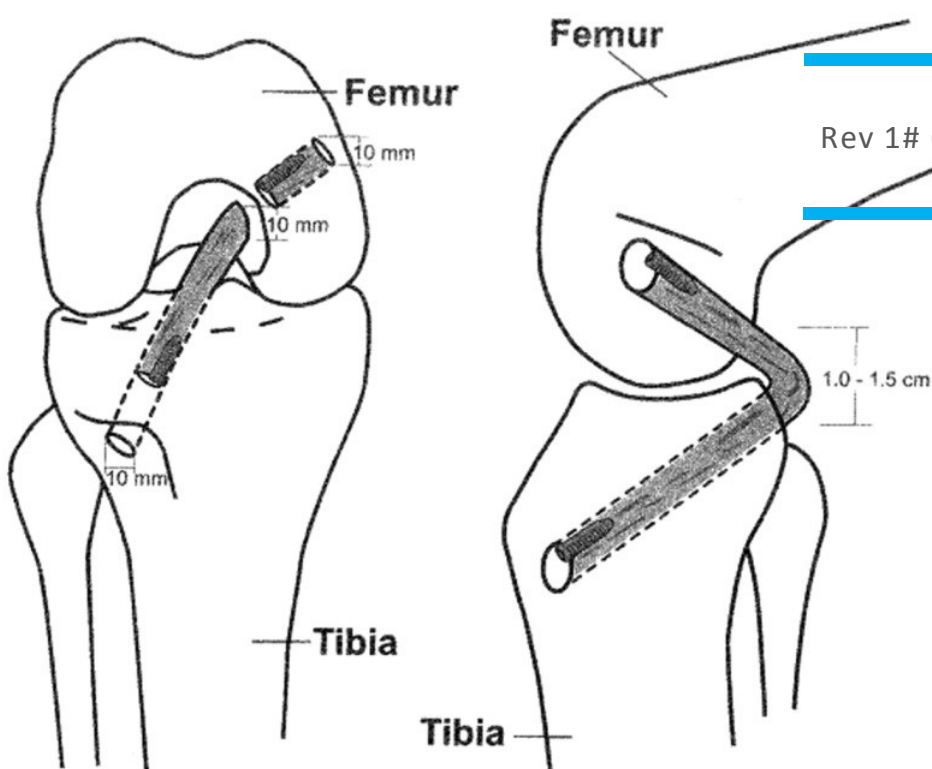

Protokol Fisioterapi Post PCL Reconstruction

*Post PCL Recontruction
Physiotherapy Guideline*

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Rev 1# 6 Januari 2016



Goal Setting

Fase 1

Fase Akut & re-edukasi otot

Minggu 1-2

1. PROM 0°-30°
2. 50% Weight Bearing dengan crutches
3. Mengurangi bengkak & inflamasi
4. Mobilitas Patella baik
5. Adekuat quadricep /VMO
6. Bracing

Minggu 2-6

1. AROM minggu 4 (0°-90°), minggu 6 (0°-120°)
2. Full Weight Bearing
3. SLR tanpa extensor lag
4. Menjaga kekuatan otot sisi sehat
5. Proprioceptive/ re-edukasi keseimbangan
6. Normal gait

Kriteria Fase 2

1. Nyeri & bengkak sudah berkurang 90%
2. Berdiri 1 kaki > 30 detik
3. Full AROM fleksi 120°
4. IKDC 45-59 poin
5. Gait normal
6. Mampu melakukan gerakan fungsional dasar

Pada fase 1 dilarang untuk melakukan:

1. Kontraksi otot hamstring (hamstring curl, isometric, stretching yang berlebihan)
2. OKC ekstensi lutut dari sudut 90°-70° **TIDAK DIPERBOLEHKAN**, **DIPERBOLEHKAN** sudut 70°-0° dengan tonus otot quadricep adekuat, **AKTIF ekstensi** lutut penuh diperbolehkan setelah 6 minggu.
3. CKC sudut 0°-60°
4. Hindari fleksi lutut aktif dengan otot hamstring (heel slide), gunakan wall slide (pasif) atau sedikit kontraksi otot hamstring.

