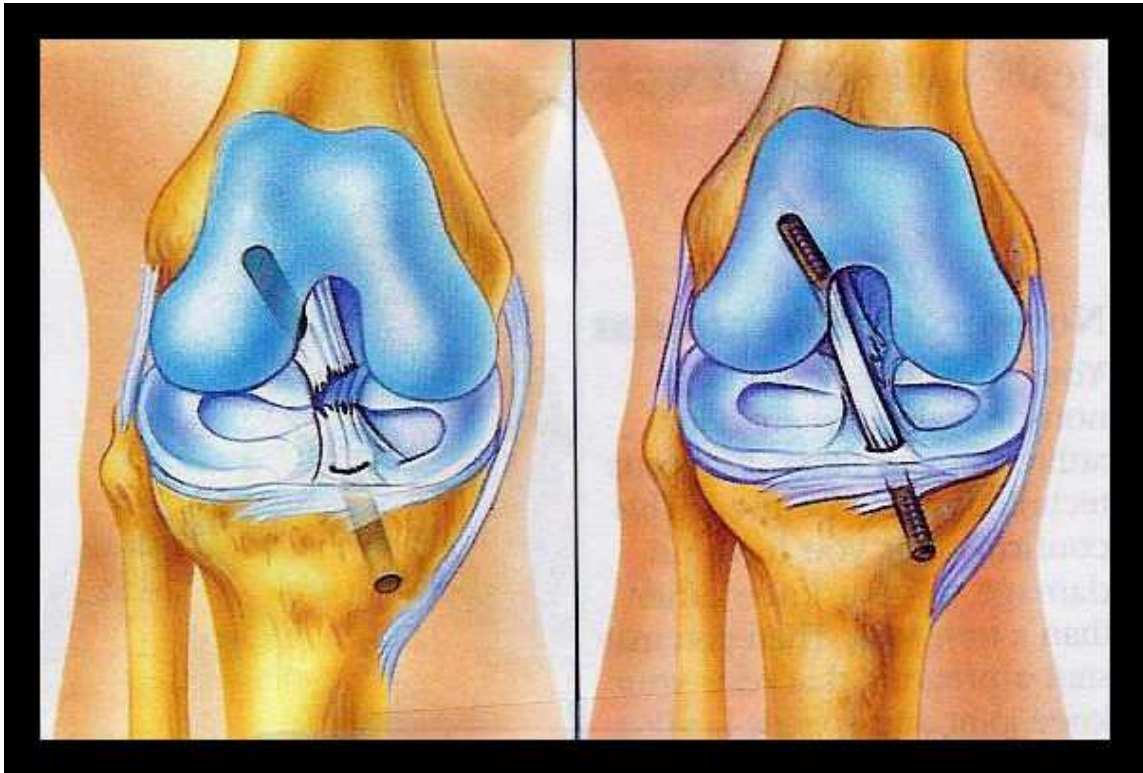




**Dr. O'Meara's**

**Anterior Cruciate Ligament Reconstruction**  
**Rehabilitation Protocol**

**[www.PalomarOrtho.com](http://www.PalomarOrtho.com)**





# **Anterior Cruciate Ligament Reconstruction** **Rehabilitation Protocol**

## **Zero to Two Weeks Post-op**

Crutch Ambulation WBAT

Stationary Bicycle

Passive Knee Extension & Stretching

Patella Mobilization

### **Restrictions:**

No Straight Leg Raising or Active Leg Extension Exercises

No Running or Jumping

## **Two to Four Weeks Post-op**

Stationary Bicycle

Passive Knee Extension & Stretching

Patella Mobilization

Hamstring Stretching & Strengthening (weight training)

Quad / VMO Training (wall sits, lunges, step downs)

### **Restrictions:**

No Straight Leg Raising or Active Leg Extension Exercises

No Running or Jumping

## **4 Weeks to 5 Months Weeks Post-op**

Stationary Bicycle

Hamstring Stretching & Strengthening (weight training)

Quadriceps Strengthening (weight training)

Adductor Strengthening (weight training)

Calf Strengthening (weight training)

### **Restrictions:**

**No Straight Leg Raising or Active Leg Extension Exercises**

**No Running or Jumping**

## **Five to Seven Months Post-op**

Stationary Bicycle

Hamstring Stretching & Strengthening (weight training)

Quadriceps Strengthening (weight training)

Adductor Strengthening (weight training)

Calf Strengthening (weight training)

Jumping Rope

Jogging (level surfaces only)

### **Restrictions:**

**No Straight Leg Raising or Leg Extension Exercises**

**No sprinting, cutting or leaping**

## **> Seven Months Post-op**

Stationary Bicycle

Hamstring Stretching & Strengthening (weight training)

Quadriceps Strengthening (weight training)

Adductor Strengthening (weight training)

Calf Strengthening (weight training)

Jumping Rope

Jogging (level surfaces only)

Agility Training (figure 8s, cariocas, sprinting)

Injury Prevention Training

Gradual Return to Sports

### **Restrictions:**

**No Leg Extension Exercises**

## Zero to Two Weeks Post-op

Crutch Ambulation WBAT

Stationary Bicycle

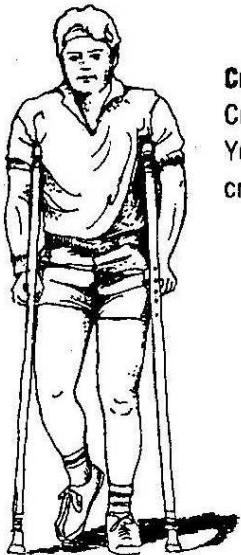
Passive Knee Extension & Stretching

Patella Mobilization

### Restrictions:

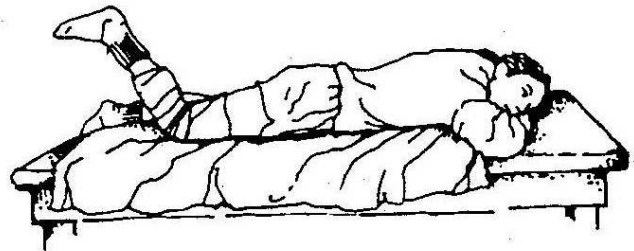
No Straight Leg Raising or Active Leg Extension Exercises

No Running or Jumping



#### **Crutches**

Crutches are used to support the knee. You can gradually stop using the crutches over the first 2 weeks.



