

## Guide To ACL Reconstruction Rehabilitation

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Welcome to our ACL Reconstruction Rehabilitation video series. The goal of these videos is to help maximize your recovery following ACL reconstruction surgery. *This video should not be used as a substitute for regular physical therapy visits and guidance from your physician.*

Please remember the following as you use these videos:

- Only progress from one phase to the next based on recommendation from your physician. Most therapy regimens, particularly after surgery, are based on a healing timeline. Progressing too quickly, even though it may feel okay at first, may put you at risk for injury.
- Regular physical therapy visits are valuable for giving you feedback on your progress and helping to ensure you are doing exercises properly.
- This program involves no special equipment and the majority of the exercises can easily be conducted at home. A jump mat or yoga mat may be helpful, as well as some light dumbbells as you progress with strengthening. Additionally, a stopwatch or timer can be used for many exercises.
- It is important to perform all exercises on both legs – this will help prevent imbalance between the rehab and non-rehab knee.
- This is a comprehensive program involving strength, balance, plyometric, agility, cardio and core exercises. You will likely find yourself in much better shape in terms of strength and balance after completing the program.
- Icing is very important after each therapy session – place an ice pack or cooling pad on the affected area for 10 minutes to help limit any irritation from exercise.
- If the affected joint is stiff, try using moist heat for 10 minutes prior to exercise to help loosen things up.
- If you develop any questions or concerns regarding your condition while using this video, contact your physician.

Best of luck in your recovery.

### PHASE I – EARLY MOTION AND MUSCLE REACTIVATION (0-2 weeks post-op)

**GOAL:** Minimize knee stiffness and help regain muscle contraction

**KEY POINTS:**

- Very important to limit pain and swelling after surgery, which can significantly limit early rehab
  - NSAIDs (i.e., Aleve, Advil), ice and elevation may help reduce pain and swelling
- Work to achieve full extension (straightening of the knee) ASAP following surgery
- Motion goals:

- Full extension immediately post-op
- Bending to 90 degrees during week 1
- Bending to 115 degrees during week 2
- Use crutches for 1-2 weeks until comfortable without them.
- Use brace locked straight for walking for 3-4 weeks until strength returns; discontinue per physician or therapist approval
- Conduct exercises 3-4 times daily in this phase
  - Start with one set of 12-15 reps
  - Progress to 2 sets of 20 reps
- Conduct balance exercises with eyes open at first, and then closed as balance improves

**PHASE 1 EXERCISES:**

1. CRYOTHERAPY & ELEVATION
2. HEEL PROPS
3. QUAD SETS
4. CALF PUMPS
5. HAMSTRING SETS
6. PATELLAR MOBILIZATIONS
7. STRAIGHT LEG RAISE
8. HIP ABDUCTION
9. HEEL SLIDES
10. WALL SLIDES
11. SEATED FLEXION HANGS
12. PRONE EXTENSION HANGS
13. BALANCE – WEIGHT SHIFTS FRONT & BACK
14. BALANCE – WEIGHT SHIFTS SIDE TO SIDE

See Phase 1 video at <http://www.matthewboesmd.com/acl-reconstruction-rehabilitation/> to view the exercises.

**PHASE 2 – BALANCE AND NORMAL GAIT (2-4 weeks post-op)**

**GOALS:** Improve range of motion to normal; restore normal gait pattern

**KEY POINTS:**

- Continue with stretching exercises [1-6 below] 3 times per day to increase motion
  - Motion goal = Full extension to full bending compared to the uninvolved knee by week 4 post-op
  - Start prone hangs [3 below] with ankle weights if full extension is not yet achieved
- Conduct light strengthening [7-17 below], balance [19-22 below], and core [29-33] exercises daily – start with one set of 12-15 reps and progress to two sets of 20 reps
  - OK to add ankle weights for straight leg raise
- For gait exercises [#23-28] start with one pass per exercise [approx. 20 ft]; increase to two passes as tolerated
- Use light stationary bike [10-15 minutes only] once you've achieved enough bending of knee to clear pedal rotation

