat-surface training is the glute-ham developer. The glute-ham developer allows you to exercise on a spherical surface, thereby conditioning the abs through their full range of motion. The sturdy design of the glute-ham developer also allows you to safely perform abdominal exercises with the heavy resistance necessary for optimal abdominal training.

A word of caution: Because the range of motion is so much greater on a glute-ham developer, during the first few weeks of training on them you should not work the abdominals to failure or perform multiple sets-you could easily pull a muscle. As you become accustomed to these exercises, you can increase the number of sets and begin adding resistance-and don't be afraid to pack it on!

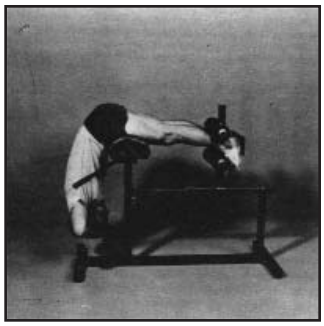
Now that we've discussed the need for going beyond the core lifts for optimal development, let's look at some valuable exercises that athletes can perform on a glute-ham developer.



The spherical surface of the padded seat on the glute-ham developer enables the abdominals to be trained throughout their full range of motion.

As stated in Part II, the workouts in the BFS program consist primarily of what strength coaches often call "economical exercises," which are exercises that involve multiple muscle groups. The bench press is an example of an economical exercise because it involves the pectorals, shoulders and triceps. The glute-ham developer allows you to perform many important economical exercises. The following are descriptions of the exercises that can be performed on the GHD.

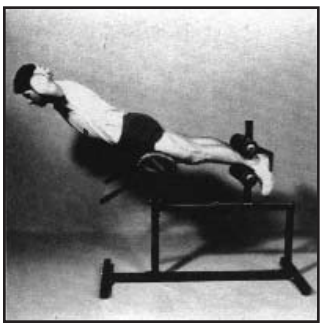
The Glute-Ham Raise



To correctly execute the glute-ham raise exercise, you must first do the following: Adjust the horizontal position of the movable back portion of the glute-ham developer (GHD) so that when the feet are secured in place, your mid-to-upper thighs will be supported on the curved seat. Your knees should clear the back edge of the seat by at least 3 to 6 inches. The exact measurement will depend upon your height. The upper body, including the pelvic girdle (pelvis), should hang down over the seat.

Adjust the vertical height of the rear upright so that when your feet are secured, the tops of your heels are about 6 inches below the level of the top of the seat. If you find that the last movement of the exercise is very easy when in this position, raise the foot height 1-2 notches (the higher the position, the more difficult the exercise), but in no case should the heels be higher than the top of the seat. You are now ready to do the exercises as follows:

1. Lie face down over the curved seat of the GHD and grasp the hand grips for support. Insert your feet (from the sides) between the rear padded rollers so that your entire foot is flush against the back plate and your toes are pointed downward.
2. Drop your body over and down the front portion of the curved seat. Your trunk should hang straight down and there should be a 90 degree angle in your hip joint. Place your hands across your chest (then behind your head when the exercise becomes easier).
3. Keep your back straight (in its normal position) by contracting the midsection muscles isometrically and raise your entire trunk via hip joint extension (by contracting the gluteus maximus and hamstring muscles). Rise up slowly (or at a moderate rate of speed) until your trunk is in a straight line with your legs or slightly above.



4. Maintain this straight-body position by continuous contraction of the hip extensors and then execute knee-joint flexion. You will experience a maximal contraction of the hamstring. Rise up until a line through your trunk and upper thigh is about 45 degrees to the horizontal. The exact height is determined by individual preference.
5. Keep your trunk straight and slowly lower your body to the starting position. Repeat.

Execute the exercise at a slow-to-moderate speed. There should be no jerkiness, quick snaps of your back or fast changes in speed during the movement. Also, there should be no movement in your spine. A slight amount of hyperextention in the mid- or final position is acceptable. But, do not arch to raise your trunk. Pull with the gluteals and hamstrings.

It is very important that you do not buckle in your midsection when knee-joint flexion occurs. Your trunk and thighs should be kept in a straight line during this last

action. If you cannot hold the spine rigid, it means your midsection muscles are weak. Therefore, sit-ups and back raises should be performed to strengthen them before doing the glute-ham-gastroc raise in totality (it can still be performed to the halfway position).