Fase 2

Hipertropi & kekuatan otot (adaptasi anatomi)

Minggu 6-9

1. AROM 0°-135°
2. Kekuatan otot quadriceps fungsional
3. Meningkatkan kekuatan otot lower leg
4. Meningkatkan core stability
5. Circuit training
6. Advance proprioceptive training

Minggu 9-12

1. Full AROM & tanpa nyeri
2. Meningkatkan program fleksibilitas
3. Progresif kekuatan otot quadriceps.
4. Hamstring strength isometric (90°-60°).
5. Melanjutkan latihan CKC/OKC konsentrik/eksentrik quadricep & hamstring.
6. Advance proprioceptive training.
7. Kebugaran Kardipulmonal

Kriteria fase 3

1. Hipertropi 90-100%
2. Core stabilisasi 100 poin.
3. 1 leg stand unstable surface >30 detik
4. Tidak ada nyeri saat sepeda statis
5. Full AROM
7. IKDC >85 poin
8. Kekuatan quadriceps > 70%, hamstring >65% otothamstring
9. Tidak ada masalah (tightness, Strain)

Fase 3

Adaptasi Fungsional

Minggu 12-18

1. Sport Specific quadriceps & hamstring strengthening
2. Sport specific proprioception training
3. Sport specific cardiovascular training
4. Agility

Kriteria fase 4

1. Joging 20 menit tanpa keluhan
2. Pola lari normal
3. IKDC 100 poin
4. Kekuatan otot quadricep & hamstring ≥ 98%
5. 1 leg landing mampu bertahan ≥ 10 detik
6. Mampu melakukan carioca dengan baik
7. Hop test ≥ 90%

Fase 4

Return To play preparation

Minggu 19-24

1. Adekuat kebugaran kardiovaskular, kekuatan, power, agility neuromuscular control, simetris & stabilitas
2. Upperbody strengthening
3. Kembali dengan tehnik olahraga yang digeluti
4. Mengikuti latihan tim minimal

Kriteria return to play

1. HOP test ≥ 98%
2. Strength test 98-100%
3. 1 leg vertical jump test 100%
4. Agility test ≥95%

Program

Fase 1

Minggu 1-2

1. Ice 15 Menit (before& after)
2. Faradic Under Pressure 15 menit (jika bengkak)
3. [Patella Mobilization 100 rep all plane](#)
4. quad set 6", 10reps, 3 set (Jika tidak ada tonus gunakan NMES)
5. [Co-contraction 10", 10 reps, 3 set](#)
6. [SLR Abd & Add](#) 10"hold,10 rep, 3 sets
7. Knee Ekstensi aktif 30°-0°.
8. [Glute Control 10", 10 rep, 3 set](#)
9. [Ankle Exercise 10 reps, 3 sets](#)
10. [Hip Lift/Hip Flexion in sitting 10 rep, 3 sets](#)
11. Weight Shifting 30", 5 reps, 1 set
12. [Heel Slide/wall slide \(30°-45°\) 100 rep, 1 set](#)
13. [Prone Hang 10 menit](#)
14. [Gait training](#)
15. Ice 15 menit

Minggu 3-4

1. Ice 15 Menit (before& after)
2. Faradic Under Pressure 15 menit (jika bengkak)
3. Patella Mobilization 100 rep all plane
4. quad set 6", 10reps, 3 set (Jika tidak ada tonus gunakan NMES)
5. Co-contraction 10", 10 reps, 3 set
6. [SLR Flexi](#), Abd & Add 10"hold,10 rep, 3 sets
7. Glute Control c/ rubber thin 10", 10 rep, 3 set
8. Ankle Exercise 10 reps, 3 sets
9. [1 leg stand 30", 5 reps, 1 set](#)
10. [Wall Squat 30° 10", 10 reps 3 sets](#)
11. [Calf raise 10 rep, 3 sets](#)
12. [Gait Training step forward c/with or without crutches 10 reps, 3 sets](#)
13. Heel Slide/wall slide (90°) 100 rep, 1 set
14. Prone Hang 0° 10 menit