- More than 15 minutes can cause irritation and swelling at this point

**PHASE 2 EXERCISES:**

1. HEEL PROPS
2. FLEXION HANGS
3. PRONE HANGS
4. HAMSTRING STRETCHING
5. CALF STRETCHING
6. PATELLAR MOBILIZATIONS
7. STRENGTH – STRAIGHT LEG RAISES
8. STRENGTH – HIP ABDUCTION
9. STRENGTH – HIP EXTENSION
10. STRENGTH – HIP ADDUCTION
11. STRENGTH – KNEE EXTENSION 40-90 DEGREES
12. STRENGTH – MINI-SQUATS – 0-40 DEGREES
13. STRENGTH – LEG PRESS – 0-30 DEGREES
14. STRENGTH – HAMSTRING CURLS – LEG WEIGHTS
15. STRENGTH – CALF RAISES
16. STRENGTH – LATERAL LUNGES
17. STRENGTH – SQUAT AND ROCK
18. STATIONARY BIKE
19. BALANCE – FRONT & BACK ROCK, FEET STAGGERED
20. BALANCE – SINGLE LEG
21. BALANCE – TANDEM WALKING HEEL TO TOE
22. BALANCE – PLYO BALL SIT AND ROCK, LEG RAISES
23. GAIT – STEP OVERS FORWARD
24. GAIT – STEP OVERS BACKWARD
25. GAIT – FORWARD HIGH KNEE WALK
26. GAIT – BACKWARD HIGH KNEE WALK
27. GAIT – FORWARD HIGH HURDLE WITH HIP CIRCLES
28. GAIT – BACKWARD HIGH HURDLE WITH HIP CIRCLES
29. CORE – ABDOMINAL ISOMETRICS
30. CORE – CRUNCHES
31. CORE – REVERSE CRUNCHES
32. CORE – DIAGONAL CRUNCHES
33. CORE – BACK EXTENSION

See Phase 2 video at <http://www.matthewboesmd.com/acl-reconstruction-rehabilitation/> to view the exercises.

**PHASE 3 – EARLY STRENGTHENING AND COORDINATION (4-6 weeks post-op)**

**GOALS:** Improve balance and muscle activation; progress strengthening exercises

**KEY POINTS:**

- Continue all motion exercises from Phase 2 until full range of motion.

- Conduct 1-2 sets of 20 reps for strengthening exercises; continue daily
  - If you feel that there are too many strengthening exercises early on, pick 4-5 to do and increase the number as your strength improves
  - If swelling or irritation develops, conduct exercises every other day
- Do exercises on both legs to prevent imbalance
- Balance exercises – progress to no touch; progress to no wall or chair assist
- Gait exercises – continue with 1-2 passes (20ft up and back) daily
- Stationary bike can be increased to 20-30 min as tolerated
- Remember to ice for 10-15 minutes following exercise sessions to prevent inflammation (pain and swelling)

**PHASE 3 EXERCISES:**

1. HAMSTRING STRETCH
2. CALF STRETCH
3. QUAD STRETCH
4. STATIONARY BIKE
5. STRENGTH – HIP FLEXION
6. STRENGTH – HIP EXTENSION
7. STRENGTH – HIP ABDUCTION
8. STRENGTH – HIP ADDUCTION
9. STRENGTH – WALL SQUATS
10. STRENGTH – FRONT LUNGES – PARTIAL
11. STRENGTH – LATERAL LUNGES
12. STRENGTH – STEP UPS 6" BLOCK – FRONT TO BACK
13. STRENGTH – STEP UPS 6" INCH BLOCK – SIDE TO SIDE
14. STRENGTH – SUMO SQUATS WITH DUMBBELL
15. STRENGTH – FRONT KICKS
16. STRENGTH – SIDE KICKS
17. STRENGTH – BEND AND SQUATS
18. BALANCE – SINGLE LEG TOE RAISE, ALTERNATE
19. BALANCE – SINGLE LEG TOE REACH
20. BALANCE – LEANING TOWERS
21. GAIT – LATERAL STEPOVERS
22. GAIT – FORWARD ZIG-ZAG SKATER STEP WITH PAUSE
23. GAIT – BACKWARD ZIG-ZAG SKATER STEP WITH PAUSE
24. GAIT – SIDE STEP IN MINI-SQUAT POSITION
25. CORE – ABDOMINAL ISOMETRICS
26. CORE – CRUNCHES
27. CORE – REVERSE CRUNCHES
28. CORE – DIAGONAL CRUNCHES
29. CORE – BACK EXTENSION

See Phase 3 video at <http://www.matthewboesmd.com/acl-reconstruction-rehabilitation/> to view the exercises.

**PHASE 4 – ADVANCED STRENGTHENING AND COORDINATION (weeks 6-12 post op)**

**GOAL:** Improve strength, coordination and muscle endurance as precursor to future phases

**KEY POINTS:**

- Conduct exercises 3-4 times weekly; strengthening exercises: 1-2 sets of 20 reps
  - Avoid irritation – if painful back off exercise frequency or intensity
- Ice following exercise for 10-15 minutes
- Cardiovascular exercise – cross train to avoid irritation, do different exercises daily
  - Continue stationary bike for 20-30 min
  - Okay to add elliptical trainer or stair stepper
  - Okay to add light running progression around week 10 post-op – start with walk/jog intervals and progress to jogging

