



Sports & Orthopaedic Specialists

Criterion Based PCL Injury Protocol: PREOPERATIVE REHABILITATION

1-3 visits of Physical therapy.

No more than once per week. Focus on teaching home program.

GOALS

1) Reduce joint effusion

REHAB STRATEGIES

Cryotherapy, elevation, ankle pumps

2) Normalize range of motion

Extension: 0

Flexion: Heel to buttock in prone

Determined by contralateral knee

Extension (focus): Heel on chair, prone hang

Flexion: Heel slide, heel slide with patient-applied over-pressure, prone flexion with patient-applied over-pressure

Gastroc/soleus: Runner stretches

3) Strengthen lower extremities

Quadriceps (focus): Quads sets, SLR, wall squat to 45 degrees, leg press

Hamstrings: Standing ham curls, bridging

Glute med/max: Clam shell

Gastroc/soleus: Heel raises

4) Improve proprioception

Tandem stance, single leg balance

5) Normalize gait

Encourage full weight bearing and symmetrical patterning

Retro walking

6) Patient education

Inform the patient of acute postoperative expectations:

-Compressive cryotherapy continuously for the first 72 hours. Then for 20 minutes 3-5 times per day

-**Exercises to do independently from date of surgery to first PT**

appointment: Ankle pumps/quads sets/heel slides (0-45) (2x/day)

- Non weight bearing period of 6 weeks, followed by progressive WBAT.

****Patient will be in a supportive brace FULL time for 6 months** This prevents posterior sag of the tibia in order to let the graft heal without undue pressure on the PCL**

-Follow all postoperative instructions from MD

-Call MD or PT if questions arise

-Begin PT 2-3 weeks following surgery (after postop visit with MD)

Remind the patient of return to sport/activity guidelines:

Teach the patient that the following time references are the EARLIEST that a specific activity may be started. It will be more important for patients to meet ROM, strength, and functional criteria before these activities are reintroduced.

-Running: 16-18+ weeks after surgery

-Non-contact drills/practice: 7-8+ months after surgery

-Contact sport: 9-12 months after surgery

-Use of functional brace for 18 months after surgery or per MD.

7) Outcome measures

Lower Extremity Functional Scale and ACL- Return to Sport Index



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

INTRODUCTION

-This PCL reconstruction protocol is criterion based. Patients must demonstrate specific functional criteria at each physical therapy visit before progressing to more advanced interventions.

-Throughout this protocol, time references (in weeks since surgery) represent the EARLIEST that a patient may begin an exercise/activity following PCL reconstruction with or without posterior lateral corner reconstruction.

PROTOCOL UTILIZATION

Each time reference in the protocol is categorized into four sections:

Functional Criteria

In this section, the therapist will see criteria for how a typically progressing patient should present following surgery. **The patient should be able to demonstrate the listed criteria at the start of the physical therapy visit. If able, progress to the therapeutic exercise listed below.** If unable, continue to focus on PT intervention strategies from prior sessions that will assist the patient in achieving these functional criteria before the next clinic visit.

Patient Education

In this section, the therapist will see points of education that should be discussed with the patient including: Frequency of home program, use of brace, graft strength, exercise technique, return to sport.

Therapeutic Exercise

The therapeutic exercise listed in this protocol conveys the appropriate load for the patient given the time elapsed and the functional progress made since surgery. This is not a complete listing of rehabilitation strategies. Only teach patients exercises appropriate for this time frame if they were able to demonstrate functional criteria listed above.

Outcome Measures

The Lower Extremity Functional Scale (Appendix 2) and ACL – Return to Sport Index (Appendix 3) will be used throughout recovery to gauge patient perceived function and self-efficacy with activity.



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Begin physical therapy with 2-3 visits at one week intervals. Then every other week until the patient has passed functional tests. Emphasis is placed on independent completion of instructed home exercise program. Approximately 12-18 clinic visits in PT from surgery to return to activity/sport.