Minggu 5-6

1. Ice 15 Menit (before& after)
2. Faradic Under Pressure 15 menit
3. Patella Mobilization 100 rep all plane
4. Sitting/standing quad set 10",10 rep, 2 set
5. Co-contraction 10", 10 reps, 3 set
6. SLR Flexi, Extension, Abd & Add c/ AW above knee 10 " hold, 10 reps , 3 sets
7. Glute Control c/ rubber moderate 10", 10 rep, 3 set
8. Ankle Exercise 10 reps, 3 sets
9. 1 leg stand 30", 5 reps, 1 set
10. Wall Squat 60°-90° 10", 10 reps 3 sets
11. Calf raise c/step/box 10 rep, 3 sets
12. Gait Training backward step and cone stepping 10 reps, 3 sets
13. Heel Slide 120° 100 rep, 1 set
14. Prone Hang 0° 10 menit

Evaluasi Pada akhir Minggu ke 6

1. [Forward](#) & [lateral Step Up c/box](#) level 1 10 reps, 2 sets

Fase 2

Minggu 7-8

1. Ice 15 Menit (before& after)
2. [ITB Massage 50 rep, 1 set](#)
3. Sitting/standing quad set 10",10 rep, 3 set
4. Co-contraction 10", 10 reps, 3 set
5. SLR all plane c/ AW on ankle 10 rep, 15" hold 3 sets
6. Ankle Exercise 10 reps, 2 sets
7. Wall Squat 90° 10", 10 reps 2 sets

Circuit 1 (8-10)

8. [Miniband series c/ rubber light 10 rep, 3 set](#)
9. [1 leg stand c/unstable surface 30", 3 set](#)
10. Calf raise 10 rep, 3 sets

Circuit 2 (11-13)

11. Forward & lateral Step Up c/high box 10 reps, 3 sets
12. [2 leg press 1/2 body weight 10 rep, 3 sets](#)
13. Core on floor (prone plank, side plank, back plank) 20", 3 sets
14. Heel Slide full ROM 100 rep, 1 set
15. Prone Hang 0° 10 menit
16. Bicycle 15'

Minggu 9-10

1. Ice 15 Menit (before& after)
2. ITB Massage 50 rep, 1 set
3. Sitting/standing quad set 10",10 rep, 3 set
4. SLR all plane c/ AW on ankle 10 rep, 15" hold 3 sets
5. 1 leg stand bosu c/ball passing 10, rep, 3 sets

Circuit 1 (7-9)

6. Miniband series c/ rubber moderate 10 rep, 3 set
7. 4 point miniband walk
8. [2 leg extention machine 15% bodyweight 10 rep, 3 set](#)

Circuit 2 (10-12)

9. 1 leg Calf raise 10 rep, 3 sets
10. [Deadlift Single Leg Single Arm with One dumbell 10 reps, 3 set](#)
11. [2 leg squat smith machine 6" 10 rep, 3 sets](#)
12. 2 leg press half body weight + 20% 10 rep, 3 sets
13. Core on floor (prone plank, side plank, back plank) 20", 3 sets
14. Heel Slide full ROM 100 rep, 1 set
15. Prone Hang 0° 10 menit
16. Bicycle 20'

Minggu 11-12

1. Ice 15 Menit (before& after)
2. Sitting/standing quad set 10",10 rep, 3 set
3. Hamstring Set 10", 10 reps, 3 set
4. [Standing Hip Exercise c/ rubber 10 rep, 3 set](#)
5. 1 leg stand bosu c/ball passing 10, rep, 3 sets

Circuit 1 (6-8)

