



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

## Physical Therapy Protocol: ACL Reconstruction

### Philosophy:

The ACL rehabilitation program emphasizes early restoration of symmetric knee ROM. The goal is to maintain stability, achieve full motion, safely rehabilitate the knee, and avoid harvest site complications. There is to be no testing of reconstructed ligaments (Lachman, Anterior/Posterior Drawer, Varus/Valgus Stress) prior to 12 weeks. Avoid isotonic resisted hamstring exercises for 8 weeks with hamstring autograft. Open chain knee extension exercises, and isokinetic strengthening are **not** performed until after 8 weeks. As the strength and agility returns, the patient may go back to doing what they enjoy. Even when the formal rehabilitation program comes to an end, keeping the knee strong and stable takes a lifelong commitment. It may take a year or more of steady exercise to regain the full use of the knee.

### *Phase I, Post-Op 0-2 Weeks*

#### **OSMS appointments:**

MD visit at 2 weeks with post-op film

Physical therapy will begin as directed by your physician and as indicated on your physical therapy order

#### **Rehabilitation Goals:**

Toe-touch weight-bearing in locked brace at 0

Post-op brace is worn for 3 weeks locked in extension while ambulating and sleeping. This will protect the graft during early incorporation as well as the donor site.

Reduce swelling using cryocuff.

#### **Precautions:**

Weight-bearing in locked brace with crutches

#### **Range-of-Motion Exercises:**

AAROM 100 to 0 degrees

#### **Suggested Therapeutic Exercises:**

Toe touch weight-bear as tolerated with two crutches

Heel slides, seated flexion stretch, passive prone flexion stretch, prone hangs, patellar mobilizations, ankle pumps, quad sets, flexion SLR with ankle weight

Passive extension stretch-foot on bolster

Clam shells, abd SLR with ankle weight, Standing terminal knee extensions into band

Standing knee flexion

NMES to quadriceps with quad set/SLR



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

**Cardiovascular Exercises:**

Bike

**Progression Criteria:**

Patient may progress to phase II after 2 weeks if they have pain well-controlled, 5°-90° of knee ROM with minimal joint swelling and quadriceps muscle control

***Phase II, (after Phase I criteria met, usually 2-4 weeks)***

**OSMS appointments:**

Physical therapy appointments remain every 5-7 days

**Rehabilitation Goals:**

Achieve symmetric motion

Minimize joint swelling with standing activities

**Precautions:**

Discontinue crutches if no quad lag with SLR, no signs of quad inhibition, and can squat hold for 60 sec with blue band

**Range-of-Motion Exercises:**

Full

**Suggested Therapeutic Exercises:**

LE/hip flexibility, passive flexion stretch, hydrants

Flexion and abd SLR with ankle weights, NMES to quadriceps, mini squats, squat holds

Heel raises, bridge holds, Hamstring curl on ball with bridge-double leg

Front/side plank, supermans

**Cardiovascular Exercises:**

Bike

**Progression Criteria:**

Patient may progress to phase II after 4 weeks if they have pain well-controlled

Progressive quadriceps control and no increase in joint swelling with standing activities

***Phase III, (after Phase II criteria met, usually 4-6 weeks)***

**OSMS appointments:**

MD appointment at 6 weeks

Physical therapy appointments every 5-7 days, and progresses to home program

**Rehabilitation Goals:**



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

Balance and stability

**Suggested Therapeutic Exercises:**

Incline walking, LE/hip flexibility, multi-directional Wobble board, single leg balance 8" step-ups, standing hydrant holds

Single leg bridge, hamstring curl on ball with bridge-single leg

Front plank with hydrant, side plank with clamshell, alternating supermans

**Cardiovascular Exercises:**

Bike, Stairmaster, Aquacisor (gait training), or retrograde treadmill

**Progression Criteria:**

Patient should be pain-free with minimal swelling

Step-ups with good form for 10-20 repetitions, standing hydrant exercise with good form for 30 seconds with blue band

