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High Hamstring Tendinopathy

High hamstring tendinopathy (HHT) is a relatively uncommon injury. It generally afflicts runners and athletes participating in sports that involve kicking or quick changes of speed and direction, such as football, soccer and rugby. Symptoms of HHT include a deep, achy pain in the lower buttocks, which can sometimes radiate down the back of the thigh to the knee. It is usually exacerbated by high intensity activities, but may also be present with prolonged sitting. Intense pain at the sit bone will often times be felt when stretching the hamstring or bending at the hip. The onset of pain is usually gradual and not associated with an acute incident.

The hamstring muscles run up and down the back of the thigh between the hip and knee. They form one common attachment at the ischial tuberosity (the sit bone) and then attach laterally and medially on the lower leg, right below knee. The load on the hamstrings is greatest during running when the leg is extended out in front of you as it engages to bring the lower leg back and into position for foot strike. This load increases with running speed, deceleration and changing directions. Even though it is primarily seen in active individuals, it can occasionally occur in sedentary people who engage in frequent squatting, bending over or other types in repetitive hip flexion.

Causes

The most current research points to two main factors to developing HHT; an increase in volume, frequency or intensity of training, and ANY previous hamstring injury. However, other factors such as lack of eccentric hamstring strength, poor lumbo-pelvic (core) stability and insufficient hip extension may be contributing factors as well.

Treatment

The goal of HHT treatment is threefold: reduce the load on the hamstring tendon, progressively strengthen the hamstrings, glutes and core and improve hip extension. It is important to avoid activities/positions which irritate the hamstring tendon. You should **avoid stretching** the hamstring in the early phases of treatment, especially if this reproduces the HHT pain. Soft tissue treatments such as massage, trigger point therapy and ASTM can help with pain management, improved mobility and bringing much needed blood flow to the injured tendinous area. If you have considerable pain when seated, you can use a pillow, cushion or even a rolled up towel to lessen the pressure on the hamstring tendon. In addition, take breaks from sitting as often as possible. Taping the hamstring may also help with pain mitigation in the early phases of treatment.

Activity Level

You should avoid movements/positions that cause pain and modify your exercise routine to keep pain to a minimum. If pain does not occur during exercise, but is present hours after or even a day later, cut back on the duration and intensity of the exercise until you find a level of activity which does not exacerbate the pain. Activities which limit hip flexion will often be best for those with HHT as they reduce stress on the hamstring tendon. Slower running will put less stress on the hamstring tendon than faster running and it may also be helpful to run on a treadmill where the leg does not engage in as much of a pulling motion on the ground. Some other ideas include upright cycling, swimming, water running, and running on flat surfaces, however your level of activity will be specific to you and the severity of injury; the key is to not try to “work through the pain.” Often incorporating a dynamic warm-up and a proper cool-down/self massage session into your exercise routine can allow you to exercise without further exacerbating HHT pain.

For More Information

This packet provides a great general outline for treating High Hamstring Tendinopathy. For more specific guidance, you can contact us directly. We are available for in person appointments at our clinics in Palo Alto and San Francisco or for telehealth virtual appointments. Go to our website at www.smiweb.org for more information OR contact Mark Fadil at Mark@smiweb.org or 650-823-1091.

DO NOT STRETCH

One of the more important findings in the literature is the negative impact that static stretching can have on high hamstring tendinopathy. Based on these findings, we recommend that you do not stretch the hamstring at all until the symptoms have subsided substantially. In this packet we offer self massage and movement based mobilization techniques that should be part of the treatment process but it is particularly important to err on the side of caution with these techniques as well. When utilized appropriately, the techniques outlined here can be effective but when done too aggressively, they could potentially irritate the area further and delay recovery.

AVOID PUTTING PRESSURE ON TENDON WHEN SITTING

Sitting will often times compress the tendon and cause further irritation. This is especially true when the injury is more acute. While it is important to reduce the amount of sitting to decrease the stress on the tendon, there are a few things you can do to make sitting a little easier. First off, place a soft pillow or a few soft folded towels in your chair so that your sits bones are focused in the center of the cushion. Second, make sure that the front of the chair is not compressing the hamstring muscle. This will increase the tension on the tendon and possibly cause further irritation. Shifting your body so that your hips are further forward in your chair should help with this. If shifting forward is difficult (ie. while driving a car), make sure the pillow or towels you add to your seat elevate your hips enough so that the hamstring doesn't press as aggressively into the seat. Finally, get up frequently. Try to get up and take a few steps every 10-15 minutes if possible.



Figure A

HIGH HAMSTRING MASSAGE with PHLX stick

Lie on your back with your right foot up on the wall as shown in *Figure A*. Your right hip and knee should be bent approximately 90 degrees. Starting with gentle pressure, slide the PHLX stick up and down with short strokes over the HS tendon. You should work exactly where the pain is focused. Gradually increase pressure as long as the pain is subsiding during the treatment.