6. [Miniband lateral & forward walk c/ rubber moderate 10 rep, 3 set](#)
7. 2 leg curl machine 40% RM 10 rep, 3 sets
8. [1 leg extention machine 15% bodyweight 10 rep, 3 set](#)

Circuit 2 (9-11)

9. 1 leg Calf raise 10 rep, 3 sets
 10. [2 leg curl gym ball 10 reps, 15" 1 leg hold, 3 set](#)
 11. 2 leg squat smith machine 6" 10 rep, 3 sets
 12. 1 leg press half body weight 10 rep, 3 set
 13. Core on ball 20", 3 sets
 14. Heel Slide full ROM 100 rep, 1 set
 15. Bicycle 30'
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Evaluasi Pada akhir Minggu ke 12

[Basket ball training drill](#)

[1](#)

[Soccer training drill](#)

Fase 3

Minggu 13-14

1. Ice 15 Menit (before& after)
2. [Terminal Knee Extention 60° 6", 10 rep, 3 set](#)
3. [Static Lunge Forward Single Arm Overhead with One Dumble c/valgus control 10 rep, 3 sets](#)
4. [Press Single Arm from Half Kneeling with One KB 10 reps, 3 set \(R&L\)](#)

Circuit 1 (5-7)

5. 1 leg curl machine 40% RM 10 rep, 3 sets
6. 1 leg extention machine 40% RM 10 rep, 3 set
7. [1 leg press 75% RM 10 rep, 3 set](#)

Circuit 2 (8-10)

8. [1 leg eccentric squat decline board 10 rep, 3 sets](#)
9. [1 leg curl gym ball 10 reps, , 3 set](#)
10. Split squat c/bosu 10 reps, 15" hold, 3 sets

Circuit 3 (11-13)

11. [Chop from Half Kneeling with Cable Bar 10 reps, 3 set](#)
12. [1 leg stand bosu c/ball passing 10, rep, 3 sets](#)
13. [Mini trampoline 2 feet jump & land → jogging → 1 leg hopping 10 rep, 3 sets](#)
14. Jogging 30'

Minggu 15-16

1. Ice 15 Menit (before& after)
2. Terminal Knee Extention 60° 6", 10 rep, 3 set
3. Static Lunge lateral Single Arm Overhead with One Dumble c/valgus control 10 rep, 3 sets
4. Walking Lunges forward & backward c/lateral rubber resistance 20 reps, 3 sets
5. Chop from Half Kneeling with Cable Bar 10 reps, 3 set

Circuit 1 (6-8)

6. 1 leg curl machine 60% RM 10 rep, 3 sets
7. 1 leg extention machine 60% RM 10 rep, 3 set
8. 1 leg press 80% RM 10 rep, 3 set

Circuit 2 (9-11)

9. Ladder drills [2 in 2 out](#), [Lateral shufle](#), [2 in 1 out](#) (focus on footwork/speed/timing) 3 reps, 3 sets
10. 1 leg curl gym ball 10 reps, , 3 set
11. [Side step over hurdle/cone 3 reps, 3 sets](#)

Circuit 3 (12-14)

12. [Split squat jumps 10 reps, 3 sets](#)
13. 1 leg stand bosu c/ball passing 10, rep, 3 sets
14. Mini trampoline 2 feet jump & land → jogging → 1 leg hopping 10 rep, 3 sets
15. Single leg drop landing c/step 10 reps 3 sets
16. Jogging 30'

Minggu 17-18

1. Ice 15 Menit (before& after)
2. Terminal Knee Extention 60° 6", 10 rep, 3 set
3. Static Lunge lateral Single Arm Overhead with One Dumble c/valgus control 10 rep, 3 sets
4. Walking Lunges forward & backward c/lateral rubber resistance 20 reps, 3 sets
5. Chop from Half Kneeling with Cable Bar 10 reps, 3 set

Circuit 1 (6-8)

