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***With Isometric
Training!***



***Powerful **3-MINUTE** exercises help
increase your vertical jump and
running speed!***

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Introduction



Dr. Larry Van Such, DC, BE

Dear Athlete,

Thank you for your interest in the *Jump Higher With Isometric Training* program. It is my sincere desire that this program meets your needs.

Isometric training, with the help of the resistance band and its dynamic and elastic properties, is fast becoming one of the most popular ways to train your muscles for strength and speed.

Once you start incorporating the strategies contained in this program into your current training schedule, you too will join a select group of athletes who have gained an immediate advantage in their sport.

So take charge and use this information. The possibilities of what you might accomplish are endless!

Sincerely,

A handwritten signature in blue ink that reads "Dr. Larry Van Such".

Dr. Larry Van Such, DC, BE

Section 1

Isometric Training
Muscular Contraction
The Resistance Band
The Jumping Process
The Running Process

ISOMETRIC TRAINING

The word ISOMETRIC is defined as follows: *iso* means equal or the same, and *metric* means length. Combining these two definitions we get *equal or the same length*. Isometrics, as it pertains to muscle training, involves tensing muscles against other muscles or against an immovable object while the length of the muscle remains unchanged. For isometric training to be effective, this muscular tension must be maintained over a certain period of time. Therefore, isometric training is best defined as follows:

The sustained contraction of a muscle over a certain period of time where the length of the muscle remains unchanged.

The following are a few examples of an isometric contraction:

Example 1. Take a 20 pound weight and perform a biceps curl. Hold a position halfway between the repetition for 10 seconds. The length of your biceps muscle doesn't change during this time. A force is still being applied. See Figure 1-1 below:



Figure 1-1.

Example 2. Push against a steel pole for 10 seconds. The pole doesn't move and neither does the length of the muscles in your arms pushing against it. A force is still being applied. See Figure 1-2 below:



Figure 1-2.

Isometric training has been around for a long time, and so it is nothing new. Many extraordinary results in muscle strength have been achieved in a very short period of time with this type of training. However, because of the number of new training products and techniques on the market today, its use by athletes is often overlooked.

MUSCULAR CONTRACTION

In order for you to appreciate the value of isometric training, it will be necessary to briefly discuss some basic anatomical principles of muscular contraction. To start with, all skeletal muscles consist of three main fiber types. These fiber types are listed below:

- 1) Slow twitch fibers - Responsible for the endurance and strength of a muscle.
- 2) Fast twitch fibers - Responsible for the speed and strength of a muscle.
- 3) Intermediate twitch fibers - Possess qualities of both slow and fast twitch fibers.

In most muscles, these fibers are intermingled. However, there is usually a predominance of one or the other. For example, in postural muscles of the spine, the slow twitch fibers dominate. This is because slow twitch fibers can undergo extensive repetitive contractions without fatigue. In non-postural limb muscles like the arms and legs, the fast twitch fibers dominate. This allows for powerful forces to be generated over a short period of time.

All of these fiber types are arranged into groups known as *motor units*. A motor unit is defined as one motor neuron and all the muscle fibers it supplies. There are many motor units within the overall muscle. When a muscle begins to contract, an action potential is carried down the motor neuron across the motor endplate to the muscle fibers it supplies. Initially, only some of the motor units become active. As the demand on the muscle increases, more and more motor units are recruited to help support this demand. As the demand on the muscle decreases, the number of motor units also decreases. This is a general description of muscular contraction.

With isometric training, a muscle opposes some form of resistance and is contracted to a certain length and then held for a certain period of time, usually 10 seconds or more. There are no repetitions required here as in weight training.

The biggest advantage to this type of training is twofold. *First*, by forcing your muscles to hold a position for a certain length of time, your body starts to recruit more and more motor units to help maintain this contraction. Motor units that are rarely exercised within a muscle are now brought into use, perhaps for the first time. *Second*, the motor units that are recruited are forced to hold their contraction continuously, time after time, until your muscles achieve a state of maximum intensity safely and effectively. The end result is that the entire muscle matures very quickly.

THE RESISTANCE BAND

One of the most popular forms of exercise training today deals with what is known as resistance training. Essentially most forms of training deal with some type of resistance aid (weights, etc.) but the way the term *resistance training* is used today means to utilize things such as rubber bands or flexible pieces of metal to provide you with a simulated form of weight training. One of the *new* and more *popular* types of resistance training aids is what is known as the resistance band or exercise band. See Figure 1-3 on the next page:



Figure 1-3. The resistance or exercise band.

This is an outstanding product that has a very unique physical property known as a *hyper-elastic potential*. This means that the more you stretch the band the more resistance you will have to apply. The amount of resistance found within an elastic band is therefore a function of its length when stretched. When used properly, the resistance band is the ideal speed training device.

Here's a very basic idea of how and why it works: Imagine first that you are performing a biceps curl, much like that shown in Figure 1-1 on page 2, except that instead of holding a weight, you are holding one end of a resistance band with the other end either attached to the floor or perhaps secured under your foot. Since we are using an isometric contraction, this position with the elbow flexed at about 90 degrees is held for 10-15 seconds without moving it.

While holding this position, imagine the band is already stretched and exerting a significant amount of force back into your biceps muscle. For some, this may be a 40 lb equivalent force, for others, perhaps more. After a few seconds, your biceps muscle will naturally start to weaken. When this happens, your body will begin to recruit more and more motor units to help keep your arm and elbow in this fixed position.

Eventually, and rather quickly if the resistance is high enough, you get to the point where you can no longer hold the band still and maintain the same amount of force efficiently. The muscle has become over-stimulated. This causes your arm to give out or start to shake a little, since the over-stimulated muscle weakens and your coordination dissipates. This is one of the desired states for your muscles to be in to train them for speed and quickness.

These movements in your elbow and arm, however small and in whichever direction, instantaneously alters the amount of force that the resistance bands supply. Unlike weights, which always have the same amount of resistance, the band's resistance is variable and changes as its length changes. Even small changes in distance, whether greater or less than the starting position, will affect the amount of resistance your muscles exert.

Your muscles constantly perceive these small changes in resistance and alter their typical recruitment pattern of motor units to try and maintain the held position. This new pattern is considerably different than that observed while undergoing a similar exercise with a 40 lb dumbbell, because its resistance is not subject to a change in position.

This is a great benefit to athletes since with each new recruitment pattern of motor units, a muscle's weakness and lack of coordination on a much deeper level than normally experienced, is instantly exposed, forcing the over-stimulated muscle fibers to immediately get stronger and with more precision than before. Furthermore, the mass of the muscle typically does not significantly increase with this type of training, which, if it did, could potentially offset these gains.

So, whenever you are able to increase a muscle's strength and coordination without adding any additional body weight, your speed, quickness and athletic performance will automatically increase. This again is just one of the reasons how and why this type of training works.

Imagine now applying this strategy in not only conventional ways, as in the biceps example here, but also in ways and positions you may have never thought of before. When you do this to your muscles, you will immediately expose and then eliminate greater weaknesses in them leading to a vastly improved athletic performance.

Therefore, throughout this entire program, we will be *using the resistance band with an isometric training strategy to increase the strength, coordination and contraction rate within specific muscles located in your lower extremities* - all of which play important roles in the jumping process.

THE JUMPING PROCESS

Jumping in sports, especially basketball, can occur off of one foot as in performing a lay-up or break-away slam dunk, or with both feet as in rebounding.

Jumping off of one foot is also common with certain track and field events like the high jump, long jump and triple jump, while jumping off of two feet is common in volleyball where athletes need to jump straight up to block a shot or spike the ball.

