

**Supplementary Table 1. Study Summary**

Author, Year	Population	Injured (I) Healthy (H) Post-op (P)	Sport or Sports	Test(s) and description (s)	Aim(s) and Conclusions
Battaglia 2007	63 with revision of ACL surgery. All 36 male (57%) and 27 female (43%) patients were skeletally mature with closed physes, and the mean patient age was 25 years (yrs) (15-52 yrs). The mean patient age at revision was 31 years (18-60 yrs)	<b>P</b> Revision of ACL reconstruction	90% were injured playing sports	<b>Single leg hop:</b> Patients were allowed to warm up and then a mean of 3 attempts was taken	Aim: to evaluate predictors of success and to determine the relationship between laxity, return to sports, and functional results. Results: Of the 45 patients in the good/excellent group, 34 (75%) had a single-legged hop comparable (>90%) to that of the contralateral leg. Of the 6 patients in the fair group, 1 (17%) had a comparable (>90%) hop. Of the 12 patients in the poor group, 3 (25%) had a comparable (>90%) hop. Statistically significant correlation between single leg hop and stability as measured by the KT 1000
Bjorklund 2006	59 subjects were included in the study, 40 men and 19 women. Thirty-one were ACL-reconstructed, 14 were ACL-injured and 14 healthy athletes were recruited from the hospital staff to participate in parts of the study. The mean age of all the subjects	<b>I, H, P</b> 31 ACL reconstruction; 14 ACL injured; 14 healthy athletes	running, table tennis, tennis, skiing and skating and strenuous sport activity is meant: football, basketball, indoor	<b>Test 1:</b> The patient starts jogging straight forward 2x20 m an then running in a figure of eight- for four laps (2 circles, 4m in diameter) <b>Test 2:</b> The patient runs straight forward 2x 20 m accelerating and brakes within 5 m <b>Test 3:</b> The patient one-leg standing is	Aim: To evaluate both the patient's and the physiotherapist's inter- and intra-rater reliability of this new criterion-based method (TAK) and to evaluate the relation between the physiotherapist's and the patient's assessments. Further, to evaluate the relation between the different functional activities in TAK and isokinetically measured quadriceps muscle strength Results: PT interrater reliability good except test 1

	was 29 years (range 15–50)		bandy and downhill skiing. Tegner level 5 and up	<p>flexing the knee as deep as possible three times in succession started with the healthy leg</p> <p><b>Test 4-</b> The patient is rising on one leg from a seated position three times in succession</p> <p><b>Test 5-</b> The patient squats three times in succession as deep as possible with equal weight on both legs</p> <p><b>Test 6-</b> The patient jumps one-leg hop for distance, ten hops in rapid succession as far as possible, started with the healthy leg</p> <p><b>Test 7-</b> The patient jumps 5 vertical hops in rapid succession as high as possible with springiness</p> <p><b>Test 8-</b> The patient jumps crossover one-leg hops in rapid succession using steps as wide and long as possible on a track of 8 m</p>	(jog/run a figure 8) and 4 (rising on 1 leg 3 times) PT intrarater reliability good on all except test 6 (one leg hop for distance in 10 reps)
Bjorklund 2009	35 patients accepting to participate in the study, 22 men and 13 women. The mean age of all the patients was 27 years (range 18–50) and all were operated ACL-reconstruction	<b>P</b>	On a scale from 1-5 (where 5 represents top level athletes): 70% were on level	Same as their 2006 article- the TAK- tested 4 and 8 months post-op	Aim: to evaluate the validity and responsiveness of the new criterion-based test instrument (TAK) for athletes with knee injuries. Construct being measured is “ability” and both the therapist and patient rate ability on 8 tests with a 0-10 point scale (0=no ability) Results:

	using hamstrings graft		4 and 30% level 3 of the scale		<p>Content Validity Test 1 as rated by a PT at 4 and at 8 months post-surgery, all tests had a ceiling effect but as a total instrument, the TAK had no floor or ceiling effects at 4 or 8 months</p> <p>Construct validity Injured and non-injured leg tested differently on all 8 tests as assessed by a PT at both 4 and 8 months.</p> <p>Responsiveness Moderate to large effect sizes in all tests between 4-8 months</p>
Carter 1997	Fifty UK military patients (46 men and four women, mean age 26.3 years)	P- ACL repair	Football, rugby, skiing, running, basketball	<p><b>Figure of eight run:</b> Each subject completing five timed circuits of a figure of eight constructed by placing cones at each corner of a rectangle 8 m by 5 m in the gymnasium. Each subject was asked to complete the circuits in as quick a time as possible within their capabilities. Controls were 23 age and sex matched individuals.</p> <p><b>Single leg hop</b> The single hop test involved each subject making a maximal single measured hop. The best attempt of three hops was recorded. No prior practicing was permitted. The best of three hops in the contralateral leg served as control.</p>	<p>Aims: 1. To determine further if ACL deficient knees show abnormal joint position sense (JPS) 2. To determine the effect of exercise therapy on JPS 3. To assess the relation between JPS, functional stability, and strength.</p> <p>Results: JPS is deficient in those with ACL deficiency and there is no improvement after 4 weeks of rehabilitation but hop, figure 8 run and quadriceps strength did improve. JPS not correlated with hop or figure 8 run. No difference in figure 8 runs times on admission between ACL deficient and 23 age/activity-matched controls</p>
Crossley 2007	14 unilateral (26 ± 7 yrs) and 13 bilateral	H- for intratester	Basketball, netball,	<p><b>Hop for Distance:</b> The participant hopped on one</p>	<p>Aims: (1) identify clinical features of individuals with unilateral and bilateral</p>