No weights should be used when first learning this exercise. The weight of the upper body is quite sufficient. Once the total exercise becomes easy and you can do the required number of repetitions, you can then hold plate weights behind your head and shoulders.

When the glute-ham exercise becomes easy, you can hold weight plates across your chest to increase the difficulty.

Advanced Variations

No weights should be used when first learning this exercise. The weight of the upper body is quite sufficient. Once this technique becomes easy, you can increase the difficulty by placing your hands behind your head.

Although you can increase the difficulty of the exercise by holding weight plates across your chest, we prefer to increase the difficulty of the exercise by adjusting the foot/ankle pad horizontally and vertically. Here is a sequence that has proven the most effective:

Level 1: Move the foot/ankle pad up once notch, and perform the exercise with your arms folded across your chest.

Level 2: Perform the exercise with the same settings as Variation #1, but place your hands behind your head.

Level 3: Move the foot/ankle pad up once notch, and perform the exercise with your arms folded across your chest.

Level 4: Perform the exercise with the same settings as Variation #3, but place your hands behind your head.

Level 5: Move the foot/ankle pad one notch closer to the front pad, but lower the pad two notches (back to the original level). Perform the exercise with your arms folded across your chest.

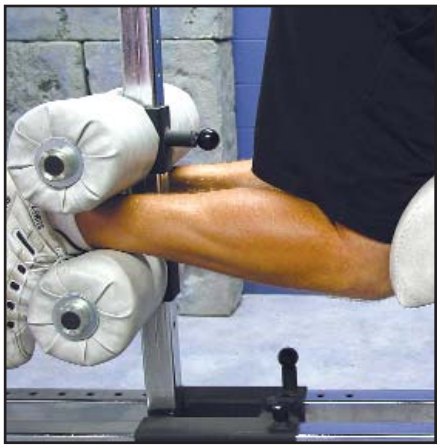
Level 6: Perform the exercise with the same settings as Variation #5, but place your hands behind your head.

Level 7: Move the foot/ankle pad up once notch, and perform the exercise with your arms folded across your chest.

Level 8: Perform the exercise with the same settings as Variation #7, but place your hands behind your head.

Level 9: Move the foot/ankle pad one notch closer to the front pad, but lower the pad two notches (back to the original level). Perform the exercise

Low Difficulty Setting



Medium Difficulty Setting

High Difficulty Setting

with your arms folded across your chest.

Level 10: Perform the exercise with the same settings as Variation #9, but place your hands behind your head.

Level 11: Move the foot/ankle pad up once notch, and perform the exercise with your arms folded across your chest.

Level 12: Perform the exercise with the same settings as Variation #12, but place your hands behind your head. This is the final advanced setting that only advanced athletes can master.

Because of the adjustments possible on the GHD, it can also be used for execution of many other exercises, including all those that can be performed on a Roman chair*. By using the GHD, correct and more precise execution of these exercises is possible.

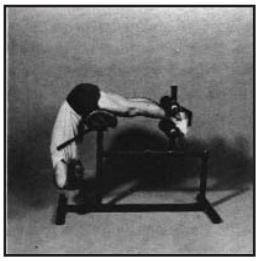
Keep in mind that the Roman chair is made for people of average height. Because of this, tall and short people cannot do certain exercises effectively; and if they do them, they usually do a modified version of the exercise, which gives different development. In addition, even some average-height people cannot do certain exercises precisely on the RC because it cannot be adjusted for proper positioning, and this can lead to injury.

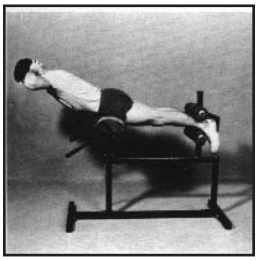
The glute-ham-gastroc raise can be executed using different numbers of sets and repetitions depending upon your objective. In general, for strength you should do approximately 5 sets of 5 repetitions. For strength and some endurance you should do 2-3 sets of 8-12 repetitions. For maximum endurance do 1 set of 25-35 reps.

*WARNING: The glute-ham-gastroc raise exercise should be performed ONLY on the GHD. Although the GHD may look similar to some Roman chairs (RC), the RC MUST NOT be used for execution of this exercise. When you use a Roman chair, you cannot secure your feet. In addition, it does not have the rounded seat and cannot be adjusted for proper execution. Trying the glute-ham-gastroc raise on the RC or in other ways leads to different movements, different muscle development and the possibility of injury.

