

ON YOUR KNEES!

Many people are aware of the spectacular footballer's knee injury, the result of an awkward turn, pass or tackle, causing the "torn cartilage" or the more serious ruptured ligaments. But what about the knee that hurts for no apparent reason?

Aching knees (patellofemoral pain) affect 25% of the population at some time in their lives but it is more common in athletes. The sports where patellofemoral pain is typically seen are those in which the bent knee position is required, such as running, breaststroke swimming, tennis, netball, fencing and skiing. Tennis, volleyball, basketball and other jumping sports can produce a related problem which affects the tendons.

Patellofemoral pain is also more common during adolescence, because the long bones are growing faster than the muscles, tendons and ligaments, putting abnormal stresses on the joints.



Patellofemoral Syndrome.

One of the problems of the knee is know as patellofemnoral syndrome. This problem can usually be treated very well without surgery. You will need to see your doctor or physiotherapist who will examine your knee, determine the diagnosis and plan a treatment program for you. You will be shown how to tape your kneecap into the right position, so that you don't have pain, and you will also be shown how to do specific exercises to dynamically reposition the kneecap. Management of patellofemoral pain is essentially carried out as a home program but you will need to visit the doctor or physiotherapist periodically, for monitoring. Progress will vary from one individual to another, so the number of treatments needed will also vary. A guide would be how well you manage without tape. If you are still getting pain, then you need to stay taped for longer. Tape is like trainer wheels on a bicycle-only necessary while you re-train the knee joint muscles.



AMIAT RISK?

Usually, individuals susceptible to aching knees have chosen the wrong parents, that is, inherited asymmetrical leg alignment. To determine whether you are at risk, stand in front of a mirror with your feet together. In this position, your knees should face the front and the joints should just touch. You may have a problem if:

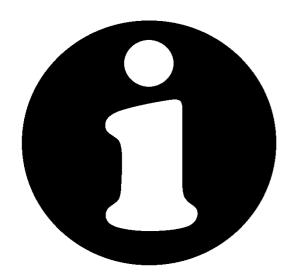
- 1. when your feet are together, your kneecaps face inwards, your knee joints don't touch when your feet are together, or your knee joints don't remain in the same plane ie one knee ends up in front of the other;
- 2. you can't put your feet together because your knees overlap;
- 3. you have flat feet;
- 4. you can't stand with one knee slightly bent without feeling like the knee is quivering or you body is swaying slightly;
- 5. when you stand on one leg and bend your knee slightly, your knee does not stay over the middle of the foot- ie your knee goes inwards or it wobbles;
- 6. you have very tight hamstring muscles.

The pain may be worse when you go up and down stairs or when you sit for a long time with knees bent. The knee may also give way on stairs, or even on the flat, and may make a grating sound. There may be some swelling.



WHY DOES POOR ALIGNMENT CAUSE ACHING KNEES?

The kneecap is kept in position by the interaction of the muscles and ligaments around it. The kneecap is like a tent and all the tissues around it like the guy ropes. If the tension is changed in one of the tissues, the tent (kneecap) does not remain centred. The joint lining has no nerves, so there is no pain until the force distribution is altered beyond a certain point. This may take months or even years.



FAT PAD IRRITATION

This condition may show as pain below the kneecap, puffy fat pads, and an inability to straighten the knee without pain. Often a forceful knee straightening manoeuvre has triggered the symptoms e.g. rapid kicking in freestyle swimming where the knee is locked out; power walking.



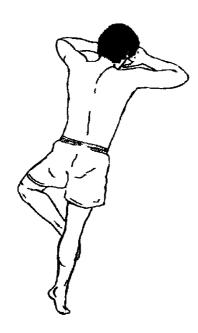
LATERAL RETINACULUM

If you feel an uneasy 'tightness' on the outside of your knee that worsens with walking, running, climb stairs or other similar activities, you may be experiencing pain of the lateral retinaculum. If the lateral retinaculum is excessively tight, you can massage the lateral or outside side of the patella (knee cap) for about a minute. Hand cream needs to be used to lubricate the skin.



WHEN CAN I RETURN TO SPORT?