WEEK 2-4: Focus on early ROM with tibia supported, quads recruitment

Functional Criteria (General guideline only)

Week 2	Extension 0	Flexion 45
Week 3	Extension 0	Flexion 60
Week 4	Extension 0	Flexion 90

-Ambulation with drop-lock brace locked in full extension with axillary crutches, non-weight bearing for 6 weeks

Patient Education

- Inform patient that they can expect up to one hour of daily rehab from now until return to sport
- Complete home program TWICE per day (two 30 minute sessions)
- Non-weight bearing with crutches and **continuous wear of brace locked in full extension**, including sleep.
Exception: home exercise program with brace unlocked
- We need to **protect the tibia from sagging posteriorly** and putting stress on the graft. **Lower leg should always be supported by brace or the PT.** Place a pillow under the proximal tibia at rest to prevent posterior sag.
- Continue to ice/elevate for 20 minutes up to three times per day
- Teach patellar mobilization 5 minutes daily
- Remind the patient that the following time references are the EARLIEST that a specific activity may be started:
Running: 16-18+ weeks after surgery. Non-contact activity/sports: 7-8+ months after surgery. Contact sports: 9-12 months after surgery
- Use of functional brace for 18 months after surgery or as determined by physician

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Avoid hyperextension of the knee for 12 weeks post-op
- Passive or active-assisted heel slides with brace unlocked. Or may take brace off with PT supporting tibia to keep from sagging posteriorly
- Quad set
- Ankle pumps
- SLR
- Clam shell with no band
- Standing or laying hip abduction/adduction
- Patella mobilizations
- Upper body cycle for cardio

Outcome Measures

- Lower Extremity Functional Scale (Appendix 2)



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

WEEK 4-6: Focus on ROM with tibia supported, quads recruitment/strength

Functional Criteria

Week 4	Extension 0	Flexion 90
Week 6	Extension 0	Flexion 110

- Ambulation with brace with axillary crutches, non-weight bearing for 6 weeks

Patient Education

- Remind patient that they can expect up to one hour of daily rehab from now until return to sport
- Complete home program ONCE per day
- Continued **full time brace use** in full extension and non-weightbearing
- Continue to ice/elevate for 20 minutes once per day
- Educate patient that even though pain is minimal, graft is weak during this time frame.
- Continue patellar mobilization 5 minutes daily

Therapeutic Exercise **(Must wear brace or have support of PT for ALL exercises)**

- NO isolated hamstring exercises for 4 months
- Prone hang: Avoid hyperextension of the knee for 12 weeks post-op
- Passive or active-assisted heel slides with support on the tibia to keep from sagging posteriorly
- Quad sets
- SLR
- Standing or laying hip abduction/adduction
- Clam shell with yellow or orange/red band
- Patellar mobilizations
- Upper body cycle for cardio



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

WEEK 6-12: Focus on progression of WB status and normalizing gait with progressive strengthening

Patient may now begin progressing their weight bearing status per MD clearance. Starting with toe-touch weight bearing, then partial weight bearing then finally full weight bearing over a 4 week timeframe. Will **obtain PCL brace** (Rebound or Jack) and continue with **full time use**, even with sleeping.

At this point rehab begins to strongly focus on the gluteus medius and maximus by implementing the Powers Program (Appendix 1). This is an evidence based progression of exercises designed to maximize the recruitment and strength of the gluteals. The program consists of eight levels with three separate focuses:

- Levels 1-3: Gluteal activation/recruitment
- Levels 4-5: Gluteal strength
- Levels 6-8: Functional applications and sport specific skill acquisition

It is imperative that the therapist provides extensive education to the patient while progressing through the Powers Program. Make sure the patient feels the exercises challenging the glutes. The quads, of course, will continue to function during weight bearing exercises. The following are the necessary cues for appropriate form:

- 1) Lower extremity alignment
- 2) Hips down and back
- 3) Pelvis level
- 4) Trunk vertical (no lateral lean)
- 5) Soft landings

Functional Criteria

- Extension symmetrical in prone
- Flexion 135 by 12 weeks
- GAIT ASSESSMENT: Progress weight bearing status then normalize gait pattern with no gross biomechanical deviations

Patient Education

- Complete home program once per day
- PCL brace use full time**, even when sleeping to protect from posterior sag.
- Continue to ice/elevate for 10-15 minutes once per day
- Reiterate to patient that even though pain is minimal, graft is weak during this time frame.
- Discuss importance of gluteal strength in alignment of the lower extremity. Strong glutes = diminished strain through the knee.