	<p>(28±8 yrs) patellar tendinosis + 31 control (age 24 ± 6yrs)  Height:  Control 1.44 (0.88) m  Unilat 178 (.90)m  Bilat 176 (.90) m  Weight:  Control 71 (11) kg  Unilat 80 (16) kg  Bilat 82 (14) kg</p>	<p>reliability on 10 subjects and the 31 in the control group  I- 14 with unilateral patellar tendinopathy and 13 with bilateral tendinopathy</p>	<p>volleyball, soccer, tennis</p>	<p>leg as far as possible from a standing start after a submaximal warm-up. The test was repeated three times for each leg and the best score was identified and recorded  <b>Six-meter hop:</b>  The participant hopped on one leg as fast as possible over a distance of 6 m using large forceful one-legged hopping movements. The time taken to complete this task was recorded.</p>	<p>patellar tendinopathy (PT) which are potentially modifiable through rehabilitation; and (2) investigate the influence of sex on these clinical features. Further study aims were to: (a) establish the repeatability of the chosen clinical measures; (b) determine the symmetry in clinical features between limbs of PT participants; and (c) identify whether scores on the clinical measures predict symptoms and function in participants with PT.  Results: Unilateral and bilateral PT had greater mass and higher BMI's than control. Those with bilateral PT reported more sports hours per week than those with unilateral PT or control. Females perform worse on both hop tests  Hop for distance doesn't predict an increase in self-reported function  Hop tests don't predict changes in self-reported symptoms of usual pain and worst pain</p>
<p>Eastlack 1999</p>	<p>Subjects were divided into two groups: copers (<i>N</i> = 12; 10 male, 2 female), and subacute noncopers (<i>N</i> = 18; 10 male, 8 female) and chronic noncopers (<i>N</i> = 15; 14 male, 1 female)</p>	<p><b>I- all with ACL tear</b></p>	<p>Not stated- just that all were athletes</p>	<p><b>The single leg hop, cross-over hop, triple hop, timed hop</b>  Results of the triple hop, cross-over hop, and the single hop tests were averaged, and the involved side's performance was expressed as a percentage of the uninjured side's performance. The timed hop test performance was also averaged and the uninjured side value was expressed as a percentage of the involved side</p>	<p>Aims: 1) assess the relationship among muscle performance, laxity, and function in a group of copers and noncopers and; 2) systematically characterize the copers and noncoper populations to identify tests that can differentiate between the populations.  Results: There was no significant difference in laxity among copers (5.5 ± 2.7 mm) and noncopers subacute, (4.2 ± 2.2 mm) (chronic, (5.1 ± 2.8 mm) in laxity and measurements of laxity (KT-2000) alone are insufficient for determining</p>

					functional status after ACL injury. Copers perform better than non-copers on all functional hop tests but final regression equation contained the crossover hop only
Gauffin 1990	Fifteen patients were selected for the study. Their mean age was 27 ± 3 years (range 21-32), height 179 ± 7 cm, and weight 74 ± 8 kg	<b>I- ACL tear</b> Mean time after injury was 16 ± 9 months (range 7-37). <b>H-</b> A reference group (mean age 24 ± 5 years) consisted of soccer players from a lower division.	Mostly recreational soccer	<b>2. A one-leg long-hop, jumping and landing on the same foot with hands behind the back.</b> Three attempts were made for each leg, and the longest hop for each leg was taken as a measure- hands behind back.	Aims: 1. to determine whether patients with old ACL ruptures show changes in basic functions such as gait and postural control. 2. to investigate whether alterations are unilateral or bilateral compared with a reference group. 3. to investigate the effects of a derotation brace upon basic functions and performance Hypothesis: We think unilateral changes might depend upon peripheral and bilateral changes upon central adaptation. Results: one leg hop impaired in the injured limb vs uninjured limb and vs control group; no correlation with decreased quad/ham strength; no difference wearing brace vs not
Holm 2004	Thirty-five female team handball players from 2 teams in the elite division participated. Their mean age was 23 (±2.5) years, and their mean weight was 69.2 (±7.3) kg. They had played handball for 14.9 (±3.2) years, 4.7	<b>H</b>	Handball	<b>The I-leg hop test:</b> performed 2 times on each leg, and the mean value (distances measured in centimeters) was recorded. <b>The triple jump test:</b> the player was asked to stand on both legs and jump twice onto the same leg, followed by a jump onto both legs (distances	Aim: to investigate the physiological effects of an ACL prevention program on lower limb function Results: No statistically significant change in hop, triple jump, or stair hop tests with an ACL prevention program