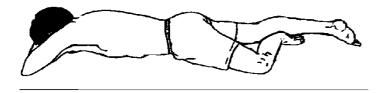
You may return to sport immediately with tape on your knee, provided you are pain-free. If you are not pain-free when the tape is on your knee, then you cannot return to sport. However, your doctor or physiotherapist will show you ways to maintain your fitness until you can go back to sport. Time out from sport is kept to a minimum, but it is not advisable to train or play with, or through, pain.



To stretch the hip.

i) Lie on your stomach on the floor. The leg is bent up and out.

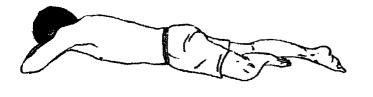
Do this for several minutes. Do 2 Times/day. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



To stretch the hip.

ii) The foot of the leg rests under the shin of the other leg, just below the knee.

Do this for several minutes. Do 2 Times/day. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

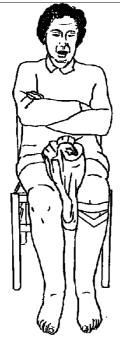


To stretch the left hip.

iii) You need to push along the length of the thigh using your buttock muscles to try to flatten the hip onto the floor.

Hold the stretch for 5 seconds.

If there is some discomfort in the groin region, you may, with your hand, hold the soft tissues at the front part of your thigh, while you push your hip down.



Training your knee.

Sitting on a firm backed chair with your arms folded and a towel between your legs, squeeze your buttocks together and the towel.

Hold the squeeze for 5 seconds and relax slowly.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Training your knee.

In sitting with arms folded and a towel between your legs, rock onto your ·) buttock and squeeze the buttock.

Hold the squeeze for 5 seconds and relax slowly.



Training your knee.

In sitting with arms folded and a towel between your legs and feet underneath you, commence rocking forwards and back.

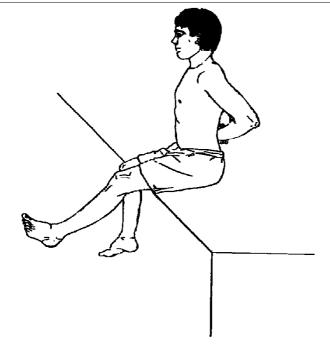
Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Training your knee.

Keep your head up and your back straight. Bend forward at the hips. You are trying to get a rhythm going, to allow the momentum to propel you forward. When you have done 3 big rocking motions, you should stand up.

Repeat this 5 times per side and every time you get out of a chair. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



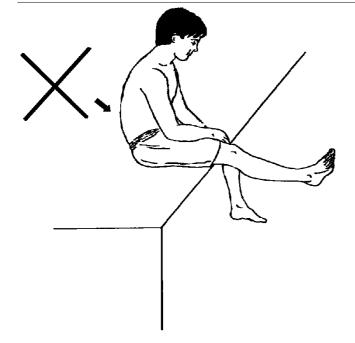
Hamstrings stretch leg.

Sit on the edge of the firm bench, so the feet are unsupported. Your back should be straight and your hands in the small of the back to stop slumping. Slowly straighten out your leg.

Hold the stretch for 5 seconds.

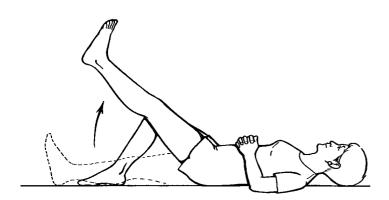
Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Repeat the stretch with the other leg.

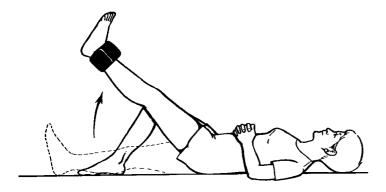


Hamstrings stretch.

This is how the stretch should not be done. It is important to maintain a straight back with this stretch so the stretch is effective.

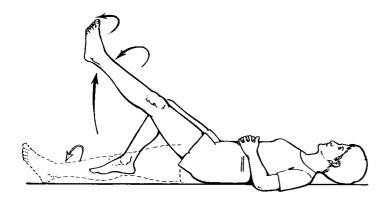


- 1. Lie on back with ____ knee straight and the other knee bent as shown
- 2. Keep the leg completely straight, then raise it _____ inches
- 3. Hold _____ seconds and slowly lower
- 4. ____ repetitions, ____ times per day

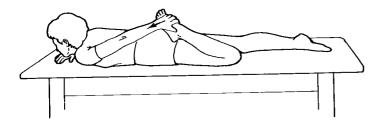


- 1. Lie on back with knee straight and the other knee bent as shown
- 2. Place a 2 lb weight around your ankle
- 3. Keep the leg completely straight, then raise it 12 inches
- 4. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.



