



PERFORMANCE TESTING – LOWER EXTREMITY

Name: _____ Mayo Clinic #: _____ Testing Date: _____
 Surgeon: _____ Injury Date: _____ Surgery Date: _____ Months Post-Op: _____
 Age: _____ Height (cm): _____ Weight (kg / lbs): _____
 Involved Limb: Right / Left Active ROM (-10° to 145°): involved ____ - ____ Uninvolved: ____ - ____ -

LIMB LENGTH (3 mos)

Inferior ASIS to inferior medial malleolus: _____ cm (Involved) _____ cm (uninvolved)
 Medial joint line to inferior medial malleolus: _____ cm (Involved) _____ cm (uninvolved)

DROP VERTICAL JUMP (9 mos)

Trial 1	Trial 2	Trial 3	Average

ACL - RSI (3/6/9/12 mos)

Score: ____/60

HOP TESTING (MAX DISTANCE)

	Involved (cm)			Uninvolved (cm)			Involved leg % (INV/UNV)
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3	Best Test
Single Hop (6/9/12 mos)							
Triple Hop (6/9/12 mos)							
Cross-Over Hop (9/12 mos)							

ISOKINETIC LOWER EXTREMITY STRENGTH (6/9/12 mos):

Quadriceps Peak Torque	Involved (ft/lbs)	Uninvolved (ft/lbs)	Involved strength %
90°/sec			
180°/sec			

Hamstrings Peak Torque	Involved (ft/lbs)	Uninvolved (ft/lbs)	Involved strength %
90°/sec			
180°/sec			

Y-BALANCE – ANTERIOR REACH (3/6/9/12 mos)

Involved (cm)			Uninvolved (cm)			Difference (INV-UNV)
Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3	Average

AGILITY T-TEST (6/9/12 mos):

	Trial 1	Trial 2
Timed T-Test (s)		

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Each patient's progress may vary based on specifics of their injury and procedure.





Primary Sport (place a check next to the sport):

<input type="checkbox"/> Baseball	<input type="checkbox"/> Basketball	<input type="checkbox"/> Cheerleading	<input type="checkbox"/> Diving
<input type="checkbox"/> Field Hockey	<input type="checkbox"/> Football	<input type="checkbox"/> Golf	<input type="checkbox"/> Gymnastics
<input type="checkbox"/> Hockey	<input type="checkbox"/> Lacrosse	<input type="checkbox"/> Martial Arts	<input type="checkbox"/> Rugby
<input type="checkbox"/> Skiing	<input type="checkbox"/> Snowboarding	<input type="checkbox"/> Softball	<input type="checkbox"/> Soccer
<input type="checkbox"/> Swimming	<input type="checkbox"/> Tennis	<input type="checkbox"/> Track and Field	<input type="checkbox"/> Volleyball
<input type="checkbox"/> Wrestling	<input type="checkbox"/> Cross-Country	<input type="checkbox"/> Other: _____	

Secondary Sport (place a check next to the sport):

<input type="checkbox"/> Baseball	<input type="checkbox"/> Basketball	<input type="checkbox"/> Cheerleading	<input type="checkbox"/> Diving
<input type="checkbox"/> Field Hockey	<input type="checkbox"/> Football	<input type="checkbox"/> Golf	<input type="checkbox"/> Gymnastics
<input type="checkbox"/> Hockey	<input type="checkbox"/> Lacrosse	<input type="checkbox"/> Martial Arts	<input type="checkbox"/> Rugby
<input type="checkbox"/> Skiing	<input type="checkbox"/> Snowboarding	<input type="checkbox"/> Softball	<input type="checkbox"/> Soccer
<input type="checkbox"/> Swimming	<input type="checkbox"/> Tennis	<input type="checkbox"/> Track and Field	<input type="checkbox"/> Volleyball
<input type="checkbox"/> Wrestling	<input type="checkbox"/> Cross Country	<input type="checkbox"/> Other: _____	

Tertiary Sport (place a check next to the sport):

<input type="checkbox"/> Baseball	<input type="checkbox"/> Basketball	<input type="checkbox"/> Cheerleading	<input type="checkbox"/> Diving
<input type="checkbox"/> Field Hockey	<input type="checkbox"/> Football	<input type="checkbox"/> Golf	<input type="checkbox"/> Gymnastics
<input type="checkbox"/> Hockey	<input type="checkbox"/> Lacrosse	<input type="checkbox"/> Martial Arts	<input type="checkbox"/> Rugby
<input type="checkbox"/> Skiing	<input type="checkbox"/> Snowboarding	<input type="checkbox"/> Softball	<input type="checkbox"/> Soccer
<input type="checkbox"/> Swimming	<input type="checkbox"/> Tennis	<input type="checkbox"/> Track and Field	<input type="checkbox"/> Volleyball
<input type="checkbox"/> Wrestling	<input type="checkbox"/> Cross Country	<input type="checkbox"/> Other: _____	

