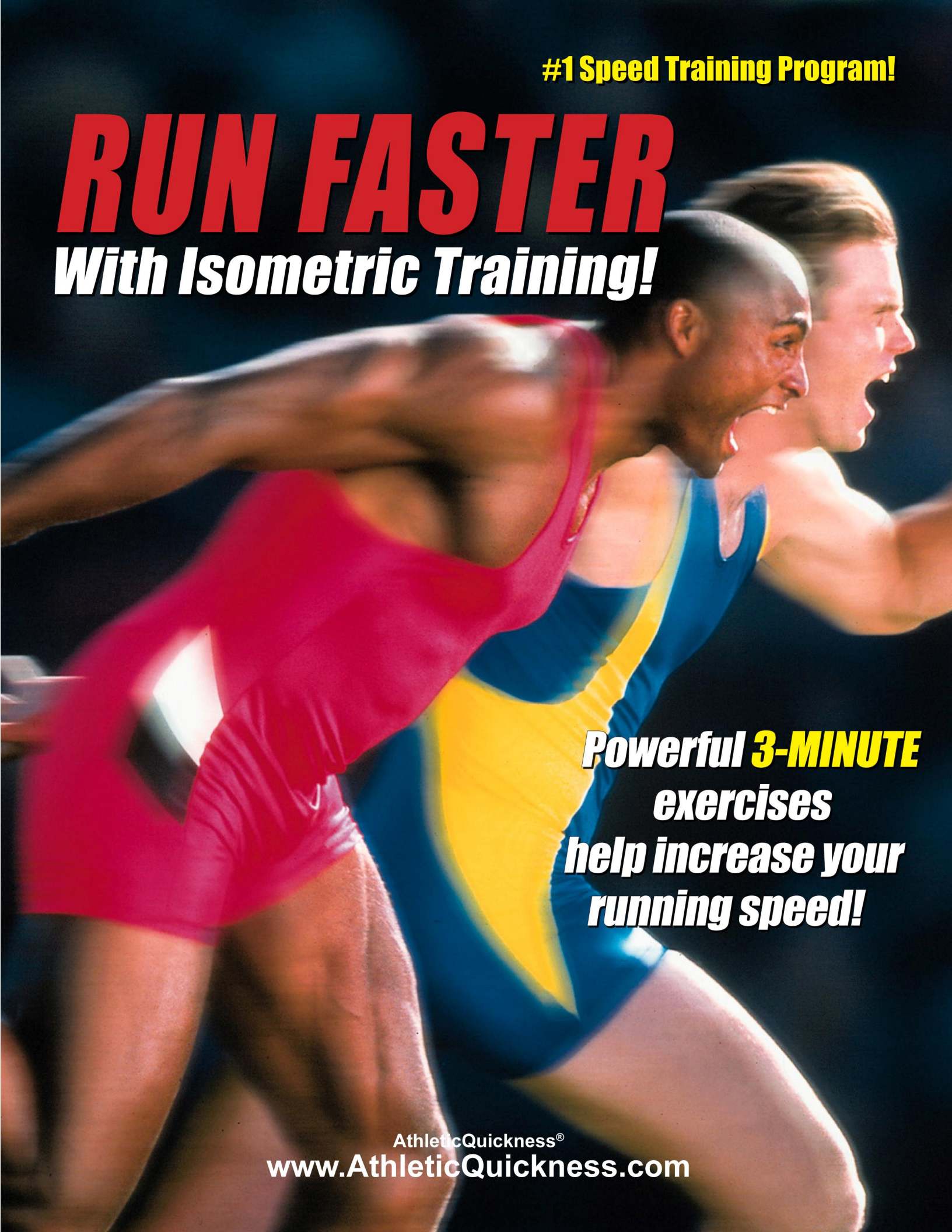
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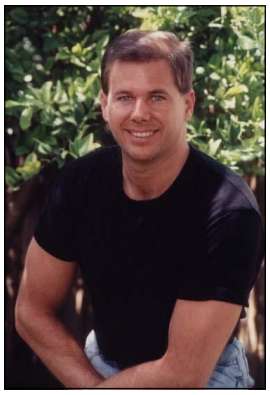

Dr. Larry Van Such, DC, BE

Dear Athlete,

Thank you for your interest in the *Run Faster 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,

Dr. Larry Van Such, DC, BE

Section 1

Isometric Training
Muscular Contraction
The Resistance Band
The Running Process

ISOMETRIC TRAINING

The word ISOMETRIC is defined as follows: ôisoô means equal or the same, and ômetricô means length. Combining these two definitions we get ôequal or the same lengthô. 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 doesnôt 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 doesnôt 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:

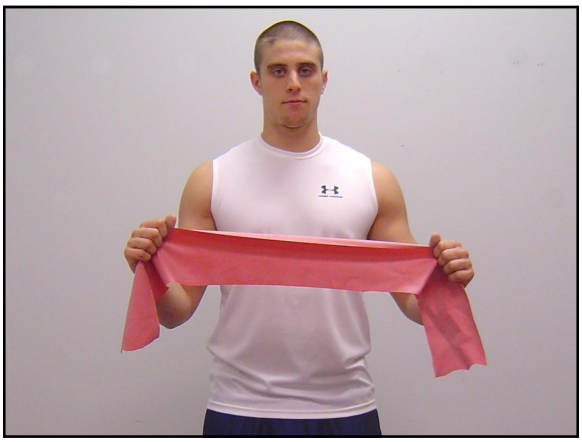

Figure 1-3. The resistance or exercise band.

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 force 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.

Hereôs 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 bandôs 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 muscleôs 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 muscleôs 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 running process.

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 1-4a, 1-4b, 1-4c and 1-4d show the stages of the push phase shortly after the start of a race for the *right* leg. See below:

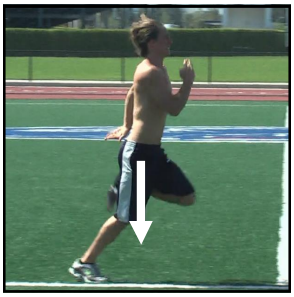

Figure 1-4a. Start of the push phase. Right thigh is perpendicular to the ground.

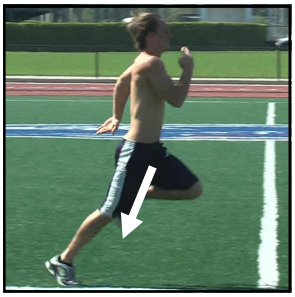

Figure 1-4b. Middle of the push phase. Right thigh and leg are extending.

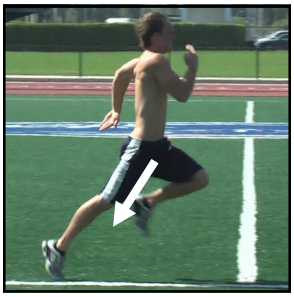

Figure 1-4c. Continuation of push phase. Right thigh and leg near complete extension.

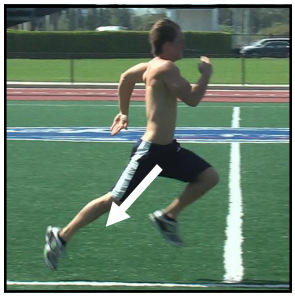

Figure 1-4d. End of push phase. Right thigh and leg fully extended. Right foot makes last contact with ground.

The muscles involved in the push phase are the knee extensors (Figure 1-7, page 7), hip extensors (Figure 1-8, page 7) and the ankle plantar-flexors (Figure 1-8, page 7).

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 what many people refer to as their *stride*. Training to improve 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 1-5a, 1-5b, 1-5c and 1-5d below show the basic stages of the swing phase for the *right* leg:

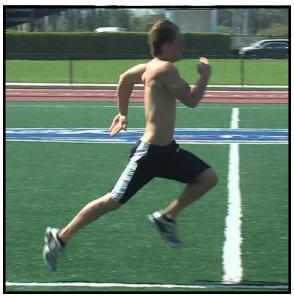

Figure 1-5a. Start of the swing phase. Right foot has just left the ground.

Figure 1-5b. Middle of swing phase. Right thigh is being pulled forward.

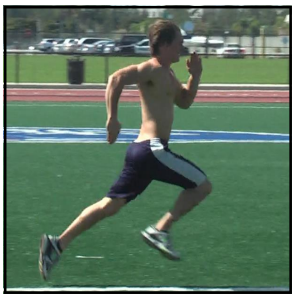

Figure 1-5c. Continuation of swing phase. Right thigh is now flexed in front of runner.

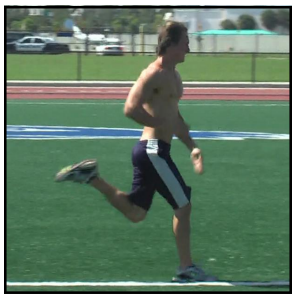

Figure 1-5d. End of swing phase. Right foot strikes the ground in front of runner.

The muscles involved in the swing phase are the hip flexors (Figure 1-7, page 7), knee flexors (Figure 1-8, page 7) and knee extensors (Figure 1-7, page 7).