**PHASE 4 EXERCISES:**

1. HAMSTRING STRETCH
2. CALF STRETCH
3. QUAD STRETCH
4. IT BAND STRETCH
5. STRENGTH – LEG PRESS
6. STRENGTH – SQUAT & HEEL LIFT
7. STRENGTH – SQUAT & REACH
8. STRENGTH – SINGLE LEG SQUATS – ALTERNATING
9. STRENGTH – REVERSE LUNGE
10. STRENGTH – LATERAL LUNGE WALK
11. STRENGTH – FORWARD LUNGE WALK
12. STRENGTH – WEIGHTED PISTOLS
13. STRENGTH – ALBANIAN SQUATS
14. STRENGTH – CROSS REACHES
15. BALANCE – SPORTS ACTIVITY ONE LEG
16. BALANCE – SINGLE LEG BALANCE ON TOWEL ROLL
17. BALANCE – WALK AND HOLD SINGLE LEG STANCE
18. PLYOMETRIC – BOX JUMPS (6" TO 12" HEIGHT)
19. PLYOMETRIC – LEAP AND LAND (DOUBLE LEG PROGRESS TO SINGLE LEG)
20. PLYOMETRIC – JUMP STOPS
21. AGILITY – FAST FEET IN PLACE
22. AGILITY – FORWARD SKIP
23. AGILITY – BACKWARD SKIP
24. AGILITY – SIDE SKIP
25. AGILITY – SIDE SHUFFLE
26. AGILITY – BACK PEDALS
27. AGILITY – Y LUNGES
28. AGILITY – TOE TAPS
29. AGILITY – TRIANGLE LUNGES
30. CROSS TRAINING – STAIR STEPPER OR ELLIPTICAL
31. CROSS TRAINING – WALK & RUN
32. CROSS TRAINING – SLOW FIGURE 8'S

33. CROSS TRAINING – SLOW LARGE CIRCLES
34. CORE – ABDOMINAL ISOMETRICS
35. CORE – CRUNCHES
36. CORE – REVERSE CRUNCHES
37. CORE – DIAGONAL CRUNCHES
38. CORE – BACK EXTENSION
39. CORE – BRIDGES
40. CORE – SINGLE-LEG BRIDGES
41. CORE – LEG LEANS

See Phase 4 video at <http://www.matthewboesmd.com/acl-reconstruction-rehabilitation/> to view the exercises.

## PHASE 5 – PLYOMETRICS AND AGILITY (month 4 post-op)

**GOALS:** Continue strengthening; start plyometric and agility training in anticipation for returning to sports and functional training.

### **KEY POINTS:**

- Warm up for 5 minutes (over 20 yards)
- Continue exercise 3-4 times per week; 1-2 sets of 20 reps as tolerated
- Exercises can also be done for timed duration (ex: start 30-second period and progress to 60-seconds)
- Ok to switch up exercises in certain groups (ex: PLYOMETRIC) – try 4-5 exercises one session and a different 4-5 exercises in the next session, etc.
- Cross training: Include 15 – 30 minutes of jogging, elliptical, or bike at end of rehab session to improve cardiovascular endurance

### **PHASE 5 EXERCISES:**

1. WARM-UP – FAST FEET
2. WARM-UP – FORWARD SKIP
3. WARM-UP – BACKWARD SKIP
4. WARM-UP – SIDE SKIP
5. WARM-UP – 3 STEP DIAGONALS
6. WARM-UP – BACK PEDALS
7. STRENGTH – FORWARD LUNGE WALK
8. STRENGTH – LATERAL LUNGE WALK
9. STRENGTH – SINGLE LEG SQUAT, ALTERNATING
10. STRENGTH – POWER STEP UP
11. BALANCE – STEP AND HOLD
12. BALANCE – SINGLE LEG BALANCE AND TOE TOUCH
13. BALANCE – POP HOPS
14. BALANCE – TOE TOUCH PLUS
15. BALANCE – TOE TAPS – BACK, FRONT, SIDE; THEN NO TAP
16. PLYOMETRIC – BOX JUMPS DOUBLE LEG (1' PROGRESS TO 2')
17. PLYOMETRIC – DOUBLE LEG LINE JUMPS – FORWARD