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Avoid hyperextension of the knee for 12 weeks post-op
- NO isolated hamstring exercises for 4 months
- Non weight bearing activation of gluteus medius/maximus with isometric holds (Powers Level 1)
- Continue active and active assisted heel slides
- Prone hang, prone knee flexion, ITB/gluteal stretch, gastrocnemius/soleus stretches
- Continue quad sets, SLR, hip extension and hip abduction. May add weight to distal thigh
- Heel raises with knee extended (start 2 legged)
- Wall slides (0-45 degrees) and progress to mini squats (0-45 degrees).
- Leg press with light weight, starting at 25% body weight. Begin double leg 10-50 degrees at week 8
- Terminal knee extension once full weight-bearing.
- Start step up/down progression once full weight bearing

-Cardio:

-After 6 weeks and once 115 degrees is achieved, ok for stationary bike starting at no resistance. Seat set to height where knee is flexed a little. Foot placed slightly forward on the pedal to minimize hamstring activation. Progress time on bike up to 20 minutes.

-Pool ambulation allowed to work on gait- walking or deep water jogging



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

WEEK 12-16: Focus on static double leg activation of gluteus medius/maximus

Functional Criteria

- Extension symmetrical in prone
- Flexion: Progress to full (avoiding forceful hyperflexion)
- Subjective report of completing clam shell with blue band for 60 seconds 5x bilaterally for a minimum of three consecutive days
- Objective observation of clam shell with blue band for 60 seconds bilaterally with appropriate form
- STAIRS ASSESSMENT: Up/down 12 steps with reciprocal pattern/no rail with no gross biomechanical deviations

Patient Education

- Complete home program once per day.
- Continue with **PCL brace use full time.**
- Remind patient of the importance of gluteal strength in alignment of the lower extremity.
- With exercises, should feel glutes working more than quads.
- Teach patient to watch technique/form in the mirror.
 - Knee aligned over second toe.
 - Hips down and back.

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Static double leg activation of gluteus medius/maximus (Powers level 2)
- Prone hang, prone knee flexion, ITB/gluteal stretch, gastrocnemius/soleus stretches
- SLR may add weight to tibial tubercle area and progress distally 1 inch/week to maximum 10 pounds
- Calf raises, progress to single leg
- Leg press (10-70 degrees)
- Double leg squats starting with no weight and progressing to half of body weight
- Balance board- double legged
- Hamstring curls standing (0-90) starting at 15-16 weeks post-op **without** weight
- Single leg balance on stable surface
- Cardio:
 - Increase resistance and time on stationary bike and stairmaster as tolerated
 - Water walking and kicking in pool (linear)

Outcome Measure

Lower Extremity Functional Scale (Appendix 2)



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Week 16-20: Focus on static single leg activation of gluteus medius/maximus and dynamic double leg strength

Functional Criteria

- Extension symmetrical in prone
- Flexion: Progress to full- last 10-15 degrees may take up to 5 months post-op
- Quadriceps function at 70% of unaffected leg with less than 2cm of atrophy

Patient Education

- Functional brace is worn until 6 months post-op. This will be discontinued per MD clearance.
- Patient must wear functional brace for running/sporting activities until 18 months post-op
- Normalization of gait and appropriate quadriceps function are necessary in order to begin return to run program

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Static single leg activation of gluteus medius/maximus (Powers level 3)
- Dynamic double leg strength (Powers level 4)
- Prone hang, prone knee flexion, ITB/glute stretch, gastroc/soleus stretches
- Quad strengthening – no open chain knee extension- may now progress leg press/squats past 70 degrees
- Single leg mini-squats (must achieve proper form prior to return to run)
- Hamstring strengthening- slow and progressive
- Balance progression- add challenge double leg then unstable single leg then with challenge

Return to Run Program (Appendix 1) **Must wear brace.**

- Observe jogging in clinic. Use clinical judgment.
- If pain free and biomechanical deviations are small, cue patient and issue Return to Run Program
- If painful and/or biomechanical deviations are moderate+, reassess at next visit.



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

WEEK 18+: Focus on dynamic single leg strength and progression of sporting activities

Functional Criteria

- Continue to monitor ROM for symmetrical extension and flexion
- Subjective report of consistent completion of home program every other day
- Gluteus medius strength a minimum of 4/5 bilaterally
- SQUAT ASSESSMENT: Complete 15/15 functional squats with appropriate alignment of lower extremities and hips down/back with no verbal cues

Patient Education

- Complete home program every other day
- Functional brace use full time for 6 months post-op and for 18 months post-operatively for all sporting activities
- No pivoting activities/sports until 7-8+ months post-op and no contact sports until 9-12 months post-op
- Remind patient of the importance of gluteal strength in alignment of the lower extremity.
- With exercises, should feel glutes working more than quads.
- Teach patient to watch technique/form in the mirror.
 - Knee aligned
 - Hips down and back
 - Pelvis level
 - Trunk vertical (no lateral lean)

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Dynamic single leg strength of gluteals (Powers level 5)
 - Prone hang, prone knee flexion, ITB/glute stretch, gastroc/soleus stretches
 - Single leg balance with challenge
 - Continued quadriceps and hamstring strengthening- working on stamina
-

*This may be the stopping point in formal PT for patients with moderate+ arthritis in the knee or patients who do not desire to do any type of ballistic sporting activities. The patient should be instructed to continue with home program twice per week until the one year anniversary of surgery.