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 1-6a, 1-6b, 1-6c and 1-6d below show the basic stages of the return phase for the *right* leg:

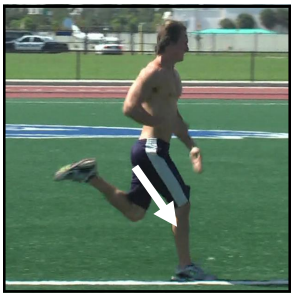

Figure 1-6a. Start of return phase. Right foot on the ground; right thigh (arrow) is flexed on the hip.

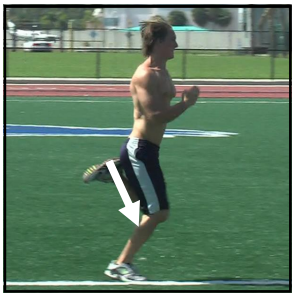

Figure 1-6b. Middle of return phase. Right thigh (arrow) flexed but runner is being pulled forward.

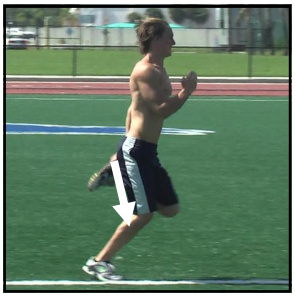

Figure 1-6c. Continuation of return phase. Right thigh (arrow) almost perpendicular to ground beneath runner.

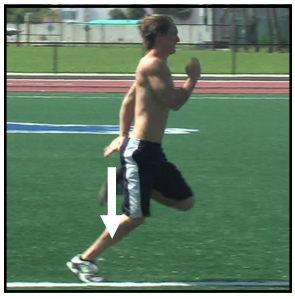

Figure 1-6d. End of return phase. Right thigh (arrow) perpendicular to ground; push phase set to repeat.

The primary muscle groups involved in the return phase are the hip extensors (Figure 1-8, page 7) and to a lesser extent, the knee flexors (Figure 1-8, page 7). Note: the hamstring muscles have two functions: 1) hip extension and 2) knee flexion.

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.

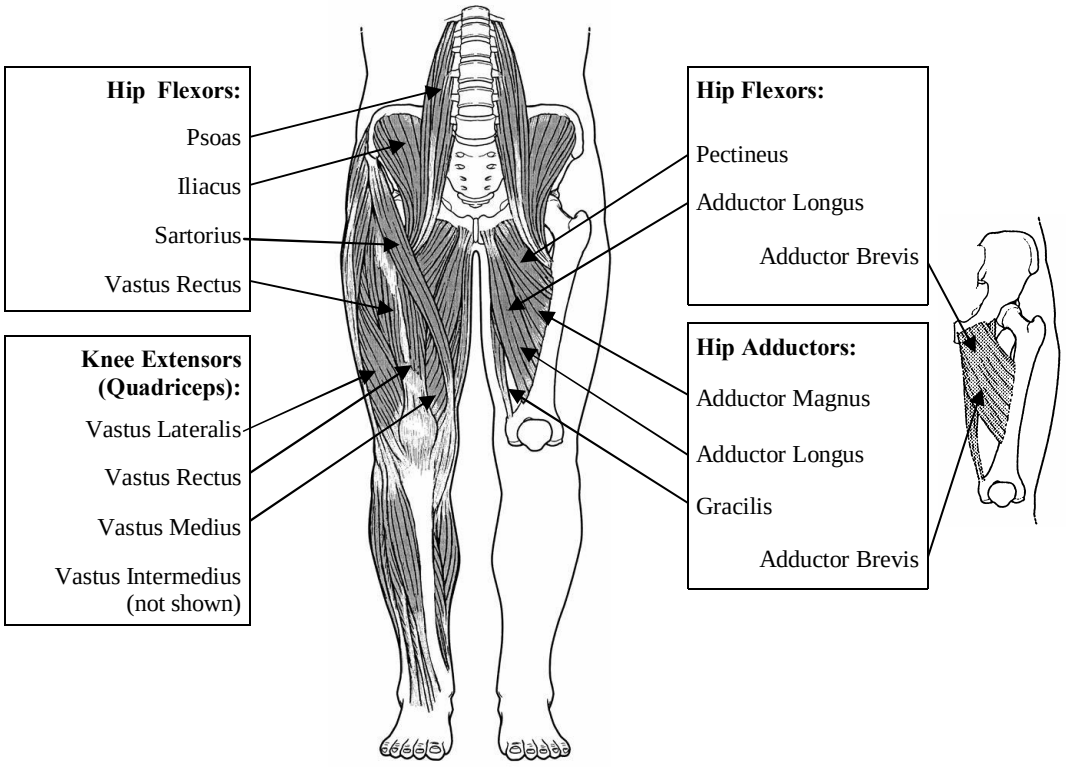

Figure 1-7.

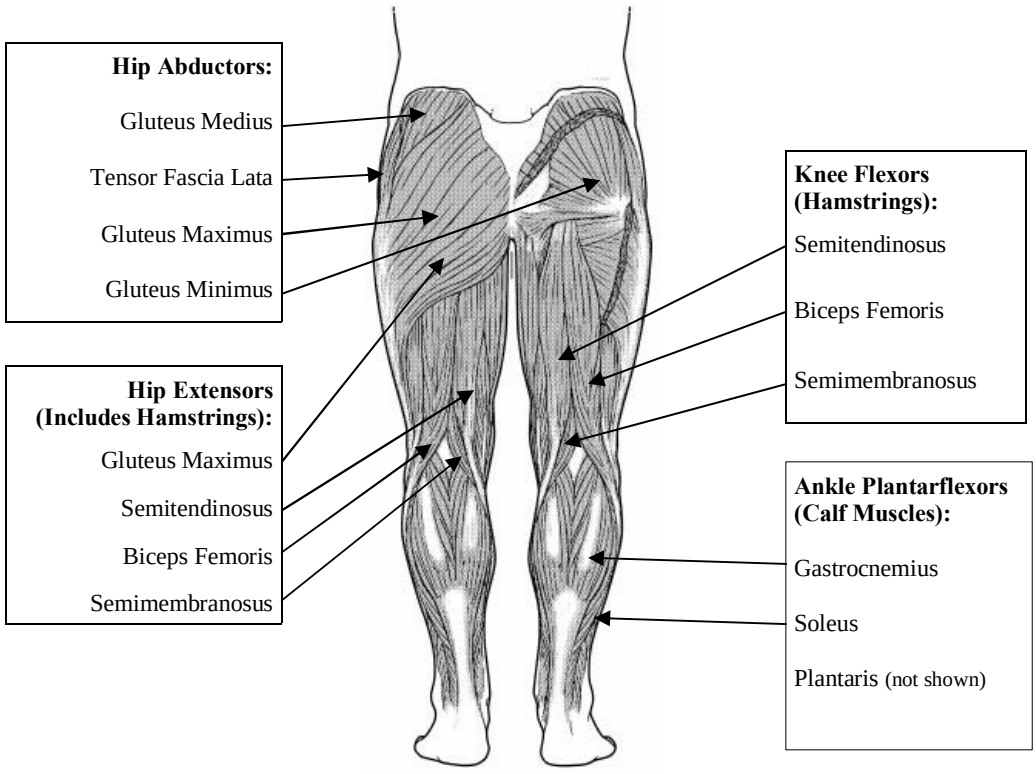

Figure 1-8.

Section 2

Instructions

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 chapter one, 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 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.

Take a moment now and look ahead to page 14; then take a look at Figure 3-1e. This is the final holding position for Exercise #1 and it is held in this position 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.

2. Attaching the resistance band. This training program comes with at least two resistance bands. All of the exercises require you to attach your bands around an immovable object such as a pole. See again page 14, Figure 3-1e. Here, the band is attached around a pole or heavy table leg. When it is time for you to attach your bands to a similar object, here are two simple rules to follow: 1) make sure the object you tie the band to is really immovable relative to your own strength, and 2) 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. 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, then you are not using enough effort. If you feel like you need a break around the 10 second mark (similar to the breaks taken between weightlifting sets), 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 ahead again to page 14, Figure 3-1e (this is the final position for Exercise #1). 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. Again, look ahead to page 14, Figure 3-1e. This is the final holding position for Exercise #1 and it is shown in Figure 2-1a on the next page. When

you perform this exercise, if it appears too easy to hold this position, then using a second band will help make it more difficult. Simply tie a knot in the second band and attach it next to the other. This is shown in Figure 2-1b. This is the same exercise except two bands are used at the same time to increase the resistance.

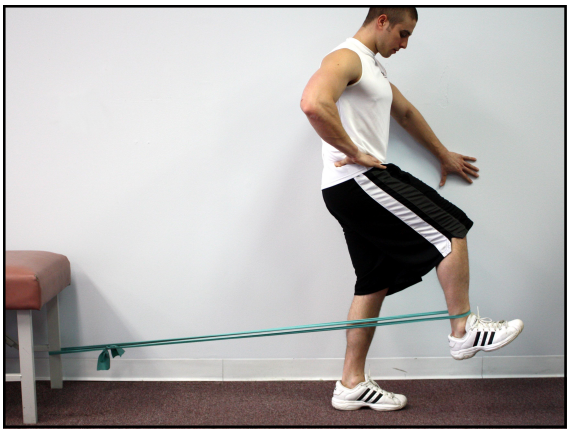

Figure 2-1a. Final holding position for Exercise #1 using one band.