Back Raises

Adjust the rear support so that when your feet are secured, your entire pelvic girdle (hip area) is situated on top of the curved seat. This is very important. Lower your upper body down over the front curve as far as possible via spinal flexion (usually about 45-60 degrees). For maximum isolation of your spinal muscles (erection spinae), there should be no hip joint action.





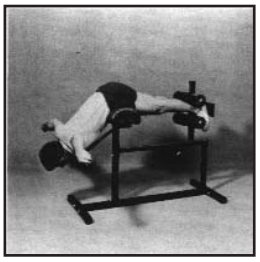
From this flexed (rounded) position of your back, extend (straighten) your spine until it is in line with your pelvic girdle and legs and it is slightly arched (hyperextended).

For strength, do 2-3 sets of 10 repetitions. For strength and endurance, do 2 sets of 15 repetitions. For endurance, do 1 set of 30-50 repetitions.

Back Raises with a Full Twist

Position your entire pelvic girdle on the seat of the GHD and secure your feet under the rear rollers. Lower your trunk so that it hangs over the seat. Place a light bar across your shoulders and hold it at the ends

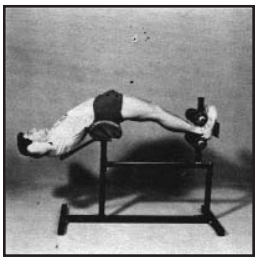
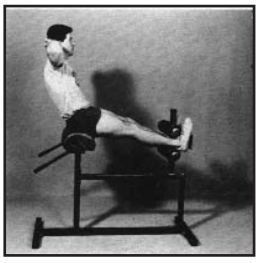
with out-stretched arms. In this beginning position, the hip-joint extensor muscles are knocked out to a great extent and the major load falls on the spinal muscles.




From this starting position raise and twist your shoulders to the left (or right) until your trunk is in line with your pelvic girdle and legs (horizontal or level with the seat of the GHD). There should be a 90 degree separation between the shoulder girdle axis and the pelvic girdle axis. There should not be any arching of your lower back (if there is any, it should be minimal). Alternate the twist with each repetition. This exercise primarily develops the rotary action of the spinal muscles.

For strength, do 2-3 sets of 10 repetitions. For strength and endurance, do 2 sets of 15 repetitions. For endurance do 1 set of 30-50 repetitions.

Sit-Ups (Curl Ups)

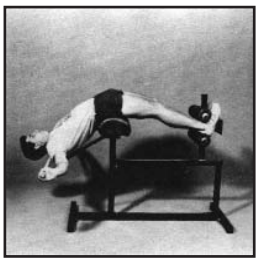



This exercise is executed in the same manner as a regular sit-up on the floor or slant board. However, the starting position is lower, and your upper body is below the horizontal. To assume this position, you must arch (hyperextend) your back slightly.

Position your pelvis so that it rests on the inside edge of the seat. In this position you have support for your lower back as you lean to the rear. Once in position, with your feet secured between the rollers or under the lower roller and hands crossed on your chest, rise up until your trunk is approximately 45 percent or more to the horizontal.

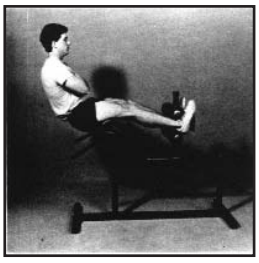
For strength, do 2-3 sets of 10 repetitions (use weights if necessary). For strength and endurance, do 2 sets of 20 repetitions. For endurance, do 1 set of 50 repetitions.

Sit-Ups with a Full Twist




When you're ready to experience full-range abdominal training, here's a great exercise that works both the obliques (side abdominal muscles) and the rectus abdominus. Situate your pelvic girdle on the seat of the glute-ham developer. With your feet secured under the rear roller, lower your trunk until it is below the horizontal (your back is slightly hyperextended). Place a light bar or stick across your shoulders and hold the ends with outstretched arms. This will ensure a full twist.

From this starting position, curl up and twist your shoulders to the right (or left) until you are almost in a sitting position. There should be a 90 degree separation between the shoulder girdle axis and the pelvic girdle axis. Alternate the direction of the twist with each repetition.

Sit-Ups with Hip Flexion

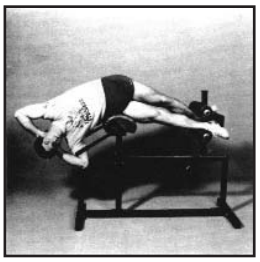
This variant of the sit-up develops the hip flexors, and major stress is placed on the lower abdominals. Position your pelvis so that you sit on the far side of the rounded seat. Lean backwards until there is a slight arch in your lower back. This is the starting position. Cross

your hands on your chest and sit up until your trunk is approximately 45 degrees or more to the horizontal.

