

Constructing Strength Routines Part II- The Lower Body

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Last month (Upper Body Strength), we provided a template for designing upper body strength training routines. This time, we will offer instruction on incorporating variety into the lower body workout plan.

Lower Body Overview

There are approximately 52 muscular structures comprising the anterior, posterior, medial, and lateral compartments of each hip, thigh, and calf. With such a vast agglomeration of muscle tissue, it is easy to understand why stimulating these areas is so crucial to athletes for strength/power augmentation.

Also, the joints served by these muscles are subjected to inordinate stresses from practices and games, which heightens the need for strength training in minimizing injury potential. Properly performed strength training can accomplish both.

Exercise Checklist

The exercises used in any routine are determined by many factors: personal preference, training philosophy, available equipment, etc. We will present several routines that utilize both compound (i.e., multi-joint) and isolation (i.e., single-joint) movements. And, as mentioned here before, we believe in using a wide array of equipment, including both free weight and machines. Due to equipment handicaps, some of the exercises (most notably hip flexion, abduction, and adduction) may require the use of manual resistance. The following is a representation of the exercises used in these routines, along with the primary muscles stimulated by each:

1. Leg press (gluteals, quadriceps, hamstrings)
2. Tru-Squat (gluteals, quadriceps, hamstrings)
3. Safety-Squat (gluteals, quadriceps, hamstrings)
4. Machine deadlift (gluteals, quadriceps, hamstrings, erector spinae)
5. Wall sits (gluteals, quadriceps, hamstrings)
6. Leg extension (quadriceps)
7. Leg curl (hamstrings)
8. Hip flexion (iliacus, psoas major)
9. Hip extension (hamstrings, gluteals, erector spinae)
10. Hip adduction (adductor group -- 7 muscles)
11. Hip abduction (abductor group - 5 muscles)
12. Calf raises (gastrocnemius, soleus)

As the routines are presented, you will notice changes in the total sets for each exercise, the exercise order, recovery times, and the prescribed rep ranges. Along with equipment derivations, these four variables enable the coach to keep the routines fresh and dictate the area of emphasis.

Lower Body Programs:

Routine #1: 20 Rep Single Sets ([link to routine 1](#))

Routine #2: Two Set Pyramid ([link to routine 2](#))

Routine #3: Triple Compound/Single Isolation ([link to routine 3](#))

Routine #4: The Spartan Survivor

Final Rep

It should also be mentioned that we perform at least 1-2 isolation movements for the low back (e.g., trunk extensions) and 1-2 isolation movements for the abdominals (e.g., bent knee trunk curl, trunk rotations) in just about every workout.

With the noted exception of the Spartan Survivor routine, all of these routines should be charted for progressive overload. Charting provides incentive for the athletes and enables the coaching staff to track improvements.

For those interested in combining these routines with the upper body routines described in last month's article, the important consideration is volume. Experience has taught us to keep our workouts in the 18 -20 total set range during the off-season, and in the 15-18 total set range during the in-season. While this format isn't carved in stone, we feel that it is as close to optimal as any system we've studied.

Keep Breathing!

It is important to maintain a continuous breathing rate while lifting - especially when working the large musculature of the lower body. If a trainee holds his breath for even a short duration, the internal pressure that results -- coupled with the external pressure of the working muscles -- may limit blood flow to the heart and brain. This can lead to dizziness and what are known as "exercise induced headaches" (EIH's). A good rule of thumb is to exhale while raising the weight and inhale while lowering the weight. However, it is most important to just breathe, regardless of the rhythm.

Routine # 1: 20 Rep Single Sets

This routine involves one set each of the following exercises:

1. Machine deadlift
2. Leg curl
3. Leg extension
4. Leg press

Coaching points: Each set is performed for a 20-rep target with a 90 sec. recovery between sets. Only one set of each exercise is performed in this routine. When the athlete is able to perform at least 20 reps with the initial weight load on any of the exercises, there will be an increment of 2.5-10 lbs. the next time the routine is performed.

Keep in mind: The conventional straight bar, dumbbell, or hip bar deadlift can be substituted for the machine. Regardless of the mode, teach your athletes to maintain the correct body posture: head straight with eyes focused in a "conversational plane," flat upper back, a normal curve in the low back, and good bend at the knees and hips. Avoid "rounding" the low back.

