

Pain

Test Description	Scoring	Goal/Pass
1. Ask the patient if they have had knee pain in the last week where is that pain. 2. Ask the patient when they experience this pain 3. Ask the patient to rate the pain /10 on VAS scale (0 no pain to 10 worst imaginable pain)	Location: AM PFJ (anterior medial patellofemoral). When: Ie. During running/particular exercise Intensity: / 10 VAS scale	For any progression must have <2/10 during/after activity

Swelling

Test Description	Scoring	Goal/Pass
Effusion <i>Stroke Test:</i> Supine, knee in full extension and relaxed. Hand beneath medial tibiofemoral joint line, stroke hand upwards towards suprapatellar bursa for a 2-3 times in sweeping motion in attempt to move effusion from the inside of the joint to suprapatellar pouch. Then stroke downwards on the lateral aspect of the knee (thigh), just superior to the suprapatellar bursa towards the lateral joint line.	Zero: no wave produced on downstroke Trace: small wave on medial side with downstroke 1+: Large bulge on medial side with downstroke 2+: Effusion spontaneously returns to medial side after upstroke 3+: So much fluid that it is not possible to move the effusion out of the medial aspect of the knee	For any progression must have: Zero – 1+

Range of Motion

Test Description	Scoring	Goal/Pass
Flexion Patient supine slide heel up towards bottom Keep heel and pelvis on ground Active movement no passive help from hand or therapist	Goniometer in degrees Record any pain / catching	0 – 5 deficit

Extension Prone leg hang Knees on edge of plinth but not off Relax lower leg and feet Measure heel height difference without placing pressure on heel Use inclinometer if available	Centimetre heel height difference Record ACLR or CL more flexed	< 2 cm
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Stability

Test Description	Scoring (for return to sport score)	Goal/Pass
Lachman's test Knee flexed 20-30 degrees in supine One hand behind tibia and other grasping thigh Thumb on tibial tuberosity Use other side as comparison	Nil (laxity): 5 points Mild: 3 points Moderate: 0 points	NA

TASK 1: Movement Retraining

To move to next phase / type of movement retraining the following must be achieved

Test Description	Scoring	Goal/Pass
Double Leg Landing - Double leg land LESS (Landing Error Scoring System)	Excellent = 0 – 3 points Good = 4-5 points Moderate = 6 points Poor = < 6 points	Excellent
Single Leg Landing (ACLR and CL) - Single leg land Modified LESS (Landing Error Scoring System)	Excellent = 0 – 3 points Good = 4-5 points Moderate = 6 points Poor = < 6 points	Excellent
Running - “Return to Running Criteria” see attached (pain, swelling, strength, function, graded CV program criteria)	See attached	Pass all measures
Agility - Modified movement error scoring system	Excellent = 0 – 3 points Good = 4-5 points Moderate = 6 points Poor = < 6 points	Excellent

DOUBLE LEG LANDING ERROR SCORING

Front view	Lateral (side) trunk flexion at contact – trunk is flexed	Yes=0, No=1
	Knee valgus angle at contact – knees over the midfoot	Yes=0, No=1
	Knee valgus displacement – knees inside of large toe	Yes=1, No=0
	Foot position at contact - toes pointing out greater than 30 degrees	Yes=1, No=0
	Foot position at contact - toes pointing out less than 30 degrees	Yes=1, No=0
	Stance width at contact - less than shoulder width	Yes=1, No=0
	Stance width at contact - greater than shoulder width	Yes=1, No= 0
	Initial foot contact – symmetric	Yes=0, No=1
Side View	Hip flexion angle at contact – hips are flexed	Yes=0, No=1
	Trunk flexion angle at contact – trunk in front of hips	Yes=0, No=1
	Knee flexion angle at contact – greater than 30 degrees	Yes=0, No=1
	Ankle plantar flexion angle at contact – toe to heel	Yes=0, No=1
	Hip flexion at max knee flexion angle – greater than at contact	Yes=0, No=1
	Trunk flexion at max knee flexion – trunk in front of the hips	Yes=0, No=1
	Knee flexion displacement – greater than 30 degrees	Yes=0, No=1
	Sagittal plane joint displacement	Large motion (soft) = 0, Average = 1, Small (loud/stiff) =2)
	Overall Impression	Excellent = 0, Average = 1, Poor = 2