The muscles involved in jumping off of one foot when compared to those used in jumping off of both feet are, as one might expect, similar, but there are a few noteworthy differences. Let's take a closer look at the muscles involved with each.

Jumping off of one foot. Jumping off of one foot typically requires a bit of running or sprinting first to generate the necessary momentum to carry you higher and/or farther. Since most athletes are familiar with performing the lay-up in basketball, which typically involves some running, let's use that as our model in identifying the muscles involved with jumping off of one foot.

As you may already be aware, right hand players jump off the ground off with their left foot when shooting a lay-up with their right hand and left hand players jump off the ground with their right foot when shooting a lay-up with their left hand. Therefore, and more specifically, we will use the right hand player performing a lay-up as our model in identifying the muscles involved with jumping off of one foot.

Right hand basketball players first run a certain distance and then plant their left foot firmly on the ground before jumping and shooting a lay-up. This is the last contact the left foot makes with the ground before jumping. With the left foot firmly planted on the ground, the left knee and left hip are initially slightly bent or flexed prior to the jump. The right thigh and leg

initially trail the left leg at this point. See Figure 1-4a. As your momentum carries you forward, the trailing right thigh and leg quickly start to flex forward and upward. The left hip and thigh remain slightly flexed. See Figure 1-4b. As the right thigh passes in front of the left thigh, it continues on its path upward to create more momentum. The right arm is flexed upward toward the basket. This occurs at the same time the left hip is extending, the left knee is extending and the left ankle is plantar-flexing. See Figure 1-4c.



Figure 1-4a. Left foot planted on the ground. Left knee and hip are slightly flexed.



Figure 1-4b. Right thigh is starting to flex forward to create momentum.

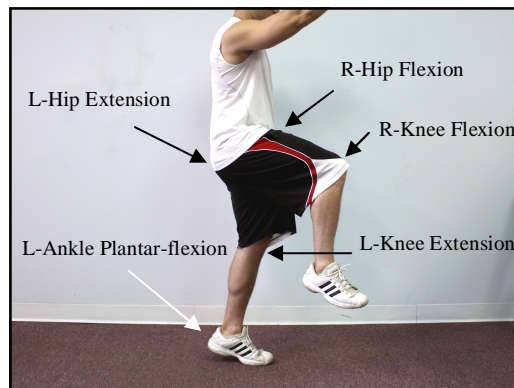


Figure 1-4c. Right thigh is flexed upward. Left knee and hip are extended and left ankle is plantar-flexed.

Summary: The muscles involved in jumping off of one (left) foot in our example above are: right hip flexors, right knee flexors, left hip extensors, left knee extensors, and left ankle plantar-flexors. See Section 4 for a picture of these muscle groups.

Jumping off of both feet. Jumping off of both feet uses similar muscles, bilaterally, except the hip flexors do not help with your upward momentum and the knee flexors may only recoil the knees slightly *after* you have left the ground. The jumping position starts out with both knees and both hips flexed. See Figure 1-5a. As the motion starts, both knees and both hips begin to extend. The arms and forearms also begin to flex. See Figure 1-5b. As the motion continues, both knees and both hips are fully extended and both ankles are plantar-flexed. The arms and forearms continue to flex upward to help create momentum. See Figure 1-5c.

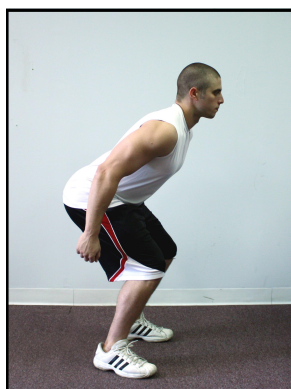


Figure 1-5a. Left & right knees and hips flexed. Left & right ankles in neutral position.

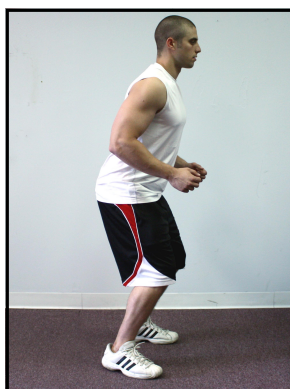


Figure 1-5b. Left & right knees and hips start to extend. Arms & forearms start to flex.

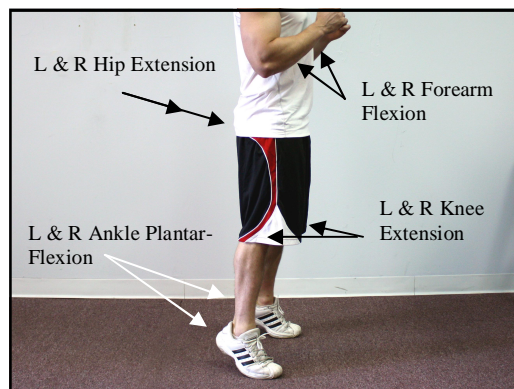


Figure 1-5c. Left & right knees and hips extended. Left & right ankles plantar-flexed. Left & right arms and forearms flexed.

Summary: the muscles involved in jumping off of both feet are: left & right hip extensors, left & right knee extensors, and the left & right ankle plantar-flexors, See Section 4 for a picture of these muscle groups. The left and right arm and forearm flexors are also involved but not illustrated.

THE RUNNING PROCESS

The *Running Process* consists of three main phases: 1) the push phase, 2) the swing phase and 3) the return phase. These three phases constitute a complete leg sequence for each leg during the entire time one is running. For example, the right leg will sequence as follows:

Push phase > Swing phase > Return phase > Push phase > Swing Phase > Return Phase etc.

The left leg follows a similar pattern however, the phases of running for the left leg are not in synch with the phases of running for the right leg.

The Push Phase. The push phase is perhaps the most popular of the three phases since it is typically associated with the start of a race however, like the other two phases, it is involved throughout the entire time one is running. It begins when the thigh of the foot touching the ground is perpendicular to the ground, and ends when the toes of this same foot are barely touching the ground behind you. Figures 1-6a, 1-6b, 1-6c and 1-6d show the stages of the push phase shortly after the start of a race for the *right* leg. See below:

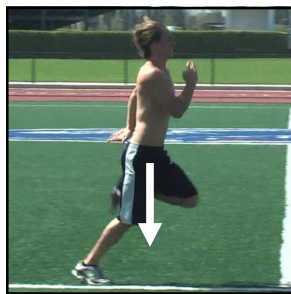


Figure 1-6a. Start of the push phase. Right thigh is perpendicular to the ground.

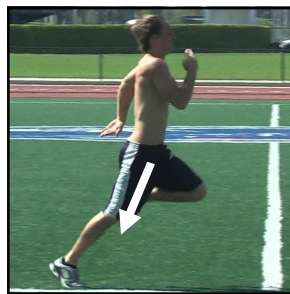


Figure 1-6b. Middle of the push phase. Right thigh and leg are extending.

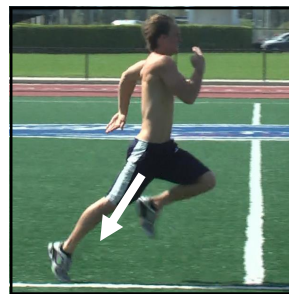


Figure 1-6c. Continuation of push phase. Right thigh and leg near complete extension.

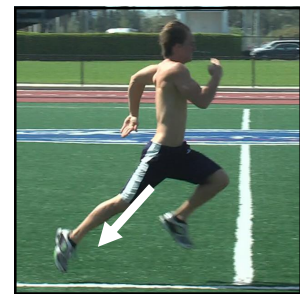


Figure 1-6d. End of push phase. Right thigh and leg fully extended. Right foot makes last contact with ground.

The muscles involved in the push phase are the knee extensors, hip extensors and the ankle plantar-flexors. See Section 4 for a picture of these muscle groups.