***Phase IV, (after phase III criteria met, usually 6-11 weeks)***

**Rehabilitation Goals:**

Non-impact strengthening: 6-day/week program

**Suggested Therapeutic Exercises:**

Incline walking, LE/hip flexibility, multi-directional Wobble board, single leg balance 8" step-ups, standing hydrant holds

Single leg bridge, hamstring curl on ball with bridge-single leg

Front plank with hydrant, side plank with clamshell, alternating supermans

**Cardiovascular Exercises:**

Bike, Stairmaster, Aquacisor (gait training), or retrograde treadmill

**Progression Criteria:**

Performs 6day/week program for at lleast 4 weeks with documented weight-resistance progression. Keep flow sheets for MD visits.

***Phase IV, (after phase III criteria met, usually 6-11 weeks)***

**Rehabilitation Goals:**

Non-impact strengthening: 6-day/week program

**Suggested Therapeutic Exercises:**

Incline walking, LE/hip flexibility, multi-directional Wobble board, single leg balance



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

8" step-ups, standing hydrant holds  
Single leg bridge, hamstring curl on ball with bridge-single leg  
Front plank with hydrant, side plank with clamshell, alternating supermans

**Cardiovascular Exercises:**

Bike, Stairmaster, Aquacisor (gait training), or retrograde treadmill

**Progression Criteria:**

Performs 6day/week program for at least 4 weeks with documented weight-resistance progression. Keep flow sheets for MD visits.

***Phase IV, (after phase III criteria met, usually 6-11 weeks)***

**Rehabilitation Goals:**

Non-impact strengthening: 6-day/week program (3 days cardio, 3 days strength)

**Suggested Therapeutic Exercises:**

**Cardio Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and abd SLR with ankle weights

**Cardio** training goal, 60 min (elliptical, Stairmaster, bike)

**Strength Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and sbd SLR with ankle weights

**Strength** training

Leg press, Hip abduction machine, Knee flexion machine

Hip extension/glut machine, Progressive weighted squats

Band stepping/walks (forward, sideways, backwards)

Forward lunges

Romanian deadlifts (RDLs), single leg balance on soft surfaces

**Progression Criteria:**

Performs 6day/week program for at least 4 weeks with documented weight-resistance progression. Keep flow sheets for MD visits.



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

## ***Phase V, (after phase IV criteria met, usually 12-16 weeks)***

### **Rehabilitation Goals:**

Non-impact strengthening: 6-day/week program (3 days cardio, 3 days strength)

### **Suggested Therapeutic Exercises:**

#### **Cardio Day:**

- Warm-up
- Bike
- LE/Hip flexibility
- Standing hydrant holds
- Flex and abd SLR with ankle weights
- Band stepping/Walks
- Cardio** training goal, 60 min (elliptical, Stairmaster, bike)

#### **Strength Day:**

- Warm-up
- Bike
- LE/Hip flexibility
- Standing hydrant holds
- Flex and sbd SLR with ankle weights
- Band walks
- Strength** training (continue with previous, add:)
- Single leg squats
- Step downs in hip dominant position, goal 8"
- 12-18" power step-ups
- Single leg Romanian deadlifts (RDLs)

### **Progression Criteria:**

Performs 6day/week program for at least 4 weeks with documented weight-resistance progression. Analysis is required for validation of proper form in 8" step down. Keep flow sheets for MD visits.

## ***Phase VI, (phase V criteria met, usually 16-20 weeks)***

### **Rehabilitation Goals:**

Return to jumping: 6-day/week program (3 days cardio, 3 days strength/plyometrics)



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

### **Suggested Therapeutic Exercises:**

#### **Cardio Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and abd SLR with ankle weights

Band walks

**Cardio** training goal, 60 min (elliptical, Stairmaster, bike)

#### **Strength Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and sbd SLR with ankle weights

**Strength** training (continue with previous, add upper body and adv weight as tol)

**Plyometric & Jump Rope** progression:

Stationary jump

Jump up

Jump over a line-forward and lateral

Drop jump (progress to 18")

Jump rope exercises

Hurdle jump-forward and lateral

#### **Progression Criteria:**

Performs 6day/week program for at least 4 weeks. Analysis is required for validation of proper form in 18" drop jump.

