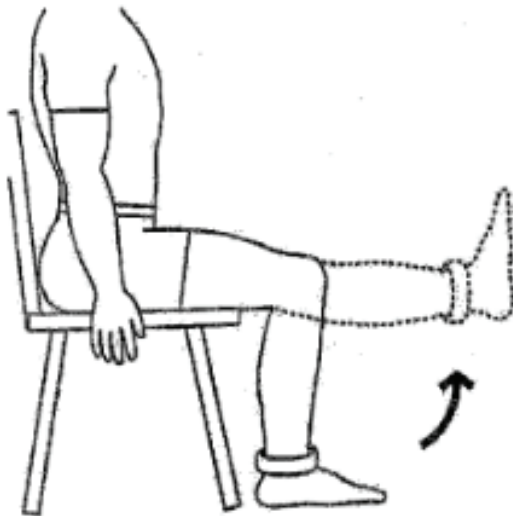# KNEE EXTENSION EXERCISES
(Open Chain Exercises)

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Open chain exercises of the knee are defined as knee exercises that are performed with the foot unsupported or free. Closed chain exercises of the knee are performed with the foot fixed or supported like a leg press or squat.

For Anterior Cruciate Ligament reconstruction surgery, we begin open chain exercises when the graft is healed in the bone tunnels of the femur and tibia. This is typically around 12 weeks after surgery for patellar tendon grafts and 16 weeks for hamstring grafts.

Begin by sitting on the edge of a table, kitchen counter, or chair with your thigh supported. Lift your foot up until the leg is straight, hold that position and count to 10, then relax, allowing your foot to hang. Repeat this process 10 times then rest for 15 seconds. This is one set of ten. Repeat this process 10 times, or as termed 10 sets of 10. We would like you to perform this routine twice a day.

Once you can do 10 sets of 10 knee extensions without shaking of your thigh or fatigue, you then add 5 pounds to your ankle. This can be done with ankle weights you purchase from an athletic store, or you can use an old purse or shopping bag and place canned goods that weigh the desired weight. Use your bathroom scale to determine this. Weigh yourself, then hold the purse or bag, and weigh yourself again. When you are 5 pounds heavier, you are ready.

Place the ankle weights, or handles of the bag or purse on your ankle. Perform the same exercises for 10 sets of 10 twice a day. When you can do this without shaking of your thigh or fatigue of your quadriceps or thigh muscle, you can then increase the ankle weights to 10 pounds. When you accomplish the 10 sets of 10 with that weight, then advance to 15 pounds, then 20, then max at 25 lbs. Do not exceed 25 pounds of ankle weight as this puts too much stress on your kneecap joint and could potentially cause damage to the joint.

During this time of doing open chain exercises, continue all your other exercises given you by your physical therapist. These should include leg presses, squats, and hamstring curls.