SINGLE LEG LANDING ERROR SCORING

	LEFT	SCORE:
Front view	<i>Lateral (side) trunk flexion at contact –excessively flexed to the side</i>	Yes=1, No=0
	Knee valgus angle at contact – knees over the midfoot	Yes=0, No=1
	Knee valgus displacement – knees inside of large toe	Yes=1, No=0
	Foot position at contact - toes pointing out greater than 30 degrees	Yes=1, No=0
	Foot position at contact - toes pointing out less than 30 degrees	Yes=1, No=0
	<i>Pelvic movement – lateral deviation or shunt or pelvic drop</i>	Yes=1, No=0
	<i>Hip is adducted</i>	Yes=1, No=0
	<i>Maintains balance on one leg</i>	Yes=0, No=1
Side View	Hip flexion angle at contact – hips are flexed	Yes=0, No=1
	Trunk flexion angle at contact – trunk in front of hips	Yes=0, No=1
	Knee flexion angle at contact – greater than 30 degrees	Yes=0, No=1
	Ankle plantar flexion angle at contact – toe to heel	Yes=0, No=1
	Hip flexion at max knee flexion angle – greater than at contact	Yes=0, No=1

	Trunk flexion at max knee flexion – trunk in front of the hips	Yes=0, No=1
	Knee flexion displacement – greater than 30 degrees	Yes=0, No=1
	Sagittal plane joint displacement	Large (large/soft) = 0, Average = 1, Small (loud/stiff) =2)
	Overall Impression	Excellent = 0, Average = 1, Poor = 2

AGILITY MOVEMENT SCORING

	LEFT	SCORE:
View from front	Frontal plane foot placement > 1 foot away from CoM	Yes=1, No=0
	Upright (<45 hip knee flexion)	Yes=0, No=1
	Excessive torso lean away from direction going	Yes=1, No=0
	Foot position at contact - toes pointing out greater than 30 degrees opposite to direction going	Yes=1, No=0
	Excessive torso rotation away from direction going	Yes=1, No=0
	Overall Impression	Excellent = 0, Average = 1, Poor = 2

TASK 2: Squats

Test Description	Scoring	Goal/Pass
Squat - When reviewing exercise program note the maximum weight patient can lift for each exercise with safety in mind, good technique, alignment and no pain.	Record in log book - Load and repetitions	Return to running: 50% BW 6RM Return to sport 50% BW 6RM = 1 point, 75% BW 6RM = 3 points 100% BW 6RM = 5 points
Leg Press (if available can be used for interlimb differences) - 1RM Single Leg - Perform adequate warm up at lower weights	R and L KG/pounds	Return to running: 1.0 x BW 1RM Return to sport: 1.5 x BW 1RM

TASK 3: Balance

Test Description	Scoring	Goal/Pass
Single Leg Stance - Arms crossed over chest - Hip and knee maintained at 90 degrees - Functional alignment maintained (i.e. no lateral deviation/flexion)	Max number seconds Best of 3 trials	Return to running/sport: 10s eyes closed

of the trunk, hips level, trunk neutral.		
Star Excursion Balance Test - Shoes off, hands on hips, minimal stance foot movement allowed (ie rotation or lift) - Trunk movement allowed if controlled movement - Most distal toe for anterior on line, Heel for posterior directions - 2 practice trials each leg, 3 good trials on each, continue until plateau of performance	Record best trial Anterior: cm Posterior medial: cm Posterior lateral: cm	Return to sport: LSI > 95% all three direction = 3 points > Normative value for age/gender = 2 points Otherwise score 0

TASK 4 and 6 (Hip Abductors + Core)

Test Description	Scoring	Goal
Side bridge - Knees bent - Shoulder, hips, knee and ankle in line - Hips fully extended - Continue until unable to maintain correct position	Max number seconds	Return to running/sport: > 95% LSI > 30s

TASK 5: Calf

Test Description	Scoring	Goal
Calf - Single Leg Heel Raise on edge of step (knees bent and straight) - Elevate as high as possible - Assessor places hand above head at highest point - 1 repetition every 2 seconds, to touch assessor hand - Stop as soon as unable to raise to original height or slows below the cadence above.	Maximum number of reps Max at 40	Return to running/sport: > 95% LSI > 25 reps Both knees bent and straight