6. 1 leg curl machine 60% RM 10 rep, 3 sets
7. 1 leg extention machine 60% RM 10 rep, 3 set
8. 1 leg press 80% RM 10 rep, 3 set

Circuit 2 (9-11)

9. Ladder drills [2 in lateral](#), [base rotation](#) (focus on footwork/speed/timing) 3 reps, 3 sets
10. 1 leg curl gym ball 10 reps, , 3 set
11. Side step over hurdle/cone 3 reps, 3 sets

Circuit 3 (12-14)

12. Split squat jumps 10 reps, 3 sets
13. 1 leg stand bosu c/ball passing 10, rep, 3 sets
14. Mini trampoline 2 feet jump & land → jogging → 1 leg hopping 10 rep, 3 sets
15. Single leg drop landing c/step 10 reps 3 sets
16. Jogging 30'

Evaluasi Pada akhir Minggu ke 18

[Basket ball training drill](#)

[1](#) [2](#)

[Soccer training drill](#)

[1](#) [2](#)

Fase 4

Minggu 19-20

1. Ice 15 Menit (before& after)
2. 1 leg squat dumble press 10 reps, 3 sets
3. Lunges Lateral medicine ball tos 10 reps, 3 sets (L/R)
4. Squat Lateral Medicine ball toss 10 reps. 3 sets
5. 1 leg squat front medicine ball toss 10 reps, 3 sets

Circuit 1 (6-8)

6. 1 leg curl machine 70% RM 10 rep, 3 sets
7. 1 leg extention machine 70% RM 10 rep, 3 set
8. 1 leg press 85% RM 10 rep, 3 set
9. Ladder drills progressive 3 reps, 3 sets
10. Forward box jumps 10 rep, 3 sets
11. [Lateral hop hurdle/cone 3 reps, 3 sets](#)
12. 1 leg forward & lateral hopping 10 reps, 3 sets
13. Cone drill
14. Single leg drop landing c/box 10 reps 3 sets
15. Jogging 30'

Minggu 21-22

1. Ice 15 Menit (before& after)
2. 1 leg squat dumble press 10 reps, 3 sets
3. Lunges Lateral medicine ball tos 10 reps, 3 sets (L/R)
4. Squat Lateral Medicine ball toss 10 reps. 3 sets
5. 1 leg squat front medicine ball toss 10 reps, 3 sets

Circuit 1 (6-8)

6. 1 leg curl machine 75% RM 10 rep, 3 sets
7. 1 leg extention machine 75% RM 10 rep, 3 set
8. 1 leg press 85% RM 10 rep, 3 set
9. Ladder drills progressive 3 reps, 3 sets
10. Figure 8 running (speed) 3 reps, 3 sets
11. Forward high box jumps 10 rep, 3 sets
12. Side step over hurdle/cone 3 reps, 3 sets
13. 1 leg forward & lateral hopping 10 reps, 3 sets
14. Cone drill
15. Single leg drop landing c/box 10 reps 3 sets
16. Jogging 30'

Minggu 23-24

1. Ice 15 Menit (before& after)
2. 1 leg squat dumble press 10 reps, 3 sets
3. Lunges Lateral medicine ball tos 10 reps, 3 sets (L/R)
4. Squat Lateral Medicine ball toss 10 reps. 3 sets
5. 1 leg squat front medicine ball toss 10 reps, 3 sets

Circuit 1 (6-8)

6. 1 leg curl machine 80% RM 10 rep, 3 sets
 7. 1 leg extention machine 80% RM 10 rep, 3 set
 8. 1 leg press 85% RM 10 rep, 3 set
 9. Ladder drills progressive 3 reps, 3 sets
 10. Figure 8 running (speed) 3 reps, 3 sets
 11. 1 leg forward box jumps 10 rep, 3 sets
 12. 1 leg forward & lateral hopping 10 reps, 3 sets
 13. Progressive Cone drill
 14. Single leg drop landing c/box 10 reps 3 sets
 15. Jogging 30'
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Form Pengukuran ACL Rehab