The Swing Phase. The swing phase begins when the toes of the foot that finished the push phase have just left the ground behind you and ends when this same foot strikes the ground in front of you. The distance covered by the swing phase is called your *stride*. Improving your stride is not very difficult however, it is perhaps one of the greatest oversights athletes make. Improving this phase of running can make a big difference in your running speed. Figures 1-7a, 1-7b, 1-7c and 1-7d below show the basic stages of the swing phase for the *right* leg:

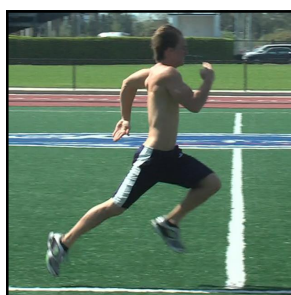


Figure 1-7a. Start of the swing phase. Right foot has just left the ground.

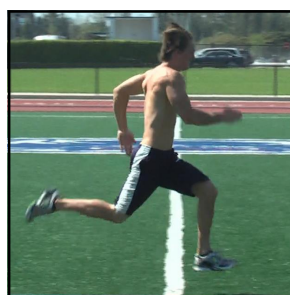


Figure 1-7b. Middle of swing phase. Right thigh is being pulled forward.

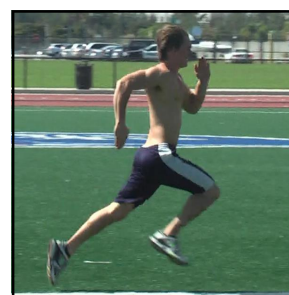


Figure 1-7c. Continuation of swing phase. Right thigh is now flexed in front of runner.

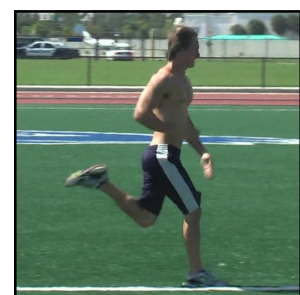


Figure 1-7d. End of swing phase. Right foot strikes the ground in front of runner.

The muscles involved in the swing phase are the hip flexors, knee flexors and knee extensors. See Section 4 for a picture of these muscle groups.

The Return Phase. The return phase begins once the foot strikes the ground in front of you and your thigh is still flexed, and ends when the knee and thigh of the same foot are perpendicular to the ground directly beneath you. This is the shortest of all the phases and it too is often overlooked by a lot of athletes. Improving this phase of running can also make a big difference in your running speed. Figures 1-8a, 1-8b, 1-8c and 1-8d below show the basic stages of the return phase for the *right* leg:

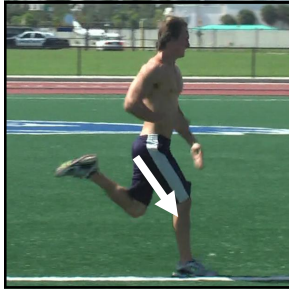


Figure 1-8a. Start of return phase. Right foot on the ground; right thigh (arrow) is flexed on the hip.

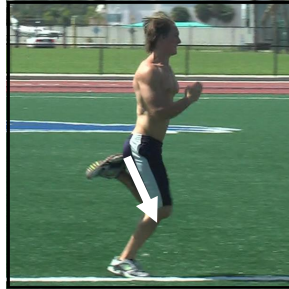


Figure 1-8b. Middle of return phase. Right thigh (arrow) flexed but being pulled underneath runner.



Figure 1-8c. Continuation of return phase. Right thigh (arrow) almost perpendicular to ground beneath runner.

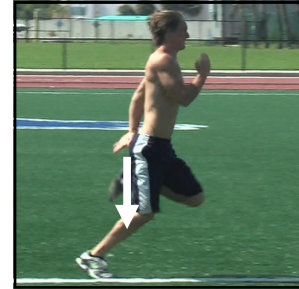


Figure 1-8d. End of return phase. Right thigh (arrow) perpendicular to ground; push phase set to repeat.

The primary muscle groups involved in the return phase are the hip extensors and to a lesser extent, the knee flexors. Note: the hamstring muscles have two functions: 1) hip extension and 2) knee flexion. See Section 4 for a picture of these muscle groups.

This completes the basic motions of the three phases of running. Many athletes have different styles of running that best suits their needs however, the muscles involved all remain the same.

Section 2

Instructions

How To Get The Most From This Program

INSTRUCTIONS

To ensure the greatest amount of your success with this program please read through this section very carefully and refer back to it as often as needed.

1. Isometric training involves no repetitions. As mentioned in Section 1, isometric training is *the sustained contraction of a muscle over a certain period of time where the length of the muscle remains unchanged*. In other words, unlike weight-training where the lengths of your muscles are always changing, as in performing a set of ten biceps curls, isometric contractions are typically held at a point about halfway between a full repetition and then this position is held for 10-15 seconds.

Using Exercise #1 as an example, when you watch the video you will notice that Figure 2-1 shown below represents the final holding position for this exercise and is to be held for 10-15 seconds - the right leg does not repetitively go forward and back, again and again, as you would normally do with weights. This is very important because isometric training using the resistance band is a very efficient way to train your muscles for speed and strength and as a result all of the exercises outlined in this program are done this way.



Figure 2-1. Final holding position for Exercise #1.

2. Attaching the resistance band. All of the exercises require you to attach your bands around an immovable object such as a pole. See again Figure 2-1 above. When it is time for you to attach your bands to a similar object here are two simple rules to follow: a) make sure the object you tie the band to is really immovable relative to your own strength and b) make sure the object you tie the band around does not have any rough or sharp edges as this will cause your exercise band to tear. Serious injury may result if the exercise band breaks and snaps back and hits you.

3. How much effort should you exert for each exercise? Isometric contractions can be done with any amount of force but typically they are done using between 70-80% of your maximum strength. *This is a significant amount of effort to exert over the a 10-15 second period of time* and the best way to gauge this amount of effort is as follows: when you start an exercise, if you can *easily* hold the final position for a lot longer than the recommended 10-15 seconds, such as 20 seconds or more, then you do not have enough resistance in your set-up and are therefore not using enough effort. If you feel like you need to take a rest from the exercise around the 10 second mark similar to the rest taken after performing a weightlifting set, then you are exerting the proper amount of force.

4. Proper positioning. All of the exercises will require you to be at a certain distance away from where the band is tied in order to achieve enough resistance. Look back to Figure 2-1 on the previous page. If this exercise is too easy when you try it, then you will need to move farther away from where your band is tied to stretch it (creating more resistance), or use a second band at the same time to increase the resistance (explained next in item #5), or both. If this exercise is too hard when you first try it using only one band, then you will need to move closer to where the band is tied; this shortens the band to reduce the resistance. Getting into the proper position is a simple thing to do. It is also critical to achieving good results with this program. As you become familiar with all of the exercises you should be able to judge for yourself the best position to be in to make the exercises most effective for you.

5. Doubling-up the resistance. There will also be times when the entire length of the band is needed but the resistance it can supply is still not strong enough. Therefore, you can use two bands and double-up the resistance. Look now to Figure 2-2 below. This is the final holding position for Exercise #1 except two bands are used at the same time to increase the resistance.

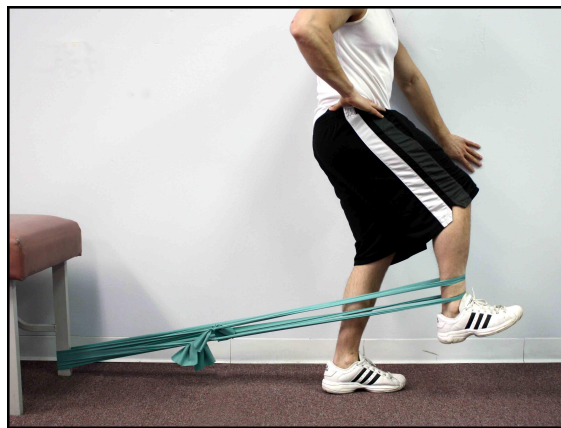


Figure 2-2. Final holding position for Exercise #1 using two bands.