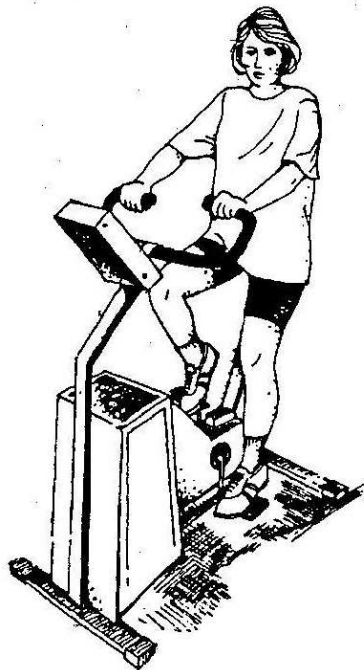
#### **Hamstring Exercises**

Early active hamstring exercises are initiated to protect the reconstructed ACL.



#### **Passive Stretching**

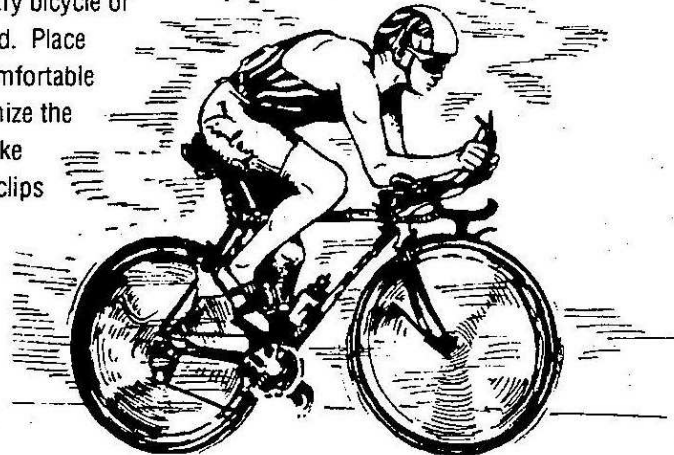
Passive stretching is started immediately to restore full extension of the knee. The kneecap is also manipulated and mobilized to maintain motion.



### **Bicycling**

Bicycling is an excellent rehabilitative exercise. It provides aerobic training to the quads and hams and it provides low-stress quad strengthening. A stationary bicycle or street bicycle may be used. Place the seat in the highest comfortable position in order to minimize the PF forces. Try to use a bike that is equipped with toe clips or toe cages so that the hamstrings also get a work-out.

Cycle 15-45 minutes every day and increase the resistance as you can tolerate it.



### **Leg Extensions**

The leg extension machine should **never** be used because it will significantly strain your ACL ligament and can cause **severe ligament injury!**



## Two to Four Weeks Post-op

Stationary Bicycle

Passive Knee Extension & Stretching

Patella Mobilization

Hamstring Stretching & Strengthening (weight training)

Quad / VMO Training (wall sits, lunges, step downs)

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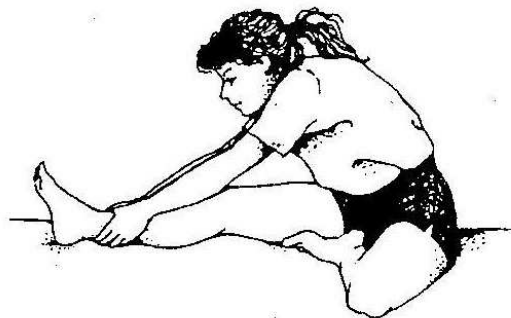
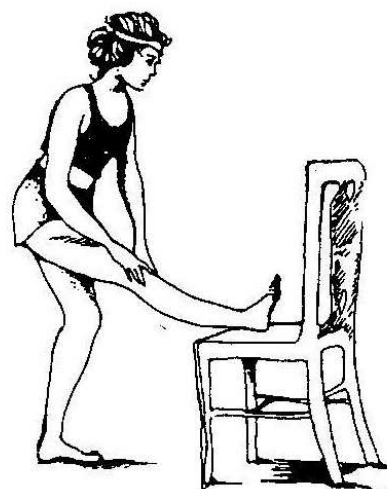
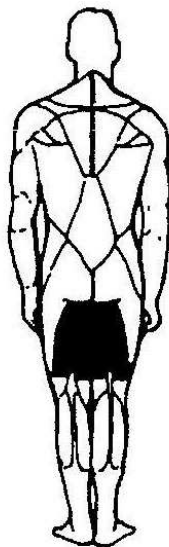
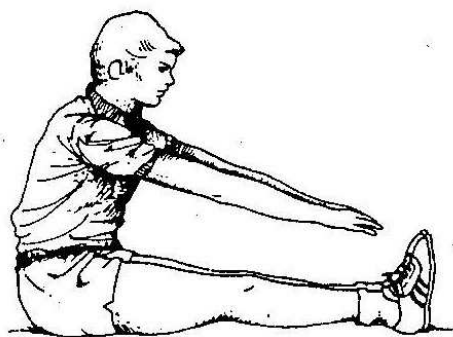
No Straight Leg Raising or Active Leg Extension Exercises

No Running or Jumping

### Hamstring Stretching

#### **Hamstring Stretching**

It is important to stretch everyday for 20-30 minutes. Better results are obtained if you stretch before and after you have warmed your muscles (e.g. bicycling). Try not to bounce when you stretch; instead, stretch to your maximum, hold for a count of 10, relax, and then repeat.