Routine #2: Two Set Pyramid

In this routine, we perform two back-to-back sets of three different exercises. We begin with the leg press, a compound movement, and follow it with two isolation movements -- hip flexion and hip extension.

The sequence, rep ranges, and recovery periods are as follows:

1. Leg press, 12-15 reps (90 sec.-2 min. recovery)
2. Leg press, 8-12 reps (90 sec.-2 min. recovery)
3. Hip flexion, 12-15 reps (90 sec.-2 min. recovery)
4. Hip flexion, 8-12 reps (90 sec.-2 min. recovery)
5. Hip extension, 12-15 reps (90 sec.-2 min. recovery)

6. Hip extension, 8-12 reps

Coaching points: We are now working with the range rule, which dictates that the weight remains constant until the high end of the range is met. At that point, an increment of 2.5-5 lbs. can be added to isolation movements, and 5-10 lbs. to compound movements.

Keep in mind: When performing any multi-set pyramid in a high-tension fashion (i.e., all-out to momentary muscular fatigue), the succeeding sets will either remain the same in weight or slightly decrease. This is obviously due to the cumulative effects of fatigue.

Routine # 3: Triple Compound/Single Isolation

We begin this routine with three sets of a compound movement (in this example, the squat), and follow them with a single set of three different isolation exercises.

It looks like this:

1. Tru-Squat or Safety-Squat, 10-12 reps (90 sec.-2 min. recovery)
2. Tru-Squat or Safety-Squat, 8-10 reps (90 sec.-2 min. recovery)
3. Tru-Squat or Safety-Squat, 6-8 reps (90 sec.-2 min. recovery)
4. Hip adduction, 12-15 reps (90 sec.-2 min recovery)
5. Hip abduction, 12-15 reps (90 sec.-2 min. recovery)
6. Seated calf raises, 12-15 reps (90 sec.-2 min. recovery)

Coaching points: When squatting, we do not take the sets to momentary muscular fatigue. This is due to the nature of the exercise and the compromising position the athlete would be placed in under those circumstances.

It takes a little more time to determine the starting weights for the squat sets, as the exercise requires exceptional technique quality. Basically, we teach the same techniques in the squat as we do in the deadlift. The obvious difference is that the weight is on the shoulders. The squat depth we teach is the top of the thigh parallel to the floor. Regarding the overload procedure, we are again working with the range rule.

Keep in mind: For those of you who have concerns about squatting, the leg press and/or deadlift are certainly viable and productive options. All of us eventually encounter individuals who, for any number of reasons, are unable to perform the squat.

To aid us in reducing some of the problems associated with this movement, all of our squat movements are performed with either the Tru-Squat machine or the Safety-Squat bar. These two modalities enable the trainee to maintain the aforementioned body posture necessary for proper stimulation and safety considerations. (For information on obtaining either of these pieces of equipment, please contact info@strengthcoach.com.)

Routine # 4: Spartan Survivor

This is an extremely difficult "no card" workout we perform on occasion during the off-season period. "No card" refers to the fact that it is one of the rare workouts we do not record. It is used as more of a change-up and esprit de corp routine. Make no mistake - the fact that it isn't recorded does not detract one iota from its intensity and demanding nature. Actually, our athletes have their own mantras for the routine - ones that would make a sailor blush.

If you're ready, here goes:

1. Deadlift, 15 all-out reps (30 sec. recovery)
2. Hip extension, 15 all-out reps (30 sec. recovery)
3. Leg extension, 15 all-out reps (30 sec. recovery)
4. Leg curl, 15 all-out reps (30 sec. recovery)
5. Leg press, 15 all-out reps (30 sec. recovery)
6. Wall sits (Description: The trainee sits against a wall with a flat back and the legs positioned at 90 degrees. We occasionally add more weight to the exercise by placing sandbags on the

athlete's thighs.) The position is maintained for 60 sec.

Coaching points: Most importantly, don't introduce this routine to your athletes until they've been engaged in some serious, tough training for at least a few weeks. This isn't a routine that you spring on them the first day of the off-season program.

And, remember, due to the initial soreness it will induce, it is solely an off-season routine. In time, you will find your athletes challenging each other to see who can hold the 90 degree position the longest on the wall sit.