This technique of using more than one band to increase the resistance is very common with isometric training. You can do this for any exercise that appears too easy.

6. You can use bands with a higher resistance level. Each band has a specific color that corresponds to a particular resistance level. Depending on where you buy your bands, the general rule is the lighter the color, the lower the resistance and the darker the color, the higher the resistance. Since this may not always be the case, it is best to know the resistance level of the bands ahead of time before you buy them. By using a band with a higher resistance you should be able to exercise well within the physical limits of that particular band.

7. Maintaining good balance during each exercise. Since each exercise is performed using one leg at a time you may find that your balance is really being tested in the beginning with this type of training. It is important to maintain proper form with each exercise and finding something to balance against while you do them is essential for your success.

In Figure 2-1 on the previous page the athlete is shown balancing against a chair and in Figure 2-2 above the athlete is balancing against a wall. If you are doing these in your home, walls make good places to balance against since they provide a sturdy support should you need it. However, be careful there are no items on the walls such as pictures, mirrors, etc. that can slide if you happen to find yourself losing your balance and end up placing your hands on them.

If you are doing these exercises in a gym and are attaching your bands to say, one piece of equipment, you might also look for a second nearby machine that can also serve as a good support for your hands.

Gym equipment makes perhaps the best places to attach your bands to. This is because the equipment is typically immovable relative to your own body strength and most of the equipment is finished with smooth steel that won't cut your bands and cause them to tear. If you have access to gym equipment it is suggested that you use it.

As a cautionary note, if you choose to incorporate gym equipment into your set-up, make sure you keep your hands away from any moving parts on the equipment (pulleys, cables, hinges, etc.) that you may be using for balance to avoid injury.

Go To Next Page →

HOW TO GET THE MOST FROM THIS PROGRAM

Below are several tips on how to get the most from this program. Review them as often as necessary as each of these tips holds a key to your success.

Tip #1. Perform approximately five minutes of light stretching before starting these exercises.

Tip #2. Use a watch or clock with a clearly visible second hand so that you can accurately time your isometric exercises.

Tip #3. The final position for each exercise should be held for 10-15 seconds. The amount of effort you should be exerting during this time should be between 70-80% of your maximum strength.

Tip #4. Isometric exercises are to be done with normal breathing. Do not hold your breath during the exercises because this may cause a sudden increase in blood pressure and/or light-headedness.

Tip #5. If you experience any abnormal discomfort during these exercises, ease off just a little bit. If the discomfort persists, consult with your physician before continuing.

Tip #6. Perform each exercise according to the *Weekly Training Schedule*.

Tip #7. It doesn't matter what time of day you exercise however, your body will respond best if you choose the same time each day to train.

Tip #8. Pay close attention to the way your body position is shown for each exercise, because correct positioning is needed to isolate specific muscle groups.

Tip #9. Periodically check your resistance bands for any wear and tear. Replace them when necessary to prevent them from breaking during an exercise.

Tip #10. To reduce the resistance for a given exercise, create a longer loop with your band, use bands with less resistance and/or position yourself closer to where the band is attached. Positioning yourself closer means the band will not be stretched as much thereby reducing the resistance.

Tip #11. To increase the resistance for a given exercise, use two bands together, use bands with more resistance and/or position yourself further away from where the bands are attached. Positioning yourself further away will cause the bands to stretch a little more adding to their resistance.

Tip #12. Always train within the physical limits of the band. What this means is, no matter how much effort you are exerting for a given exercise, the exercise band should still be capable of stretching a little further. If the band is stretched to its maximum, you will essentially turn the band into a static rope or cable, incapable of returning any hyper-elastic force back. This greatly reduces its effectiveness. If this situation ever occurs, see Tip #11 on how to rectify it.

Tip #13. The exercises demonstrated in this program are meant to be physically challenging. If you find that your initial attempt with an exercise is too easy, you should either add another resistance band to the exercise, use a stronger band and/or reposition your self further away from your band attachment to stretch the bands. Remember, holding the final position for these exercises using 70-80% of your maximum strength is a significant amount of effort to exert over a 10-15 second period of time before wanting to take a rest.

Tip #14. Gym equipment provides safe and effective places to attach your bands since they are relatively immovable and do not typically possess any rough or sharp edges that may accidentally cut you band. If you have access to such equipment it is suggested that you use it.

Tip #15. If you have a game scheduled and have been actively performing most, if not all, of the exercises in this program for at least two consecutive weeks prior to competition, you may want to allow yourself two full days of rest from these exercises before the competition.

IMPORTANT NOTICE. Consult with your physician before beginning this exercise program.

Section 3

Exercises #1-#10

Exercise #1 Workout Summary

Muscles used: Hip Flexors, Knee Extensors

The final holding position for the right leg is shown in Figure 1a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 1b.



Figure 1a. Final holding position for right leg.



Figure 1b. Final holding position for left leg.

Repeat this process two more times giving you a total of three reps for the right leg and three for the left as shown in the table below:

Exercise #1

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) The exercises demonstrated in this program are meant to be physically challenging so if you find that your initial attempt with an exercise is too easy, you can either take an extra step away from the pole to further stretch the band, use a band with a higher resistance level, or use two or more bands at the same time. Remember, holding the final position for these exercises using 70-80% of your maximum strength is a significant amount of effort to exert over a 10-15 second period of time before wanting to take a rest. 2) It doesn't matter what time of day you exercise however, your body will respond best if you choose the same time each day to train.

Exercise #2 Workout Summary

Muscles used: Hip Flexors, Knee Extensors

The final holding position for the right leg is shown in Figure 2a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 2b.



Figure 2a. Final holding position for right leg.



Figure 2b. Final holding position for left leg.

Repeat this process two more times giving you a total of three reps for the right leg and three for the left as shown in the table below:

Exercise #2

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) Isometric exercises are to be done with normal breathing. Do not hold your breath during the exercises because this may cause a sudden increase in blood pressure and/or light-headedness. 2) Use a watch or clock with a clearly visible second hand so that you can accurately time your isometric exercises. 3) Pay close attention to the way your body position is shown for each exercise, because correct positioning is needed to isolate specific muscle groups.

Exercise #3 Workout Summary

Muscles used: Hip Flexors, Knee Extensors

The final holding position for the right leg is shown in Figure 3a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 3b.



Figure 3a. Final holding position for right leg.



Figure 3b. Final holding position for left leg.

Repeat this process two more times giving you a total of three reps for the right leg and three for the left as shown in the table below:

Exercise #3

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) Always train within the physical limits of the band. What this means is, no matter how much effort you are exerting for a given exercise, the resistance band should still be capable of stretching a little further. If the band is stretched to its maximum where there is no more stretch left in it, you will essentially turn the resistance band into a static rope, or cable, incapable of returning any elastic force back. This greatly reduces its effectiveness. If this should happen to you, then watch the video on *How To Increase Resistance* and use one of the methods presented there. 2) It doesn't matter what time of day you exercise however, your body will respond best if you choose the same time each day to train.

Exercise #4 Workout Summary

Muscles used: Hip Extensors

The final holding position for the right leg is shown in Figure 4a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 4b.



Figure 4a. Final holding position for left leg.



Figure 4b. Final holding position for right leg.