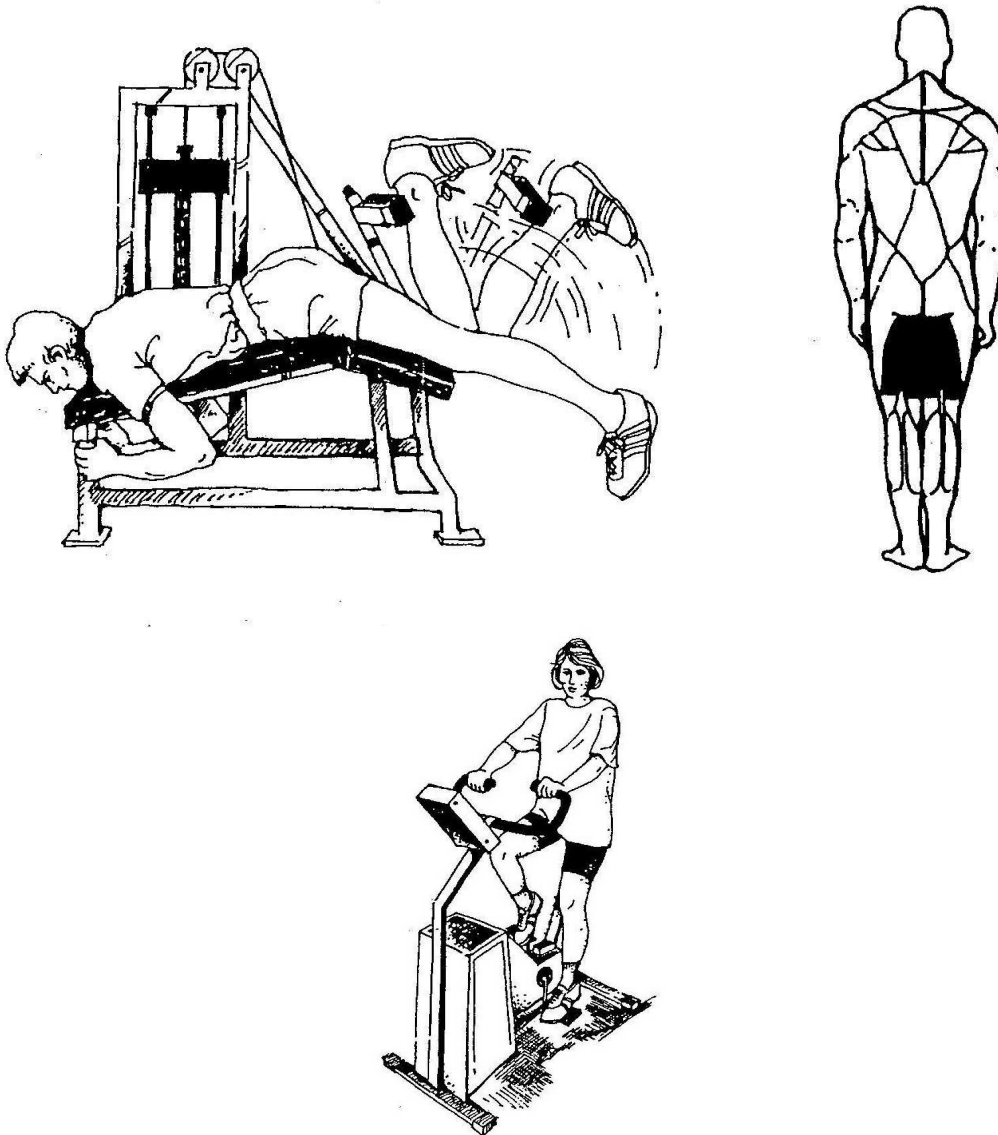
## Hamstring Strengthening

The hamstrings are the primary dynamic stabilizers of the knee and they protect your ACL reconstruction.

Each exercise should be performed as 3 sets of 15 repetitions, every other day. The amount of weight should be increased once you are able to complete a full 3 sets of 15 reps. The strength training should involve gentle smooth repetitions. No jerking or yanking!

In the third set of each exercise, try to “exercise to fatigue”. The most effective strength training and rehabilitation programs include at least one set of the maximum number of repetitions possible for each exercise performed (“exercise to fatigue”). Higher numbers of repetitions (15 – 20) favor increased muscle endurance while building muscle strength as well; so use a lighter weight that will allow at least 15 repetitions in a normal set.

Three sets of 15 – 20 reps performed every other day is an optimum strengthening and rehabilitation program. However, during the first month of strengthening, a single set program, every other day, is adequately effective at improving muscle strength and endurance.