- 1. Lie on back with knee straight and the other knee bent as shown
- 2. Keep the leg completely straight with toes pointed outward, then raise it 12 inches
- 3. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

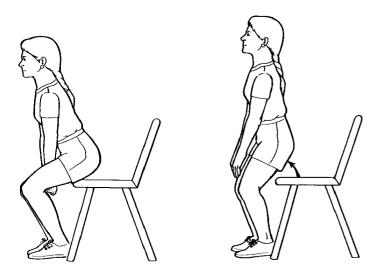


- 1. Lie on a surface as shown
- 2. Hold on to your ankle and bend the knee so that you feel a stretch
- 3. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.

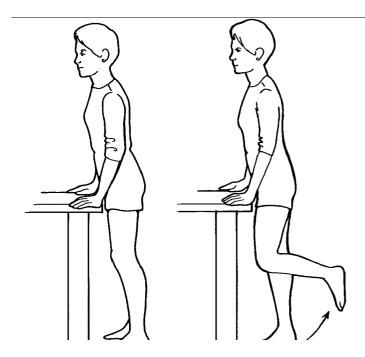


- 1. Lie as shown with inch roll under foot
- 2. Press foot down onto roll
- 3. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

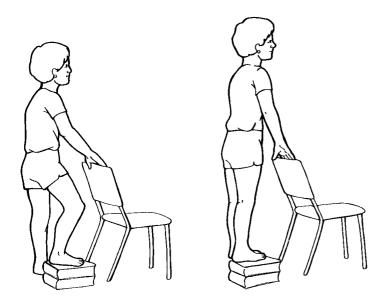


- 1. Sit on edge of chair, feet flat on floor
- 2. Stand upright
- 4. Hold 5 seconds, slowly reverse, repeat on other side.

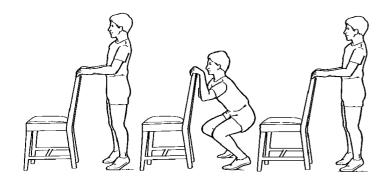
Hold this position for 5-10 seconds, followed by 10 seconds of relaxation and then repeat. Perform this 5 times. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



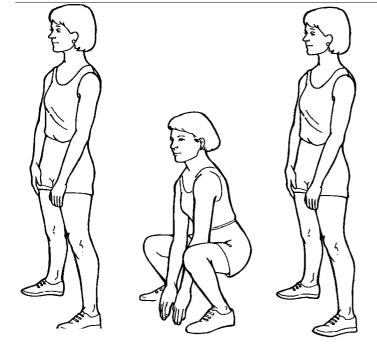
- 1. Stand holding onto solid object as shown
- 2. Slowly bend knee
- 3. Hold 5 seconds and slowly lower
- 4. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



- 1. Place enough books on floor to total of 6 inches tall
- 2. Hold onto solid object for support
- 3. Step up onto books with foot
- 4. Slowly lower
- 5.Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



- 1. Hold onto solid object as shown
- 2. Stand on tip toes
- 3. Squat, the first several times you do this, squat only a little (less than 25% of your maximum. Later when you are feeling better, squat as far as you can, then stand up using as little help from arms as possible
- 4. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

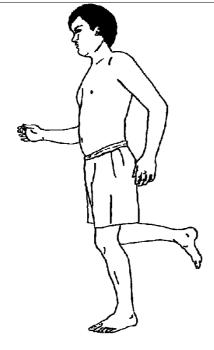


- 1. Squat to touch floor as shown, keeping chest upright and feet flat on floor
- 2. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Gluteus medius training leg.

Swing leg forward and back, whilst moving the arms to simulate the running motion.



Gluteus medius training leg.

Stand on the leg.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Gluteus medius training.

i) Stand close to the wall, with the outside of the the foot parallel to the wall. The knee of the other leg is bent up against the wall. The hips should be in the same plane.

Hold for 5 seconds.



Gluteus medius training.

The body should remain in alignment over the leg.

Hold for 5 seconds.