Repeat this process two more times giving you a total of three reps for the left leg and three for the right as shown in the table below:

Exercise #4

Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) The key to this exercise is to keep the ankle that is off the ground, (left ankle in the example above) dorsi-flexed. This means your foot and toes are flexing up and back towards your shin. This helps prevent too much knee flexion (as in performing a leg curl) and forces the hamstring muscles to function more as hip extensors rather than knee flexors. 2) The right hand is shown bracing against a chair so that your upper body is not pulled forward during the exercise.

Exercise #5 Workout Summary

Muscles used: Hip Extensors

The final holding position for the right leg is shown in Figure 5a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 5b.



Figure 5a. Final holding position for left leg.



Figure 5b. Final holding position for right leg.

Repeat this process two more times giving you a total of three reps for the left leg and three for the right as shown in the table below:

Exercise #5

Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) All of the exercises recommend using between 70-80% of your maximum strength over a 10-15 second period of time. This is a significant amount of effort and the best way to gauge this is you should feel like you need to take a rest from the exercise around the 10 second mark. So when it's your turn to do an exercise, if you can easily hold the final position for a lot longer than the recommended 10-15 seconds, such as 20 seconds or more, then you do not have enough resistance and will need to increase it. 2) If you experience any abnormal discomfort during these exercises, ease off just a little bit. If the discomfort persists, consult with your physician before continuing.

Exercise #6 Workout Summary

Muscles used: Knee Flexors

The final holding position for the right leg is shown in Figure 6a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 6b.

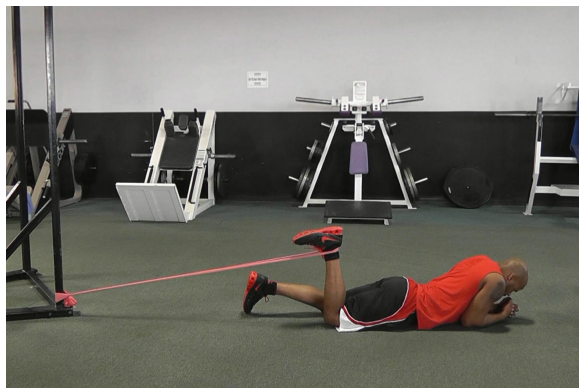


Figure 6a. Final holding position for right leg.



Figure 6b. Final holding position for left leg.

Repeat this process two more times giving you a total of three reps for the right leg and three for the left as shown in the table below:

Exercise #6

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) The exercises demonstrated in this program are meant to be physically challenging so if you find that your initial attempt with an exercise is too easy, you can either take an extra step away from the pole to further stretch the band, use a band with a higher resistance level, or use two or more bands at the same time. Remember, holding the final position for these exercises using 70-80% of your maximum strength is a significant amount of effort to exert over a 10-15 second period of time before wanting to take a rest. 2) It doesn't matter what time of day you exercise however, your body will respond best if you choose the same time each day to train. 3) Periodically check your resistance bands for any wear and tear. Replace them when necessary to prevent them from breaking during an exercise.

Exercise #7 Workout Summary

Muscles used: Knee Extensors, Hip Extensors

The final holding position for the right leg is shown in Figure 7a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 7b.



Figure 7a. Final holding position for right leg.



Figure 7b. Final holding position for left leg.

Repeat this process one more time giving you a total of three reps for this exercise as shown in the table below:

Exercise #7

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) Keep most of your weight on the front foot where the band is attached to and use the back foot mainly for balance. 2) Remember to always train within the physical limits of the band. What this means is no matter how much effort you are exerting for a given exercise, the resistance band should still be capable of stretching a little further. If the band is stretched to its maximum where there is no more stretch left in it, you will essentially turn the resistance band into a static rope, or cable, incapable of returning any elastic force back. This greatly reduces its effectiveness. If this should happen to you, then watch the video on "How to Increase Resistance" and use one of the methods presented there. 3) It doesn't matter what time of day you exercise however, your body will respond best if you choose the same time each day to train.

Exercise #8 Workout Summary

Muscles used: Ankle Plantarflexors or Calf Muscles

The final holding position for the right leg is shown in Figure 8a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 8b.



Figure 8a. Final holding position for right leg.



Figure 8a. Final holding position for left leg.

Repeat this process one more time giving you a total of three reps for this exercise as shown in the table below:

Exercise #8

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) Always train within the physical limits of the band. What this means is, no matter how much effort you are exerting for a given exercise, the resistance band should still be capable of stretching a little further. If the band is stretched to its maximum where there is no more stretch left in it, you will essentially turn the resistance band into a static rope, or cable, incapable of returning any elastic force back. This greatly reduces its effectiveness. If this should happen to you, then watch the video on *How To Increase Resistance* and use one of the methods presented there. 2) Use a watch or clock with a clearly visible second hand so that you can accurately time your isometric exercises. 3) Pay close attention to the way your body position is shown for each exercise, because correct positioning is needed to isolate specific muscle groups.

Exercise #9 Workout Summary

Muscles used: Ankle Plantarflexors or Calf Muscles

The final holding position for the right leg is shown in Figure 9a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 9b.



Figure 9a. Final holding position for right leg.



Figure 9b. Final holding position for left leg.

Repeat this process one more time giving you a total of three reps for this exercise as shown in the table below:

Exercise #9

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) Isometric exercises are to be done with normal breathing. Do not hold your breath during the exercises because this may cause a sudden increase in blood pressure and/or light-headedness. 2) Use a watch or clock with a clearly visible second hand so that you can accurately time your isometric exercises. 3) Pay close attention to the way your body position is shown for each exercise, because correct positioning is needed to isolate specific muscle groups.

Exercise #10 Workout Summary

Muscles used: Ankle Plantarflexors or Calf Muscles

The final holding position for the right leg is shown in Figure 10a. This position is held for 10-15 seconds using between 70-80% of your maximum strength. After a short rest, the same is then performed with your left leg as shown in Figure 10b.

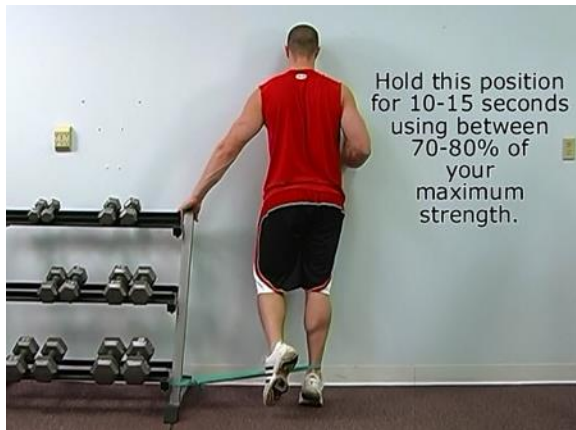


Figure 10a. Final holding position for right leg.



Figure 10b. Final holding position for left leg.

Repeat this process one more time giving you a total of three reps for this exercise as shown in the table below:

Exercise #10

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

Training Schedule: The *Progress Chart* and *Weekly Training Schedule* located in Section 5 will guide you through all of the exercises and allow you to chart your progress along the way.

Training Tips: 1) All of the exercises recommend using between 70-80% of your maximum strength over a 10-15 second period of time. This is a significant amount of effort and the best way to gauge this is you should feel like you need to take a rest from the exercise around the 10 second mark. So when it's your turn to do an exercise, if you can easily hold the final position for a lot longer than the recommended 10-15 seconds, such as 20 seconds or more, then you do not have enough resistance and will need to increase it. 2) Use a watch or clock with a clearly visible second hand so that you can accurately time your isometric exercises. 3) Pay close attention to the way your body position is shown for each exercise, because correct positioning is needed to isolate specific muscle groups.