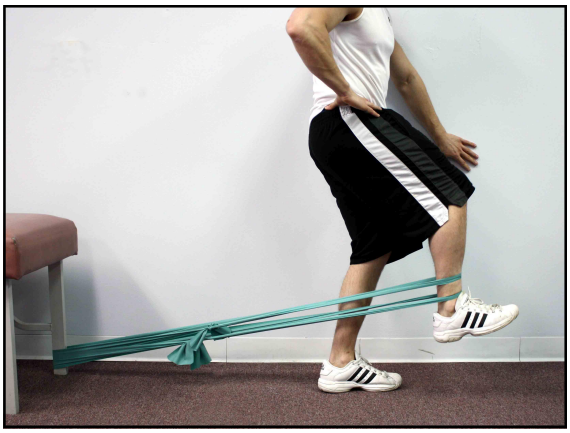

Figure 2-1b. Final holding position for Exercise #1 using two bands.

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. By combining the bands that came with this program, you should be able to achieve enough resistance to meet most, if not all, of your needs.

6. You can use bands with a higher resistance level. Each band has a specific color that corresponds to a particular resistance level ranging from the color *red* which is of light resistance to the color *gold* which is of xxx-heavy resistance. By using a band with more resistance, you should be able to exercise well within the physical abilities of that particular band. See the *Product Information* section in the appendix for all available bands.

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. Its important to maintain proper form with each exercise, and finding something to balance against while you do them is essential for your success.

In Figures 2-1a and 2-1b above, the athlete is shown balancing against a wall while this exercise is being performed. If you are doing these in your home, walls make good places to balance against since they provide you with a sturdy support should you need it. However, be careful there are no items on the walls such as pictures or mirrors 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 wonôt 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 setup, 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.

Chapter 3

How To Get The Most From This Program
Exercises #1 - #10

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 *Training Routine* found in the appendix.

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.

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

SECOND IMPORTANT NOTICE. Muscles listed underneath each exercise are considered the primary muscles involved for that exercise. Other secondary muscles may be involved but not listed.

EXERCISE #1

Muscles Trained: Leg with band—Hip Flexors (Figure 1-7, page 7) and Knee Extensors (Figure 1-7, page 7).
Leg on ground—Internal Hip Rotators to counter the rotation caused by this exercise.

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a *pole*), as shown in Figure 3-1a. Next, place your right foot inside the loop with your back facing the pole as shown in Figure 3-1b.

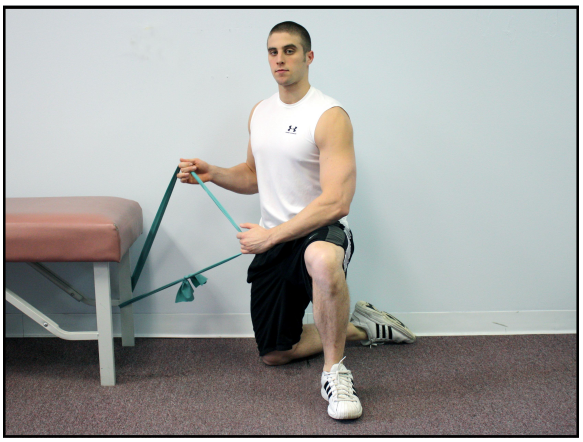

Figure 3-1a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-1b. Right foot inside the loop with your back facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole or other immovable object in the direction of the black arrow as shown until you feel the tension in your right hip flexors and quadriceps (white arrows) starting to increase. See Figure 3-1c.

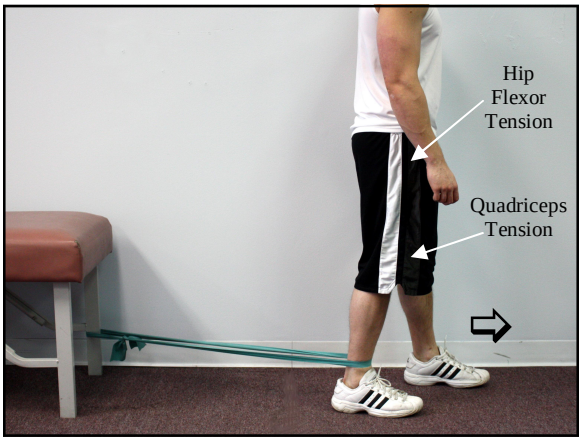

Figure 3-1c. Body positioned further away from the pole.
Resistance band is now stretched.
Tension is felt in your right hip flexors and quadriceps.

STEP 3. Lift your right foot off the ground about 12 inches as shown in Figure 3-1d. Finally, extend your right foot forward in the direction of the black arrow as shown in Figure 3-1e and then hold this position without changing it for 10-15 seconds. See both figures on the next page:

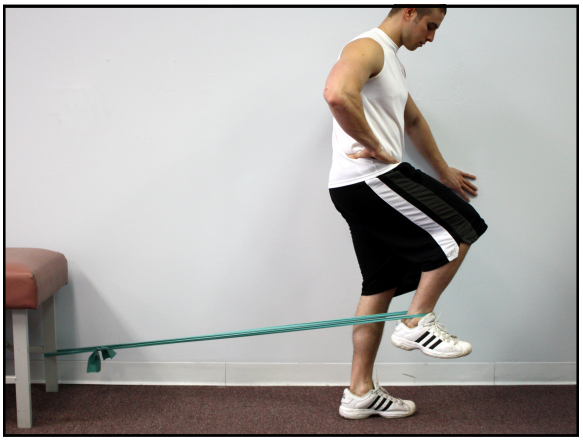

Figure 3-1d. Right foot raised off the ground about 12 inches.

Figure 3-1e. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Repeat STEPS 1-3 with your left leg.

TRAINING TIPS. 1) The most important aspect of this, and all of the exercises, is to hold and maintain the final position for 10-15 seconds using between 70-80% of your maximum strength; this is the key to your speed training success. 2) You may need to reposition yourself closer to, or farther from, where the band is attached to achieve the proper amount of resistance. 3) It may be helpful to balance yourself against a wall or a chair to counterbalance the twisting effect this exercise has on your upper body. 4) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #2

Muscles Trained: Leg with band—Hip Flexors (Figure 1-7, page 7) and Knee Extensors (Figure 1-7, page 7).
Leg on ground—Internal Hip Rotators to counter the rotation caused by this exercise.

NOTE: This exercise is a modification to Exercise #1. It may appear similar however, it has a different final holding position.

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a *pole*), as shown in Figure 3-2a. Next, place your right foot inside the loop with your back facing the pole as shown in Figure 3-2b.

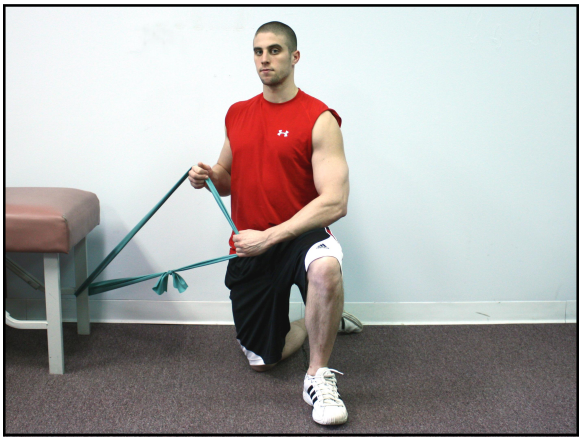

Figure 3-2a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

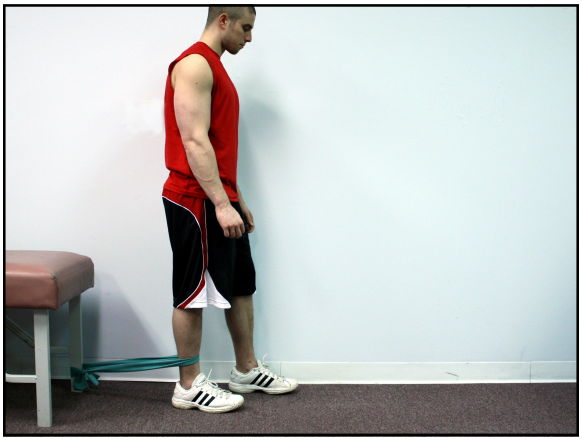

Figure 3-2b. Right foot inside the loop with your back facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole or other immovable object in the direction of the black arrow as shown until you feel the tension in your right hip flexors and quadriceps (white arrows) starting to increase. See Figure 3-2c.

