

Patellofemoral Dislocation Rehabilitation Program - Accelerated

The Gundersen Health System Sports Medicine Patellofemoral Dislocation Rehabilitation Program is an evidence-based and soft tissue healing dependent program allowing patients to progress to vocational and sports-related activities as quickly and safely as possible. Individual variations will occur depending on patient response to treatment. Avoid ROM with chondrosis or pain when performing exercises. Please contact us at 1-800-362-9567 ext. 58600 if you have questions or concerns.

Phase I: 0-2 weeks	Acute phase
Goals	<ul style="list-style-type: none"> • Minimize knee joint effusion • Gently increase ROM per tolerance • Encourage quadriceps function • Gradual progression of therapeutic exercises for strengthening, stretching, and balance • Normalization of gait pattern
ROM	<ul style="list-style-type: none"> • wk 0-1: 0 degrees • wk 1-2: Gradually increase as tolerated. Goal of full ROM by 4-6 wks.
WB	<ul style="list-style-type: none"> • WBAT w/ knee immobilizer. Switch to lateral patellar stabilizing brace when good quadriceps control.
Modalities	<ul style="list-style-type: none"> • Cryotherapy 15 minutes in duration 3x/day • IFC for pain/effusion if needed • NMES quadriceps if needed
Treatment Recommendations Guidelines for progression based on tolerance	<ul style="list-style-type: none"> • Active warm-up through ROM as tolerated (ie Bike high seat for ROM, Nu Step) • Gentle stretching to increase ROM. Emphasis on full return of knee extension <ul style="list-style-type: none"> ASAP with gradual improvement for knee flexion ROM based on patient tolerance. Low-load long duration stretching for extension with heat if needed (1st TERT= Total End Range Time) Patellar mobilizations only if needed (ie: tight lateral retinaculum). Avoid lateral patellar glides AROM / AAROM / PROM • Flexibility exercises for hamstring, gastroc-soleus, ITB, iliopsoas if indicated • Gentle strengthening exercises: Exercise in a pain-free manner. Respect patellofemoral joint reaction forces. Initiate functional CKC exercises with strengthening from terminal extension to mid-range flexion, respecting patellofemoral joint reaction forces which increase with higher knee flexion angles during CKC exercises. Initiate gentle sub-max OKC exercises from mid-range flexion to 0 (patella is well seated in the trochlear groove) and light isotonic OKC exercises 90 to 45 degrees, respecting patellofemoral joint reaction forces which increase into terminal extension angles. Incorporate total leg strengthening. <ul style="list-style-type: none"> Biofeedback QS with adductor squeeze, SLR, CKC knee extension Multi-angle isometrics quadriceps/hamstrings at 20 degree increments Gentle short arc 0-30 quadriceps with biofeedback (if no chondrosis) Light isotonic OKC exercises 90 to 45 degrees CKC exercises of weight shifting, partial wall squats Hip 4 way SLR, sidelying ER Gastroc soleus strengthening • Balance/proprioception exercises double leg stance progressing to single leg • Core stability and upper body exercises if desired • IFC for pain/effusion, NMES for quadriceps activation and control as needed • Ice (in stretch for extension if needed) 2nd TERT

	<ul style="list-style-type: none"> • HEP for 3rd TERT 	Updated 10/07
--	---	---------------

Phase II: 2-4 weeks	Minimal protective phase
Goals	<ul style="list-style-type: none"> • Minimize knee joint effusion • Return of full range of motion • Improve muscle strength and endurance • Progression of therapeutic exercises for strengthening, stretching, and balance
ROM	<ul style="list-style-type: none"> • Gradually progression to with goal of full ROM by wks 4-6
WB	<ul style="list-style-type: none"> • No limitations. Work on normalization of gait pattern if not already achieved. • Continue with patellar stabilizing brace for long distance ambulation
Modalities	<ul style="list-style-type: none"> • Cryotherapy 15 minutes in duration 1-2x/day • IFC for pain/effusion if needed • NMES quadriceps if needed
Treatment Recommendations Guidelines for progression based on tolerance	<ul style="list-style-type: none"> • Active warm-up: Bike, Elliptical Runner, Nu Step, Treadmill walking • Stretching for full ROM Low-load long duration stretching with heat if needed (1st TERT= Total End Range Time) Patellar mobilizations only if needed (ie: tight lateral retinaculum). Avoid lateral patellar glides AROM / AAROM / PROM • Flexibility exercises for hamstring, gastoc-soleus, ITB, iliopsoas if indicated • Strengthening and endurance exercises: Exercise in a pain-free manner. Progress to full ROM exercises per tolerance. Respect patellofemoral joint reaction forces which increases with knee flexion angles during CKC exercises, increases with terminal extension angles with OKC exercises. Incorporate total leg strengthening. Avoid dynamic valgus during strengthening and functional activities (focus on hip abductor and external rotator strengthening). Biofeedback QS with adductor squeeze, SLR, CKC knee extension Quadriceps OKC isotonic short arc with progression to full ROM (if no chondrosis) Hamstring isotonic CKC exercises: Progress from mid ROM to full ROM – leg press, step-ups, partial lunges progress to full lunges, lateral step-overs, sidestep with T-band, partial squats progress to 90 degree squats Hip 4 way SLR, sidelye ER Gastroc soleus exercises Total leg strengthening • Balance/proprioception • CV conditioning, Core stability • Ice (in stretch if needed) 2nd TERT • HEP for 3rd TERT if needed