# 4 Weeks to 5 Months Weeks Post-op

## Stationary Bicycle

Hamstring Stretching & Strengthening (weight training)

Quadriceps Strengthening (weight training)

Adductor Strengthening (weight training)

Calf Strengthening (weight training)

### Restrictions:

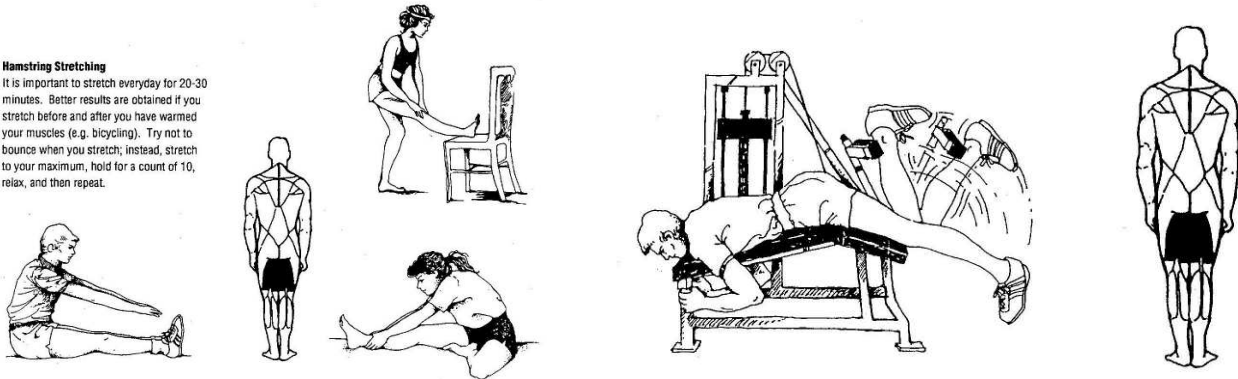
**No Straight Leg Raising or Active Leg Extension Exercises**

**No Running or Jumping**

## Hamstring Stretching & Strengthening

### Hamstring Stretching

It is important to stretch everyday for 20-30 minutes. Better results are obtained if you stretch before and after you have warmed your muscles (e.g. bicycling). Try not to bounce when you stretch; instead, stretch to your maximum, hold for a count of 10, relax, and then repeat.



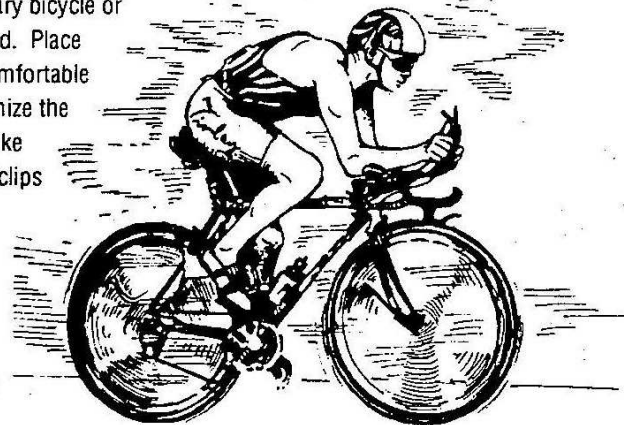
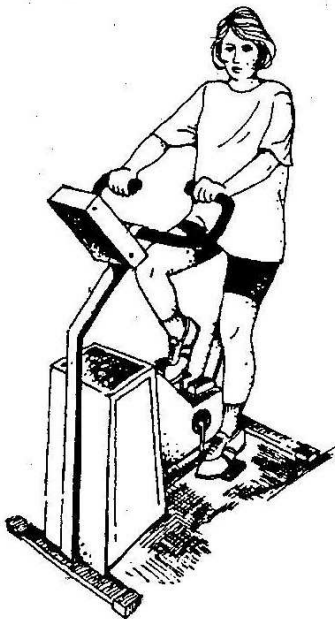
## Bicycle Training

### Bicycling

Bicycling is an excellent rehabilitative exercise.

It provides aerobic training to the quads and hams and it provides low-stress quad strengthening. A stationary bicycle or street bicycle may be used. Place the seat in the highest comfortable position in order to minimize the PF forces. Try to use a bike that is equipped with toe clips or toe cages so that the hamstrings also get a work-out.

Cycle 15-45 minutes every day and increase the resistance as you can tolerate it.





## Quadriceps Strengthening

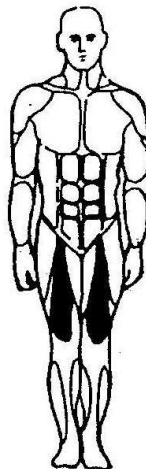
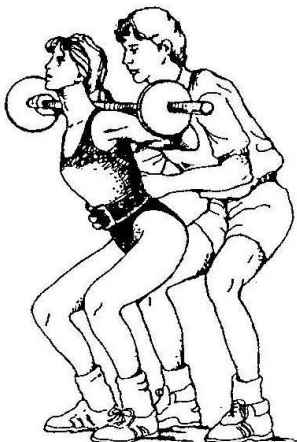
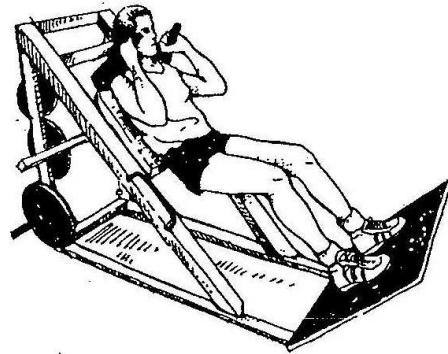
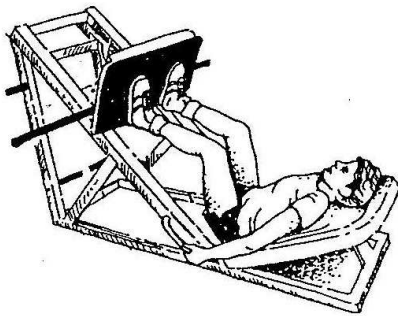
The quad consists of 4 muscles; the most important one is the Vastus Medialis (VMO).