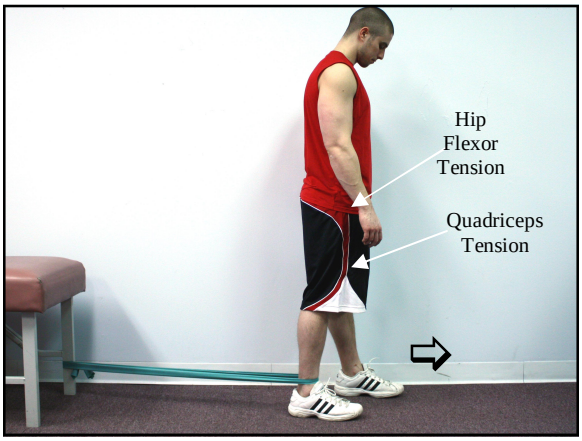

Figure 3-2c. Body positioned further away from the pole.
Resistance band is now stretched.
Tension is felt in your right hip flexors and quadriceps.

STEP 3. Lift your right foot off the ground about a foot and a half (18 inches) as shown in Figure 3-2d. (Note: this is a lot higher than the final holding position for Exercise #1 and your right thigh is now almost parallel to the ground.) Finally, extend your right foot forward in the direction of the black arrow as shown in Figure 3-2e and then hold this position without changing it for 10-15 seconds. See below:

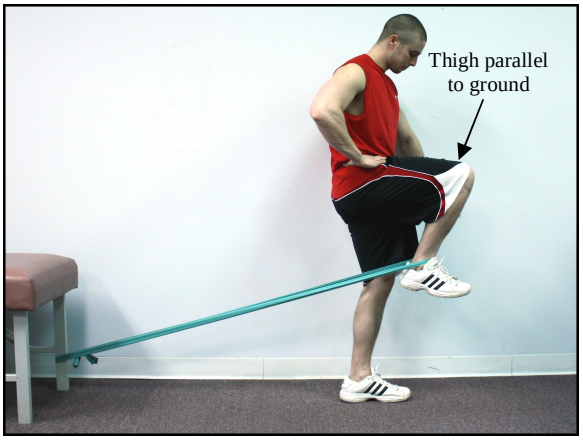

Figure 3-2d. Right foot raised off the ground about a foot and a half (18 inches).

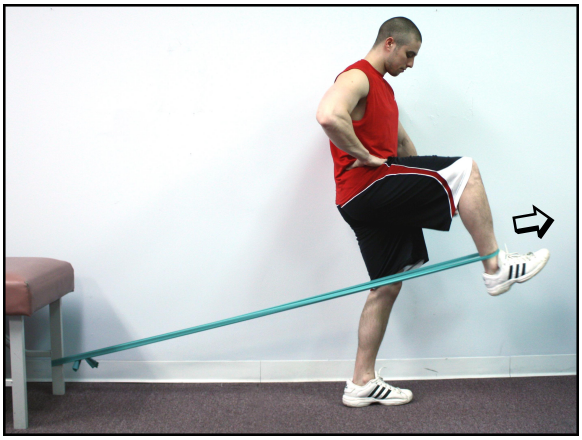

Figure 3-2e. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Repeat STEPS 1-3 with your left leg.

TRAINING TIPS. 1) You may need to reposition yourself closer to, or farther from, where the band is attached to achieve the proper amount of resistance. 2) It may be helpful to balance yourself against a wall or a chair to counterbalance the twisting effect this exercise has on your upper body. 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. 4) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #3

Muscles Trained: Leg with band—Hip Flexors (Figure 1-7, page 7) and Knee Extensors (Figure 1-7, page 7).
Leg on ground—Internal Hip Rotators to counter the rotation caused by this exercise.

NOTE: This exercise is also a modification to Exercise #1. It may appear similar however, it too has a different final holding position.

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a *pole*), as shown in Figure 3-3a. Next, place your right foot inside the loop with your back facing the pole as shown in Figure 3-3b.

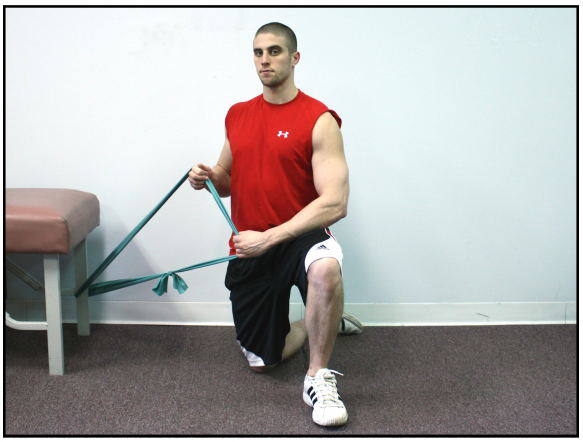

Figure 3-3a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-3b. Right foot inside the loop with your back facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole or other immovable object in the direction of the black arrow as shown until you feel the tension in your right hip flexors and quadriceps (white arrows) starting to increase. See Figure 3-3c.

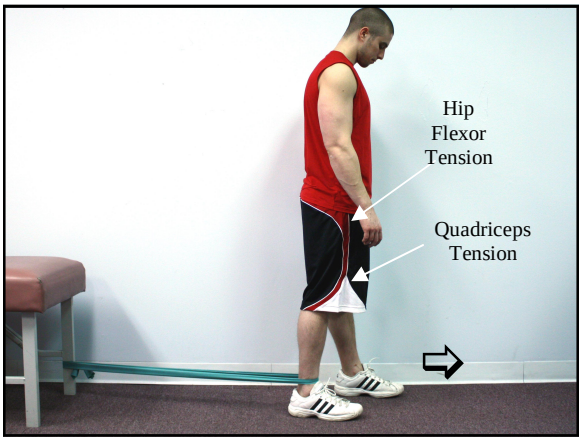

Figure 3-3c. Body positioned further away from the pole.
Resistance band is now stretched.
Tension is felt in your right hip flexors and quadriceps.

STEP 3. Take an additional step forward to stretch the band even further. See Figure 3-3d on the next page. (Note: this is further away than where you were for Exercise #1 and this additional distance is necessary so that you end up with the proper amount of resistance and effort in the final hold position. The length of this extra step will also depend on the length of the band you are using. Some may only need to take a half step further forward to end up with the proper amount of resistance.) Finally, pull your right leg and foot forward, keeping your knee slightly bent, and stop at a position when your right foot is beneath you. Hold this position without changing it for 10-15 seconds. See Figure 3-3e on the next page:

Figure 3-3d. Taking an extra step to eventually stretch the band even further.

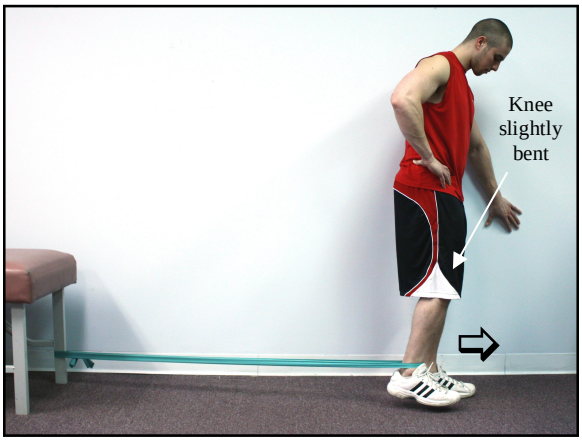

Figure 3-3e. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Repeat STEPS 1-3 with your left leg.

TRAINING TIPS. 1) The most important aspect of this, and all of the exercises, is to hold and maintain the final position for 10-15 seconds using between 70-80% of your maximum strength; this is the key to your speed training success. 2) It may be helpful to balance yourself against a wall or a chair to counterbalance the twisting effect this exercise has on your upper body. 3) Isometric exercises are to be done with normal breathing. Do not hold your breath during the exercises because this may cause a sudden change in blood pressure and/or light-headedness. 4) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #4

Muscles Trained: Leg with band—Hip Extensors (Figure 1-8, page 7) and Knee Flexors (Figure 1-8, page 7).
Leg on ground—External Hip Rotators to counter the rotation caused by this exercise

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a *pole*), as shown in Figure 3-4a. Next, place your left foot inside the loop while facing the pole as shown in Figure 3-4b.

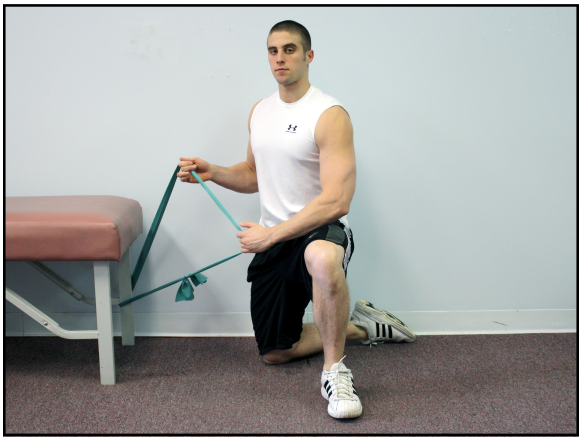

Figure 3-4a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-4b. Left leg placed inside the loop while facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole (backwards) or other immovable object in the direction of the black arrow as shown until you feel the tension in your left hip extensors (white arrows) starting to increase. See Figure 3-4c. Next, raise your left foot off the ground a few inches. See Figure 3-4d.

