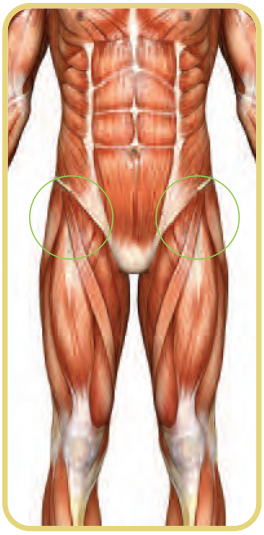
Hip Flexor Mobility on Performance

Cardiovascular-based exercise is the most popular type of activity in America. According to the Physical Activity Council the top three activities people participate in represent some form of bipedular movement. Walking represents the most popular form of activity in the US with 117 million participants, followed by running/jogging at 54 million participants. Cycling is not far behind in 6th place, and hiking ranks in at number nine. The one commonality between all these forms of human locomotion is they rely on hip flexion for progressive forward movement. In fact, most speed is gained (stride length) through increased hip flexion positioning. Therefore, if these types of activities are performed with a high level of frequency the hip flexors will undoubtedly lose flexibility (similar to sitting at a desk all day at work). Tight hip flexors are commonplace among runners and cyclists alike (as well as those who habitually use the stair-climber and elliptical machines) and certainly require attention, such as adjunct stretching and muscle balance work, to avoid overuse injuries. Of notable concern, tight hip flexors promote the cascade of events that lead to lower-cross syndrome. Lower-cross syndrome presents with chronic anterior pelvic tilting and causes kinetic chain disturbances both superior to the pelvis and as far distal as the ankles.

Top 10 Activities in America

		2013 (000)
1	Walking for Fitness	117,351
2	Running/Jogging	54,188
3	Treadmill	48,166
4	Bowling	46,209
5	Free Weights (Hand Weights)	43,164
6	Bicycling (Road/Paved Surface)	40,888
7	Weight/Resistance Machines	36,267
8	Stretching	36,202
9	Hiking (Day)	34,378
10	Swimming for Fitness	26,354

Hip Flexor Anatomy



Three muscles are primarily involved in hip flexion: the psoas major, iliacus and rectus femoris (the sartorius and adductor complex are also involved, but to a lesser degree). The iliacus and psoas are often grouped using a single name: the iliopsoas. While both the iliacus and psoas insert inferiorly on the femur, the iliacus originates on the iliac crest while the psoas originates superiorly on the lumbar vertebrate. The third hip flexor muscle, the rectus femoris, is part of the quadriceps muscle group and crosses both the hip and knee joint; originating on the anterior-superior iliac spine (ASIS) and inserting on the patella tendon.

An important concept when considering hip flexion function is the fact that the rectus femoris also performs knee extension. Therefore, the degree of knee flexion/extension during assessments and range of motion drills for the hip flexors determines if the rectus femoris or iliopsoas is affected. An easy way to determine the level of severity of hip flexor tightness is to perform the Thomas test for the iliopsoas group and the rectus femoris.

THE THOMAS TEST

Directions

- The athlete lies in a supine position on a table or bench and pulls both legs to chest height (~120 flexion)
- He or she then releases one leg under control, slowly extending it off the edge of the table/bench
  - Normal ROM – the hamstring of the released leg comes to rest on the table/bench while the other leg does not move
- The assessment is repeated with the other leg
- Flexibility evaluation is categorized as either good, borderline, or needs work
  - Capacity will often differ from left to right hip flexor
  - Pelvic instability is evident by a posterior pelvic tilt
  - Flexing the descending leg will identify rectus femoris limitations whereas using a straight leg is more related to assessing the iliopsoas

Stretching the Hip Flexors

Due to the fact that the iliopsoas and rectus femoris reach their respective length-tension from different degrees of knee flexion, it is important to stretch both muscle groups. The rectus femoris requires high amounts of knee flexion with hip extension to optimize the stretch; this can be accomplished by performing the reverse Bulgarian squat, prone (lifted) quad stretch, and the lunge with knee flexion stretch. The iliopsoas muscle group is better stretched with a straighter leg as seen with forward Bulgarian squats, field lunges, broad lunge stretches, and frog step-backs. Additionally, walking lunges and high-box hip stretches can be used to overlap the muscle groups. A key element during both dynamic mobility and static flexibility is to take advantage of reciprocal inhibition. By contracting the hip extensors at terminal positions, the hip will attain greater extension positions.

Hip bridge – Safety note: ensure that a neutral spine is maintained throughout the movement by activating the TVA, pelvic floor, and rectus abdominis

Prone quad stretch – Safety note: there should be no trunk extension/hyperextension during the stretch

Walking lunges with overhead reach – Technique tip: contract the hip extensors to take advantage of reciprocal inhibition

Step back with overhead reach – Technique tip: contract the hip extensors and extend the thoracic spine during the upward reach

Lunge with knee flexion – Safety note: avoid rotational stress on the posterior knee

Box hip stretch – Technique tip: contract the hip extensors to obtain a posterior pelvic tilt

Reverse Bulgarian – Technique tip: flex the rear knee and push the hips backwards to target the rectus femoris

Forward Bulgarian – Technique tip: perform minimal knee flexion and pushing the hips forward to target the iliopsoas

Frog step-backs – Technique tip: fully extend the rear knee and push hips down

CEUQuiz

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The CEU Quiz is now available online at:

http://www.ncsf.org/continueded/onlineceu.aspx