

## Isometric Training

Isometric training refers to contraction of muscle units without moving. It is not measured in the usual way of sets and repetitions but rather with time under tension.

To appreciate how isometrics might help your running we should start with the three main types of muscle fibres:

- Slow twitch - strength and endurance of a muscle
- Fast twitch - strength and speed of a muscle
- Intermediate - has qualities of both types and responds to the way you train

Running requires both strength/endurance and strength/speed, so we want to help recruit all the muscle fibres but to do so without overstressing your bodies. In other words we are using time over force to achieve this goal.

Most muscles are mixed in their fibre type but as you contract the muscle only some of the fibres are active at first. Then, as the demand on the muscle increases your body will begin to recruit more of these motor units to activate more muscle fibres. By training your body to recruit more muscles fibers, you will be less prone to overuse injuries, problems caused by muscle fatigue and you should be able to run faster and with more ease.

### Is this core training?

We are working to get your bodies to recruit more muscles in your core and leg muscles. For this reason we often use the term **Pillar training** because you will feel muscles working from your back and hips all the way down to the bottom of your feet.

The key to good form here is with the stand leg. You need core strength and good posture for each and every exercise. You should never have back pain, hip pain, knee pain or foot pain with these exercises if you are holding your body correctly. If you're getting sore then try less resistance or wait until you talk to one of the Parkway clinicians.

Sport and life come from a variety of angles and positions so as we progress these exercises we will also change up your body position. Following a foundation with isometrics we will progress your training to include more dynamic exercises.

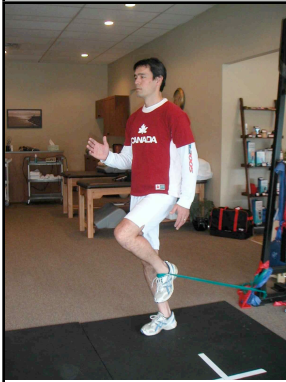
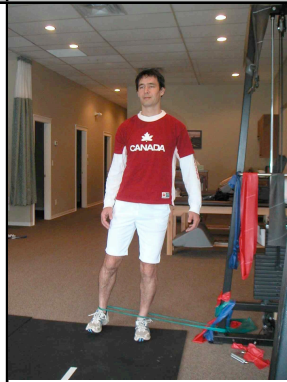
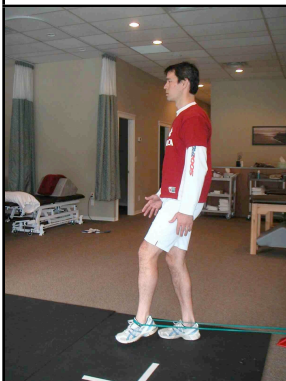
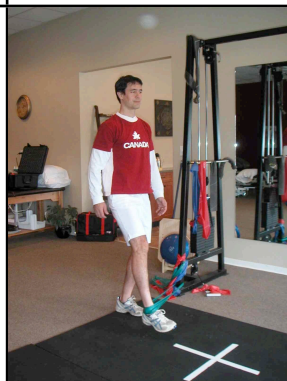
Theraband offers resistance depending on the thickness of the band. You can find these bands in many sport equipment stores and we also carry it at Parkway Physiotherapy at about a buck a foot.

