



PATELLAR FRACTURE

■ ■ ■ Description

Patellar fracture is a complete or incomplete break of the kneecap (patella). Most fractures of the patella are accompanied by sprain or rupture of ligaments, ligament-like tissue (retinaculum), or tendons attached to the patella.

■ ■ ■ Common Signs and Symptoms

- Severe pain in the knee at the time of injury
- Tenderness and swelling in the knee
- Pain when trying to move the knee
- Inability to straighten a bent knee under its own power
- Catching or locking of the knee
- Bleeding and bruising in the knee
- Difficulty in bearing weight on the injured extremity, especially when trying to get up from a sitting position, go up or down stairs, or jump
- Visible deformity if the fracture is complete and the bone fragments separate enough to distort normal leg contours
- Numbness and coldness in the leg and foot beyond the fracture site if the blood supply is impaired

■ ■ ■ Causes

- Injury causing a force greater than the bone can withstand; usually due to a direct blow
- Indirect stress caused by twisting or bending

■ ■ ■ Risk Increases With

- Contact sports, especially football, hockey, or soccer
- Basketball
- Motor sports
- Bony abnormalities (including osteoporosis), tumors of bone
- Metabolic disorders, hormone problems, and nutritional deficiencies and disorders
- Poor physical conditioning (strength and flexibility)

■ ■ ■ Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
 - Strength, flexibility, and endurance
 - Cardiovascular fitness
- Wear proper protective equipment (knee pads).

■ ■ ■ Expected Outcome

This condition is usually curable with appropriate treatment.

■ ■ ■ Possible Complications

- Failure to heal (nonunion)
- Healing in a poor position (malunion)
- Avascular necrosis (bone death) due to interruption of blood supply to bone

- Arrest of normal bone growth in children
- Risks of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis), need for further surgery, and pain from the wires or screws used to fix the fracture
- Infection in fractures where the skin broken over fracture site
- Arthritic knee joint
- Prolonged healing time if activity is resumed too quickly
- Proneness to repeated knee injury
- After healing, risk of roughened contact surface of the kneecap, causing pain with sitting, when rising from a sitting position, when going up or down stairs or hills, and when jumping or running
- Stiff knee
- Unstable kneecap

■ ■ ■ General Treatment Considerations

Initial treatment consists of medications, elevation of the leg, and ice to relieve pain and reduce swelling. Cast or brace immobilization, especially if the fracture is in proper alignment and position, is performed. Surgery is usually recommended to reduce the fracture into proper alignment and position if the joint surface is not smooth. This is done by using wires or screws to fix the fracture and restore the joint surface's smoothness. After immobilization (with or without surgery), stretching and strengthening of the injured and weakened joint and surrounding muscles (due to immobilization and the injury) are necessary. These may be done with or without the assistance of a physical therapist or athletic trainer.

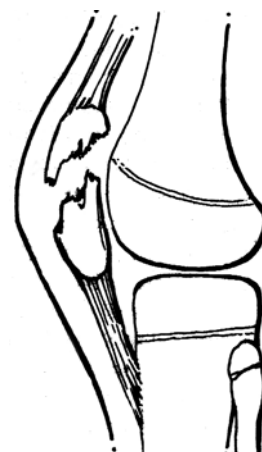


Figure 1

From DeLee JC, Drez D Jr.: *Orthopaedic Sports Medicine: Principles and Practice*. Philadelphia, WB Saunders, 1994, p. 1240.

■ ■ ■ Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Narcotic pain relievers may be prescribed by your physician for severe pain. Use only as directed and only as much as you need.

■ ■ ■ Notify Our Office If

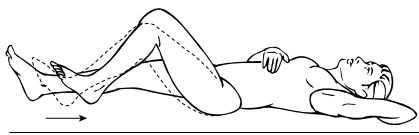
- Symptoms get worse or do not improve in 2 weeks despite treatment
- The following occur after immobilization or surgery (report any of these signs immediately):
 - Swelling above or below the fracture site
 - Severe, persistent pain
 - Blue or gray skin below the fracture site or in the toes or numbness or loss of feeling below the fracture site
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

EXERCISES

➤ RANGE OF MOTION AND STRETCHING EXERCISES • Patellar Fracture

After a patellar fracture, you may have surgery or may be placed in a cast or brace to immobilize your knee for a period of time. Regardless of which method of management was chosen by your physician, these are some of the *initial* exercises you may start your rehabilitation program with. Perform them until you see your physician, physical therapist, or athletic trainer again. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation, but not pain, should be felt.