Each exercise should be performed as 3 sets of 15 repetitions, every other day. The amount of weight should be increased once you are able to complete a full 3 sets of 15 reps. The strength training should involve gentle smooth repetitions. No jerking or yanking!

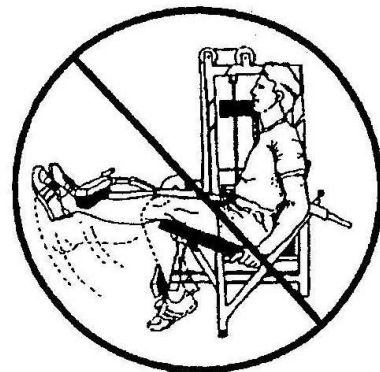
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Three sets of 15 – 20 reps performed every other day is an optimum strengthening and rehabilitation program. However, during the first month of strengthening, a single set program, every other day, is adequately effective at improving muscle strength and endurance.

When using the leg press machines, do NOT flex your knees more than 90 degrees.  
When performing half-squats, do NOT bend your knees more than 60 degrees.



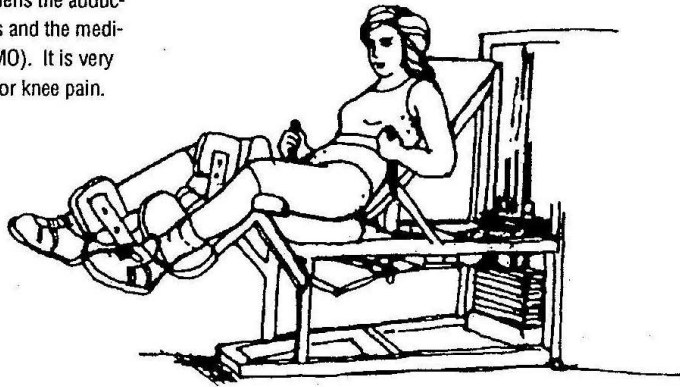
The leg extension machine should **never** be used because it will significantly aggravate your PF pain and can cause **severe ligament injury**.



## Adductor Strengthening

### Adductor Strengthening

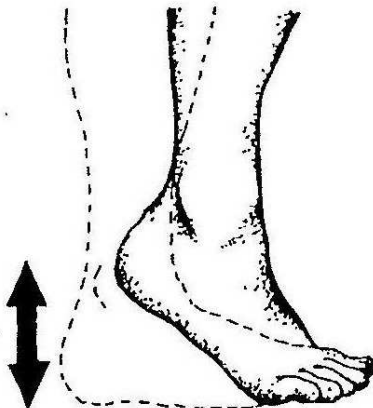
The adductor muscles are located on the inside of your thighs. This exercise strengthens the adductor muscles, the medial hamstrings and the medial quadriceps (vastus medialis - VMO). It is very effective in helping to relieve anterior knee pain.



### Adductor Squeeze

Lie comfortably on your back on the floor with your hands behind your head. Squeeze a pillow as hard as you can between your knees and hold for 6 to 10 seconds. This motion strengthens the muscles of the inner thigh and helps pull the kneecap into line. Repeat 10 times.

## Calf Strengthening



### Calf Raises

Do as many as are comfortable; start with a few, then gradually work up to your maximum; repeat three times a day.

## Five to Seven Months Post-op

### Stationary Bicycle

Hamstring Stretching & Strengthening (weight training)

Quadriceps Strengthening (weight training)

Adductor Strengthening (weight training)

Calf Strengthening (weight training)

Jumping Rope

Jogging (level surfaces only)

### Restrictions:

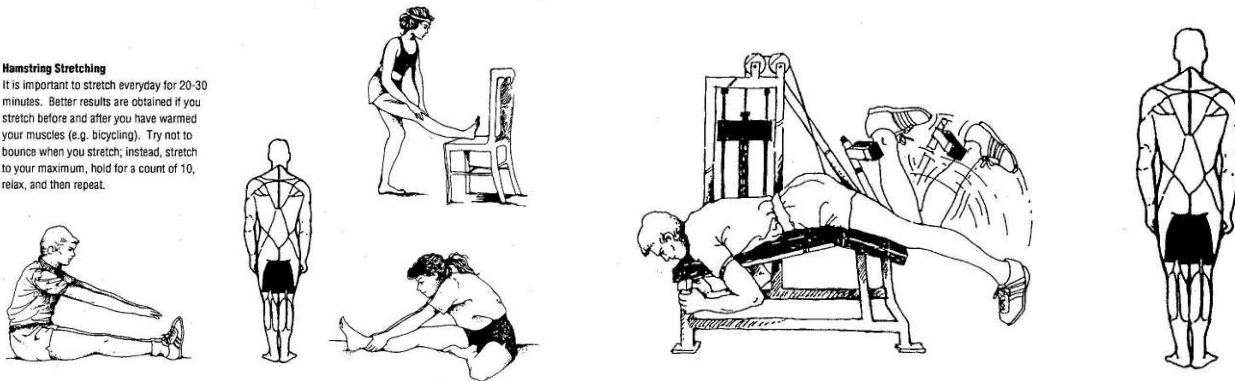
No Straight Leg Raising or Leg Extension Exercises

No sprinting, cutting or leaping

## Hamstring Stretching & Strengthening

### Hamstring Stretching

It is important to stretch everyday for 20-30 minutes. Better results are obtained if you stretch before and after you have warmed your muscles (e.g. bicycling). Try not to bounce when you stretch; instead, stretch to your maximum, hold for a count of 10, relax, and then repeat.



