

**PCL Non-Operative Protocol**  
**Acute Grade I or Grade II (stress xray confirmed PCL injury)**  
**Dr. Jeffrey Witty, M.D.**

**General Rules Regarding Brace Use:**

Brace should be left on at all times with the following exceptions:

- While in the shower
  - o During shower, the knee should be kept fully extended by the quadriceps muscle
  - o Can be removed in prone position during exercise
- Ideally start with dynamic brace for approximately 12 – 16 weeks with transition to lighter static, competition/custom PCL brace during sports.

**Notes on Athlete Progression and Individualized Program:**

- Athletes may progress at different speeds, the above protocol is a general outline.
- In some studies in the average time to return to “sport specific drills” ranges between 4 – 27 weeks with an average of 11 weeks.
- Return to full activity may range between 10 to 40 weeks with an average of 16 weeks.

**General Precautions:**

- No isolated hamstring exercise for 4 months.
- Avoid athletics, running/walking on downhill grades, running down stairs, and other high knee flexion activities, deceleration motions for 6 months.
  - o MD my clear patient for stairs using brace earlier on case by case basis
- Note any other restrictions to knee motion in MD orders
  - o Other restrictions may include avoiding varus/valgus stress on the knee depending on injury pattern.

**Modalities:**

Ice, compression and other swelling reduction ok to start immediately.

	<b>Weightbearing</b>	<b>Brace</b>	<b>ROM</b>	<b>Exercise</b>
<b>Phase I</b> <b>Week 0 - 6</b>	Week 0 – 2: Partial weight Crutches  Week 2 -3: Begin WBAT with brace using crutches as symptoms allow.	On at all times as described above.	Outside brace: 0 – 90  In Ossur Rebound Brace: Full flexion  In Hinged Knee Brace: 0 - 90	ROM: Gravity assisted flexion with active extension against gravity. Provide anterior tibial support.  Prone passive flexion, gravity extension.  Strengthening: Closed chain quad isometrics. E stim

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				Straight leg raises. Active Knee Extension
<b>Phase II</b> <b>Week 6 - 8</b>	WBAT with brace using crutches until normal gait pattern, then wean off of crutches.	Brace on as described.	Full flexion in all braces.	Continue Phase I  Start wall sits (0 - 45), mini squats (0 - 30)  Leg press: (Week 6 - 8: 10 - 45 deg)  Balance Training: Weight shifts (forward - backward) Two legged balance board  Stationary bike: (Week 6 - 8: 10 - 45)
<b>Phase III</b> <b>Week 8 - 12</b>	WBAT	Brace on as described	Full flexion in all braces.	Continue Phase II  Continue wall sits (0 - 90), Mini squats (0 - 90)  Leg press: 10 - 70  Stationary bike: 10 - 70 deg
<b>Phase IV</b> <b>Week 12 - 24</b>	WBAT	Brace until week 16.  Transition to custom light brace for return to sports as needed.	Full ROM	Continue Phase III  Stationary bike: 0 - full ROM  Full motion leg press  Multihip machine  Balance: Start single leg balance.

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				<p>Stairclimbing machine with progressive resistance</p> <p>Elliptical with progressive resistance</p>
<b>Phase V Week 24 on</b>	WBAT	Brace discontinued	Full ROM	<p>Continue Phase IV. For athletes, isokinetic test at 6 months.</p> <p>Start walk to running program (&lt; 20% isokinetic diff)</p> <p>Figure 8 running (&lt; 20% isokinetic diff)</p> <p>Plyometrics (&lt; 20% isokinetic diff)</p> <p>Sport specific drills (&lt; 10 – 15% isokinetic diff)</p> <p>Return to sports dependent on passing functional testing.</p>

**Notes on Grade I Injuries:**

- Lower grade isolated injuries may have a truncated rehab duration (sport return approx. 12 weeks, Wilk protocol). See specific MD instructions.

**Varus Precautions:**

- No figure 4 positions
- No single leg stance activity/balance exercise x 3 months
- No side to side weight shifts for 3 months
- No hip abduction x 12 weeks
  - o After 12 weeks, provide resistance applied ABOVE knee

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**Valgus Precautions:**

- No single leg stance activity/balance x 3 months
- No side to side weight shifts for 3 months
- No hip adduction exercise for 3 months
  - o After 12 weeks, provide resistance applied ABOVE knee
- Active extension / Passive flexion ROM can be done in the figure 4 position with towel or rope

**Adapted from:**

Shelbourne et al Arthroscopy 2005

Patel et al HSSJ 2007

Jacobi et al JBJS Br 2010

VICKS lecture; Vail, Colorado 2015

Noyes Knee Disorders Text 2016

Agolley et al The Bone and Joint Journal 2018

Winkler et al KSSTA 2020