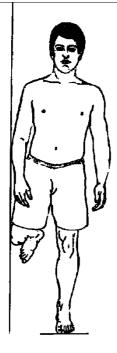
Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Gluteus medius training.

iii) Only the knee of the leg should be touching the wall. The standing other leg should be slightly bent, just off lock. The weight should be back through the heel.

Hold for 5 seconds.



Gluteus medius training.

This is an important muscle to stabilize for proper knee function.

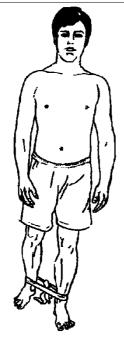
vi) The hips and foot are kept parallel with the wall and the knee opposite the wall is turned outwards. This is an isometric exercise.

Hold knee turnout for 5 seconds. Repeat everytime you pass a wall.

Hold for 5 seconds.

Repeat this 5 times per side. As with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Remember to keep ankle on the floor, parallel with the wall and do not turn ankle out.

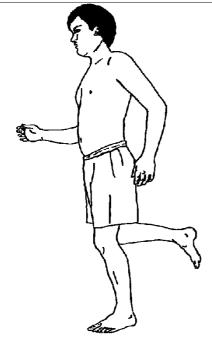


Gluteus medius training, important for proper knee function.

Place a tied piece of latex band or tubing around both ankles. Stand on the leg and push the leg 45 degrees on a diagonal behind you. Keep the body straight aligned over the leg. do not lean forward.

Repeat on each side.

Hold for 5 seconds.



Gluteus medius training leg.

Stand on the leg.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.



Gluteus medius training leg.

Swing leg forward and back, whilst moving the arms to simulate the running motion.



Aim: The squat is an excellent closed-chain exercise for the entire leg.

Instructions:

Begin by holding the bands near your hips. Stand on the middle of the band with both feet. Grasp the ends of the band at hip level. Perform minisquat, keeping back and elbows straight. Hold and slowly return.

TIPS: Keep your back straight and knees pointing forward. Don't allow your knees to rotate inward or outward.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: The squat is an excellent closed-chain exercise for the entire leg.

Instructions:

Stand on the middle of the band with both feet. Grasp the ends of the band at shoulder level. Perform squat, keeping back and elbows straight. Hold and slowly return.

TIPS: Keep your back straight and knees pointing forward. Don't allow your knees to rotate inward or outward.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: The squat is an excellent closed-chain exercise for the entire leg.

Instructions:

Stand on the middle of the band with both feet. Grasp the ends of the band at shoulder level. Perform squat, keeping back and elbows straight. Hold and slowly return.

TIPS: Keep your back straight and knees pointing forward. Don't allow your knees to rotate inward or outward.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: This closed-chain exercise targets the hip and low back extensors.

Instructions:

Stand on the middle of the tubing with both feet. Grasp the ends of the tubing. Squat down to take up all the slack. Keep your elbows and back straight and slowly return from the squat to an upright position against the tension of the tubing while extending your hips.

TIP: Keep your back straight; avoid rounding your back.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: This closed-chain exercise increases proprioception, strength, and stabilization of the standing leg. Targets the hip abductors on both legs.

Instructions:

Loop the band around your ankles with no slack in the bands. Keep your knees straight and kick outward with opposite leg. Continue kicking without letting your kicking leg touch the ground. Repeat on other leg. Keep your back straight, and avoid leaning or bending over.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: Strengthens the hamstring muscles.

Instructions:

Tie the ends of a long band together, creating a loop. Securely attach one end of the loop near the floor. Lay on your stomach and place the other end of the loop around your ankle. Begin with your knee straight and bend your knee against the band. Hold and slowly return.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: Strengthens the internal rotators of the hip.

Instructions:

Loop the band and securely attach one end of the loop to a fixed object near the floor. Sit with the exercising side away from the attachment, and place your ankle inside the other end of the loop. Rotate your ankle outward, keeping your knee pointing forward. Hold and slowly return.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: Strengthens the hamstring muscles.

Instructions:

Make a loop with your band or tubing. Place exercising ankle inside loop. Stand on the remaining loop with the opposite leg to stabilize. While balancing on the leg securing the band, bend your other knee. Hold and slowly return.