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Name: _____

Mayo Clinic Number: _____

Date: _____

Anterior Cruciate Ligament Return to Sports after Injury Scale (ACL-RSI)

Instructions: Please answer the following questions referring to your main sport prior to injury. For each question, tick a box ☒ between the two descriptions to indicate how you feel right now relative to the two extremes.

1. Are you confident that you can perform at your previous level of sport participation?

Not at all confident	0	10	20	30	40	50	60	70	80	90	100	Fully confident
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. Do you think you are likely to reinjure your knee by participating in your sport?

Extremely likely	0	10	20	30	40	50	60	70	80	90	100	Not likely at all
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3. Are you nervous about playing your sport?

Extremely nervous	0	10	20	30	40	50	60	70	80	90	100	Not nervous at all
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

4. Are you confident that you could play your sport without concern for your knee?

Not at all confident	0	10	20	30	40	50	60	70	80	90	100	Fully confident
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. Do you find it frustrating to have to consider your knee with respect to your sport?

Extremely frustrating	0	10	20	30	40	50	60	70	80	90	100	Not at all frustrating
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6. Are you fearful of reinjuring your knee by playing your sport?

Extremely fearful	0	10	20	30	40	50	60	70	80	90	100	No fear at all
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Reprinted from Webster KE and Feller JA. Development and Validation of a Short Version of the Anterior Cruciate Ligament Return to Sport After Injury (ACL-RSI) Scale. The Orthopaedic Journal of Sports Medicine, 6(4): 1-7. 2018.

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DROP VERTICAL JUMP (Hewett, 2006, Sports Medicine)

- Performed in athletic shoes
- Starting position on top of 31 cm high box
- Patient instructed to stand shoulder width apart. Toes over the edge of the box.
- Athlete should lean forward until they fall landing equally on both feet. Then immediately perform a maximum vertical jump reaching with their arms as high as they can (as if jumping for a rebound in basketball)
- Tell the athlete you are looking to see how quickly they can get off the ground and how high they can reach with both hands.
- 2-3 practice repetitions
- 3 official trials
- Video record frontal plane with the patient's phone, Sports med ipad, or Dartfish

Rating:

- 1.) Find the frame that displays peak frontal plane valgus
- 2.) Rate knee valgus during landing based on the key below.
- 3.) Average the three trials (Trial 1 +Trial 2 +Trial 3)/3
- 4.) Report the individual trial scores and the average.

2D Video ACL Injury Risk Index	
Score	Description
1	No knee valgus
2	Slight Wobble and/or Inward Motion,
3	Knees Collide and/or Large Frontal Excursion
low risk = 1 ; Moderate risk ≤ 2; High risk > 2	

Score 1



Score 2



Score 3



DVJ Max Knee Flexion:

1. _____°
2. _____°
3. _____°

Was the test completed (circle):? Yes / No (circle reason): Pain / Poor Form

Other: _____

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HOP TESTING

Single hop (Rambaud AJ, 2017, BMJ; Noyes F, 1991, AJSM)

- 1-2 warm ups
- 3 official trials
- Record all 3 trials. The maximum will be reported.
- Must hold landing for 2 seconds
- Measured from starting spot to toe position on final landing
- Hands placed in a comfortable position to start and free to move during testing

Triple hop (Rambaud AJ, 2017, BMJ; Noyes F, 1991, AJSM)

- 1-2 warm ups
- 3 official trials
- Record all 3 trials. The maximum will be reported.
- There should be no stop time in between 1st, 2nd, and 3rd landing of each trial
- Must hold landing for 2 seconds
- Measured from starting spot to toe position on final landing
- Hands placed in a comfortable position to start and free to move during testing

Cross-over hop (Rambaud AJ, 2017, BMJ; Noyes F, 1991)

- 1-2 warm ups
- 3 official trials
- Record all 3 trials. The maximum will be reported.
- There should be no stop time between 1st, 2nd, and 3rd landing of each trial
- Start jumps to side of stance leg (i.e. If testing right leg, first jump would be to right side of line)
- Must hold landing for 2 seconds
- Measured from starting spot to toe position on final landing
- Hands placed in a comfortable position to start and free to move during testing