Return to Weight Lifting (Must wear brace or have support of PT for ALL exercises)

- Patient may begin a slow, graduated return to strength training in the gym
- Max of every other day
- Give the ok for: Leg press, prone or seated ham curls, hip abduction, squats with smith/bar, dead lifts, calf raises
- Do not start more advanced Olympic lifts at this time
- No seated knee extension**
- Two to three sets of 12-15 at appropriate weight
- Gradual increase in weight (max of 10% once per week).
- Fatigue and muscle soreness is ok. No pain in knee.

Outcome Measures

Lower Extremity Functional Scale (Appendix 2)
ACL – Return to Sport Index (Appendix 3)



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

WEEK 20+: Focus on ballistic double leg skill re-education

Functional Criteria

- Subjective report of consistent completion of home program every other day
- STEP DOWN ASSESSMENT: Complete 10/10 step downs from 6" box with appropriate alignment of lower extremities, hips down/back, pelvis level, trunk vertical. All with no verbal cues and no visual feedback.

Patient Education

- Complete home program every other day
- Functional brace use full time for 6 months post-op for ambulation/running and for 18 months post-operatively for all sporting activities
- No pivoting activities/sports until 6 months post-op and no contact sports until 9 months post-op
- Teach patient to watch technique/form in the mirror.
 - Knee aligned
 - Hips down and back
 - Soft landings
- Most patients spend 4 weeks focused on double leg plyometrics and skill acquisition. Very few progress to single leg after only 2 weeks.

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Ballistic double leg skill re-education (Powers level 6)
- Continue with 1 set of hip hike, single leg squat
- Double leg plyometrics with then without challenge
- Continued work on stamina for quads/glutes/hamstrings
- Footwork/agility drills
- Incorporate sport specific activities
- Cardio:
 - Regular cardio workouts 4-6 times per week
 - Progression of running



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

WEEK 22+: Focus on ballistic single leg skill re-education

Functional Criteria

- Gluteus medius strength of 5-/5 or greater bilaterally
- SINGLE LEG SQUAT ASSESSMENT: Complete 10/10 single leg squats with appropriate alignment of lower extremities, hips down/back, pelvis level, trunk vertical. All with no verbal cues.
- Outcome measure: Lower Extremity Functional Scale

Patient Education

- Complete home program every other day
- Functional brace full time use for 6 months and for 18 months post-operatively for all sporting activities
- No pivoting activities/sports until 6 months post-op and no contact sports until 9-12 months post-op
- Teach patient to watch technique/form in the mirror.
 - Knee aligned
 - Hips down and back
 - Pelvis level
 - Trunk vertical (no lateral lean)
 - Soft landings
- Most patients spend 4 weeks focused on single leg plyometrics and skill acquisition. Very few progress to cutting/pivoting after 2 weeks.

Therapeutic Exercise (Must wear brace or have support of PT for ALL exercises)

- Ballistic single leg skill re-education (Powers level 7)
- Incorporate sport specific activity
- Single leg plyometrics
- Focus on proper deceleration from running/sprinting
- Progression of agility/footwork drills

Cardio:

- Regular cardio workouts 4-6 times per week
- Progression of running

Outcome Measures

Lower Extremity Functional Scale (Appendix 2)

ACL – Return to Sport Index (Appendix 3)

*This may be the stopping point in formal PT for patients who complete linear running, but no sports participation with contact, deceleration, pivoting. The patient should be instructed to continue with home program twice per week until the one year anniversary of surgery.



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Week 24+: Focus on cutting skill re-education

Functional Criteria

-DECELERATION ASSESSMENT: Complete 3/3 deceleration-back pedal drills bilaterally with appropriate alignment of lower extremities, hips down/back, pelvis level, trunk vertical, soft landings. All with no verbal cues.

Patient Education

- Complete home program every other day
- Continue to focus on technique/form.
- Patient may discontinue brace use for daily activities/sleeping per MD clearance.
- Brace use still required for sporting activity until 18 months after surgery.