Section 4

Muscles and Movements

HIP FLEXORS

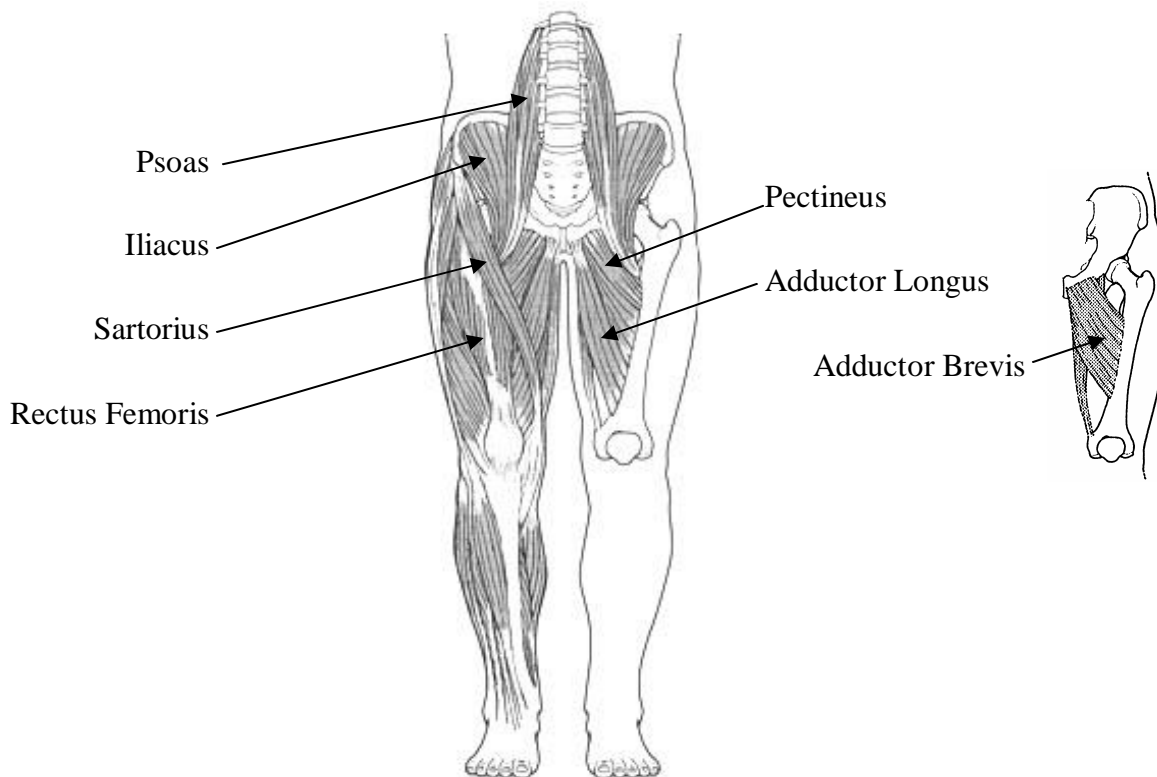


Figure 4-1. Hip Flexors.

The hip flexor muscles (also known as thigh flexors) are a group of seven muscles located on both sides of the body. Their names are: 1) Psoas, 2) Iliacus, 3) Sartorius, 4) Vastus Rectus (a.k.a Rectus Femoris), 5) Adductor Longus, 6) Adductor Brevis and 7) Pectineus. See Figure 4-1 above.

The hip flexors main function is to flex the thigh upon the pelvis. This occurs during activities such as running, jumping, and walking. This is illustrated in Figures 4-2a and 4-2b.



Figure 4-2a. Neutral hip position.



Figure 4-2b. Hip flexion.

HIP EXTENSORS

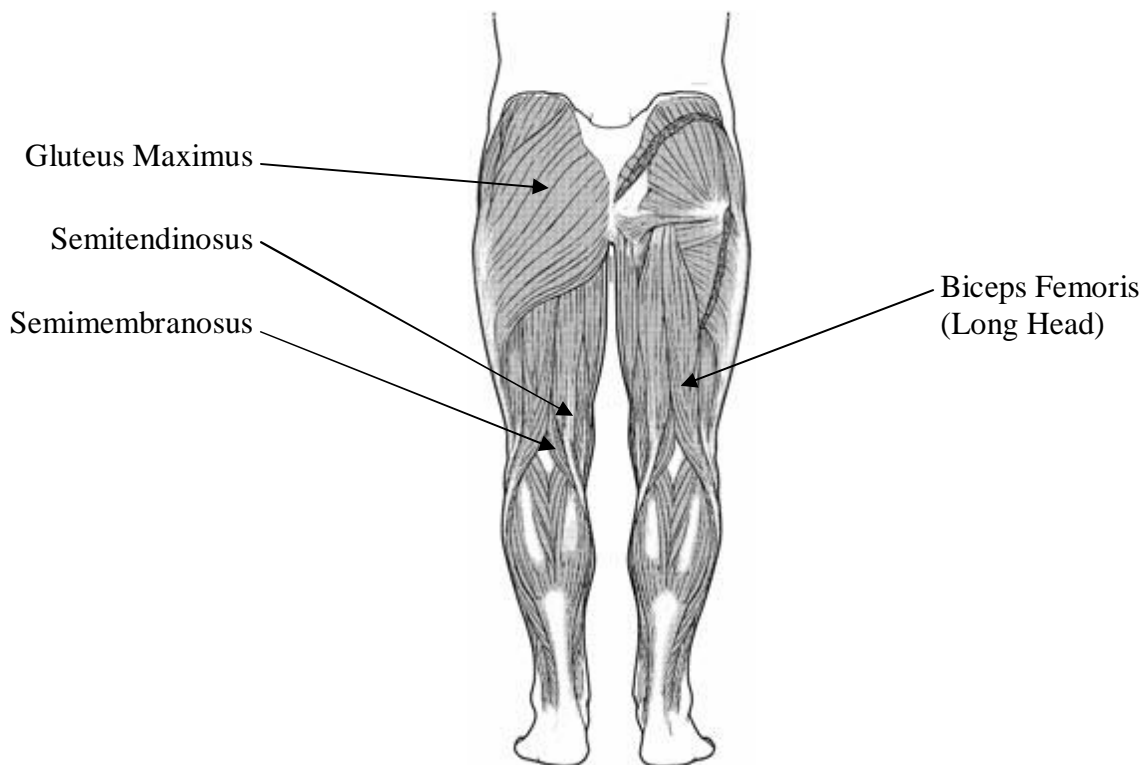


Figure 4-3. Hip Extensors.

The hip, or thigh, extensors consist of 4 muscles located in the buttocks region and behind the thigh. Their names are: 1) Gluteus Maximus, 2) Semimembranosus, 3) Semitendinosus, 4) Long Head of Biceps Femoris. See Figure 4-7 above. Note: The Semimembranosus, Semitendinosus and Biceps Femoris are commonly known as the hamstrings. See Figure 4-3 above.

The main function of the hip, or thigh extensors, is to extend the thigh behind your body. This occurs during activities such as running, jumping, walking, skating, and swimming. This is illustrated in Figures 4-4a and 4-4b.



Figure 4-4a. Neutral hip position.



Figure 4-4b. Hip extension.