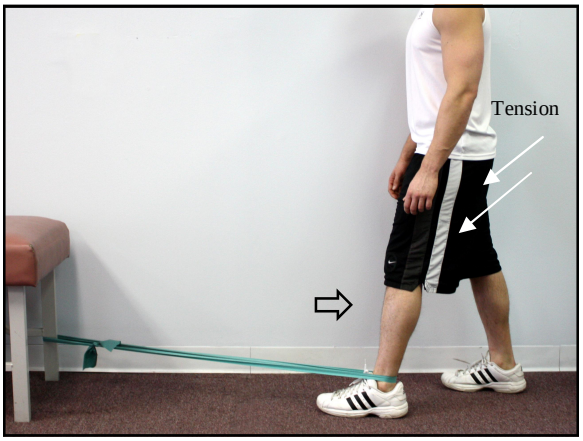

Figure 3-4c.

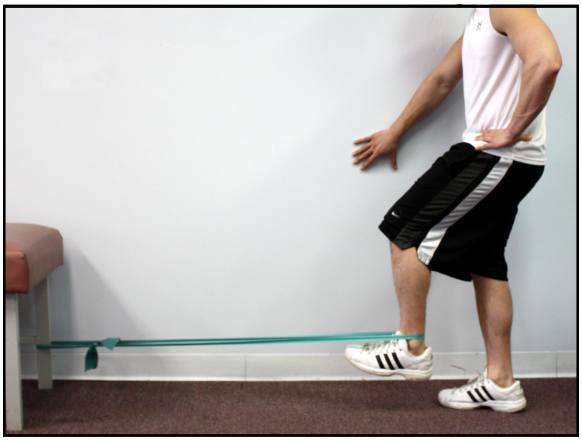

Figure 3-4d.

STEP 3. Pull your left thigh and leg backwards (keeping your knee in this slightly flexed position and ankle extended) in the direction of the black *outlined* arrow as shown in Figure 3-4e. Stop at a position when your foot is beneath you and then hold this position without changing it for 10-15 seconds. See Figure 3-4e.

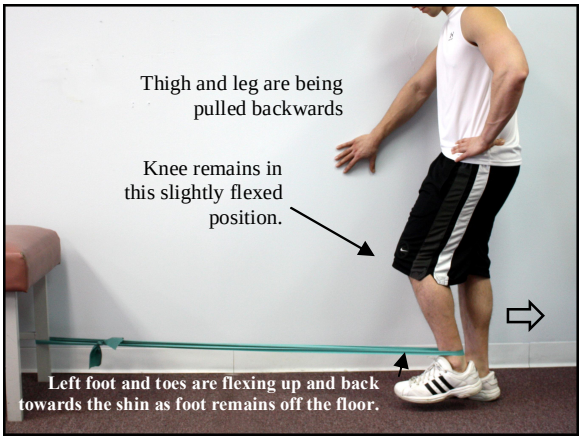

Figure 3-4e. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Repeat STEPS 1-3 with your right leg.

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 the wall. The left hand may be more helpful to brace against the back of a chair (not shown), so that your upper body is not pulled forward during the exercise. 3) To increase the resistance, either shorten the band, use two or more bands together, or move away from the pole a little further. 4) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #5

Muscles Trained: Leg with band—Hip Extensors (Figure 1-8, page 7) and Knee Flexors (Figure 1-8, page 7).
Leg on ground—External Hip Rotators to counter the rotation caused by this exercise

NOTE: This exercise is a modification to Exercise #4. It may appear similar however, it has a different final holding position.

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a *pole*), as shown in Figure 3-5a. Next, place your left foot inside the loop while facing the pole as shown in Figure 3-5b.

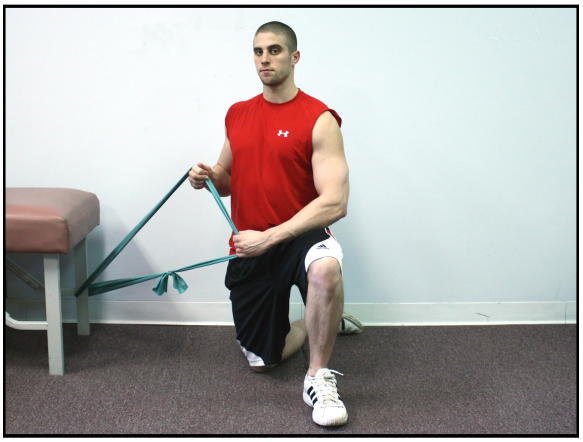

Figure 3-5a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-5b. Left leg placed inside the loop while facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole (backwards) or other immovable object in the direction of the black arrow as shown until you feel the tension in your left hip extensors (white arrows) starting to increase. See Figure 3-5c.

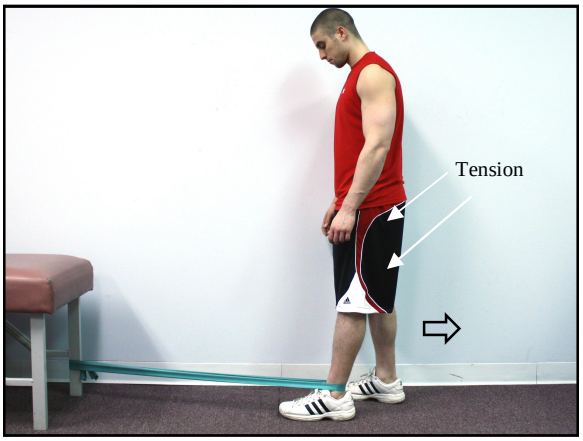

Figure 3-5c. Body positioned further away from the pole. Resistance band is now stretched.

STEP 3. Finally, extend your left thigh and leg backwards, behind you, in the direction of the black *outlined* arrow and then hold this position without changing it for 10-15 seconds. See Figure 3-5d.

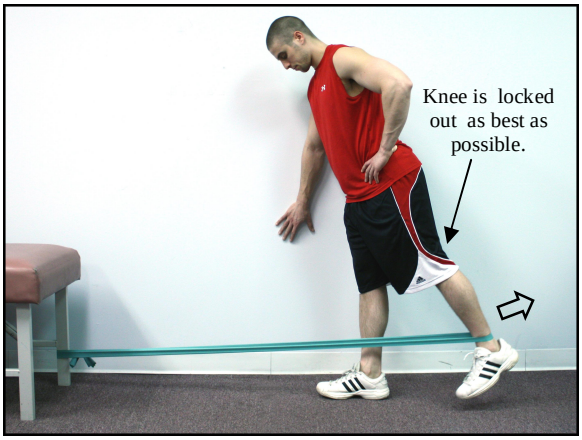

Figure 3-5d. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Repeat STEPS 1-3 with your right leg.

TRAINING TIPS. 1) You may need to reposition yourself closer to, or farther from, where the band is attached to achieve the proper amount of resistance. 2) The right hand is shown bracing against the wall. The left hand may be more helpful to brace against the back of a chair (not shown), so that your upper body is not pulled forward during the exercise. 3) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #6

Muscles Trained: Hip Adductors (Figure 1-7, page 7).

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a pole), as shown in Figure 3-6a. Next, place your right foot inside the loop with your right side facing the pole as shown in Figure 3-6b.

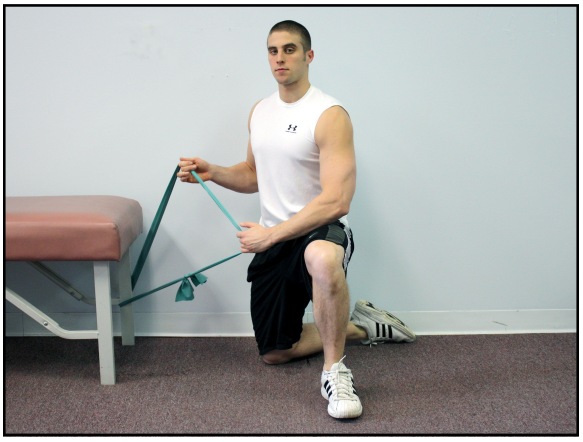

Figure 3-6a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-6b. Right leg inside the loop with your right side facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole (sideways) or other immovable object in the direction of the black arrow as shown until you feel the tension in your right adductors (white arrows) starting to increase. See Figure 3-6c.

Figure 3-6c. Body positioned further away from the pole. Resistance band is now stretched. Tension in your right adductors is starting to increase.

STEP 3. Cross your right leg over your left (adduction of right leg) in the direction of the arrow as shown and then hold this position without changing it for 10-15 seconds. See Figure 3-6d.

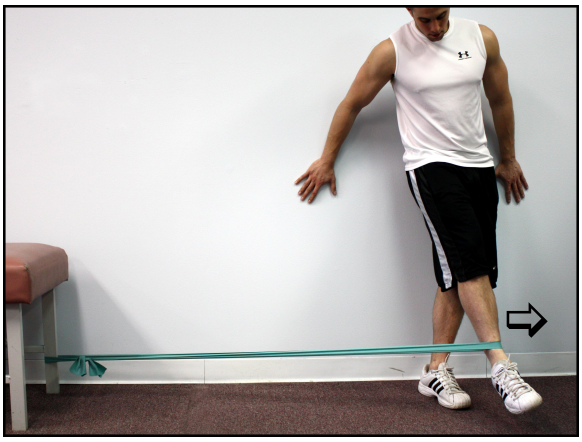

Figure 3-6d. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Face the other direction and repeat STEPS 1-3 with your left leg.