Therapeutic Exercise (Must wear brace for all sporting/cutting/pivoting activities)

- Cutting skill acquisition (Powers level 8)
- Progression of agility/footwork drills to include cutting (increase intensity/speed)
- Sprint work and proper deceleration
- Continued work on plyometrics and proper jump landing
- May begin integration into controlled drills/team practices **without** contact per MD approval

Cardio:

- Regular cardio workouts 4-6 times per week
- Progression of running/sprint/sports drills



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Week 28+

Functional Criteria

- Gluteus medius strength 5/5 bilaterally
- BROAD JUMP ASSESSMENT: Complete a triple broad jump with appropriate alignment, hips down/back, soft landings. All with no verbal cues.

Patient Education

- Continue to focus on technique/form.
- Self-awareness of proper LE mechanics and alignment with sporting activities

Therapeutic Exercise

- Continue sport specific drills
- Progression of sprint drills (increase intensity, direction change, deceleration drills)

Cardio:

- Regular cardio workouts 4-6 times per week
- Progression of sprint drills
- May begin integration into controlled drills/team practices **without contact** per MD approval- functional progression back into contact sports at 9-12 months per MD approval and after passing functional testing

Outcome Measures

Lower Extremity Functional Scale (Appendix 2)

MENISCUS REPAIR – Return to Sport Index (Appendix 3)

Functional Testing (With brace on)

- Powers Functional Test (Appendix 5)
 - Step down, drop jump, lateral shuffle, deceleration, triple hop, run-cut
- Noyes Functional Test (Appendix 6)
 - Single, triple, cross-over, timed hop tests
 - Do not test until passed Powers Functional Test

*Most patients do not pass on the first attempt of functional tests. If not passing, re-establish home exercise program to focus on areas of functional deficit. Then retest in 2-3 weeks.

*If passing scores are obtained during functional testing, recheck with surgeon for return to sport clearance.



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Appendix

- 1 Return to Run Program
- 2 Lower Extremity Functional Scale
- 3 ACL – Return to Sport Index
- 4 Powers Functional Test
- 5 Noyes Functional Test



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

APPENDIX 1: Return to Run Program



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Return to Run Program

-Run no more than every other day

-If pain is increased after a session, take TWO days off. Then repeat same session.
Do not advance to the next level until pain free.

-If weather is good, run outside over flat ground.

-If wintery conditions, run inside on treadmill.

Walk	Jog	Repeat	Total Time
4 min	1 min	6x	30 min
3 min	2 min	6x	30 min
2 min	3 min	6x	30 min
1 min	5 min	5x	30 min
1 min	7 min	4x	32 min
1 min	10 min	3x	33 min
0	30 min	1x	30 min

-After running: Ice for 10-15 minutes



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

APPENDIX 2: Lower Extremity Functional Scale



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Lower Extremity Functional Scale

Circle the number that corresponds to your ability to do the following activities during the PAST WEEK.

	Extremely difficult or unable	Quite a bit of difficulty	Moderate difficulty	A little bit of difficulty	No difficulty
	0	1	2	3	4
Usual work, housework, school activities	0	1	2	3	4
Usual hobbies, recreational/sporting activities	0	1	2	3	4
Rolling in bed	0	1	2	3	4
Getting into or out of the bath	0	1	2	3	4
Walking between rooms	0	1	2	3	4
Putting on shoes or socks	0	1	2	3	4
Squatting	0	1	2	3	4
Lifting an object, like a bag of groceries, from the floor	0	1	2	3	4
Performing light activities around home	0	1	2	3	4
Performing heavy activities around home	0	1	2	3	4
Getting into or out of a car	0	1	2	3	4
Walking 2 blocks	0	1	2	3	4
Walking a mile	0	1	2	3	4
Going up or down 10 stairs	0	1	2	3	4
Standing for one hour	0	1	2	3	4
Sitting for one hour	0	1	2	3	4
Running on even ground	0	1	2	3	4
Running on uneven ground	0	1	2	3	4
Making sharp turns while running fast	0	1	2	3	4
Hopping	0	1	2	3	4

Score _____/80



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

APPENDIX 3: ACL – Return to Sport Index



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

ACL Return to Sport Index

Circle the appropriate number for your response. Please complete all questions.