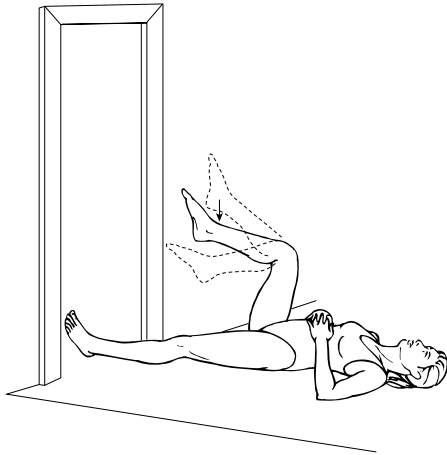
RANGE OF MOTION • Knee Flexion

1. Lie on your back with your legs out straight.
2. Slowly slide your heel toward your buttocks. Bend your knee as far as is comfortable to get a stretching sensation.
3. Hold for _____ seconds.
4. Return your leg to the starting position.
5. Repeat exercise _____ times, _____ times per day.



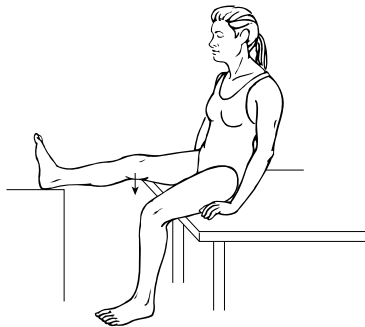
RANGE OF MOTION • Knee Flexion and Extension

1. Sit on the edge of a table or chair.
2. Use the uninjured/unaffected leg to straighten (extend) and bend (flex) the injured/affected leg.
3. **Flexion**—Cross your ankles, placing the uninjured or unaffected leg on top of the injured/affected leg. Pull your heel(s) backward under the surface you are sitting on to increase the amount you can bend your knee.
4. **Extension**—Cross your ankles, placing the uninjured or unaffected leg under the injured/affected leg. Pull your heel(s) backward under the surface you are sitting on to increase the how much you can straighten your knee.
5. Repeat exercise _____ times, _____ times per day.



RANGE OF MOTION • Gravity Knee Flexion

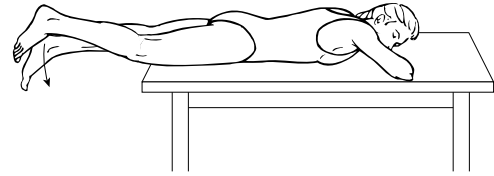
1. Lie on the floor as shown with your toes/foot lightly touching the wall.
2. Allow your toes/foot to slide down the wall, allowing gravity to bend your knee for you.
3. Obtain a “comfortable” stretching sensation.
4. Hold this position for _____ seconds. Then return the leg to the starting position.
5. Repeat exercise _____ times, _____ times per day.



RANGE OF MOTION • Knee Extension Sitting

1. Sit with your leg/heel propped on another chair as shown. You may also prop your foot up on a rolled-up towel, a table, or a foot stool.
2. Relax, letting gravity straighten out your knee.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.

Note: If authorized by your physician, physical therapist, or athletic trainer, you may place a _____ pound weight on your thigh just above your kneecap to obtain a more effective stretch.