	(±2.8) years at the top level. The total number of training hours per week was 10 to 12. 27 players completed the study			measured in centimeters). The test was performed twice on each leg, and the mean value was recorded. <b>Stair hop test:</b> the player was asked to hop up 22 steps on 1 leg, turn around, and hop down the same 22 steps on the same leg (time measured in seconds)	
Hurd 2008	345 consecutive patients- 129 females and 216 males 27 (10.3) yrs old; 58% non-copers and 42% copers	<b>I-</b> acute ACL tears after 6 weeks of pre-hab	International Knee Documentation Committee (IKDC) level I or II sports	<b>Single hop for distance</b> <b>Cross-over hop for distance</b> subjects must cross a 15cm wide piece of tape on each hop <b>Triple Hop for Distance</b> <b>6m timed hop</b> Tests were performed with 2 practice trials followed by 2 test trials. The mean of these 2 trials was used as the score. Otherwise, the tests were not described.	Aim: Determine the influence of quadriceps strength, pre-injury activity level, and anterior knee laxity on hop test performance, as well as the influence of timed hop, cross-over hop, quadriceps strength, pre-injury activity level, and anterior knee laxity on self-assessed global function. Results: Neither anterior knee laxity nor quadriceps strength differed between potential copers and non-copers. Quadriceps strength influenced hop test performance more significantly than preinjury activity level or anterior knee laxity, but the variance accounted for by quadriceps strength was low (Range: 4-8%). Timed hop performance was the only variable that impacted self-assessed global function. The magnitude of passive anterior laxity had no effect on dynamic knee stability
Koutras 2009	The sample consisted of 28 consecutive volunteers (25 men!3 women) who underwent	<b>H-</b> only the uninvolved leg was studied	Recreational athletes	<b>The single leg jump:</b> jump on one leg as far as possible with the arms behind the back. <b>Triple jump:</b> starting in bilateral stance and landing on	Purpose: to investigate the effect of three rehabilitation programs (isokinetic, isotonic, and home exercise) on knee flexor and extensor isokinetic torque and functional performance of the uninvolved

	arthroscopic partial meniscectomy. 8 refused to participate			one leg; then jump only on one leg and land on the same leg; and finally, jump with the same leg and land on both legs. <b>The modified vertical jump test [16] was used.</b> A tape measure is secured around the subject's belt who is then instructed to jump vertically and maximally on one leg.	leg in patients who underwent arthroscopic meniscectomy. Results: the uninjured leg improved with regard to all performance tests after both isokinetic and isotonic strength training
Myer 2011	Eighteen patients (mean $\pm$ SD age, 16.9 $\pm$ 2.1 years; height, 170.0 $\pm$ 8.7 cm; body mass, 71.9 $\pm$ 21.8 kg) who returned to their sport within a year following ACL reconstruction (95% CI: 7.8 to 11.9 months from surgery) participated (ACLR group). These individuals were asked to bring 1 or 2 teammates to serve as control participants, who were matched for sex, sport, and age (n = 20; mean $\pm$ SD age, 16.9 $\pm$ 1.1 years; height, 169.7 $\pm$ 8.4 cm; body mass, 70.1 $\pm$ 20.7 kg).	<b>H- controls</b> <b>P- ACL reconstructe d</b>	football, soccer, basketball, volleyball	<b>Broad jump</b> distance was measured on a testing mat and recorded to the nearest centimeter. Athletes were instructed to start with the toes of both feet on a line and to use arm swing to leap forward as far as possible. Distance was measured from the start line to where the closest body segment touched on the test mat. Athletes were allowed 2 trials to achieve maximum broad jump distance to be recorded for analysis. <b>Single hop</b> The athlete's starting position for this maneuver was a semicrouched position on the single limb being tested. The athlete was instructed to initiate the hop by swinging the arms forward, simultaneously extending at the hip and knee, and hopping forward as far as possible while being able to land safely on the same limb. A	Purpose: To use modified NFL Combine testing methodology to test for functional deficits in athletes following anterior cruciate ligament (ACL) reconstruction following return to sport. Vertical jump used a machine which disqualifies it from our study. 6 meter timed hop used infrared. Results: Broad jump and timed hop not different in groups of ACL recon and healthy. LSI for single hop and triple hop different (large effect). LSI for crossover different (moderate effect). LSI for crossover hop

				<p>stabilized, 1-second landing on the hop limb was required for a successful trial (FIGURE 6A). Of the 2 trials, that with the greatest distance was used for further analysis</p> <p><b>Crossover hop</b> Athletes were instructed to immediately redirect into 2 subsequent forward-directed hops, crossing over the midline with each hop. The final landing on the hop limb was required to be stabilized and held for 1 second to be recorded as a successful trial (FIGURE 6B)</p> <p><b>Triple hop</b> The starting position for this maneuver was a semi-crouched position on the single limb being tested. The athlete was instructed to initiate the hop by swinging the arms forward, while hopping forward as far as possible and safely landing on the same limb, and to immediately redirect into 2 subsequent hops, holding the third landing. The final landing on the hop limb had to be stabilized and held for 1 second to be recorded as a successful trial</p>	
Nagano 2010	59 female athletes/114 knees mean (SD) age, height,	<b>H</b>	basketball	<p><b>Y-balance test</b> While maintaining the single-leg stance, the participants</p>	Aims: To assess the relationship between dynamic knee motion in female athletes during landing after jumping and lower



