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## **REHABILITATION AFTER KNEE MENISCUS REPAIR**

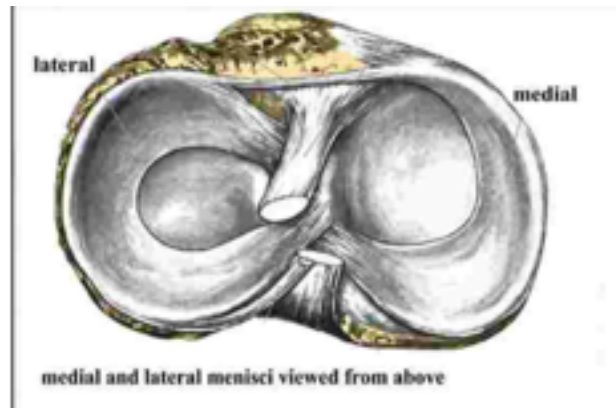
### **Phase One: The first week after surgery Goals:**

1. Control pain and swelling
2. Initiate knee motion
3. Activate the quadriceps muscles

### **Guidelines and Activities:**

#### **Knee Range of Motion:**

You can fully extend (straighten the knee). To avoid placing stress on the meniscus repair, do not bend your knee beyond 90 degrees (bent to a right angle)



#### **Brace and Crutches:**

You will go home with crutches and a knee brace locked in full extension (straight). Unless otherwise instructed by Dr. Nelson, use crutches when walking and **bear weight as tolerated** on the operated leg. That is, you can bear as much weight as you can, even full weight, as long as there is no knee pain when you put your weight on the limb. Wear the post-operative brace for walking. Lock the brace when walking to protect the knee in case of a fall. You can unlock the brace to sit or move the knee when not walking. When walking with the crutches, follow the instructions below:

#### **Walking (weight bearing as tolerated):**

- Put the crutches forward about one step's length.
- Put the injured leg forward; level with the crutch tips.
- Touch the foot of the involved leg to the floor and bear weight as tolerated.
- While bearing weight (on the crutches if there is pain in the knee) on the involved leg, take a step through with the uninjured leg.

#### **Exercise Program:**

#### **QUADRICEPS SETTING - to maintain muscle tone in the thigh muscles and straighten the knee.**

Lie or sit with the knee extended fully straight as in figure. Tighten and hold the front thigh muscle making the knee flat and straight. If done correctly, the kneecap will slide slightly upward toward the thigh muscle. The tightening action of the quadriceps should make your knee straighten and be pushed flat against the bed or floor.

Hold 5 seconds for each contraction. Do 20 repetitions three times a day.



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**HEEL PROP-** to straighten (extend) the knee.

Lie on your back with a rolled up towel under your heel or sit in a chair with the heel on a stool as shown in the figure. Let the knee relax into extension (straight). If the knee will not straighten fully, you can place a weight (2 to 5 pounds) on the thigh, just above the kneecap. Try to hold this position for 5 minutes, three times a day. While maintaining this extended position, practice quadriceps setting.



**SITTING HEEL SLIDES** - to regain the bend (flexion of the knee).

While sitting in a chair or over the edge of your bed, support the operated leg with the uninvolved leg. Lower the operated leg, with the unoperated leg controlling it. Allow the knee to bend but **DO NOT exceed 90 degrees of bend at the knee.** Hold five seconds and slowly relieve the stretch by lifting the foot upward, helping with the uninvolved leg, to the straight position (passive assist). Repeat exercise 20 times, three times a day.



**ANKLE PUMPS** - to stimulate circulation in the leg. You should do at least 10 ankle pump exercises each hour.

### **OFFICE VISIT**

Please return to Dr. Nelson's office approximately **10-14 days** after your surgery.

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### **Rehabilitation after knee meniscus repair**

#### **Phase Two: 2 to 6 weeks after surgery**

##### **Goals:**

1. Protect the knee from overstress and allow healing
2. Regain knee motion, limiting knee flexion to 90 degrees
3. Begin muscle strengthening

##### **Knee Range of Motion:**

You can fully extend (straighten the knee). To avoid placing stress on the meniscus repair, do not bend your knee beyond 90 degrees (bent to a right angle).