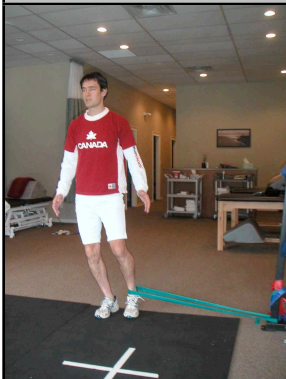
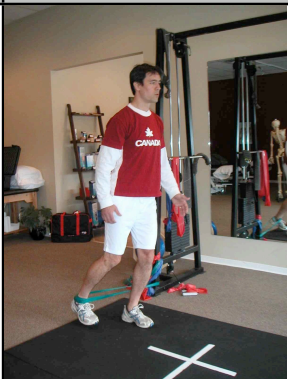
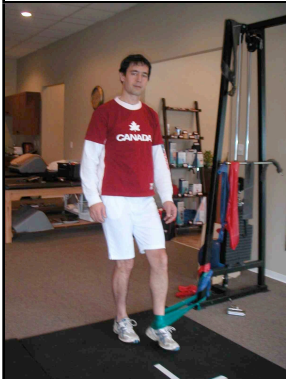
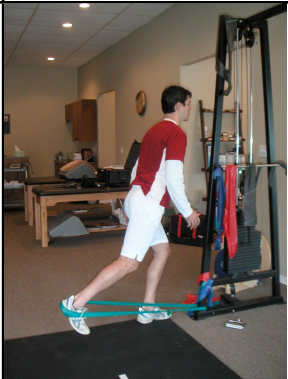
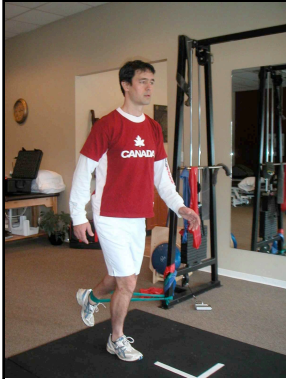
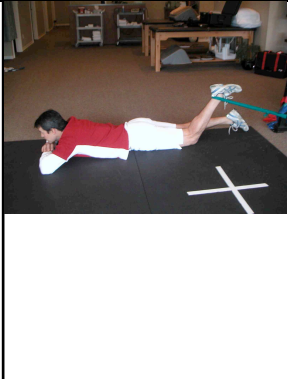
## Exercises:

Hip flexion and quads- very important muscles to work in that they drive the leg forward during running. As running athletes begin speed sessions we tend to see them more often for aches and injuries, so strengthening this muscle group is very important. As you straighten the knee out more you will put more stress on the quadriceps muscles, with the knee bent more you will stress the hip flexors.

Hip extension and hamstrings- done through the glutes and the hamstrings. The gluteals help with the power of pushing off while the hamstrings assist bringing your body forward from the planted foot and also controlling the leg just before heel strike. It is important therefore that you work both these muscle groups.

Hip abduction and adduction - many runners think only in the plane in which they move but the best and most efficient runners, and those who have the fewest injuries, will be strong in the side to side and rotational planes as well (the frontal and transverse planes). Strength in this plane will keep the pelvis and hips in line so that you do not lose power through excessive side to side motion. Note that we will work on these exercises with a band of rotation as well so that in the end you will recruit muscle from many different angles and create the most comprehensive strength patterns.

	<p>Hip Flexion</p> <p>3 sets of 10 second holds.</p> <p>Vary the angle at which you hold you hip</p>		<p>Hip Abduction</p> <p>1 set of 10 seconds with leg held straight to the side</p>
	<p>Quadriceps</p> <p>3 sets of 10 second holds</p> <p>Emphasis is on straightening the knee.</p>		<p>Hip Abduction</p> <p>1 set of 10 seconds with leg held to the side and in front of the stand leg</p>

	<p>Hip Adduction</p> <p>1 set of 10 seconds with the leg pulled straight inward</p>		<p>Hip Abduction</p> <p>1 set of 10 seconds with the leg taken to the side and backwards</p>
	<p>Hip Adduction</p> <p>1 set of 10 seconds with the leg pulled inward and in front of the stand foot</p>		<p>Hip Extension</p> <p>3 sets of 10 seconds pressing the leg backwards</p> <p>Vary the amount of bend in the stand leg and the amount of hip extension</p>
	<p>Hip Adduction</p> <p>1 set of 10 seconds with the leg pulled inward and behind the stand leg</p>		<p>Hamstrings</p> <p>3 sets of 10 second holds</p> <p>Vary the angle at the knee joint</p>

Cues: hold for 10-15 seconds, trembling is okay but loss of form that you can't regain means the exercise is over. Maintain excellent posture throughout. Only work to 60-70% of your maximum capacity. You can build from 3 reps upwards to 8-10 reps in each direction.

Rest interval about 1 to 1, ie 10-15 sec hold and 10-15 sec rest interval.

2-3x per week. At these parameters can do on run days but if increased then should be on non-run days.