	<p>and weight was 19.4 (1.2) years, 169.1 (6.6) cm, and 62.8 (6.5) kg, respectively</p>		<p>were asked to reach with the free leg to the anterior, posteromedial, and posterolateral directions in relation to the stance foot. The maximum reach distance was measured by moving the slider from the starting point of the toe of the stationary foot to the most distant point of the extended foot.</p> <p>The trials were discarded and repeated if the participants (1) failed to maintain a unilateral stance, (2) lifted or moved the stance foot from the grid, (3) touched down with the reach foot, or (4) failed to return the reach foot to the starting position. The participants practiced three trials on each leg in each of the three reach directions before formal testing. After the practice, they conducted formal testing of three trials on each leg in each of the three reach directions. The greatest value from the three trials for each direction was used for the analysis of each reach distance, and then the process was repeated with the other leg. In addition, the greatest reach distance in each direction was combined to yield a composite reach distance for</p>	<p>limb clinical physical measurements, considered risk factors for anterior cruciate ligament (ACL) injury. We proposed that (1) knee valgus and flexion angles during landing are correlated with clinical physical measurements; (2) combining these measurements enables prediction of the knee valgus and flexion angles during landing.</p> <p>Results: Intrarater reliability on YBT is high. YBT does NOT predict peak knee valgus angle. YBT anterior + increased Hip IR ROM + increased ankle DF ROM + navicular drop explain 29% of the variance in peak knee flexion angle</p>
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				analysis of overall test performance. The lengths of both legs were measured in a standing position from the ASIS to the top portion of the medial malleolus by using a cloth tape measure, and the length data were normalized for each leg.	
Noyes 1991	67- 40 male, 27 females age 16-48 Only 26 (group 2) completed all 4 tests but all 67 completed single hop and timed hop	<b>I- ACL deficient patients</b>	59/67 were injured during sports	<p><b>Single hop</b>  <b>Timed hop</b>  <b>Triple Hop</b>  the patient stood on one leg, performed three consecutive hops as far as possible, and landed on the same foot. The total distance hopped was measured. The mean values and the limb symmetry index were calculated as described for the single hop test.</p> <p><b>Crossover hop for distance</b>  performed on a course consisting of a 15 cm marking strip on the floor which extended approximately 6 meters. The patient hopped three consecutive times on one foot, crossing over the center strip on each hop. The total distance hopped was measured. The limb symmetry index was calculated as previously described for the single hop test.</p>	<p>Aims: 1. Compare the 4 hop tests to determine which was most diagnostic of limb asymmetry 2. To determine, through regression analysis, what combination of hop tests and other clinical findings can be used to determine lower limb function in people with ACL deficient knees. Regression analyses were conducted between limb symmetry as measured by the hop tests and muscle strength, symptoms, and self-assessed function.</p> <p>Results:  Thirty-five of 67 patients (52%) demonstrated abnormal limb symmetry on the single hop test (Table 1). Thirty-three of 67 patients (49%) demonstrated abnormal limb symmetry on the timed hop test. There was no statistically significant difference between the two tests. 15 multiple regressions run and none of the tests, in combination with any other variable correlated with limb symmetry  Detecting abnormal limb symmetry in an ACL deficient knee (SN):  Single hop: SN52 SP97  Timed Hop: SN49 SP94</p>

					Not Sensitive enough
Purdam 2003	46 male and female adolescent basketball players Mean age (SD) was 16.5 years (1.0). Mean height was 184.3 cm (11.4 cm) and mean weight was 74.9 kg (12.7 kg).	<b>I-</b> 13 with VISA less than 90 18 with VISA of 90-99 <b>H-</b> 15 with a 100 VISA score (no disability)	basketball players	<b>25 degree declined board Tests:</b> <b>1. Single leg squat</b> <b>2. Single leg hop</b> Starting with a knee flexion angle of 50 degrees, subjects then hopped as high as possible and landed with the entire foot contacting the board and returning to the start position of 50 degrees knee flexion	Aim: to determine the discriminative ability of several functional tests for change in pain (0-10scale) due to intensive workloads in patients with jumper's knee and to investigate the decline squats and hop as examination tools for jumper's knee Results: single leg decline squat and single leg decline hop are the most discriminatory tests but the single leg decline squat is more reliable. Double leg tests of no use
Ross 2002	Fifty subjects (36 men, 14 women, age=20.6±1.3 years) at a mean of 31.0±16.3 months following ACLR	<b>P-</b> Anterior cruciate ligament repair (ACLR)	Air Force academy cadets- all intramural athletics- 96% injured during sports	<b>Single leg hop for distance</b> Subjects stood on one leg with the anterior aspect of their athletic shoe at the zero mark of the tape measure. They were instructed to hop as far as possible forward and land on the tape measure. The distance from the zero mark of the tape measure to the point where the subject's heel hit the ground was measured.	Aim: to examine the relationship between participation restrictions in activities of daily living and sports following anterior cruciate ligament reconstruction (ACLR). The dependent variable was participation restriction in ADL and sports as measured by KOS, ADLS, and SAS. Results: Forward stepwise regression analysis revealed that while the number of injured knee structures alone accounted for 47% of the variability in patient-reported participation restrictions, the combination of the number of injured knee structures, time from ACLR, and the hop index provided the most effective estimate of participation restrictions. Fewer injured structures in the knee, more time since ACLR and greater scores on the hop index explained 66% of the variation in participation restrictions. No correlation between quadriceps torque at 90 degrees per second and the hop test
Ross	Forty-eight subjects	<b>P-ACLR</b>	Air Force	<b>Single hop- same as in 2002</b>	Aim: to assess the relationship between