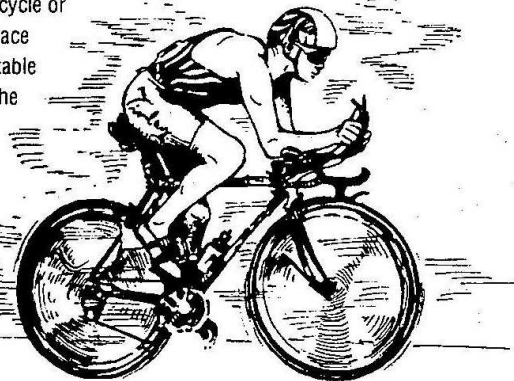
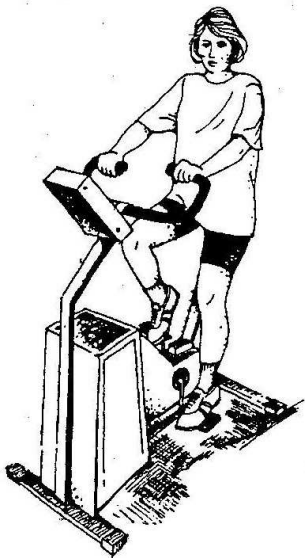
## Bicycle Training

### Bicycling

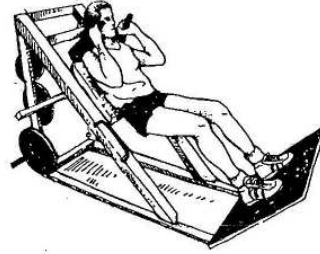
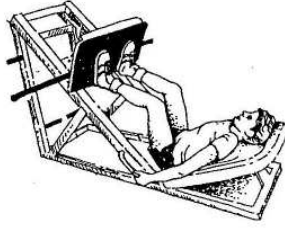
Bicycling is an excellent rehabilitative exercise.

It provides aerobic training to the quads and hams and it provides low-stress quad strengthening. A stationary bicycle or street bicycle may be used. Place the seat in the highest comfortable position in order to minimize the PF forces. Try to use a bike that is equipped with toe clips or toe cages so that the hamstrings also get a work-out.

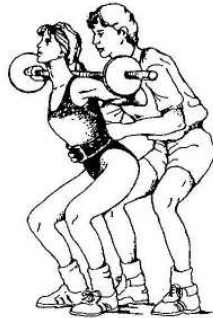
Cycle 15-45 minutes every day and increase the resistance as you can tolerate it.



## Quadriceps Strengthening



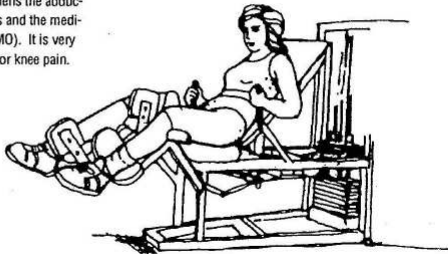
The leg extension machine should **never** be used because it will significantly aggravate your PF pain and can cause severe ligament injury.



## Adductor Strengthening

### Adductor Strengthening

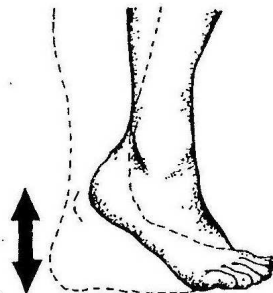
The adductor muscles are located on the inside of your thighs. This exercise strengthens the adductor muscles, the medial hamstrings and the medial quadriceps (vastus medialis - VMO). It is very effective in helping to relieve anterior knee pain.



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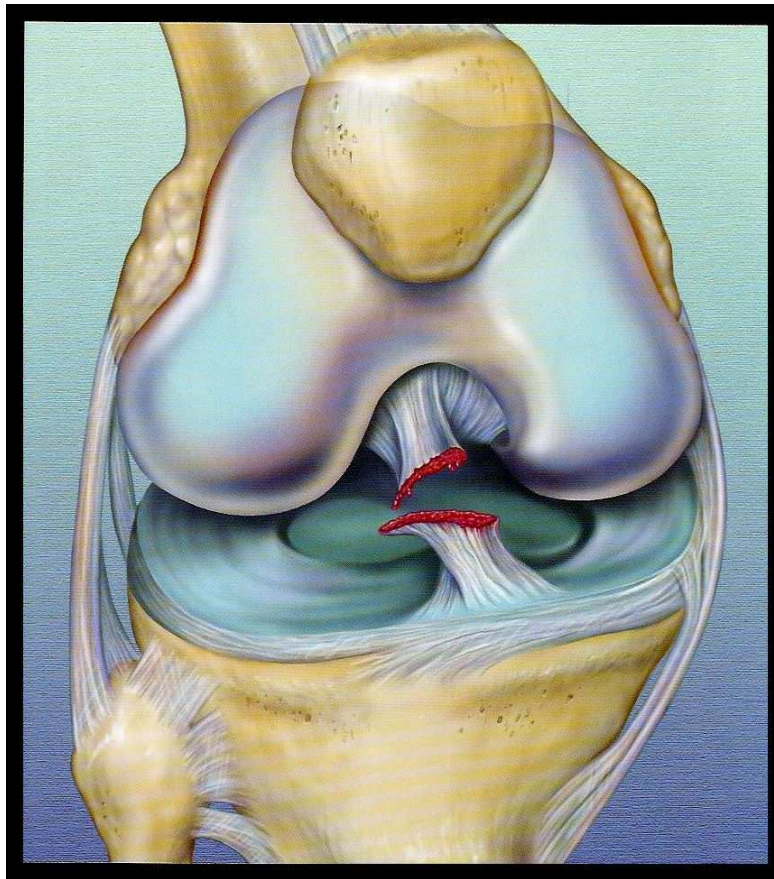
## Calf Strengthening



### Calf Raises

Do as many as are comfortable; start with a few, then gradually work up to your maximum; repeat three times a day.