Single Leg Hop for Distance

(1-2 practice trials each leg):

Uninvolved / Involved

1. _____ cm / _____ cm

2. _____ cm / _____ cm

3. _____ cm / _____ cm

Was the test completed (circle):? Yes

No (circle reason): Pain / Poor Form

Other: _____

Single Leg Triple Hop for Distance

(1-2 practice trials each leg):

Uninvolved / Involved

1. _____ cm / _____ cm

2. _____ cm / _____ cm

3. _____ cm / _____ cm

Was the test completed (circle):? Yes

No (circle reason): Pain / Poor Form

Other: _____

Single Leg Triple Hop Crossover for Distance (1-2 practice trials each leg):

Uninvolved / Involved

1. _____ cm / _____ cm

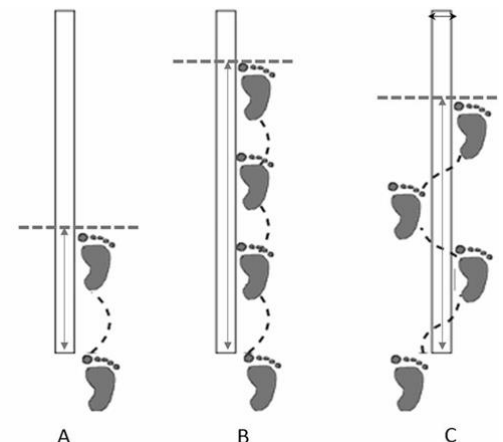
2. _____ cm / _____ cm

3. _____ cm / _____ cm

Was the test completed (circle):? Yes

No (circle reason): Pain / Poor Form

Other: _____



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HUMAC Isokinetic testing (Protocol Installed)

***testing can be conducted up to 7 days prior to 6/9/12 month testing date. ***

Follow protocol for testing parameters at 60/180/300 degrees per second

- 10 testing repetitions at 90°/sec (all at 100% effort) with 10 sec rest → 10 reps at 180°/sec (all at 100% effort)

Make sure that chair and dynamometer settings are documented in the Humac for both limbs.

Follow same chair and dynamometer settings for subsequent tests. Take the average test results.

Instruction

- 4 preceding practice repetitions, increasing in effort, ensuring 100% effort by 4th repetition
- During test sequence, instruct patients to “push/pull as hard as you can and as fast as you can.”

IF TIME PERMITS

Anterior Y-balance: Protocol/Normative Values by Shaffer SW, 2013, Mil Med)

Testing Procedure:

- Subject is to stand on 1 leg on the center foot plate w/ the most distal aspect of the foot at the starting line.
- The subjects’ hands will be maintained on the hips during the trials.
- The free limb will start and stop to the side of the stance leg on a firm surface.
- While maintaining single leg stance, the subject will reach with the free limb in the anterior direction.

Practice:

- The subject will perform 6 practice trials on the uninvolved limb and then 6 practice trials on the **involved** limb.
- If the subject has a failed trial (see below) during the practice session please correct the error, but they do not need to repeat a practice trial.

Rest: Rest is built in by performing all practice trials one limb and then the other.

Testing:

- 3 trials standing on the uninvolved foot reaching in the anterior direction followed by 3 trials standing on the **involved** foot reaching in the anterior direction.

Failed Trial:

- Failed to maintain unilateral stance on the platform (e.g. touched down to the floor with the reach foot or fell off the stance platform).
- Failed to maintain reach foot contact with the reach indicator on the target area while it was in motion (e.g. kicked the reach indicator).
- Used the reach indicator for stance support (e.g. placed foot on top of reach indicator).
- Failed to return the reach foot to the starting position under control.
- Do not maintain a one second hold prior to returning to the end position.
- Failed to maintain hands on hips.