2010	(34 men, 14 women; age $20.6 \pm 1.2$ years), at a mean of $31.7 \pm 16.2$ months following ACLR,		academy cadets- all intramural athletics- 96% injured during sports	<b>study</b>	functional levels in activities of daily living and sports and fear-avoidance beliefs in patients with a history of anterior cruciate ligament reconstruction (ACLR), after controlling for injury-related variables and physical impairment measures. Results: a regression model with only the Fear-Avoidance Belief Questionnaire (FABQ) activity subscale score and additional knee surgery accounted for 61% of the variance in combined self-reported activity scores. The hop test along with isokinetic torque and anterior tibial laxity explained only 1% of the variance
Svensson 2006	59- 28 B-PT-B graft and 31 in the semitendinosis group. All female	<b>P</b>	53 injured in sport- not specified	<b>Knee walking test- not a physical performance test and Single leg hop (not described)</b>	Aim: to compare the results after arthroscopic anterior cruciate ligament (ACL) reconstruction using central third, bone-patellar tendon-bone (BTB group) (n=28) and four strand semitendinosus/gracilis (ST/G group) (n=31) autografts in female patients. Results: The hop test LSI improves 2 years after rehabilitation for ACL tear after both BPTB and quadruple gracilis as did the Lysholm knee score but no correlation between these 2 measures of function was performed
Tegner 1986	26 ACL deficient male soccer players (27 +/- 6 yrs); 66 uninjured male soccer players (mean age 23+/-5 yrs)	<b>I-</b> 26 ACL deficient soccer players <b>H-</b> 66 uninjured male soccer	Soccer	<b>One-leg hop</b> performed three times with each leg, hopping and landing on the same leg with the hands behind the back. The best distance for the injured leg and the quotient between the best	Aim: to evaluate dysfunction after ACL injury with use of functional tests by comparing tests results in ACL deficient players with those of uninjured soccer players Results: Patients who were ACL deficient hopped significantly shorter and had

		players		<p>distances for the injured and the uninjured legs were used</p> <p><b>Running a staircase</b> A spiral staircase with 25 steps was run twice, up once and down once, one step at a time. The running time was recorded manually with a stopwatch.</p> <p><b>Running up and down a slope</b> The indoor slope was 55 meters long with a 180° turn halfway up. It was run up once and down once. The running time was recorded manually with a stopwatch.</p>	<p>lower hop quotients and distances with the injured leg when compared to healthy subjects but 62% of the injured population had a normal hop quotient (normal defined as a range of 2SD's from the mean of the healthy group). ACL deficient subjects ran slope and stairs significantly slower than healthy comparisons. 42% of injured ran stairs normally and 35% ran slope normally</p>
Witvrouw 2002	<p>30 patients with anterior knee pain (10 males and 20 females), who met the inclusion criteria (see below), followed a five-week rehabilitation protocol. Mean age of the subjects was 21.1 (4.6) (SD) years. The duration of symptoms before the beginning of this study averaged 16.2 months (8 weeks to 28 months)</p>	I- anterior knee pain	<p>80% (24/30) participated in sports</p>	<p><b>Unilateral squat test</b> subjects were asked to perform a maximal single knee bend without pain. The maximal flexion angle in the knee was measured using the American Academy of Orthopedic Surgeons' (1993) instructions</p> <p><b>Step test</b> subjects were asked to step up and down a 10-cm step. If the subjects did not experience pain, the height of the step was increased by 5 cm until pain occurred. This height was recorded. If the patients were able to step up and down a step of 45 cm without pain, the test ended and the patients were registered as asymptomatic</p> <p><b>Triple jump test</b></p>	<p>Aim: to determine the outcome-predictive role of various parameters in the closed-chain treatment of chronic anterior knee pain patients</p> <p>Results: ICC Triple jump = 0.88; A multiple stepwise regression analysis revealed that the reflex response time of m. vastus medialis obliquus (VMO) (<math>P1/20.041</math>; 0.026), and the duration of symptoms (<math>P1/2</math> 0.019; 0.045) were the only two parameters which were significantly associated with the outcome (evaluated by the Kujala score) at five weeks, and at three months</p>