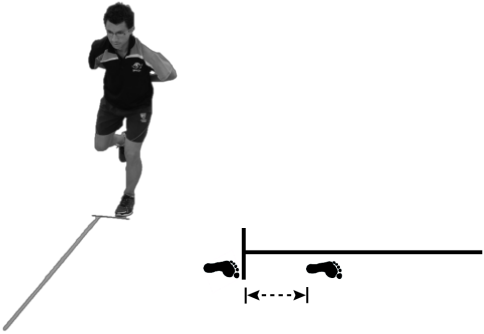
TASK 7: Gluteal/Hamstring

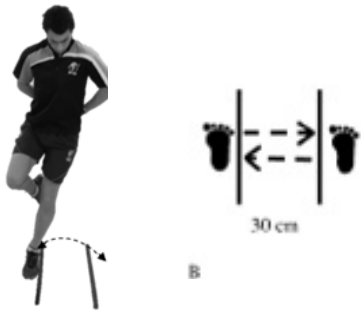
Test Description	Scoring	Goal
Hamstring Option 1 – Hand held dynamometry - Patient lying prone - Measure at 15 degrees KF and 45 degrees KF - Hand held dynamometer 3 trials - Hamstring Option 2 - Maximum single leg hamstring bridge (used for return to sport score) - Patient supine so HF 30, KF 30 foot on chair/plinth - Tester to identify max height of full hip extension - Place ruler across pelvis to ensure patient reaches this height with each rep - X 2 practice repetitions	Record at both 15 and 45 degrees average newtons Record number of repetitions for each leg	Return to running: - > 70% LSI Return to sport: - 90% LSI and > normative value for age/gender/BW <i>Return to sport score</i> LSI > 95% all three direction = 3 points > Normative value for age/gender = 2 points Otherwise score 0
Gluteals - Single leg Bridge - Weight bearing leg: KF 60 degrees - Non weight bearing leg: full KE, thigh level with WB thigh - Arms crossed over chest - Elevate hips as high as possible - Assessor places hands at this height - Repeat as many times as possible touching assessors hands each time - Stop as soon as unable to bridge to original height	Maximum number of reps Max at 40	Return to running: > 95% LSI > 15 reps

Functional Testing

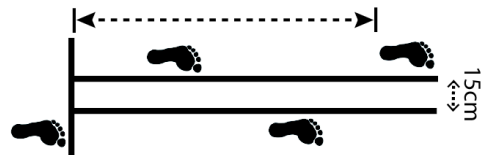
Test Description	Scoring	Goal/Pass
One Leg Rise Test Patient sits on an adjustable plinth. Foot placed so heel is 10cm from edge of bed Plinth adjusted so knee is flexed to 90 degrees Arms crossed across chest Opposite leg suspended knee fully extended, hip at 30 degrees	Number of reps completed Test stops if; - > 3 loss of balance or other foot touching ground - Not keeping up with speed - Patient stops due to fatigue - Patient reaches 50 reps	Return to running: >22 Return to sport: >95% LSI

Rise on and off bed, allowing to just touch the surface with their bottom but are not allowed to completely sit or rest Completed at speed of 45bpm (MetroTimer App)		
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Test Description	Scoring	Goal
Single Leg Hop For Distance - <i>Set up:</i> rigid tape with measuring tape (up to 150-200cm) - <i>Start position:</i> toes behind line, hand together behind back, NWB leg can do anything but touch the ground. WB leg – no limitations. - <i>Land position:</i> must “stick” landing. I.e. no secondary movements/hops. Must maintain balance and not touch NWB foot > 3 secs/assessor confident balance has been controlled. NWB not allowed to touch other leg. hands must remain clasped behind back - <i>Record:</i> Continue on same leg until “plateau” i.e. no longer improving. Must record 3 good trials.	Maximum score (cm) 	Return to running: NA Return to sport: >95% LSI Normative value for age/gender

Test Description	Scoring	Goal
Side Hop - <i>Set up:</i> rigid tape 30cm apart - <i>Start position:</i> toes behind line, hand together behind back, NWB leg can do anything but touch the ground. WB leg – no limitations. - <i>Land position:</i> must “stick” landing. I.e. no secondary movements/hops. Must maintain balance and not touch NWB foot > 3 secs/assessor confident balance has been controlled. NWB not allowed to touch other leg. hands must remain clasped behind back - <i>Record:</i> Continue on same leg until “plateau” i.e. no longer improving. Must record 3 good trials.	Maximum reps in 30s 	Return to running: NA Return to sport: >95% LSI Normative value for age/gender
LESS Score - See Section 4.5 for how to score the quality of movement during double	Record the LESS for right and left limb on a single leg hop	0-3 points

and single leg landings		
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Test Description	Scoring	Goal
Triple Crossover Hop - <i>Set up:</i> rigid tape x 2 with measuring tape (up to 600cm), 15cm apart - <i>Start position:</i> toes behind line, hand together behind back, NWB leg can do anything but touch the ground. WB leg – no limitations. - <i>Land position:</i> must “stick” landing. I.e. no secondary movements/hops. Must maintain balance and not touch NWB foot > 3 secs/assessor confident balance has been controlled. NWB not allowed to touch other leg. - Hands must remain clasped behind back - <i>Record:</i> Continue on same leg until “plateau” i.e. no longer improving. Must record 3 good trials.	Maximum score (cm) 	Return to running: NA Return to sport: >95% LSI Normative value for age/gender
LESS Score - See Section 4.5 for how to score the quality of movement during agility cuts	Record the LESS for right and left limb for a 90 degree cut	0-3 points