Type	Direction	Lower Extremity	Absolute Reach (cm)	Normalized Reach (%)
			Mean ± SD ^a (95% CI)	Mean ± SD ^{a,b} (95% CI)
Average Reach of 3 Trials	Anterior	Left	57.8 ± 6.8 (56.1,59.4)	63.6 ± 7.2 (61.9,65.3)
		Right	57.6 ± 7.1 (55.9,59.3)	63.5 ± 7.7 (61.6,65.3)

Y- Balance (6 practice trials each leg): Uninvolved / Involved

1. _____ cm / _____ cm 2. _____ cm / _____ cm 3. _____ cm / _____ cm

Was the test completed (circle):? Yes / No (circle reason): Pain / Poor Form

Other: _____

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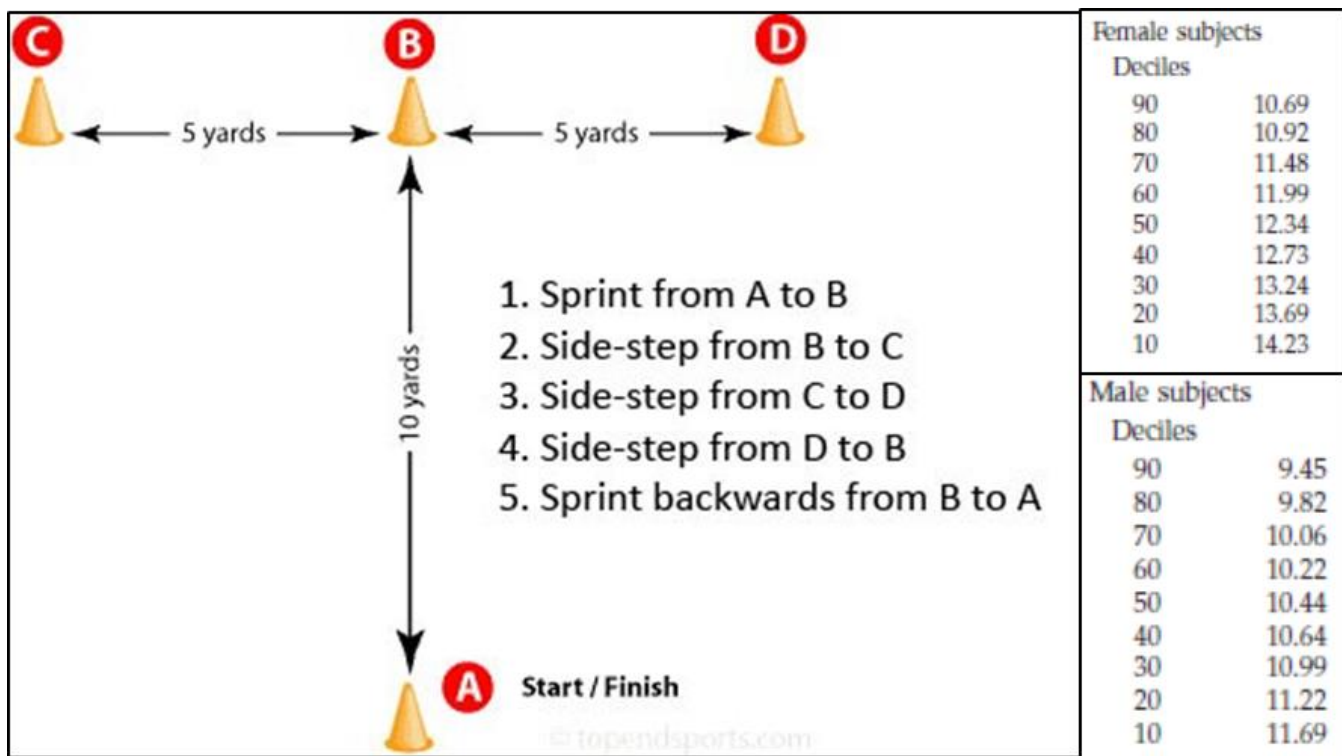


AGILITY T-TEST (6/9 mos):

Best Timed T-Test:	Seconds
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Timed T-test: Protocol by NSCA (Semenick D, 1990, NSCA J)

- 1-2 submaximal trial runs/warm ups to familiarize (Touch the base of cone with outside hands: B=Right hand, C=Left hand, D=Right hand, and B=Left hand)
- 2 official trials – the best of two will be recorded.
- Allow 30-60 seconds rest break between trials
- Timing of trails done on Brower electronic testing (movement activated) or stopwatch. Start the timer with the first movement of the subject.
- Place the “A” cone off center so patient does not look backwards for the cone.
 - *Touch the base of cone. No crossing feet when shuffling. Keep the body facing front.*



*Normative Values: College Students (Paule K, 2000, JSCR)

T-Test (1-2 submaximal trial runs/warm ups to familiarize):

1. seconds
2. seconds

Was the test completed (circle):? Yes / No (circle reason): Pain / Poor Form

Other: _____

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