18. PLYOMETRIC – DOUBLE LEG LINE JUMPS – LATERAL
19. PLYOMETRIC – DOUBLE LEG LINE JUMPS – FRONT / BACK
20. PLYOMETRIC – DOUBLE LEG LINE JUMPS – SIDE /SIDE
21. PLYOMETRIC – DOUBLE LEG JUMP/ROTATE/HOLD
22. PLYOMETRIC – SINGLE LEG LEAP AND LAND
23. PLYOMETRIC – LONG JUMP, DOUBLE LEG LAND, BACK PEDAL
24. PLYOMETRIC – SQUAT, JUMP, LUNGE
25. PLYOMETRIC – SINGLE LEG HOPS – 4 FOR HEIGHT
26. PLYOMETRIC – SINGLE LEG HOPS – 4 FOR DISTANCE
27. AGILITY – FIGURE 8 FORWARD
28. AGILITY – FIGURE 8 FACE FORWARD
29. AGILITY – FIGURE 8 CARIOCAS
30. AGILITY – HIGH KNEE, SIDE SHUFFLE, HIGH KNEE
31. AGILITY – 4 CORNER DRILL #1
32. AGILITY – 4 CORNER DRILL #2
33. AGILITY – T DRILL
34. CROSS-TRAINING – BIKE
35. CROSS TRAINING – ELLIPTICAL AND RUNNING
36. CORE – PLANKS
37. CORE – V SIT AND STRETCH
38. CORE – V SIT AND TWIST
39. CORE – CHOPPING
40. CORE – DIAGONALS

See Phase 5 video at <http://www.matthewboesmd.com/acl-reconstruction-rehabilitation/> to view the exercises.

## PHASE 6 – ADVANCED SPORTS AND FUNCTIONAL TRAINING (months 5+ post-op)

**GOAL:** Prepare for return to sports and high-level activity

**KEY POINTS:**

- Warm up for 5 minutes (over 20 yards)
- Add dumbbells to increase resistance of strength exercise
- Continue cross-training to develop cardiovascular endurance
- Return to full sports activity based on physician approval

**PHASE 6 EXERCISES:**

1. WARM-UP – FAST FEET
2. WARM-UP – FORWARD SKIP
3. WARM-UP – BACKWARD SKIP
4. WARM-UP – SIDE SKIP
5. WARM-UP – 3 STEP DIAGONALS
6. WARM-UP – BACK PEDALS
7. STRENGTH – FORWARD LUNGE WALK
8. STRENGTH – LATERAL LUNGE WALK

9. STRENGTH – SINGLE LEG SQUAT, ALTERNATING
10. STRENGTH – POWER STEP UPS
11. STRENGTH – SINGLE LEG DEADLIFT
12. PLYOMETRIC – SINGLE LEG LINE JUMP AND HOLD – FRONT/BACK
13. PLYOMETRIC – SINGLE LEG LINE JUMP AND HOLD – SIDE/SIDE
14. PLYOMETRIC – SINGLE LEG LINE JUMP – CLOCKWISE
15. PLYOMETRIC – SINGLE LEG LINE JUMP – FIGURE 8
16. PLYOMETRIC – SINGLE LEG JUMP ROTATIONS 90 DEGREES
17. PLYOMETRIC – SQUAT, JUMP, LUNGE
18. PLYOMETRIC – JUMP, LUNGE, FREEZE
19. PLYOMETRIC – SPINNING PLYO SQUAT, LUNGES
20. PLYOMETRIC – DOUBLE LEG LONG JUMP
21. PLYOMETRIC – SINGLE LEG HOP – HOP – HOLD
22. PLYOMETRIC – STEP OFF, JUMP, HOLD
23. PLYOMETRIC – BOX JUMPS DOUBLE LEG (1' PROGRESS TO 2')
24. PLYOMETRIC – SINGLE LEG LEAP AND LUNGE
25. PLYOMETRIC – SINGLE LEG HOPS – 4 FOR HEIGHT
26. PLYOMETRIC – SINGLE LEG HOPS – 4 FOR DISTANCE
27. PLYOMETRIC – SINGLE LEG HOPS – 10-20 YARDS FOR SPEED
28. AGILITY – NEAR/NEAR, FAR/FARS
29. AGILITY – SCISSOR KICKS LATERAL
30. AGILITY – TUCK JUMPS X 2, BACK PEDAL
31. AGILITY – CONE DRILL #1
32. AGILITY – CONE DRILL #2
33. AGILITY – CONE DRILL #3
34. AGILITY – M CONE DRILL
35. AGILITY – X DRILL
36. CROSS-TRAINING – BIKE
37. CROSS TRAINING – STAIR STEPPER OR ELLIPTICAL
38. CROSS TRAINING – TREADMILL
39. CORE – PLANKS
40. CORE – V SIT AND STRETCH
41. CORE – V SIT AND TWIST
42. CORE – CHOPPING
43. CORE – DIAGONALS
44. CORE – BODY BRIDGES – PRONE, RIGHT, LEFT, SUPINE

See Phase 1 video at <http://www.matthewboesmd.com/acl-reconstruction-rehabilitation/> to view the exercises.

**For more information, visit [www.MatthewBoesMD.com](http://www.MatthewBoesMD.com)**