## ***Phase VII, (phase VI criteria met, usually 20-24 weeks)***

#### **Rehabilitation Goals:**

Return to running: 6-day/week program (3 days cardio, 3 days strength/plyometrics)

#### **Suggested Therapeutic Exercises:**

#### **Cardio Day:**



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and abd SLR with ankle weights

Band walks

**Cardio** training goal, 60 min (elliptical, Stairmaster, bike)

**Running** drills:

Jogging 40 yards at 60-70% max

Slowly progressing to continuous running

**Strength Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and sbd SLR with ankle weights

**Strength** training (continue with previous, add upper body and adv weight as tol)

**Plyometric & Jump Rope** progression:

Jump rope exercises

Drop jump (progress to 18")

10 yard broad jump

Single leg hop for distance

Single leg hurdle hop-forward and lateral

Bounds-Forward, lateral and diagonal

Stationary single leg hop

Single leg hop up & down

**Progression Criteria:**

Performs 6day/week program for at least 4 weeks. Analysis is required for validation of proper form of triple hop and readiness to progress onto cutting and changing direction activity.

***Phase VIII, (phase VII criteria met, usually 24+ weeks)***

**Rehabilitation Goals:**

Cutting and change of direction: 6-day/week program (3 days cardio, 3 days strength/plyometrics)

**Suggested Therapeutic Exercises:**



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

### **Cardio Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and abd SLR with ankle weights

Band walks

**Cardio** training goal, 60 min (elliptical, Stairmaster, bike, jogging)

**Running** drills:

Lateral shuffle

Deceleration

90° cuts

### **Strength Day:**

Warm-up

Bike

LE/Hip flexibility

Standing hydrant holds

Flex and sbd SLR with ankle weights

**Strength** training (continue with previous, add upper body and adv weight as tol)

**Plyometric** progression:

Jump rope exercises

Drop jump (progress to 18")

10 yard broad jump

Bounds-Forward, lateral and diagonal

Single leg hop for distance, triple hop

Single leg hurdle hop-forward and lateral

Stationary single leg hop

Single leg hop up & down

### **Progression Criteria:**

Performs 6day/week program for at least 4 weeks. Analysis is required for validation of proper form of:

18" step down

18" box jump

Triple hop

Lateral shuffle

Deceleration and cutting



Green Bay • Fox Valley • Marinette

2223 Lime Kiln Road, Green Bay, WI 54311 • Phone: 920-430-8113 • Fax: 920-430-8124

[osmsgb.com](http://osmsgb.com)

### References:

- Adams D, Logerstedt D, Hunter-Giordano A, Axe MJ, Snyder-Mackler L. Current Concepts for Anterior Cruciate Ligament Reconstruction: A Criterion-Based Rehabilitation Progression. *J Orthop Sports Phys Ther.* 2012;42(7):601-614.
- Manal TJ, Hoffman SA, Sturgill L. *Current Concepts of Orthopaedic Physical Therapy, 3<sup>rd</sup> Edition: The Knee: Physical Therapy Patient Management Utilizing Current Evidence.* 2011; Independent Study Course 21.2.11.
- Myer GD, Paterno MV, Ford KR, Quatman CE, Hewett TE. Rehabilitation After Anterior Cruciate Ligament Reconstruction: Criteria-Based Progression through the Return-to-Sport Phase. *J Orthop Sports Phys Ther.* 2006;36(3):385-402.
- Noyes Knee Institute. ACL Repair Protocol.
- UW-Madison ACL Repair Protocol.
- Wilk KE, Macrina LC, Cain EL, Dugas JR, Andrews JR. Recent Advances in the Rehabilitation of Anterior Cruciate Ligament Injuries. *J Orthop Sports Phys Ther.* 2012;42(3):153-170.