

Lower Extremity Functional Assessment

Patient Name: _____

MRN: _____

Date of Surgery: _____

Surgeon: _____

Graft Type (circle):	Autograft	Hamstring	BPTB	Quad
	Allograft	Achilles	BPTB	Other

Concomitant Injuries/Procedures: _____

	Operative Limb	Non-operative Limb	Limb Symmetry Index
Range of motion (X-0-X)	-0-	-0-	-
Pain (0-10)	/10	/10	-
Knee Effusion			-
Strength Tests ^(lbs/in2)			
Hamstring Strength (Avg/ 3 trials)			%
Hip Abduction Strength (Avg/ 3 trials)			%
Quad strength (Avg/ 3 trials)			%
Hop Tests ^(cm)			
- Single Leg Hop for distance			%
- Triple Hop for distance			%
- Crossover Hop for distance			%
Motor Control Tests			
- Lateral step down (80 bpm)	min sec	min sec	-
- Lateral leap and catch (40 bpm)	sec	-	-
Calculated 1 RM (Single Leg Press)			
Y Balance Test			
Vertical Jump			
IKDC-2000			
Anterior Cruciate Ligament Return to Sport After Injury (ACL – RSI)			

Explanation of Tests:

Pain is recorded as an average value over the past 2 weeks, from 0-10. 0 is absolutely no pain, and 10 is the worst pain ever experienced.

Knee Effusion is tested using the Modified Stroke Test. An upstroke is applied to medial side of knee, followed by downstroke on lateral side. The therapist observes for movement of fluid with each stroke.

- 0: no wave produced with downward stroke
- Trace: small wave of fluid on medial side of knee
- 1+: large bulge of fluid on medial side of knee with downstroke
- 2+: Effusion returns to medial side of knee without downstroke
- 3+: inability to move effusion from medial side of knee

Gluteus Medius strength is measured using a handheld dynamometer. The patient is positioned in side lying with the test knee in full extension and the test hip in slight extension. The HHD is placed just proximal to the lateral malleolus. The patient is instructed to apply a maximal isometric effort force against the HHD and the average of 3 trials is recorded for each limb.

Quadriceps strength is measured using a handheld dynamometer. The patient is secured in 60 degrees of knee flexion and the HHD is placed between the patient's tibia and the resistance arm, 1 inch proximal to the midline between the malleoli. The patient is instructed to apply a maximal isometric effort force against the HHD and the average of 3 trials is recorded for each limb. If available ISOKINETIC CON-CON @ 60, 180, and 240 degrees/sec, 90-30 degrees of ROM.

Hamstring strength is measured using a handheld dynamometer. The patient is secured in 60 degrees of knee flexion and the HHD is placed between the patient's lower leg and the resistance arm, 1 inch proximal to the midline between the malleoli. The patient is instructed to apply a maximal isometric force against the HHD and the average of 3 trials is recorded for each limb. If available ISOKINETIC CON-CON @ 60, 180, and 240 degrees/sec, 90-30 degrees of ROM.

Timed Lateral Step down is performed on a step high enough to encourage the patient to achieve 60 degrees of knee flexion when the heel contacts the ground. The patient performs continuous single leg squats off the step with their hands on the hips to the beat of an 80 bpm metronome. Each click of the metronome signals the athlete to flex or extend the knee. The patient is instructed to maintain neutral limb alignment and the test is timed until the patient demonstrates three faulty movement pattern strikes, the patient reports pain, the inability to continue or reaches 180 seconds. A strike includes knee valgus, loss of balance, missing the beat of the metronome or hands coming off the hips. The total time is recorded prior to obtaining 3 strikes for each limb.

Hop testing is performed per standardized testing guidelines. The furthest hop is recorded to the nearest centimeter for each limb. Single-leg hop for distance, triple hop for distance and crossover hop for distance are measured from the heel.

Lateral Leap and Catch is performed by placing two lines on the floor set at a distance of 60% of the patient's body height. The patient is instructed to jump unilaterally from one foot to the other keeping to the beat of a 40 bpm metronome. The test is timed for 60 seconds or the test is timed until the patient demonstrates three faulty movement pattern strikes. A strike includes knee valgus, pelvic drop, not reaching the line or significant loss of balance.

Y Balance Test is performed per standardized testing guidelines. The average of 3 trials is recorded to the nearest centimeter for each limb.

References:

- Arden CL, Taylor NF, Feller JA, Whitehead TS, Webster KE. Psychological Responses matter in returning to preinjury level of sport after anterior cruciate ligament reconstruction surgery. *Am J Sports Med.* 2013;47:1549-1558. <https://pubmed-ncbi-nlm-nih-gov.treadwell.idm.oclc.org/23733635/>
- Arden CL. Anterior Cruciate Ligament Reconstruction-Not Exactly a One-Way Ticket Back to the Preinjury Level: A Review of Contextual Factors Affecting Return to Sport After Surgery. *Sports Health.* 2015;7(3):224-230. <https://pubmed-ncbi-nlm-nih-gov.treadwell.idm.oclc.org/26131299/>
- Collins NJ, Misra D, Felson DT, Crossley KM, Roos EM. Measures of knee function: International Knee Documentation Committee (IKDC) Subjective Knee Evaluation Form, Knee Injury and Osteoarthritis Outcome Score (KOOS), Knee Injury and Osteoarthritis Outcome Score Physical Function Short Form (KOOS-PS), Knee Outcome Survey Activities of Daily Living Scale (KOS-ADL), Lysholm Knee Scoring Scale, Oxford Knee Score (OKS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Activity Rating Scale (ARS), and Tegner Activity Score (TAS). *Arthritis Care Res (Hoboken).* 2011; 63(Suppl 11):S208-S228. <https://pubmed-ncbi-nlm-nih-gov.treadwell.idm.oclc.org/22588746/>
- Haitz K, Schultz R, Hodgins M, Matheson GO. Test-Retest and Interrater Reliability of the Functional Lower Extremity Evaluation. *Journal of Orthopaedic & Sports Physical Therapy.* 2014;44(12):947-954. <https://pubmed-ncbi-nlm-nih-gov.treadwell.idm.oclc.org/25394690/>
- Noyes FR, Barber SD, Mangine RE. Abnormal lower limb symmetry determined by function hop tests after anterior cruciate ligament rupture. *Am J Sports Med.* 1991 Sep-Oct;19(5):513-8. doi: 10.1177/036354659101900518. PMID: 1962720.
- Plisky PJ, Gorman PP, Butler RJ, Kiesel KB, Underwood FB, Elkins B. The reliability of an instrumented device for measuring components of the star excursion balance test. *N Am J Sports Phys Ther.* 2009;4(2): 92-99. <https://pubmed-ncbi-nlm-nih-gov.treadwell.idm.oclc.org/21509114/>
- Stark T, Walker B, Phillips JK, Fejer R, Beck R. Hand-held dynamometry correlation with the gold standard isokinetic dynamometry: a systematic review. *PM R.* 2011;3(5):472-479. doi:10.1016/j.pmrj.2010.10.025