TRAINING TIPS. 1) The most important aspect of this, and all of the exercises, is to hold and maintain the final position for 10-15 seconds using between 70-80% of your maximum strength; this is the key to your speed training success. 2) To increase the resistance, step further away from where the band is tied or use two bands together. 3) Use a watch or a clock with a clearly visible second hand, so that you can accurately time your exercises. 4) Try not to let the band slide too far up your leg while performing this exercise. 5) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #7

Muscles Trained: Hip Adductors (Figure 1-7, page 7).

NOTE: This exercise is a modification to Exercise #6. It may appear similar however, it has a different final holding position.

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a pole), as shown in Figure 3-7a. Next, place your right foot inside the loop with your right side facing the pole as shown in Figure 3-7b.

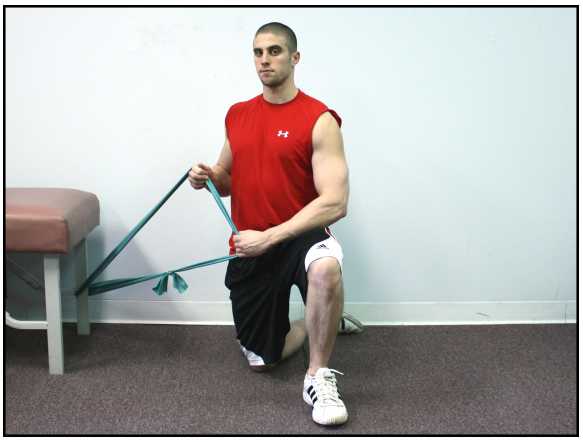

Figure 3-7a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-7b. Right leg inside the loop with your right side facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole (sideways) or other immovable object in the direction of the black arrow as shown until you feel the tension in your right adductors (white arrows) starting to increase. See Figure 3-7c.

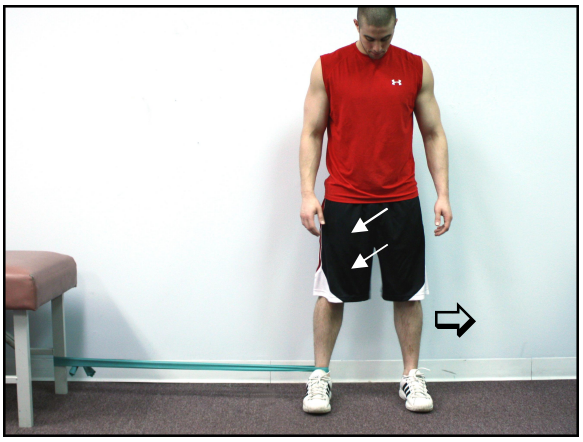

Figure 3-7c. Body positioned further away from the pole. Resistance band is now stretched. Tension in your right adductors is starting to increase.

STEP 3. Next, take an extra step away from the pole to stretch the band even more. See Figure 3-7d on the next page. (Note: this is further away than where you were for Exercise #6 and this additional distance is necessary so that you end up with the proper amount of resistance and effort in the final hold position. The length of this extra step will also depend on the length of

the band you are using. Some may only need to take a half step further sideways to end up with the proper amount of resistance.) Finally, keep your *left* foot stationary and pull your right leg in towards the midline of your body stopping at a position when your right foot is beneath you. Keep the right foot off the ground and then hold this position without changing it for 10-15 seconds. See Figure 3-7e.

Figure 3-7d. Extra step taken further away from the pole to eventually stretch the band more.

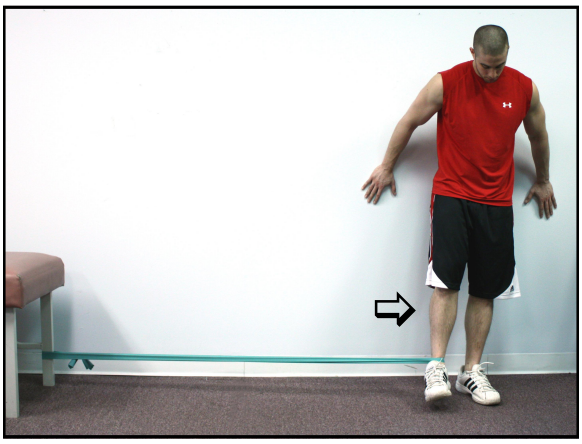

Figure 3-7e. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Face the other direction and repeat STEPS 1-3 with your left leg.

TRAINING TIPS. 1) Periodically check your resistance bands for any wear and tear. Replace them when necessary to prevent them from breaking during an exercise. 2) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #8

Muscles Trained: Hip Abductors (Figure 1-8, page 7).

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a pole), as shown in Figure 3-8a. Next, place your left foot inside the loop with your right side facing the pole as shown in Figure 3-8b.

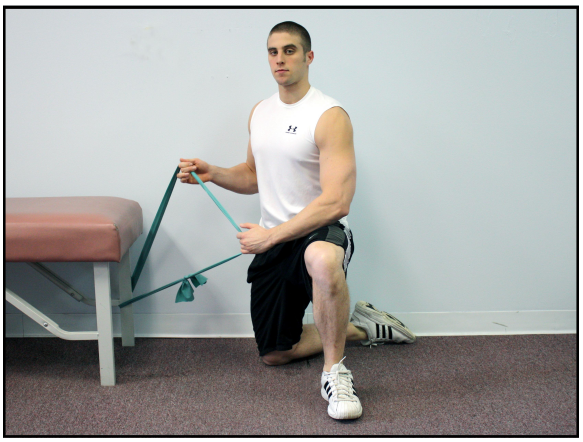

Figure 3-8a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-8b. Left leg inside the loop with your right side facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole (sideways) or other immovable object in the direction of the black arrow as shown until you feel the tension in your left abductors (white arrows) starting to increase. See Figure 3-8c.

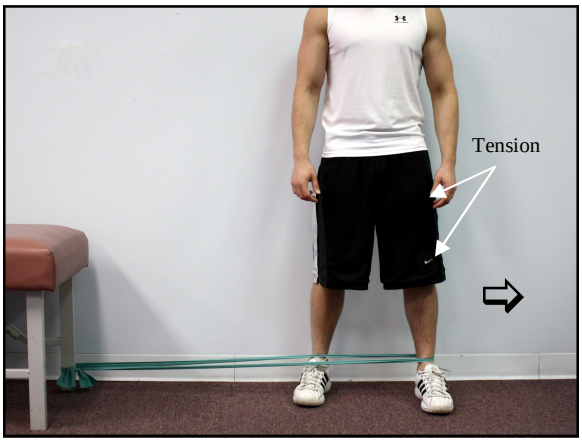

Figure 3-8c. Body positioned further away from the pole. Resistance band is now stretched. Tension in your left abductors is starting to increase.

STEP 3. Move (abduct) your left leg away from the midline of your body in the direction of the arrow as shown and then hold this position without changing it for 10-15 seconds. See Figure 3-8d.

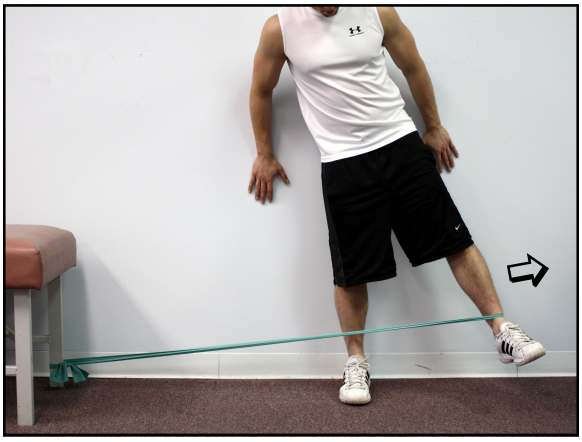

Figure 3-8d. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Face the other direction and repeat STEPS 1-3 with your right leg.

TRAINING TIPS. 1) Balance yourself against a wall or a chair to get better leverage with this exercise. 2) To increase the resistance, add in your second band and/or step further away from where the band is attached. 3) Isometric exercises are to be done with normal breathing. Do not hold your breath during the exercises because this may cause a sudden change in blood pressure and/or light-headedness. 4) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #9

Muscles Trained: Hip Abductors (Figure 1-8, page 7).

NOTE: This exercise is a modification to Exercise #8. It may appear similar however, it has a different final holding position.

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a pole), as shown in Figure 3-9a. Next, place your left foot inside the loop with your right side facing the pole as shown in Figure 3-9b.