				patients were instructed to stand on their injured leg, and had to jump three times along a straight line. The total distance was measured in centimeters, and in addition the patients were instructed to score their pain and discomfort during this test on a 100-mm VAS	
Zouita 2009	26 soccer players having undergone a single ACLR (mean $\pm$ S.D. age: $22 \pm 3.11$ ; height: $172.8 \pm 4.17$ cm; weight: $72.1 \pm 7.15$ kg) and a control group comprising 20 age- and activity-matched subjects (age: $23.96 \pm 2.02$ years; height: $180.2 \pm 0.06$ cm; weight: $78.37 \pm 9.58$ kg).	<b>P</b> -24 weeks post ACLR <b>H</b> - 20 control	Soccer	<b>Single Hop</b> The single-leg hop was performed three times with each leg. Subjects were asked to hop as far as possible from a predetermined line and to land on the same leg. The use of arm swing was not discouraged, as subjects were asked to perform with maximal effort. The best of the three tests was recorded in centimeters and used as the dependent score	Aim: To compare results of the single-leg hop for distance in soccer players 2 years after anterior cruciate ligament reconstruction (ACLR) with those in an age- and activity-matched control group Results: After ACLR (mean time postoperatively: $24 \pm 1$ months), single-leg hop for distance score was normal, when compared with the contralateral limb. Our results indicate that 2 years after surgery, single-limb postural stability in the ACLR group differed significantly from that in the control group.
Barber 1990	43 females, 35 males from the community, and 15 elite male soccer players AND 26 males + 9 females Mean age 25 (17-34) with positive Lachman's and pivot shift tests with no clinical sign of other ligamentous injury	<b>H</b> -93 normals <b>I</b> - 35 ACL deficient normal at activity Level I or II	All level I or II activity and elite soccer	<b>One-legged hop for distance</b> The patient stands on one limb, hops as far as possible, and lands on the same limb. The distance is measured and recorded. Each limb is tested twice. To calculate the symmetry index, the mean of the involved limb is divided by the mean of the noninvolved limb and the result is multiplied by 100	Aim: to evaluate the effectiveness of five hopping, Jumping, and cutting type (shuttle run) tests in determining lower extremity functional limitations in anterior cruciate ligament- (ACL) deficient knees Results: testing of normal established 85% on the LSI as "normal" for the 1-legged hop and timed hop. The 2 shuttle run tests and the vertical jump test did not detect functional limitations. In the one-legged hop tests, 50% of the patients

				<p><b>One-legged vertical jump</b>  the patient's standing reach is recorded for both the right and left sides. The patient then jumps off of a specified limb, touches the wall, and lands on the same limb. The opposite limb is not used during the test; the patient lifts it off of the ground prior to the jump. Chalk is applied to the fingertips to properly record the jump. Two tests are performed on each leg. The standing reach is subtracted from the total vertical jump score. The mean is used and the LSI is calculated</p> <p><b>One-legged timed hop test</b>  a distance of 6 m is measured. The patient, encouraged to use large forceful one-legged hopping motions, performs a series of hops over the total distance. A series of two tests are completed for each limb, with mean times calculated to the nearest one hundredth of a second. LSI is calculated</p> <p><b>Shuttle run</b>  The shuttle run is performed on a 6-m course. Cones placed at both ends of the course designate circling points. One limb, designated the circling</p>	<p>performed normally, however, all reported giving-way episodes with sports, indicating a lack of sensitivity of these tests in defining functional limitations. Patients with abnormal one-legged hop test scores were considered at serious risk for giving way and limitations during sports activities. Statistically significant relationships were found among abnormal scores on the one-legged hop-type tests and (1) self-assessed difficulty with pivoting, cutting, and twisting, (2) quadriceps weakness (isokinetic at 60 degrees per second), and (3) patellofemoral compression pain</p>
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				<p>limb, is kept toward the inside of the course during the test. Each patient completes a one-half-speed trial run for both the involved and noninvolved limbs. The patient then completes two laps on each limb. The LSI is calculated</p> <p><b>Cutting-type shuttle run</b> For the second shuttle run, the patient accelerates from the beginning to the end of a 6 meter distance, performs a sudden deceleration, stops, turns, pivots, and accelerates back to the starting point. Each patient completes two laps for each limb. The LSI is calculated</p>	
Brosky 1999	15 male; 26 yrs (7.3); height 182.7 (8.3) cm; weight 86.5 kg (14.9)	<b>P- post ACL reconstructi on</b>	Recreational athletes (2-3 x a week)	<p><b>Single hop</b> The subjects stood on one limb behind a line marker representing the starting point, and hopped as far forward as possible, landing on the same limb (Figure 2). The criteria for a successful jump required the subject to maintain the landing for a minimum of 2 seconds.</p> <p><b>Single leg timed hop</b> The timed hop was performed over a distance of 6 meters. Subjects were encouraged to use large forceful 1-legged hopping motions across the 6 meter distance.</p>	<p>Aim: To evaluate the intrarater reliability of selected clinical outcome measures in patients having ACL reconstruction</p> <p>Results: Single hop, timed hop, and vertical hop ICC for intrarater .88- .97. With the graph these authors use for ICC's it's impossible to tell which values belong to which tests</p>



				<p>Mean of 3 trials used</p> <p><b>Single leg vertical jump</b></p> <p>Used a Vertec. Counter movements of the upper extremities were encouraged during the jumps to facilitate maximal height of jump. The standing baseline reach was subtracted from the total vertical jump score to obtain the distance jumped</p>	
Grindem 2011	81 subjects 40 men and 41 women with a mean age of 29.2 (8.8) yrs	<b>I- ACL deficient</b>	Regular participants in Level I or II activities	<p><b>Single hop</b></p> <p><b>Triple hop, timed 6m hop, crossover hop</b></p> <p>1 practice and 2 trials with arms free. LSI was calculated.</p>	<p>Aims: 1. to determine if single-legged hop tests in the early phase after ACL injury are predictive of self-reported knee function assessed with the IKDC2000 in non-operatively treated individuals 1 year after baseline testing.</p> <p>2. to assess if a combination of 2 single-legged hop tests would lead to higher discriminative accuracy than 1 hop test alone.</p> <p>Results: Single hop is the only test predictive of function at 1 year. A cut score of 88% has a SN of 71.4 and an SP of 71.7. Those with LSI above 88% have an 89% probability of achieving normal ratings on the IKDC at 1 year while those below 88% have only a 5% chance of reaching normal on IKDC. Combining 2 tests did not create higher discriminative accuracy</p>
Logerstedt 2012	One hundred subjects (75.0%) underwent reconstructive surgery and performed both a	<b>P- ACL reconstruction</b>	Regular participants in Level I or II activities	<p><b>The single hop for distance (single hop),</b></p> <p>Performed with the patient standing on the leg to be tested, hopping as far as possible, and landing on the same leg</p>	<p>Aim: to determine if single legged hop tests can be used to predict 1 year self-reported outcomes</p> <p>Hypothesis: Single-legged hop tests conducted preoperatively would not and 6</p>