##### **Brace and Crutches:**

Unless otherwise instructed by Dr. Nelson, use crutches when walking and **bear weight as tolerated** on the operated leg. Wear the post-operative brace for walking. Lock the brace with the knee fully straight when walking to protect the knee in case of a fall. You can unlock the brace to sit or move the knee when not walking.

##### **Exercise Program**

Days per week: 5-7 Times per day: 1

Quadriceps sets	1-2 sets of 15-20 reps
Heel prop	5 minutes
seated Heel slides	1 set of 15 reps
Straight leg raises	3 sets of 10 reps
Short arc lift	3 sets of 10 reps
Standing toe raises	3 sets of 10 reps
Hip Abduction	3 sets of 10 reps
Wall slides	3 sets of 15 reps

##### **QUADRICEPS SETTING - to maintain muscle tone in the thigh muscles and straighten the knee.**

Lie on your back with the knee extended fully straight. Tighten and hold the front thigh muscle making the knee flat and straight. If done correctly, the kneecap will slide slightly upward toward the thigh muscle. The tightening action of the quadriceps should make your knee straighten and be pushed flat against the bed or floor. Hold 5 seconds for each contraction.



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**HEEL PROP** - to straighten (extend) the knee.

Lie on your back with a rolled up towel under your heel or sit in a chair with the heel stool as shown in. Let the knee relax into extension (straight). If the knee will not straighten fully, you can place a weight (2 to 5 pounds) on the thigh, just above the kneecap. While maintaining this extended position, practice quadriceps setting.



**SITTING HEEL SLIDES** - to regain the bend (flexion of the knee). See figure in phase 1.

While sitting in a chair or over the edge of your bed, support the operated leg with the uninvolved leg. Lower the operated leg, with the nonoperative leg controlling, allowing the knee to bend but **DO NOT exceed 90 degrees of bend at the knee**. Hold five seconds and slowly relieve the stretch by lifting the foot upward, helping with the uninvolved leg, to the straight position (passive assist).

**STRAIGHT LEG LIFT**

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

1. Tighten the quadriceps (quadriceps setting) as much as you can, push the back of the knee against the floor.
2. Tighten this muscle **harder!**
3. Lift your heel 4 to 6 inches off the floor
4. Tighten the quadriceps **harder again.**
5. Lower your leg and heel back to the floor. Keep the quadriceps as tight as possible.
6. Tighten this muscle **harder again.**
7. Relax and repeat .



If the knee bends when you attempt to lift the limb off of the bed, do not do this exercise. Keep trying to do the quadriceps setting exercise until you can lift the limb without letting the knee bend.

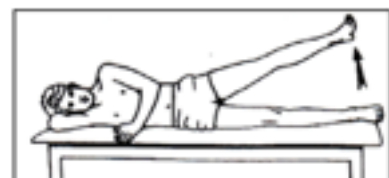
**SHORT ARC LIFT**

With the knee bent over a rolled up towel or blanket of a height of 4-5 inches (the knee should be bent only 20-25 degrees), lift the foot so that the knee fully straightens. Hold the knee locked in extension for 5 seconds, then slowly lower.



**HIP ABDUCTION**

Lie on your unoperated side. Keep the knees fully extended. Raise the operated limb upward to a 45 degree angle as illustrated. Hold one second, and then lower slowly. Repeat 20 times. If the straight leg lift, short arc lift and side leg lift can be performed easily after the first week, then an ankle weight may be used to increase the resistance of the exercise and to build strength. Start with one pound and add one



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pound per week until you reach five pounds.

### **STANDING TOE RAISE**

Stand facing a wall, hands on the wall for support and balance. Keep the knees extended fully. Tighten the quadriceps to hold the knee fully straight. Raise up on 'tip-toes' while maintaining the knees in full extension. Hold for one second, then lower slowly to the starting position.



### **WALL SLIDES**

Stand upright with your back and buttocks touching a wall. Place the feet about 12 inches apart and about 6 inches from the wall. You will be bearing 50% of your weight (or less on the affected side) on each leg. Slowly lower your hips by bending the knees and slide down the wall until the knees are flexed about 45 degrees (illustration). Pause five seconds and then slowly slide back up to the upright starting position. When doing a wall slide, you should position your thighs so that your kneecaps are in line with the tips of your shoes, or your second toe, and try to keep equal weight on both feet.