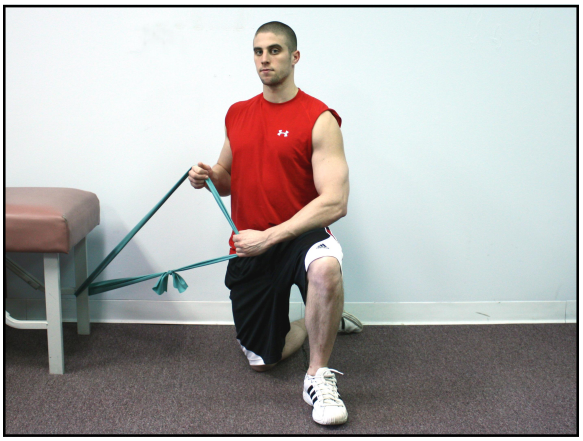

Figure 3-9a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-9b. Left leg inside the loop with your right side facing the pole.

STEP 2. Depending upon your size and strength, begin stepping slowly away from the pole (sideways) or other immovable object in the direction of the black arrow as shown until you feel the tension in your left abductors (white arrows) starting to increase. See Figure 3-9c. Now take an additional step away to stretch the band even further. The band should feel very tight at this point. (Note: this is further away than where you were for Exercise #8, and this additional distance is necessary so that you end up with the proper amount of resistance and effort in the final hold position. The length of this extra step will also depend on the length of the band you are using. Some may only need to take a half step further sideways to end up with the proper amount of resistance.) See Figure 3-9d.

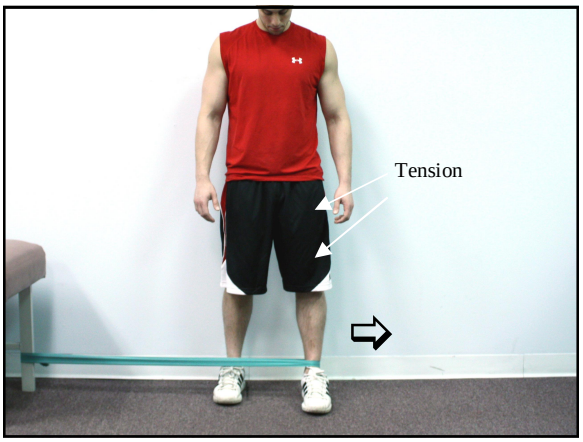

Figure 3-9c. Body positioned further away from the pole. This is similar to the distance for Exercise #8 at this point in the exercise.

Figure 3-9d. Body positioned an extra step further away to stretch the band even more.

STEP 3. Finally, lift your left leg off the ground, but donôt abduct it any further than what is pictured. Apply pressure in the direction of the arrow as shown and hold this position without changing it for 10-15 seconds. See Figure 3-9e.

Figure 3-9e. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Face the other direction and repeat STEPS 1-3 with your right leg.

TRAINING TIPS. 1) The most important aspect of this, and all of the exercises, is to hold and maintain the final position for 10-15 seconds using between 70-80% of your maximum strength; this is the key to your speed training success. 2) Perform each exercise according to the *Training Routine* found in the appendix.

EXERCISE #10

Muscles Trained: Knee Flexors (Figure 1-8, page 7).

STEP 1. Tie one of your bands around an immovable object, in this case the leg of a heavy table, (e.g. a pole), as shown in Figure 3-10a. Next, place the loop of the band around the back of your right ankle as shown in Figure 3-10b.

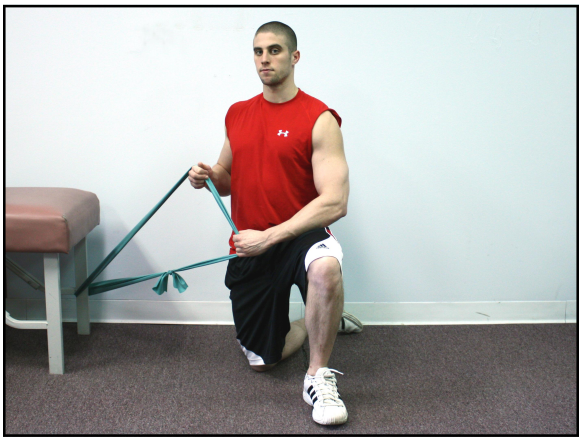

Figure 3-10a. Resistance band tied around a pole. Any knot will do as long as it does not come undone.

Figure 3-10b. Loop of band placed around the back of the right ankle.

STEP 2. Next, move away from the pole a few feet in the direction of the black *outlined* arrow as shown. This will increase the resistance felt in your hamstrings (solid black arrow). See Figure 3-10c on the next page:

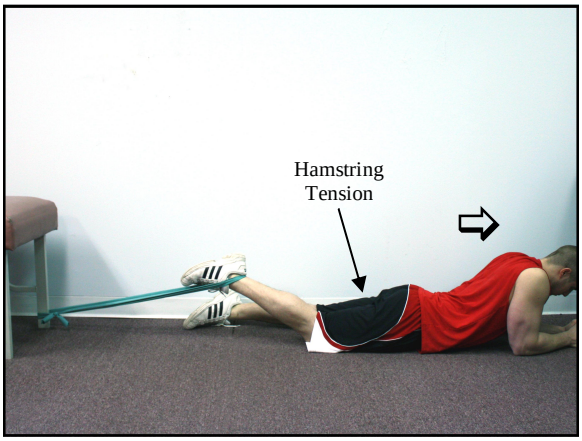

Figure 3-10c. Body positioned further away from the pole a few feet to stretch the band.

STEP 3. Flex your right leg behind your thigh in the direction of the arrow as shown. Stop when your leg is about 90º to the floor and then hold this position without changing it for 10-15 seconds. See Figure 3-10d.

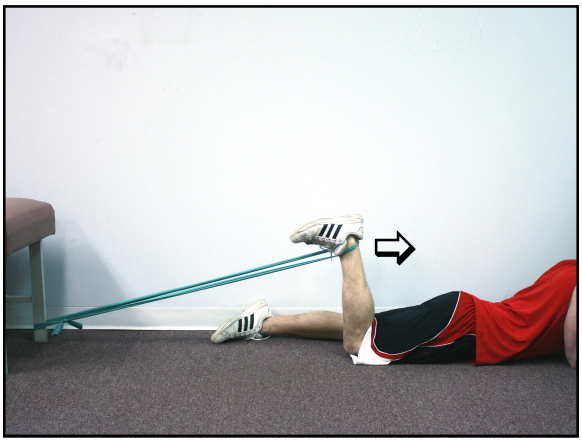

Figure 3-10d. Final position held for 10-15 seconds using between 70-80% of your maximum strength.

STEP 4. Repeat STEPS 1-3 with your left leg.

TRAINING TIPS. 1) Make sure the band doesn't slide down your leg while performing this exercise. 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) Perform each exercise according to the *Training Routine* found in the appendix.

This completes all of the recommended isometric training exercises for the lower extremity and as you can see, each one plays an important role in the running process. With practice, they will become easier to perform. And for one final tip, it may be helpful for you to periodically review all of the training tips located on page 12, that way you can be sure to get the best possible results.

"Imagine how much fun you will have playing your favorite sport knowing that you are one of the fastest players on the team!"

Dr. Larry Van Such

Appendix

Training Routine
Progress Chart
Weekly Training Schedule
Additional Training Tips
Product Information

TRAINING ROUTINE

There are 10 exercises in this program. They are all demonstrated (pictured) using a certain leg. Each exercise also contains written instructions to repeat the corresponding exercise by using the other leg. Therefore, performing each exercise with both legs *completes* that exercise one time.

The *Weekly Training Schedule* (located two pages after this page) calls for doing each *complete* exercise three times in a given day. As an example of how an exercise should be performed each day, look back at Exercise #1 and in particular, page 14, Figure 3-1e. This is the final holding position for Exercise #1, and it states to hold this position for 10-15 seconds. This is shown again in Figure A-1. This completes the first half of the exercise. STEP 4 of Exercise #1 (also on page 14) states to *Repeat STEPS 1-3 with your left leg*. This completes the second half of the exercise and is shown in Figure A-2.

Figure A-1. Final position for Exercise #1 using the right leg. This position is held for 10-15 seconds using 70-80% of your maximum strength. This completes the first half of the exercise.

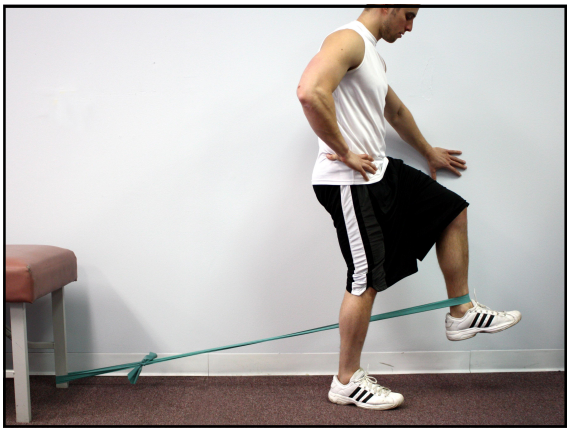

Figure A-2. Final position for Exercise #1 using the left leg. This position is held for 10-15 seconds using 70-80% of your maximum strength. This completes the second half of the exercise.

Performing Exercise #1 with each leg completes the exercise *once*. Since the *Weekly Training Schedule* calls for doing each complete exercise three times in any given day, Table 1 shows how this would look:

Table 1. Exercise #1.