RANGE OF MOTION • Knee Extension, Prone

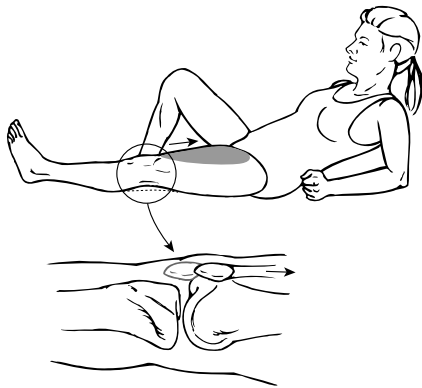
1. Lie on your stomach on a bed or sturdy table with your knee and leg off the table. The kneecap should be off the edge of the bed or table.
2. Allow gravity to straighten your knee for you.
3. Hold this position for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.

Note: If authorized by your physician, physical therapist, or athletic trainer, you may place a _____ pound weight on your ankle to obtain a more effective stretch.

> STRENGTHENING EXERCISES • Patellar Fracture

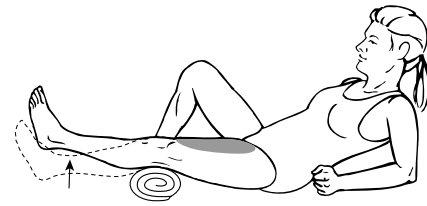
After a patellar fracture, you may have surgery or may be placed in a cast or brace to immobilize your knee for a period of time. Regardless of which method of management was chosen by your physician, these are some of the *initial* exercises you may start your rehabilitation program with. Perform them until you see your physician, physical therapist, or athletic trainer again. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



STRENGTH • Quadriceps, Isometrics

1. Lie flat or sit with your leg straight.
2. Tighten the muscle in the front of your thigh as much as you can, pushing the back of your knee flat against the floor. This will pull your kneecap up your thigh, toward your hip.
3. Hold the muscle tight for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.

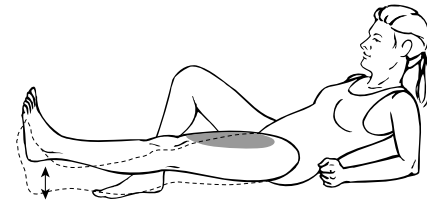


STRENGTH • Quadriceps, Short Arcs

1. Lie flat or sit with your leg straight.
2. Place a _____ inch roll under your knee, allowing it to bend.
3. Tighten the muscle in the front of your knee as much as you can, and lift your heel off the floor.
4. Hold this position for _____ seconds.
5. Repeat exercise _____ times, _____ times per day.

Additional Weights: OK TO USE DO NOT USE!!!

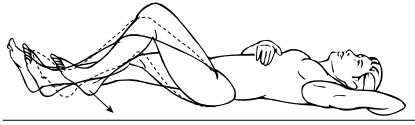
If okay'd by your physician, physical therapist, or athletic trainer, a _____ pound weight may be placed around your ankle for additional weight.



STRENGTH • Quadriceps, 7 Count

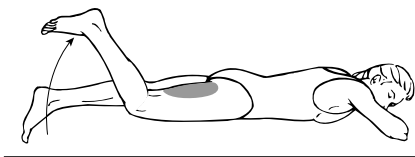
The quality of the muscle contraction in this exercise is what counts the most, not just the ability to lift your leg!

1. Tighten the muscle in front of your thigh as much as you can, pushing the back of your knee flat against the floor.
2. Tighten this muscle harder.
3. Lift your leg/heel 4 to 6 inches off the floor.
4. Tighten this muscle harder again.
5. Lower your leg/heel back to the floor. Keep the muscle in front of your thigh as tight as possible.
6. Tighten this muscle harder again.
7. Relax.
8. Repeat exercise _____ times, _____ times per day.



STRENGTH • Hamstring, Isometrics

1. Lie on your back on the floor or a bed.
2. Bend your knee approximately _____ degrees.
3. Pull your heel into the floor or bed as much as you can.
4. Hold this position for _____ seconds. Rest for _____ seconds.
5. Repeat exercise _____ times, _____ times per day.



STRENGTH • Hamstring, Curls

1. Lie on your stomach with your legs out straight.
2. Bend knee to 90 degrees. Hold this position for _____ seconds.
3. Slowly lower your leg back to the starting position.
4. Repeat exercise _____ times, _____ times per day.