### **Office visit**

Call to schedule a 6 week follow up with Dr. Nelson

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### **Rehabilitation after knee meniscus repair**

Phase Three: Six to twelve weeks after surgery

#### **Goals:**

1. Begin partial weight bearing
2. Regain full motion
3. Regain full muscle strength

#### **Knee Range of Motion:**

You can now begin to gradually regain normal range of motion of the knee.

#### **Brace and Crutches:**

If instructed by Dr. Nelson, you may discontinue the brace and begin to progressively walk normally on the leg. Try to avoid limping and walk slowly but normally. Avoid squatting or pivoting on the operated knee.

#### **Exercise Program**

The following exercise program will help you regain knee motion and strength. If the exercises can be performed easily after the first week, then an ankle weight may be used to increase the resistance of the exercise and to build strength. Start with one pound and add one pound per week until you reach five pounds. Do the exercises daily for the first week, then decrease to every other day when using ankle weights. You may ride the stationary bicycle daily for 10 to 20 minutes (see below). Avoid using stair-stepper machines, doing deep knee bends and squats. Avoid any exercise that causes crunching, clicking or pain at the kneecap. Do not pivot or twist on the knee.

#### **STATIONARY BICYCLE**

Utilize a stationary bicycle to move the knee joint and increase knee flexion. If you cannot pedal all the way around, then keep the foot of your operated leg on the pedal, and pedal back and forth until your knee will bend far enough to allow a full cycle. Most people are able to achieve a full cycle revolution backwards first, followed by forward. You may ride the cycle with no resistance for 10 to 20 minutes a day. Set the seat height so that when you are sitting on the bicycle seat, your knee is fully extended with the heel resting on the pedal in the fully bottom position. You should then ride the bicycle with your forefoot resting on the pedal.

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**EXERCISE PROGRAM** (see phase 2 for descriptions and illustrations)

Days per week 5-7 Times per day 1

Quadriceps sets	1-2 sets of 15-20 reps
seated or supine Heel slides	1 set of 15 reps
Straight leg raises	3 sets of 10 reps
Short arc lift	3 sets of 10 reps
Standing toe raises	3 sets of 10 reps
Hip Abduction	3 sets of 10 reps
Standing hamstring curl	3 sets of 10 reps
Wall slides	3 sets of 15 reps
Squat to Chair	3 sets of 10 reps
Seated leg press	3 sets of 20 reps
Step up Down	see below

**STANDING HAMSTRING CURL**

Stand facing the wall, using the wall for balance and support. While standing on the unoperated limb bend the knee of the operated side and raise the heel toward the buttock. Hold this flexed position with the leg parallel to the floor for one second. Slowly lower the foot back to the floor. Keep the thighs aligned as illustrated.



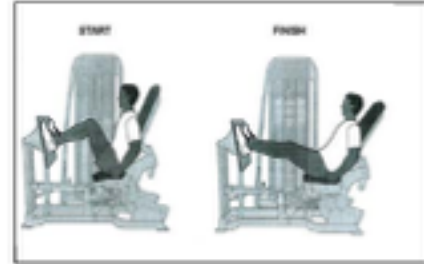
**SQUAT TO CHAIR**

In the chair squat exercise, you lower your buttocks toward the chair until your buttocks touch the chair. Do not sit or rest at the chair, but instead immediately and slowly return to the standing and starting position. Remember to keep your head over your feet and bend at the waist as you descend. When doing a squat, you should position your thighs so that your kneecaps are in line with the tips of your shoes, or your second toe. After the first week, you may hold dumbbells while performing this exercise and the wall slide. Start with 3 to 5 pounds each hand. You may add 2 to 3 pounds per week until you reach 10 pounds in each hand.