1. Exercise #1 performed with *right* leg, Figure A-1. Position held for 10-15 seconds. Rest 15 seconds.
2. Exercise #1 performed with *left* leg, Figure A-2. Position held for 10-15 seconds. Rest 15 seconds.
Exercise #1 completed one time.
3. Exercise #1 performed with *right* leg, Figure A-1. Position held for 10-15 seconds. Rest 15 seconds.
4. Exercise #1 performed with *left* leg, Figure A-2. Position held for 10-15 seconds. Rest 15 seconds.
Exercise #1 completed a second time.
5. Exercise #1 performed with *right* leg, Figure A-1. Position held for 10-15 seconds. Rest 15 seconds.
6. Exercise #1 performed with *left* leg, Figure A-2. Position held for 10-15 seconds. Rest 15 seconds.
Exercise #1 completed a third time.

TOTAL EXERCISE TIME: 3 Minutes Maximum

A similar routine is used for each of the remaining exercises and it will take you approximately three minutes to perform each exercise as described in a given day.

The *Progress Chart* and *Weekly Training Schedule,* located on the next two pages, will help guide you through all of the exercises and allow you to chart your progress along the way.

PROGRESS CHART

Name_____ **Date Started**_____

STEP 1. Record your fastest time in one or more of the following before starting this program:

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 at least two weeks. You may make copies of the next page to document any additional weeks of training.

STEP 3. Perform the same sprint(s) as in STEP 1. When you are finished, record your fastest time and note the improvement.

40 yard dash _____ seconds, Improvement _____ seconds

60 meter dash _____ seconds, Improvement _____seconds

100 meter dash _____ seconds, Improvement _____ seconds

200 meter dash _____ seconds, Improvement _____seconds

400 meter dash _____ seconds, Improvement _____seconds

_____Other _____ seconds, Improvement _____seconds

Date Completed_____

STEP 4. Continue on with this training schedule for as long as you continue to see improvement. Also, once you get a good feel as to what these exercises are doing for you, you can make adjustments to the frequency in your training.

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STEP 2 (Cont'd):

WEEKLY TRAINING SCHEDULE

Perform each complete exercise three times on the recommended day during the week.
Exercises #1, 2, 8, 9 & 10 are performed on days 1 & 4 in week #1 and days 8 & 11 in week #2.
Exercises #3, 4, 5, 6 & 7 are performed on days 2 & 5 in week #1 and days 9 & 12 in week #2.

Place a ✓ on line when complete.	Exercise #1	Exercise #2	Exercise #3	Exercise #4	Exercise #5	Exercise #6	Exercise #7	Exercise #8	Exercise #9	Exercise #10
Day #1	_____	_____	REST	REST	REST	REST	REST	_____	_____	_____
Day #2	REST	REST	_____	_____	_____	_____	_____	REST	REST	REST
Day #3	REST	REST	REST	REST	REST	REST	REST	REST	REST	REST
Day #4	_____	_____	REST	REST	REST	REST	REST	_____	_____	_____
Day #5	REST	REST	_____	_____	_____	_____	_____	REST	REST	REST
Day #6	REST	REST	REST	REST	REST	REST	REST	REST	REST	REST
Day #7	REST	REST	REST	REST	REST	REST	REST	REST	REST	REST
End Training Week 1										
Day #8	_____	_____	REST	REST	REST	REST	REST	_____	_____	_____
Day #9	REST	REST	_____	_____	_____	_____	_____	REST	REST	REST
Day #10	REST	REST	REST	REST	REST	REST	REST	REST	REST	REST
Day #11	_____	_____	REST	REST	REST	REST	REST	_____	_____	_____
Day #12	REST	REST	_____	_____	_____	_____	_____	REST	REST	REST
Day #13	REST	REST	REST	REST	REST	REST	REST	REST	REST	REST
Day #14	REST	REST	REST	REST	REST	REST	REST	REST	REST	REST
End Training Week 2										

ADDITIONAL TRAINING TIPS

Tip #1. The exercises demonstrated in this program are meant to be physically difficult. 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 yourself 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 #2. 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 your band. If you have access to such equipment, it is suggested that you use it.

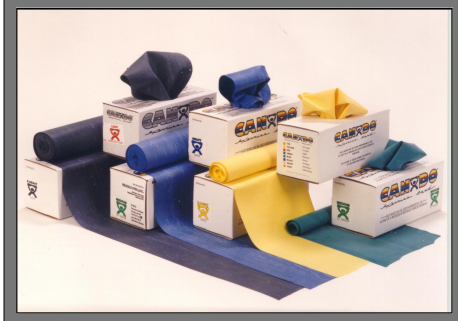
Tip #3. If you have a game scheduled and have been actively performing most, if not all, of the exercises in this program for at least two consecutive weeks prior to competition, you may want to allow yourself two full days of rest from these exercises before the competition.

"With your newly conditioned leg muscles, you should feel your legs springing effortlessly forward when you go for that extra burst of speed!"

PRODUCT INFORMATION

Available at: **www.AthleticQuickness.com/order.asp**

Product #1: Resistance Bands



Color/Resistance

Red *	Light resistance
Green *	Medium resistance
Blue *	Heavy resistance
Black	X-Heavy resistance
Silver	2X-Heavy resistance
Gold	3X-Heavy resistance

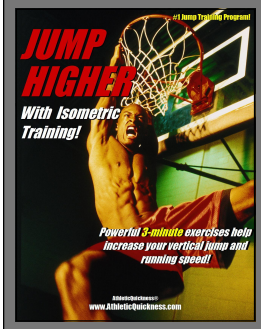
*Recommended

Important Notice: It is very natural to want to use the heaviest bands available to get as much resistance as you can. However, a better strategy would simply be to buy the red, green and/or blue bands and then combine them together if you need more resistance. This is because the silver and gold bands are extremely strong, and you won't be able to reduce their resistance level if you need to. Just like working out with weights, it is better to have several 10 lb. plates to work with instead of nothing but 45 lb. plates - you have more options. The same applies with the bands. ***To order heavier resistance bands or replacement bands, go to the Order page at www.AthleticQuickness.com/order.asp and then click on Order the Resistance Bands or Training Manuals.***

Product #2: Door Attachment For Bands

Makes finding a secure place to attach the band easy and convenient. The height of the door anchor can be easily adjusted to accommodate any of the exercises.

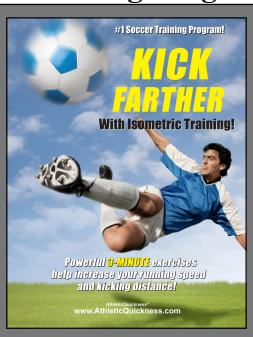
Product #3: Additional Training Programs



Basketball/Volleyball

JUMP HIGHER With Isometric Training!

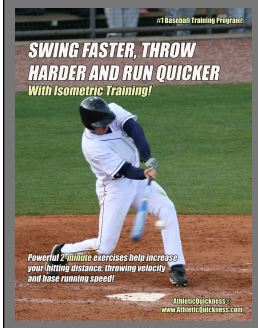
Powerful 3-minute exercises help increase your running speed and vertical jump!



Soccer/Football

KICK FARTHER With Isometric Training!

Powerful 3-minute exercises help increase your running speed and kicking distance!



Baseball/Softball

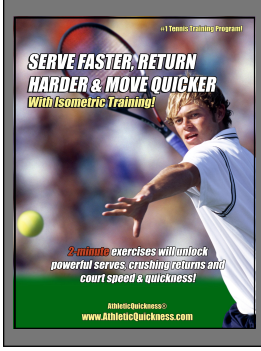
SWING FASTER and THROW HARDER With Isometric Training!

Powerful 3-minute exercises help increase your bat speed, hitting distance and pitching speed!

Mixed Martial Arts

STRIKE FASTER With Isometric Training!

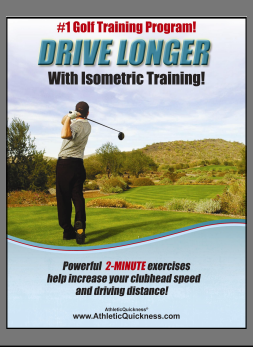
Powerful isometric exercises help increase your striking speed, kicking power and core agility!



Tennis

SERVE FASTER, RETURN HARDER & MOVE QUICKER With Isometric Training!

3-minute exercises will unlock powerful serves, crushing returns & court speed and quickness!



Golf

DRIVE LONGER With Isometric Training!

Powerful 2-minute exercises help increase your clubhead speed and driving distance!

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Kick Farther With Isometric Training!

Isometric training, with the help of the resistance band and its dynamic elastic properties, is perhaps the most effective speed training technique available today!

14-day program puts you on the fast track to becoming faster.

Ten simple 3-minute exercises quickly and easily isolate, strengthen and quicken all of the major muscle groups involved in the sprinting process, including:

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Exercises leave you feeling lighter, faster and more responsive immediately.

Training takes less than 15 minutes a day.

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Lateral mobility
Straight forward sprinting

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Requires very little set-up equipment.

Exercises can be done basically anywhere and at anytime.

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