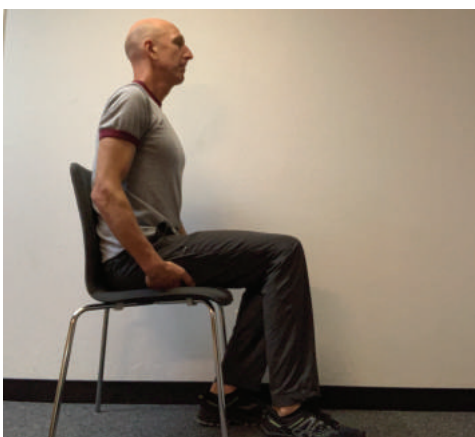


Figure B

MANUAL MOBILIZATION of HAM-STRING TENDON

Sit in a chair with your hips and knees bent 90 degrees. Using either your fingers or a massage ball, dig into the tendon while letting the weight of your leg push down into your fingers or the ball. The pressure should be focused at the base of the sit bone. Let pain be your guide. If using your fingers, slide your fingers back and forth across the tendon. If using a ball, shift your hips back and forth over the ball. This will usually be painful at first. Keep the pain level at a 6 (out of 10) or below. Gradually increase pressure as sensitivity subsides.



Figure C

Self-Massage

Massage should be done on a daily basis. It will help to eliminate tight areas and release trigger points that may be contributing to the pain and dysfunction. We recommend spending 10-15 minutes a day massaging the areas outlined below. All treatments are demonstrated on the right side. The self massage tools shown here can be purchased from PHLX at www.phlxtherapy.com.

LATERAL HIP

Place the PHLX point under your hip as shown in *Figure C*. To focus on the anterior fibers of the gluteus minimus, gluteus medius and TFL, the foot of the top leg should be placed in front of the bottom leg. This will roll your torso and hip forward. Focus the pressure on a tight/sore knot or band. Move the bottom leg backward and forward for approximately 30 seconds. Try to feel the spot “soften” and become less painful. You will sometimes feel pain radiate down to the outside of the knee. If this occurs, continue working this spot until the referred pain subsides or diminishes.



Figure C



Figure D

POSTERIOR HIP

Sit on the PHLX point as shown in *Figure D*. Cross your right leg over your left knee. Focus the pressure on a tight/sore knot or band. Move the right knee towards your chest and then away from your chest for approximately 30 seconds. Try to feel the spot “soften” and become less painful. You will sometimes feel pain radiate down the back of the thigh. If this happens, work the area until the referred pain diminishes.

LATERAL THIGH

Using the PHLX roll, roll up and down the outside of the thigh as shown in *Figure E*. Stop and focus the pressure on any sore spots you find. Bend and straighten the knee for approximately 30 seconds. The area should start to “soften” and become less painful. You will sometimes feel pain radiate down to the outside of the knee. If this occurs, continue working this spot until the referred pain subsides or diminishes.



Figure E



Figure F

HAMSTRING

Roll up and down the back of the thighs as shown in *Figure F*. Stop when you encounter a tender knot or band and then rotate your thigh back and forth until you feel the spot “soften” and become less painful. You will sometimes feel pain radiate up and/or down the leg. If this occurs, continue massaging the spot until the referred pain subsides or diminishes. For added pressure, cross one leg over the other.

Mobilization

The mobilizations outlined here should be completed 2-3 times per day when High Hamstring Tendinopathy. When performing the mobilization, move into position until you start to feel a stretch and then return to the starting position. The mobilization should be a continuous movement without stopping. Repeat up to 50 times, slightly increasing the range of motion with each rep. An uncomfortable stretch feeling is OK, but make sure that you do not cause pain or irritation during or after the mobilization. All mobilizations are shown for the right leg.

HIP EXTERNAL AND INTERNAL ROTATION



Figure G

Start on your back with your left foot on the wall. Cross your right leg over your left knee. For external rotation, push your right knee towards the wall as shown in *Figure G*. For internal rotation, pull your right knee across your body towards your left shoulder as shown in *Figure H*. Go back and forth between internal and external rotation. For a more intense mobilization, shift your hips closer to the wall.



Figure H

HIP EXTENSION

Kneeling on your right knee, lunge forward with your left leg. Make sure you have a towel or cushion under your right knee. Shift your hips forward and contract your right glute while at the same time lifting your right arm and reaching up towards the ceiling (*Figure I*). Then relax your glute, shift your hips back and bring your arm back down.