# Jogging



## > Seven Months Post-op

### Stationary Bicycle

Hamstring Stretching & Strengthening (weight training)

Quadriceps Strengthening (weight training)

Adductor Strengthening (weight training)

Calf Strengthening (weight training)

Jumping Rope

Jogging (level surfaces only)

Agility Training (figure 8s, cariocas, sprinting)

Injury Prevention Training

Gradual Return to Sports

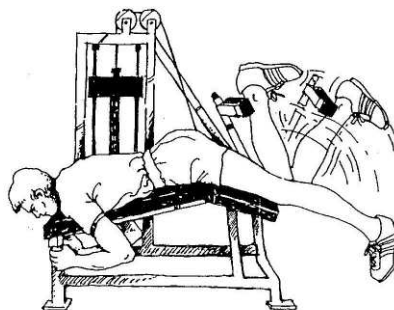
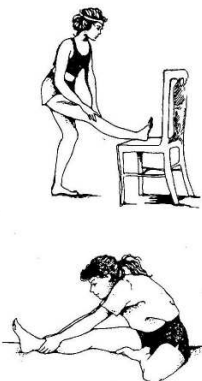
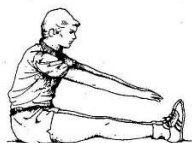
### Restrictions:

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## Hamstring Stretching & Strengthening

### Hamstring Stretching

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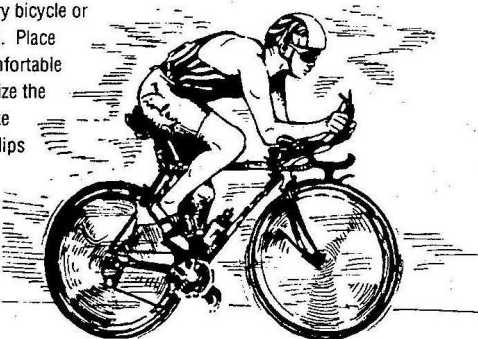
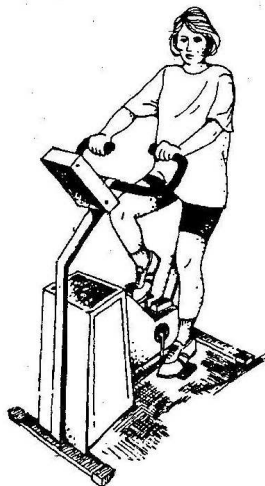
## Bicycle Training

### Bicycling

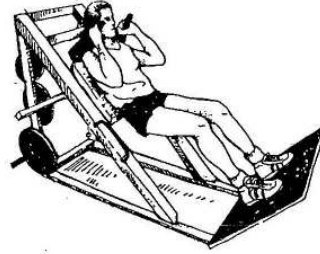
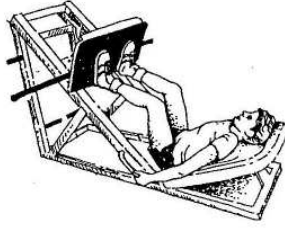
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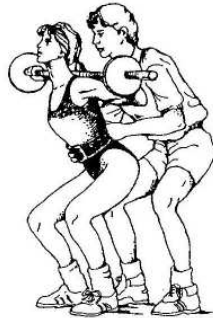
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## Quadriceps Strengthening



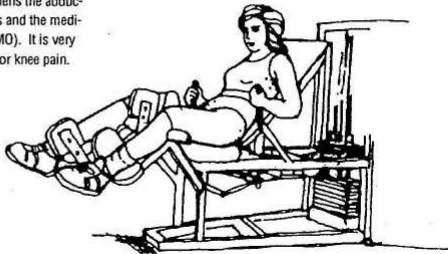
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## Adductor Strengthening

### Adductor Strengthening

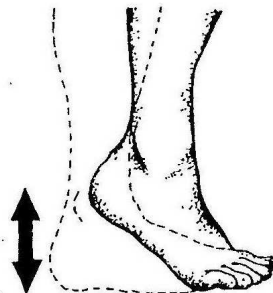
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## Calf Strengthening