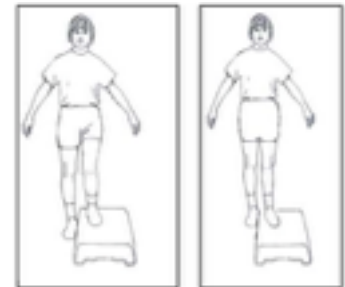


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**SEATED LEG PRESS-** If you are using a leg press machine for strengthening, use an amount of weight that feels easy enough to perform 20 repetitions as the starting weight for this exercise. Use this weight for the first week before raising the weight. The weight may be increased by about 5 pounds every 7 to 10 days thereafter, as long as you can perform 20 repetitions per set for 3 sets, and as long as the weight used does not exceed body-weight when using both legs, or 1/2 body weight when using the one leg. In this exercise, avoid letting the knees snap or drop suddenly into extension when reaching the fully straightened position. Avoid starting the exercise with the knees bent past 90 degrees. Adjust the seat position to limit the excursion of the machine.



**Step Up- Down Exercise** -Place the foot of the operated limb on a stool or step. Maintain balance, if necessary, by holding onto the wall or a chair (illustration). Standing sideways to the step, slowly lower the opposite foot to touch the floor. Do not land on the floor, just touch gently and then step up onto the stool by straightening the knee using the quadriceps muscles. Try to keep an upright posture and avoid bending forward during the exercise. When doing a step up-down, you should position your thigh so that your kneecap is in line with the tip of your shoe, or your second toe. Do 3 sets of 10 to 15 repetitions.



**Progression for Step Up-Down Exercise** -Start with a step of 3 inches in height. Start with 3 sets of 5 repetitions. Add one repetition per set, per workout, until you can do 3 sets of 10 (about 2 weeks) If pain free, progress to a step of 6 inches in height. Repeat the above progression starting with 3 sets of 5 repetitions. Add one repetition per set, per workout, until you can do 3 sets of 10 (about 2 weeks). If pain free, progress to a step of 9 inches in height (the height of a standard stair). Repeat this process of progression from 3 sets of 5, to 3 sets of 10 (about 2 weeks).

**STRETCHING EXERCISES**

Times per day: 1-2 Days per week: 5-7

Hamstring stretch	3-5 reps holding 15-30 seconds
Quadriceps stretch	3-5 reps holding 15-30 seconds
Calf Stretch	3-5 reps holding 15-30 seconds

**OFFICE VISIT**

Please set up an appointment to see Dr. Nelson in 8 weeks (3-4 months after surgery).



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## **Rehabilitation after knee meniscus repair**

### **Phase Four: Twelve weeks after surgery onward Goals:**

1. Regain full muscle strength.
2. Work on cardiovascular conditioning.
3. Do sports-specific training.

### **ACTIVITIES Muscle-Strengthening Exercises**

You should continue muscle-strengthening exercises from phase 2 and 3 on a three times a week basis. At this time, you can decrease the number of repetitions per set from 15 to 10. This will allow you to work with more resistance. Remember to do all exercises slowly, with good form. Weights can be increased when you can do a particular weight easily, for 3 sets of 10 repetitions, for 3 consecutive workouts. At all times, be cautious of pain or crunching at the kneecap or patellar tendon while exercising. You may use resistance machines at your gym, **DO NOT** do lunging or high impact drills or exercises or drills where you pivot on the fixed foot. Also avoid doing squats or leg press where the knee is allowed to bend past 90 degrees.

### **Cardiovascular Conditioning**

You can use Nordic track, stationary bicycle, elliptical trainer or swimming workouts to build cardiovascular fitness. Three to five times per week for 20 to 30 minutes is sufficient for improvement in this area. Please note that excessive long duration cardiovascular exercise can retard or delay muscular strength development when strength improvement and gains in muscle size are the programs primary goal.

### **Phase Five: 16 Weeks after surgery onward**

At this time, light running on a soft level surface can begin if Dr. Nelson advises.

You need to have full range of motion, good strength and no swelling to run safely. If you run, 3 times per week for 10 minutes is advisable for the first 2 weeks. If there is no pain or swelling, you can increase your running time by 1 minute per session for a maximum of 30 minutes.

Walking and hiking on gentle trails can also be used for conditioning activity.

### **20 weeks after surgery**

Speed and agility running program for Return to Sports