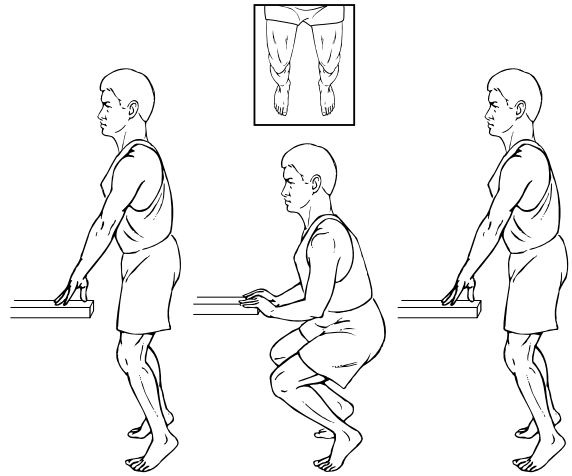
Additional Weights: OK TO USE DO NOT USE!!!

If okay'd by your physician, physical therapist, or athletic trainer, a _____ pound weight may be placed around your ankle for additional weight.



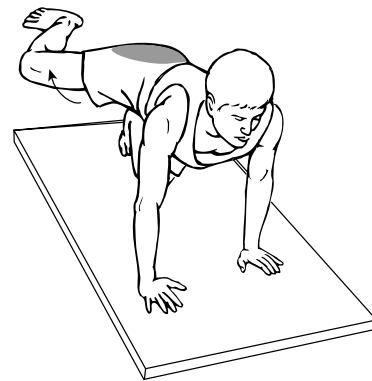
STRENGTH • Hip Abduction

1. Lie on your side as shown with the injured/weak leg on top.
2. Bend the bottom knee slightly for balance. Roll your top hip slightly forward.
3. Lift your top leg straight up, leading with your heel. Do not let it come forward. Hold this position for _____ seconds.
4. Slowly lower your leg to the starting position.
5. Repeat exercise _____ times, _____ times per day.



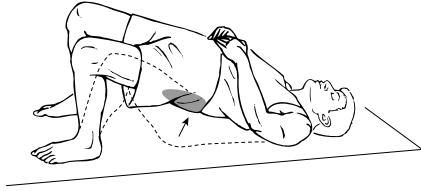
STRENGTH • Quads

1. Stand with your feet shoulder-width apart and place equal weight on both legs.
2. Keep your kneecaps in line with your toes.
3. Slowly bend both knees, keeping *equal weight* on both legs, and return to a standing position.
4. **Do not bend your knees more than 90 degrees.**
5. You may use the edge of a table or counter for balance if needed.
6. Repeat exercise _____ times, _____ times per day.



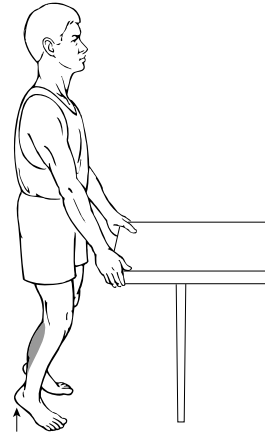
STRENGTH • Hip Abduction in Quadriped

1. Position yourself on your hands and knees as shown.
2. Keeping your knee bent, lift it up and out to the side from the hip. Hold this position for _____ seconds.
3. Slowly lower your knee to the starting position.
4. Repeat exercise _____ times, _____ times per day.



STRENGTH • Hip Extensors

1. Lie on your back as shown with your knees bent and feet flat on the floor.
2. Fold your hands over your stomach or chest.
3. Tighten your buttocks, push down with your feet, and raise your buttocks as high as possible.
4. Hold this position for _____ seconds.
5. Repeat exercise _____ times, _____ times per day.



STRENGTH • Plantarflexors

1. Stand with feet shoulder-width apart. Hold on to counter or chair if necessary for balance.
2. Rise up on your toes as far as you can. Hold this position for _____ seconds.
3. Complete this exercise using only one leg if it is too easy using both legs.
4. Repeat exercise _____ times, _____ times per day.

Notes:

(Up to 4400 characters only)

Notes and suggestions