Phase III 4+weeks	Return to activity phase
Goals	<ul style="list-style-type: none"> • Progress muscle strength, endurance, and balance activities • Progress to higher level activities depending on functional demands and MD approval • Return back to vocational, recreational, and sport activities
Brace	• Patellar stabilizing brace only for sport / strenuous work activities until wk 12
Modalities	• Cryotherapy 15 minutes 1x/day or after strenuous activity
Treatment Recommendations continued	<ul style="list-style-type: none"> • Active warm-up: Bike, Elliptical Runner, Nu Step, Treadmill walking • Continue with stretching and flexibility exercises as needed • Strengthening and endurance exercises: Advance as tolerated with emphasis on functional strengthening. Avoid dynamic valgus during strengthening and functional activities (focus on hip abductor and external rotator strengthening). <ul style="list-style-type: none"> Total leg strengthening Hip strengthening Heel raises Hamstring full ROM isotonic Quadriceps isotonic in ROM without chondrosis Isokinetic quadriceps/hamstrings in ROM without chondrosis CKC exercises: Leg press, multiple direction lunges, squats, step-ups, sidestep with T-band Gastroc soleus exercise Stairmaster, Euroglide • Dynamic balance exercises • Impact activities if 75% strength on CKC testing: running program, agility drills, plyometrics • Sports-specific activities • CV conditioning and core stability
Testing at 4-6 weeks	<ul style="list-style-type: none"> • Linea CKC testing • Biodex knee flex/ext 0-90 if indicated • Functional testing when appropriate
Return to sport/work guidelines	<ul style="list-style-type: none"> • Based on MD approval, minimal pain at rest or with activity, no knee joint effusion, full pain-free ROM, isokinetic strength and functional testing at 90 % compared to uninvolved side, good performance on functional testing (90% compared to normative data or contralateral extremity) and adequate performance on sport-specific drills • Anticipated return to full activity between 8-24 weeks.

- Redislocation rate ranges from 15-50% depending on activities and number of predisposing factors
- Predisposing factors for primary or recurrent dislocations:
Patella alta, lateral patellar displacement, trochlea dysplasia, increase Q angle (men > 10 +/- 5 deg, females > 15 +/- 5 deg), genu valgum, vastus medius hypoplasia, generalized ligamentous laxity, external tibial torsion, subtalar joint pronation or pes planus, increased femoral anteversion

- Beighton scale for generalized ligamentous laxity:

Instructions: Give patient a point for each of the following characteristics:

	Right	Left
Passive extension of 5 th MCP past 90 deg	_____	_____
Passive opposition of the thumb to forearm	_____	_____
Hyperextension of elbow past 10 deg	_____	_____
Hyperextension of knee past 10 deg	_____	_____
Trunk flexion with palms flat on the floor	_____	

Each limb is scored separately and a single point is given if positive, being able to touch hands for the floor counts as a single point. Highest possible score is 9.

Interpreting scores: Hypomobility = 0-3 Hypermobility = 4-6 Extreme hypermobility = 7-9

Patellar Dislocation References

- Arendt, Elizabeth A., et al: Current Concepts of Lateral Patella Dislocation. Clinics in Sports Medicine. 2002; 21: 499-519
- Atkin, Dave M, et al: Characteristics of Patients With Primary Acute Lateral Patellar Dislocation and Their Recovery Within the First 6 Months of Injury. The American Journal of Sports Medicine. 2000; 28(4): 472-479
- Beasley, Leslie S, Vidal, Armando F: Traumatic Patellar Dislocation in Children and Adolescents: Treatment Update and Literature Review. Current Opinion in Pediatrics. 2004, 16:29-36
- Buchner, Mathias MD, et al: Acute Traumatic Primary Patellar Dislocation: Long-term Results Comparing Conservative and Surgical Treatment. Clinical journal in Sports Medicine. 2005;15:62-66
- Cosgarea, Andrew J., et al: Evaluation and Management of the Unstable Patella. The Physician and Sports Medicine. 2002; 30(10): 33-40
- Davies GJ, Zillmer DA: Functional progression of exercise during rehabilitation in Knee Ligament Rehabilitation, Ellenbecker, 2000; 345-360
- Fulkerson, John P: Diagnosis and Treatment of Patients with Patellofemoral Pain. The American Journal of Sports Medicine. 2002 Vol. 30, No. 3.
- Hinton, Richard Y., Sharma, Krishn, M. Acute and Recurrent Patellar Instability in the Young Athlete. Orthopedic Clinics of North America. 2003; 34: 385-396
- McClure PW, Blackburn LG, Dusold C. The use of splints in the treatment of joint stiffness: biological rational and algorithm for making clinical decisions. Physical Therapy. 74:1101-1107
- Mehta, Vishal M. et al: An Algorithm Guiding the Evaluation and Treatment of Acute Primary Patellar Dislocations. Sports Med Arthrosc Rev. 2007;15:78-81
- Post, William R., et al: Patellofemoral Malalignment: Looking Beyond the Viewbox. Clinics in Sports Medicine. 2002; 21: 521-546
- Sapega AA, Quedenfeld TC. Biophysical factors in range of motion exercises. Physician and Sports Medicine. 1981; 9: 57-65
- Stefancin, John J, Parker, Richard D. First-time Traumatic Patellar Dislocation. Clinical Orthopaedics and Related Research. 2007; 455z: 93-101
- Straker JS, Johnson-Stuhr P: Clinical application of closed kinetic chain exercises in the lower extremities. Orthopaedic Physical Therapy Clinics of North America, 2000; 9(2): 185-207
- Stewart DR, Burden SB. Does generalized ligamentous laxity increase seasonal incidence of injuries in male first division club rugby players. Br J Sports Med. 2004; 38: 457-460