TIP: Maintain your balance with a sturdy object like a chair. Keep your back straight and avoid arching your back.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



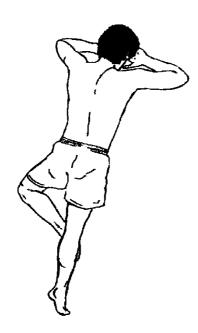
Aim: Great to help prevent or rehabilitate ACL injuries. Also helps strengthen the outer hip muscles.

Instructions:

Place loop of band around your knees. Be sure the band is taut. Keep your knees apart against the pull of the band while you walk.

VARIATION: Perform small hops or jumps with the band around your knees. Avoid letting the knees collapse inward.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

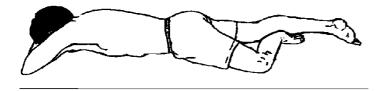


To stretch the hip.

i) Lie on your stomach on the floor. The leg is bent up and out.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.



To stretch the hip.

ii) The foot of the leg rests under the shin of the other leg, just below the knee.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: Closed-chain minisquat for lower extremity strength and balance.

Instructions:

Stand with both feet perpendicular to Rocker bottoms. Keep board parallel to ground. Perform mini-squat, slightly bending your hips and knees. Keep your back and neck straight. VARIATION: Perform on 1 leg.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: Trains dynamic balance.

Instructions:

Stand with both feet in line with Rocker bottoms. Keep your knees straight and lean to one side without letting the board move. Avoid twisting your back or hips.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: Turn the head for additional challenge while on balance boards.

Instructions:

Stand with both feet in line with Rocker bottoms. Keep board parallel to ground. Turn your head left and right. Avoid hyperextending your knees.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: 2-leg stance on Rocker Board for balance in frontal plane.

Instructions:

Stand with both feet perpendicular to Rocker bottoms. Keep board parallel to ground. Keep your back and neck straight. Avoid hyperextending your knees.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: 1-leg stance on Rocker Board for balance in frontal plane.

Instructions:

Stand on one leg with foot perpendicular to Rocker bottoms. Keep board parallel to ground. Keep your back and neck straight. Avoid hyperextending your knee.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



Aim: 2-leg stance on Wobble Board for balance.

Instructions:

Stand with both feet centered on board. Keep board parallel to ground. Keep your back and neck straight. Avoid hyperextending your knees.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.



Aim: Balance. Step down off Rocker Board in frontal plane.

Instructions:

Begin standing on board with both feet perpendicular to Rocker bottoms. Keep board parallel to ground and step down to floor with one leg. Return to standing on both legs on board. Keep your back and neck straight.



Aim: Balance. Half Step on Rocker Board for additional challenge.

Instructions:

Begin with board slightly in front of you with Rocker bottoms aligned with your feet. Step up onto board with short-foot, (maintaining a normal arch in the foot) keeping your knees, back, and neck aligned, and abdominals slightly tightened. Keep the board parallel to the ground. Slowly return to starting position.



Aim: 2-leg stance on Rocker Board for balance in frontal plane.

Instructions:

Stand with both feet perpendicular to Rocker bottoms. Keep board parallel to ground. Keep your back and neck straight. Avoid hyperextending your knees.

Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.



Aim: 1-leg stance on Rocker Board for balance in frontal plane.

Instructions:

Stand on one leg with foot perpendicular to Rocker bottoms. Keep board parallel to ground. Keep your back and neck straight. Avoid hyperextending your knee.



Aim: Closed chain minisquat for lower extremity strength and balance.

Instructions:

Stand with both feet perpendicular to Rocker bottoms. Keep board parallel to ground. Perform mini-squat, slightly bending your hips and knees. Keep your back and neck straight. VARIATION: Perform on 1 leg.

Aim: 1-leg stance on Rocker Board for balance in frontal plane.



Aim: 2-leg stance on Wobble Board for balance.

Instructions:

Stand with both feet centered on board. Keep board parallel to ground. Keep your back and neck straight. Avoid hyperextending your knees.



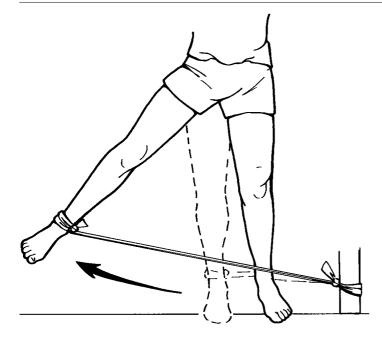
Aim: This closed-chain exercise increases proprioception, strength, and stabilization of the standing leg. Targets the hip abductors on both legs.