Figure I

ROTATIONAL HAMSTRING

Stand on your left foot and place your right heel on a surface below waist level (*Figure J*). Keep your right leg straight but do not lock your knee. Lean forward from the waist and keep your back straight until you feel a good stretch down the back of the right thigh. Rotate your torso to the right and then to the left so that you are alternately facing to the outside and inside of your right leg. **It is extremely important that you do not push this mobilization to the point of pain/irritation. Err on the side of caution.**



Figure J

SUPINE HAMSTRING



Figure K

Lie on your back with a strap around your right foot. Your left knee should be bent with your left foot on the floor. Keeping your right knee bent, pull your right knee up into your chest as shown in *Figure K*. Keep your right knee close to your chest and start to straighten your right knee as shown in *Figure L*. **It is extremely important that you do not push this mobilization to the point of pain/irritation. Err on the side of caution.**



Figure L

Strengthening

One of the keys to proper strengthening is not doing too much too soon. A good general guideline to follow is to strengthen every other day for the first week, two out of every three days for the second week and every day from the third week on. If any of these exercises exacerbate the pain/irritation of the injury please stop and seek professional guidance.

LATERAL HIP STABILIZER

Balance on your right leg with the band wrapped around your left leg just above the knee as shown in *Figure M*. Keep your right knee slightly bent and bring your left knee forward in a running motion. Focus on keeping your pelvis in neutral and pointing straight ahead without rotating or tilting. Repeat with the band placed behind the right knee and focusing on the back kick aspect of the running motion as shown in *Figure N*. For increased difficulty, add a second band at the ankle as shown in *Figure O*.



Figure M



Figure N



Figure O



Figure P

MONSTER WALK

The resistance band should be wrapped around your ankles as shown in *Figure P*. Assume a quarter squat position and walk backwards by lifting your right foot and shifting your right leg back and out. Then follow with the left leg. Stay in the quarter squat position the entire time. For additional resistance, add a second band around your knees.

GOOD MORNING

Stand with your feet shoulder width apart, knees slightly bent and your hands crossed at your chest. Stand upright, brace your core and squeeze your shoulder blades together. Keep your back straight and lean forward, hinging at the hips and bringing your chest down towards the ground until you start to feel a stretch sensation in the hamstrings. For added difficulty, hold a weight against your chest.

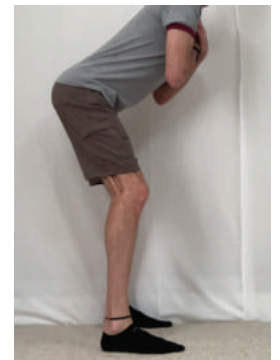


Figure Q

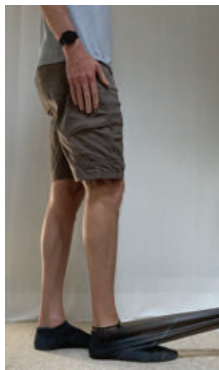


Figure R

HAMSTRING PROPRIOCEPTION

Stand with a band wrapped around your right heel as shown in *Figure R*. The band should be pulling your right leg forward. Lift your right leg and bend your right knee as shown in *S*. Try to maintain a steady fluid movement throughout the entire range of motion.

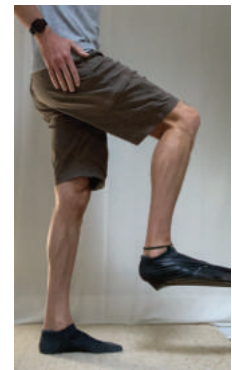


Figure S

Core Strengthening

There is a strong correlation between a weak/unstable core and HHT. This core strength routine is designed specifically for HHT and is probably just as important as the strengthening exercises on the previous page. We recommend performing this core routine a minimum of 5 days a week.

BRIDGE



Figure T

Lie on your back with your hips off the ground and your weight balanced on your shoulders and the heels of your feet as shown in *Figure T*. Keep your core contracted throughout the entire exercise. Let your hips fall towards the ground and then push your hips back up to the starting position. For added difficulty, straighten your left leg and balance your weight between your shoulders and the heel of your right foot. Repeat the same motion with your hips.

SIDE LYING PLANK



Figure U

Lie on your right side with your hips off the ground and your body supported by the outside of your right foot and your right forearm (*Figure U*). Keep your core contracted through the entire exercise. For an easier version, come down onto your right knee with your knees bent. For a more challenging version, move your top leg forward and backward in a running motion (*Figure V*).



Figure V

PRONE PLANK

Balance all of your weight on your forearms and toes as shown in *Figure W*. Keep your core contracted through the entire exercise and your back as straight as possible. For a more advanced technique maintain this position while you slowly lift your left foot off of the ground as shown in *Figure X*. Hold for two seconds and return your foot to the ground. Repeat with right leg.



Figure W



Figure X

SUPINE PLANK

Please note that this is a more advanced exercise and will place a lot of stress on the hamstring. It should only be attempted later in the strengthening process. Balance all of your weight on your forearms and heels as shown in *Figure Y*. Keep your core contracted through the entire exercise and your back, hips and legs as straight as possible. For added difficulty, lift your right leg 4 inches off of the ground. Hold this position for 2 seconds and return your leg to the starting position. Repeat with left leg.



Figure Y