	pre-op and 6 month post-op hop test			<p><b>crossover hop for distance (crossover hop),</b> patients stood on 1 leg, then hopped as far as possible forward 3 times while alternately crossing over a 15-cm marked strip on the floor</p> <p><b>triple hop for distance (triple hop),</b> performed with the patient standing on 1 leg and performing 3 consecutive hops as far as possible The hop distance was measured to the nearest centimeter from the starting line to the patient's heel with a standard tape measure.</p> <p><b>6-meter timed hop (6-m timed hop)</b> patients stood on 1 leg, then hopped as fast as possible over a marked distance of 6 meters. The time was recorded with a standard stopwatch <b>The Mean of 2 trials was used and LSI was calculated</b> For the 6-m timed hop, LSI was expressed as the percentage of the averaged uninvolved limb hop time divided by the averaged involved limb hop time.</p>	<p>months after ACL reconstruction would predict self-reported knee function (International Knee Documentation Committee [IKDC] 2000) 1 year after ACL reconstruction Results: Single-legged hop tests conducted 6 months after ACL reconstruction can predict the likelihood of successful and unsuccessful outcome 1 year after ACL reconstruction. Patients demonstrating less than the 88% cutoff score on the 6-m timed hop test at 6 months may benefit from targeted training to improve limb symmetry in an attempt to normalize function. Patients with minimal side-to-side differences on the crossover hop test at 6 months possibly will have good knee function at 1 year if they continue with their current training regimen. Preoperative single-legged hop tests are not able to predict postoperative outcomes. Optimal LSI cutoff for 6m timed is 87.7% (Sn53;Sp 90) and for the crossover is 94.9% (Sn 88; Sp 47)</p>
Ostenberg 1998	101 female soccer players (20.3 (4.1) yrs old; 166.9 (4.9) cm tall; weight 61.3 (7.3 kg); BMI 21.9 (2.4)	<b>H</b>	Soccer	<p><b>One-leg-hop for distance.</b> Standing on one leg, hands behind the back, the subject hopped and landed, on the same leg, without moving the hands from the back or losing</p>	<p>Aims: 1. to determine the relationship between isokinetic knee extensor muscle strength at 60"/sec and 180°/sec and five functional performance tests (one-leg-hop, triple-jump, vertical-jump, one-leg-rising and square-hop) 2. to determine the</p>

			<p>balance. The distance, in centimeters, was measured from the toe in the starting position to the heel where the subject landed. The hop was performed three times with each leg and the best effort was recorded.</p> <p><b>Triple-jump.</b> The subject was standing on both feet, hands free to help during the jump, hopping from both feet to the right foot, then again to the right foot and finally landed on both feet. The procedure was repeated twice on the right foot and then three times on the left foot. However, if the subject increased hop length in all the three hops, additional hops were performed until no increase in hop length was seen. The best performance was recorded, in centimeters</p> <p><b>Vertical-jump. Modified.</b> A measuring tape ran vertically down from the belt through a loop in the platform. The subject was standing on both feet, hip wide, both arms free to help during the jump. The subject was allowed to bend the knees as much as desired to initiate the jump. When the subject performed a vertical jump, the measuring tape was</p>	<p>relationship between the five different functional performance test</p> <p>Results: Using linear regression models corrected for body weight, height, and age, there were low correlations between the isokinetic strength measurements at 60 and 180 deg/sec and the functional tests. It is not recommended using functional performance testing and isokinetic testing interchangeably.</p> <p>Normal ISI's are about 100% in dominant vs non-dominant and 96% when comparing strong leg vs weak with the exception of 1 leg rising which was within 15%.</p>
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				<p>pulled through the loop and the height of the jump was recorded. Three maximal trials were allowed and the best result was recorded, in centimeters. However, if the subject increased jump height in all the three jumps, additional jumps were performed</p> <p><b>One-leg-rising.</b> The subject was sitting on a height-adjustable bench, the heel of one foot placed 10 cm in front of the bench on a stool secured to the floor. This way the minimum height possible was 0 cm. The other foot was held in the air. Both arms were held out in front of the body</p> <p>The subject was asked to rise on one leg without help, neither by swinging the body nor the arms. The subject chose the initial height and was allowed three trials.</p> <p>If the subject succeeded, the bench was lowered and three new trials were allowed. The subject continued until she no longer could rise from the bench. The height, between the height-adjustable bench and the stool attached to the floor, at the lowest height the subject succeeded to rise, was</p>	
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				<p>registered in centimeters. A low number was seen as a better result than a high number</p> <p><b>Square-hop.</b> The square-hop test has been developed and used in clinical practice by physiotherapists. The subject was standing outside a 30x35 cm square, marked with tape on the floor. The subject was asked to jump clockwise, on the right leg, in and out of the square during 30 sec. The number of times the foot touched inside the square, without touching the tape, was recorded. The procedure was repeated on the left leg.</p>	
Wilk 1994	<p>Thirty-four males and 16 females were tested (mean age 24.5 years; age range 15-52 years). Fiftyone percent of the patients tested were 21 years of age or younger. The mean height was 170 cm (range 150-198 cm), and the mean weight was 75 kg (range 53-109 kg).</p>	P- ACLR	<p>92% injured in Unspecified sports activities</p>	<p><b>Single hop for distance</b> The patients stood on one limb, hopped as far forward as possible, and landed on the same limb. The distance was recorded with a tape measure which was fixed to the ground. As the subject landed, an investigator recorded the distance from the starting position to the heel.</p> <p><b>Single leg timed hop</b> performed over a distance of 6 m. The patients were encouraged to use large, forceful one-legged hopping motions to propel their bodies the measured distance. Three</p>	<p>Aim: to determine the relationships among patient self-assessment, isokinetic strength, and 3 functional hop tests</p> <p>Results: correlation between hop tests and self-rated function in ACLR patients is low. correlation between hop tests and isokinetic torque at 180 deg/sec in ACLR patients is better than with self-rated function but still low.</p>