Instructions:

Loop the band around your ankles with no slack in the bands. Keep your knees straight and kick outward with opposite leg. Continue kicking without letting your kicking leg touch the ground. Repeat on other leg. Keep your back straight, and avoid leaning or bending over.

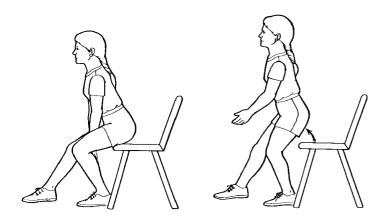
Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

Start with low resistance bands and increase resistance as tolerated.

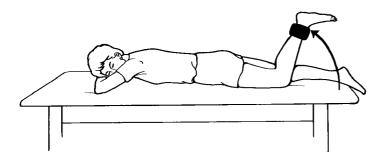


- 1. Anchor rubber tubing to solid object and ankle as shown
- 2. Raise hip out to side, without letting it come forward
- 3. Hold 5 seconds, slowly relax
- 4. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.

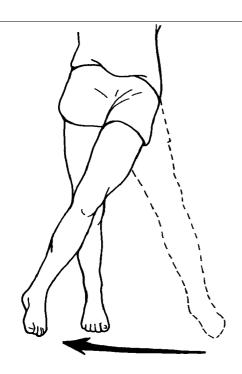
Start with low resistance bands and increase resistance as tolerated.



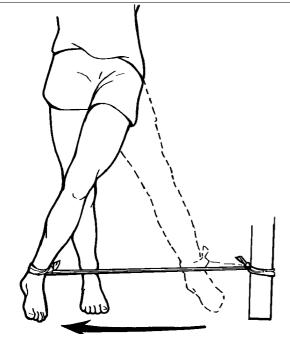
- 1. Sit on edge of chair as shown, with one foot closest to chair
- 2. Stand upright, letting the other leg help as little as possible
- 3. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



- 1. Lie as shown
- 2. Place 2 lb weight on ankle
- 3. Slowly bend knee
- 4. Hold 5 seconds and slowly lower
- 5. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



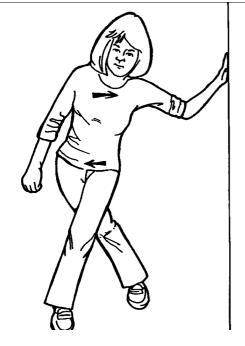
- 1. Stand with toe pointing out to side as shown
- 2. Now cross the leg in front of your other leg
- 3. Hold 5 seconds, slowly relax
- 4.Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



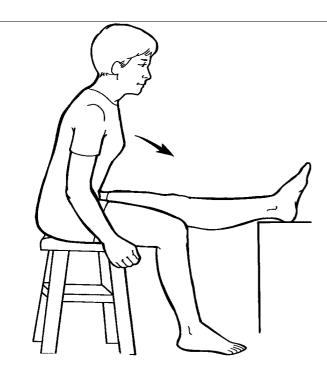
- 1. Anchor rubber tubing to solid object and ankle as shown
- 2. Stand with toe pointed out to side
- 3. Now cross the leg in front of your other leg
- 4. Hold 5 seconds, slowly relax
- 5. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



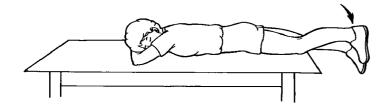
- 1. Stand with side facing wall as shown
- 2. Lean hip toward wall, while leaning trunk away from wall
- 3. Hold 5 seconds
- 4. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



- 1. Stand with side facing wall
- 2. Cross the leg behind the other leg and toward the wall
- 3. Bend the forward knee slightly and lean your trunk toward the wall until you feel a stretch on the outside of the hip (see arrow)
- 4. Hold 5 seconds
- 5. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.



- 1. Sit with leg propped as shown
- 2. Relax, letting the leg straighten
- 3. Lean forward, keeping the back straight
- 4. Hold 5 seconds



- 1. Lie on a table or bed with feet hanging over end as shown
- 2. Slowly allow gravity to extend the knee
- 3. Hold 5 seconds
- 3. Hold 5 seconds
- 4. Repeat this 5 times per side. Remember as with all therepeutic exercises, if this causes significant pain, discontinue. You may attempt again the next day.