For strength, do 2-3 sets of 10 repetitions (use weights if necessary). For strength and endurance, do 2 sets of 20 repetitions. For endurance, do 1 set of 50 repetitions

Side Bends

To do the side bend, lie sideways on the GHD so that when your feet are secured (sideways) between the rollers, your pelvic girdle is directly above the seat. Lower your trunk (shoulders) as far as possible beyond the horizontal and then raise your trunk as high as possible. Keep your body in a side-facing position throughout the movement.



Because of the greater range of motion, this is an advanced exercise and should not be attempted by beginners. To prepare for this exercise, you should do standing side bends and floor side bends.

This exercise can also be used to work the leg abductors. To do this, adjust your side-facing body position so that support is on your upper, outer thigh and your entire trunk hangs over the edge of the seat. Lower your body below the horizontal and rise up. This is a difficult exercise and should not be attempted until you have mastered the side bends.

For strength, do 3-4 sets of 5 repetitions. For strength and endurance, do 2-3 sets of 10-15 repetitions. For endurance, do 1 set of 25-35 repetitions.

Horizontal Trunk Twists

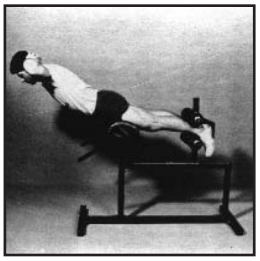
Also known as the Russian Twist, this exercise requires that your pelvic girdle (buttocks) be on the seat when your feet are secured in the rear pad. When seated in this position, lower your trunk until it is horizontal, in a straight line with your pelvic girdle and legs. Raise your arms so they are perpendicular to your trunk. This is the starting position. Rotate 90 degrees to the right (or left). Return to the initial position and then rotate to the opposite side. Your body must remain straight throughout the entire exercise.

Although elite athletes have been known to perform this exercise holding 45-pound weight plates, be warned that this is an advanced exercise and is not recommended if you have weak abdominal and spinal muscles. When you have developed adequate strength in these muscles (by performing the beginner-level exercises described in the BFS training manual) and are ready to take your abdominal training to a higher level, start with no more than 5 pounds.

For strength, do 4-5 sets of 5 repetitions. For strength and endurance, do 2-3 sets of 8-10 repetitions. For endurance, do 1 set of 20-25 repetitions.

Reverse Knee Curls

The reverse knee curl exercise is the same as the latter part of the glute-ham-gastroc raise. It is used when you want to work the lower hamstrings more than the upper. To do this exercise, execute only the last movement of the glute-ham-gastroc raise. Begin with



your body in the straight position (horizontal to the floor) and execute knee joint flexion. Return to the straight-body position and repeat.

For strength, do 5-6 sets of 5 repetitions. For strength and endurance, do 2-3 sets of 10 repetitions. For endurance, do 1 set of 20-35 repetitions.

Inversions

The GHD is also used as an inversion apparatus**. The foot support position is adjusted vertically (slightly higher than the seat) and horizontally so you rest on your upper front thighs and relieve the tension on your hamstrings. Hang over from your hips and relax completely. This positioning allows you to hang upside down very easily for effective stretching of your spine.

Some inversion devices in which you hang from the feet have been criticized because of the excessive pulling on the ankle and knee joints, especially when the prime objective of upside-down hanging is to stretch and relax the spine. Because inverted hanging on the GHD is from the hips, it does not strain these joints and still allows for a good spinal effect.

**NOTE: Do not do any exercise in the inverted position and do not hold the position for extended periods of time.

Part IV: Equipment Maintenance
There is always a risk when you use any sort of training equipment. To minimize risk when using the glute-ham developer, please follow these guidelines:

1. Inspect equipment daily for loose or worn parts (including nuts and bolts). Replace parts at first sign of wear. Failure to replace worn parts may result in injury.

1. Be alert to the possibility of injury. Do not be careless.

2. Children should not be allowed to play on or around this machine.

If you have any questions on the proper use of equipment, do not hesitate to call Bigger Faster Stronger, Inc., (800-628-9737) and talk to one of our coaching experts on staff.

Enjoy your glute-ham developer!