KNEE FLEXORS (HAMSTRINGS)

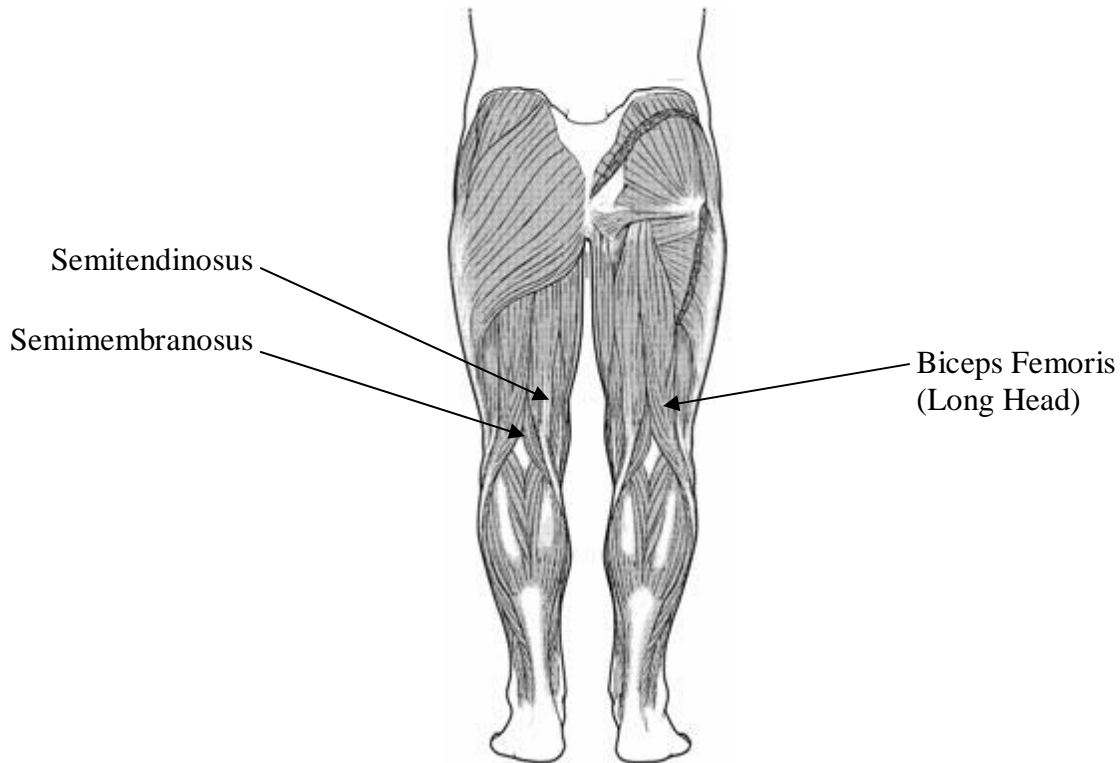


Figure 4-5 Knee Flexors.

The knee/leg flexors are a group of three muscles located in the posterior thigh region on both sides of the body. Their names are: 1) Semitendinosus, 2) Biceps Femoris and 3) Semimembranosus. They are commonly known as the hamstrings. See Figure 4-5 above.

The hamstrings have two functions: 1) flexion of the leg behind the thigh, also known as knee flexion, as seen in Figure 4-6a below and 2) extension of the thigh behind the hip, also known as hip extension, as seen in Figure 4-6b below.



Figure 4-6a. Knee flexion.



Figure 4-6b. Hip extension.

KNEE EXTENSORS (QUADRICEPS)

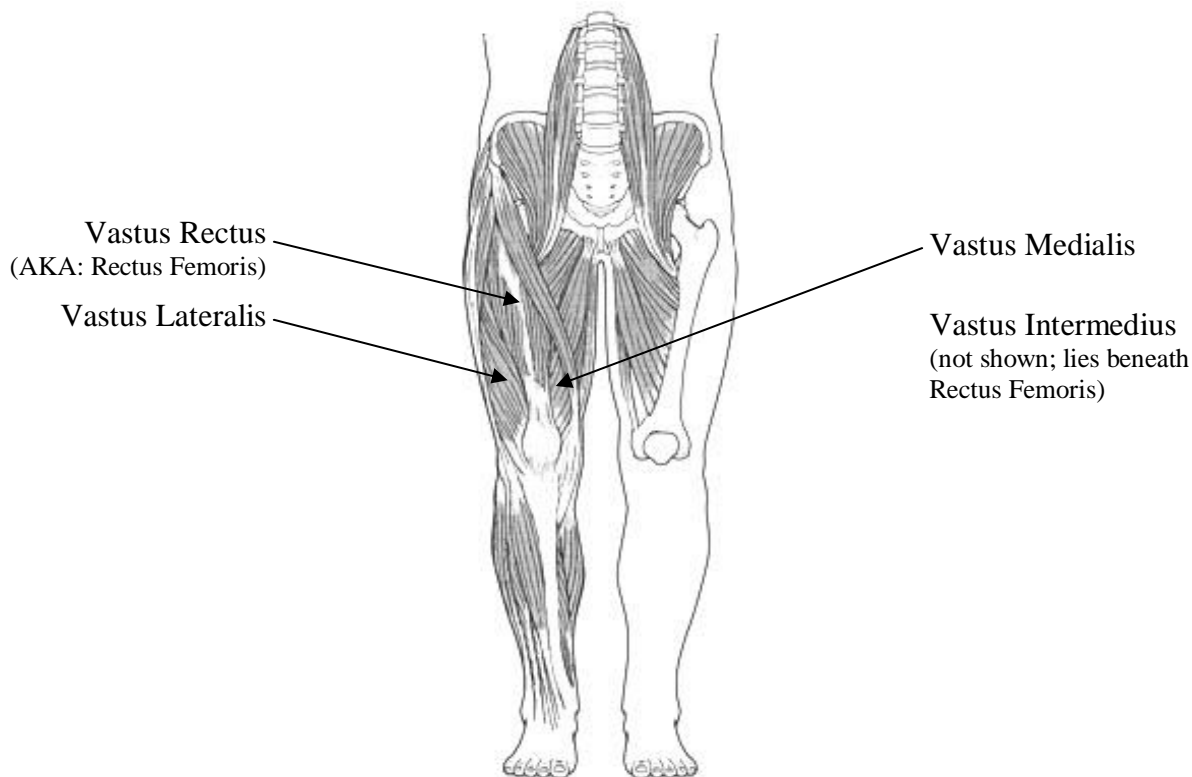


Figure 4-7. Knee Extensors.

The knee/leg extensors are a group of four muscles located in the anterior thigh region on both sides of the body. Their names are: 1) Vastus Rectus (a.k.a. Rectus Femoris), 2) Vastus Medialis, 3) Vastus Lateralis and 4) Vastus Intermedius. They are commonly known as the quadriceps, or quads. These muscles are shown in Figure 4-7 above.

The quadriceps main function is to extend the leg at the knee. This occurs during activities such as running, jumping, kicking, standing and walking. This is illustrated in Figures 4-8a and 4-8b.



Figure 4-8a. Knee in flexion while standing.



Figure 4-8b. Knee in extension while standing.