Not at all

Extremely

1. Are you confident that you can perform at your previous level of sport participation?
0 1 2 3 4 5 6 7 8 9 10
2. Do you think you are likely to re-injury your knee by participating in your sport?
10 9 8 7 6 5 4 3 2 1 0
3. Are you nervous about playing your sport?
10 9 8 7 6 5 4 3 2 1 0
4. Are you confident that your knee will not give way by playing your sport?
0 1 2 3 4 5 6 7 8 9 10
5. Are you confident that you could play your sport without concern for your knee?
0 1 2 3 4 5 6 7 8 9 10
6. Do you find it frustrating to have to consider your knee with respect to your sport?
10 9 8 7 6 5 4 3 2 1 0
7. Are you fearful of re-injuring your knee by playing your sport?
10 9 8 7 6 5 4 3 2 1 0
8. Are you confident about your knee holding up under pressure?
0 1 2 3 4 5 6 7 8 9 10
9. Are you afraid of accidentally injuring your knee by playing your sport?
10 9 8 7 6 5 4 3 2 1 0
10. Do thoughts of having to go through surgery and rehabilitation again prevent you from playing your sport?
10 9 8 7 6 5 4 3 2 1 0
11. Are you confident about your ability to perform well at your sport?
0 1 2 3 4 5 6 7 8 9 10
12. Do you feel relaxed about playing your sport?
0 1 2 3 4 5 6 7 8 9 10

Raw SCORE _____/12 = _____



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

APPENDIX 4: Powers Functional Test



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Powers Functional Test

Patient sticker

- Give the patient verbal instructions. Example: *This is a step down test. Stand on the box on your surgical leg, bend your knee, and touch your opposite heel to the ground.*
- If desired, show the patient how to do the test.
- Allow for two practice attempts – surgical leg only.
- Complete each test twice. View once from an anterior vantage point and once from a lateral vantage point. Video if desired. Document biomechanical aptitudes or faults.
- Scoring: 2 = adequate / 1 = borderline / 0 = inadequate

	Anterior view			Lateral view		
	Hip Stability (Knee(s) aligned)	Pelvis Stability (Pelvis level)	Trunk Stability (Torso vertical)	Shock Absorption (Soft landings)	Hip Strategy (Hips down and back)	
1 Step Down	0 1 2	0 1 2	0 1 2	-----	0 1 2	
2 Drop Jump	0 1 2	-----	-----	0 1 2	0 1 2	
3 Lateral Shuffle	0 1 2	-----	0 1 2	-----	0 1 2	
4 Deceleration	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	
5 Triple Hop	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	
6 Run Cut	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	

Passing / low risk 45-50
 Moderate risk 40-44
 Substantial risk <40

Score: _____/50

- 1 Patient stands on surgical limb on 6" box. Bends knee to touch opposite heel to floor.
- 2 Patient stands on 12" box. Jumps to ground, rebounds vertically, and lands.
- 3 In athletic stance, patient shuffles quickly sideways 4-5 times then rapidly changes direction. Go first toward surgical limb so that direction change takes place on affected extremity.
- 4 Run 4-6 steps forward, plant on surgical leg in single leg squat, then back pedal for 4-6 steps.
- 5 Patient completes three moderate to large forward hops on surgical limb.
- 6 Run 4-6 steps forward, plant on surgical leg in single leg squat, then cut 90 degrees and continue running forward.



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

APPENDIX 5: Noyes Functional Test



Criterion Based PCL Reconstruction Protocol: POSTOPERATIVE REHABILITATION

Noyes Functional Test

Patient sticker

- Give the patient verbal instructions. Example: *This is a single hop for distance. Jump from your left leg to your left leg as far as you possibly can. You must land in control for at least one full second before you put your other leg down.*
- If desired, show the patient how to do the test.
- Allow for two practice attempts on each leg.
- Measure three official trials alternating legs. Record the mean and the limb symmetry index. Give the patient ample rest between tests.
- The literature advocates for 85% limb symmetry index to demonstrate preparedness for return to sport (Reid et al 2007). A referring physician may subscribe to higher standards.

1. Single Hop

	Affected	Unaffected
1)	_____	_____
2)	_____	_____
3)	_____	_____
Mean	_____	_____

Limb Symmetry Index _____%

2. Triple Hop

	Affected	Unaffected
1)	_____	_____
2)	_____	_____
3)	_____	_____
Mean	_____	_____

_____%

3. Cross Over Triple Hop

	Affected	Unaffected
1)	_____	_____
2)	_____	_____
3)	_____	_____
Mean	_____	_____

_____%

2. Timed Six Meter Hop

	Affected	Unaffected
1)	_____	_____
2)	_____	_____
3)	_____	_____
Mean	_____	_____

_____%