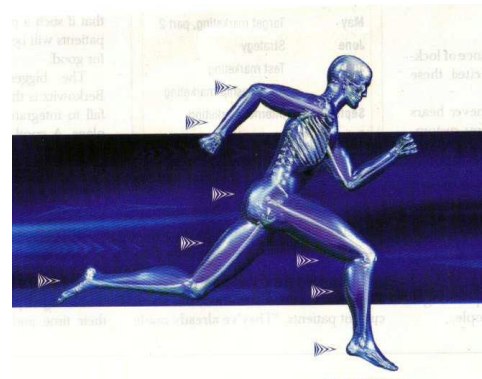
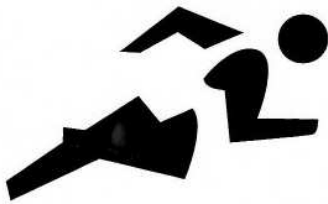
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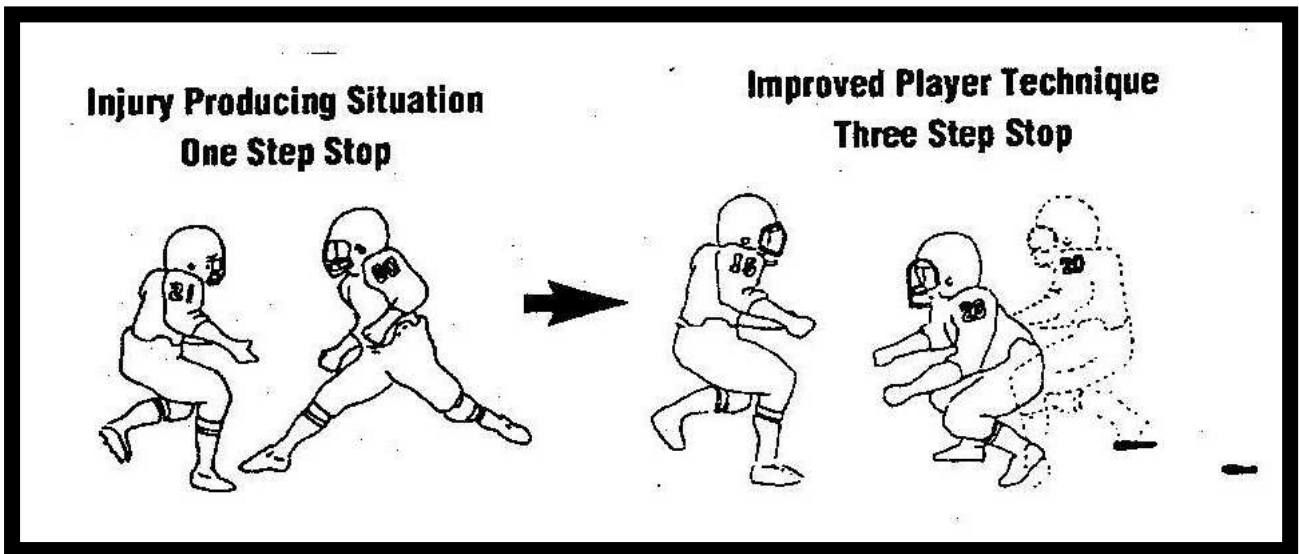
# Jogging



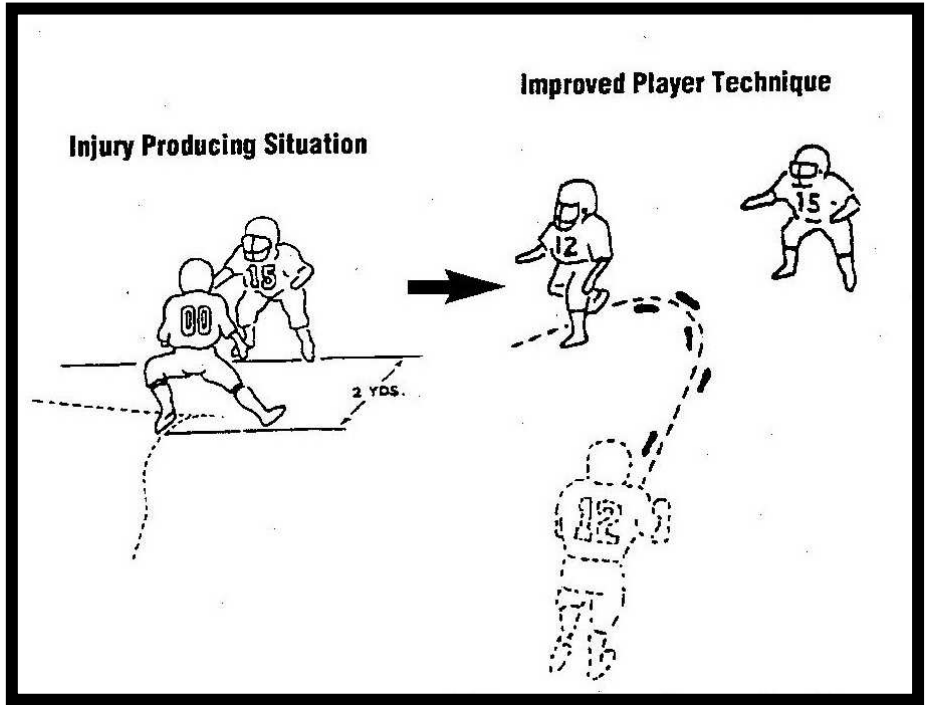
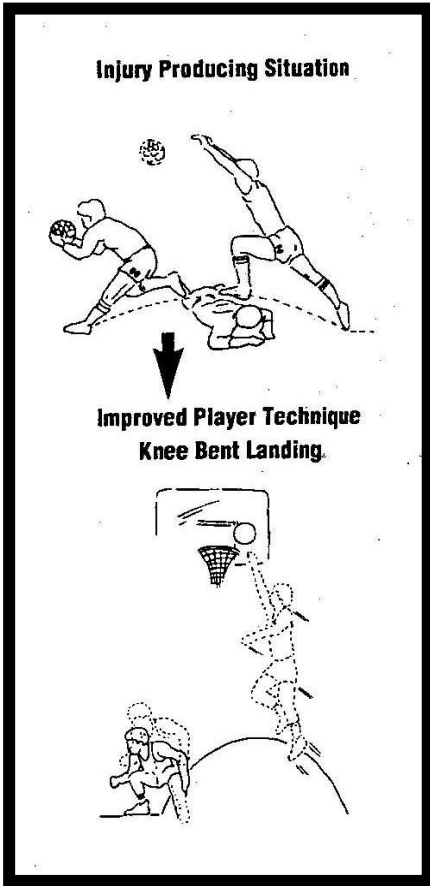
# Agility Training



# Injury Prevention Training







## Return to Sports