ANKLE PLANTAR-FLEXORS

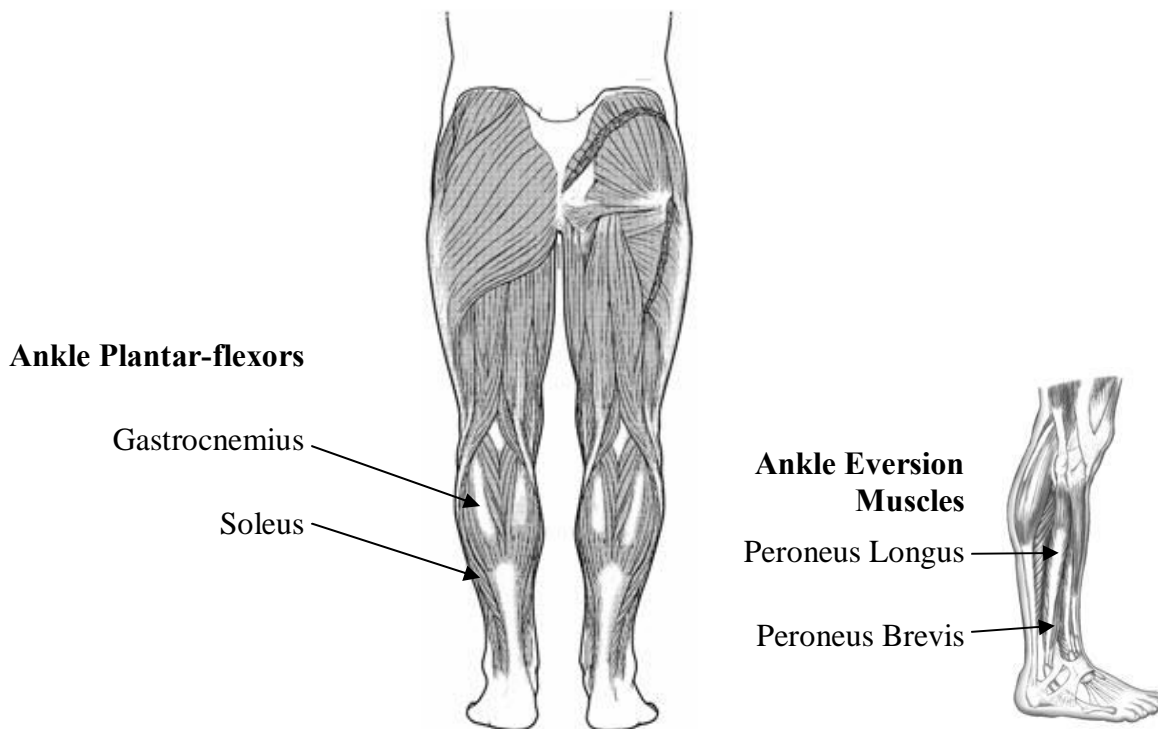


Figure 4-9a. Ankle Plantar-flexors.

Figure 4-9b. Ankle Eversion Muscles.

The Ankle Plantar-flexors are located in the posterior leg region of the body. They are commonly called the calf muscles. Their names are: 1) Gastrocnemius and 2) Soleus. See Figure 4-9 above. Their main function is to plantarflex the ankle. This occurs during jumping, running and walking. This is illustrated in Figures 4-10c and 4-10d.



Figure 4-10c. Neutral ankle position.



Figure 4-10d. Ankle plantar-flexion.

The ankle eversion muscles are located in the lateral lower leg region. Their names are Peroneus Longus and Peroneus Brevis. They provide support and strength to the ankle joint. See Figure 4-9b above.

Section 5

Progress Chart
Weekly Training Schedule
Important Training Tip Reminders

PROGRESS CHART

Name _____ Date Started _____

STEP 1. Record your highest and longest jumps in Progress Chart 1 and your fastest times in Progress Chart 2 before starting the exercises. See below:

Progress Chart 1. Record jumping height and/or distance.	
Type of Jump	Height/Distance
Running Vertical Jump	Inches
Standing Vertical Jump	Inches
High Jump	Feet-Inches
Long Jump	Feet-Inches
Triple Jump	Feet-Inches
Broad Jump	Feet-Inches

Progress Chart 2. Record your fastest time in each race.	
Type of Race	Time
40 yard dash	Seconds
60 meter dash	Seconds
100 meter dash	Seconds
200 meter dash	Seconds
400 meter dash	Seconds
Other:	Seconds

STEP 2. Complete the *Weekly Training Schedule* located on the next page for two consecutive weeks. Allow yourself 2 days of rest after your last exercise session, then proceed to STEP 3.

STEP 3. Now record your highest and longest jumps in Progress Chart 3 below and note the improvement. Also, record your fastest times in Progress Chart 4 below and note the improvement.

Progress Chart 3. Record jumping height and/or distance and note the improvement.		
Type of Jump	Height/Distance	Improvement
Running Vertical Jump	Inches	Inches
Standing Vertical Jump	Inches	Inches
High Jump	Feet-Inches	Feet-Inches
Long Jump	Feet-Inches	Feet-Inches
Triple Jump	Feet-Inches	Feet-Inches
Broad Jump	Feet-Inches	Feet-Inches

Progress Chart 4. Record your fastest time in each race and note the improvement.		
Type of Race	Time	Improvement
40 yard dash	Seconds	Seconds
60 meter dash	Seconds	Seconds
100 meter dash	Seconds	Seconds
200 meter dash	Seconds	Seconds
400 meter dash	Seconds	Seconds
Other:	Seconds	Seconds

STEP 4. After you have completed the initial two weeks of training it is recommended that you continue on with this same schedule for as long as you continue to see improvement and for as long as you plan to stay competitive in your sport. After you have been performing these exercises for several months, you may be able to reduce your training down to once a week for each exercise, however, you will need to pay close attention to what effect this has on your athletic performance.

WEEKLY TRAINING SCHEDULE

The table below outlines your Weekly Training Schedule for all ten exercises. As noted, Exercises #1-#5 are performed on Days 1 and 4 and Exercises #6-#10 are performed on Days 2 and 5.

Day of Week	Weekly Training Schedule				
1	Exercise #1	Exercise #2	Exercise #3	Exercise #4	Exercise #5
2	Exercise #6	Exercise #7	Exercise #8	Exercise #9	Exercise #10
3	Rest Day	Rest Day	Rest Day	Rest Day	Rest Day
4	Exercise #1	Exercise #2	Exercise #3	Exercise #4	Exercise #5
5	Exercise #6	Exercise #7	Exercise #8	Exercise #9	Exercise #10
6	Rest Day	Rest Day	Rest Day	Rest Day	Rest Day
7	Rest Day	Rest Day	Rest Day	Rest Day	Rest Day

Each exercise listed in Section 3 of this program contains a different table that instructs you to perform it three (3) times on the recommended day before moving on to the next exercise. For example, Exercise #1 is performed on Day 1 (as well as Day 4) of the week. Do this exercise 3 times with each leg, alternating between them as you go. See Table below:

Exercise #1

Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Right Leg	Hold position for 10-15 seconds.	Rest 15 seconds.
Left Leg	Hold position for 10-15 seconds.	Rest 15 seconds.

TOTAL EXERCISE TIME: 3 Minutes Maximum

When finished, proceed to Exercise #2 and do likewise before continuing on to the next until all five exercises for that day have been completed.

With each exercise taking around 3 minutes to complete, it should take you about 15 minutes total to complete all five exercises for any given day.

IMPORTANT TRAINING TIP REMINDERS

Tip #1. The exercises demonstrated in this program are meant to be physically challenging. If you find that your initial attempt with an exercise is too easy then you will need to increase the resistance by either adding in another resistance band, using a stronger band and/or repositioning yourself further away from where your band is attached to stretch it further.

Tip #2. Always train within the physical limits of the band. What this means is, no matter how much effort you are exerting for a given exercise, the resistance band should still be capable of stretching a little further. If the band is stretched to its maximum where there is no more stretch left in it, you will essentially turn the resistance band into a static rope, or cable, incapable of returning any elastic force back. This greatly reduces its effectiveness. If this should happen to you, then watch the video on *How To Increase Resistance* and use one of the methods presented there.

Tip #3. All of the exercises recommend using between 70-80% of your maximum strength over a 10-15 second period of time. This is a significant amount of effort and the best way to gauge this is you should feel like you need to take a rest from the exercise around the 10 second mark. So when it's your turn to do an exercise, if you can easily hold the final position for a lot longer than the recommended 10-15 seconds, such as 20 seconds or more, then you do not have enough resistance and will need to increase it.



“With your newly conditioned leg muscles, you should feel your legs springing effortlessly forward and upward when you go for that extra burst of speed and take-off when jumping!”