				<p>tests were performed, and the mean times were calculated for each limb</p> <p><b>Single leg triple crossover hop</b>          Performed on a course consisting of a 15-cm marking strip on the floor that extended the entire 6 m. Each subject hopped 3 consecutive times on the same leg</p> <p><b>All tests</b> were performed three times, with the mean of the three values used to calculate limb symmetry. A limb symmetry score of less than 85% was considered abnormal</p>	
Augustsson 2004	<p>19 males. descriptive data of the patients was mean (<math>\pm</math>SD) age, body weight and height of <math>28\pm 5</math> years, <math>79\pm 8</math> kg and <math>182\pm 5</math> cm respectively. Mean (<math>\pm</math>SD) time since surgery was <math>11\pm 2</math> months, whereas the mean time (<math>\pm</math>SD) between the index injury and reconstruction was <math>22\pm 17</math> months. And 69% (13/19) had returned to their previous level of sports participation</p>	<b>P- ACLR</b>	<p>All of the patients were at least recreational athletes</p>	<p><b>Single leg hop</b>          2 practice trials. The patient was instructed to stand on one leg and to position his toes to a mark on the floor. The patient was then instructed to hop forward as far as possible and to land on the same leg. The patient was instructed to hold his hands on his hips throughout the jump. The distance, in centimeters, was measured from the toe in the starting position to the heel where the patient landed. A hop was only regarded as successful if the patient was able to keep his foot in place after landing (i.e., no extra hops for balance</p>	<p>Aim: to investigate the ability of a new hop test to determine functional deficits after ACL reconstruction.</p> <p>Results:          Hop test and fatigued hop test significantly different in injured vs not and the fatigued hop test has a significantly lower LSI <math>89\pm 8</math> compared to the hop <math>97\pm 5</math></p>

				<p>correction were allowed) until the investigator had marked where the patient landed. The test was performed until three successful hops were made with each leg</p> <p><b>Single leg hop fatigue-</b> 1 set of knee extension to fatigue at 50% 1 RM then the hop test</p>	
Jerre 2001	49 (24 females; 25 males) recreational athletes and 226 (61 females; 165 males)	<b>P-</b> 2-5 years post repair of ACL	Recreational (Tegner 2-5) vs competitive (Tegner 9-10)	<p><b>Single leg hop</b> Testing method not described but symmetry index calculated</p>	<p>Aim: to compare the outcome after ACL ligament reconstruction in recreational (Tegner 2-5) vs competitive athletes (Tegner 9-10)</p> <p>Results: no difference in symmetry between groups in 1 leg hop 2-5 years after ACLR</p>
Vander-meulen 2000	46 (17 males; 29 females) competitive athletes see table 1 for details	<b>H</b>	All subjects exercised regularly	<p><b>Lateral hop</b> Max of 3 warm-up hops. Hands free, most medial aspect of the foot in front of the starting line, must hold landing for 5 seconds. Process continued until 3 successful trials completed</p> <p><b>Forward hop</b> Max of 3 warm-up hops. Hands free, most posterior aspect of the foot in front of the starting line, must hold landing for 5 seconds. Process continued until 3 successful trials completed</p>	<p>Aim: propose a novel lower extremity test (lateral hop for distance) and examine its reliability</p> <p>Results: Lateral hop distance ICCs are good (Male .83 left and .89 right; female .85 left, .86 right) but LSI for lateral hop not. Forward hop ICCS also acceptable (Male .84 left and .92 right; female .89 left, .91 right)</p> <p>Hop does not correlate with Tegner activity rating or self-rated stability. Lateral hop left correlates with stability rating and right with Tegner rating but correlations are low</p>