

Functional Hop Testing

Tests:

- Single hop for distance
- 6-m Timed Hop
- Triple hop for distance
- Crossover hop for distance

Procedures:

- One practice trial for each limb.
- Begin with non-operative limb.
- Rest in between (30 seconds) to avoid fatigue.
- For the hops for distance (single, triple, and crossover) to be deemed successful, the landing must have been maintained for 2 seconds.
- Unsuccessful hop:
 - touching down of the contralateral lower extremity
 - touching down of either upper extremity
 - loss of balance
 - additional hop on landing
 - If the hop was unsuccessful, the subject was reminded of the requirement to maintain the landing, and the hop was repeated. No further instructions were provided to the subjects. Typically, 1 or 2 extra trials are required.
- Distance hopped:
 - measure at the level of the great toe
 - measure and record to the nearest centimeter from a standard tape measure
- Timed 6-m hop:
 - Large one-legged hops in series over the total distance.
 - A standard stopwatch used to record time
 - Start when a subject's heel lifted from the starting position and stop the moment that the tested foot passes the finish line
 - Measurements recorded to nearest 10th of a second.

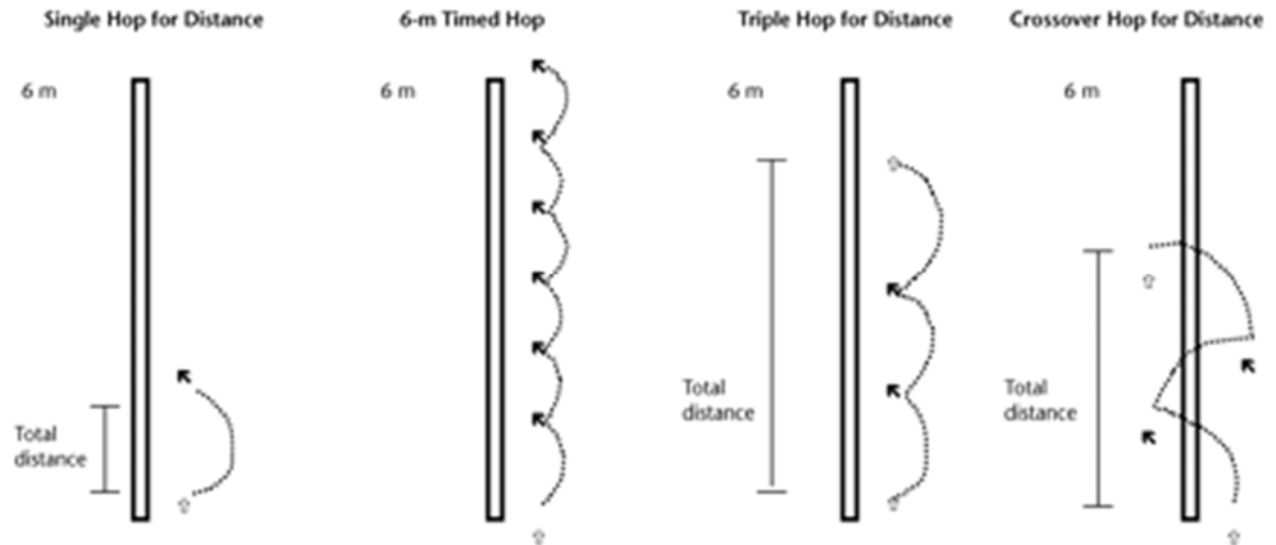


Figure: Diagrammatic representation of the series of 4 hop tests: single hop for distance, 6-m timed hop, triple hop for distance, and crossover hop for distance. Adapted and reprinted by permission of Sage Publications Inc from: Noyes FR, Barber SD, Mangine RE. Abnormal lower limb symmetry determined by function hop tests after anterior cruciate ligament rupture. Am J Sports Med. 1991;19: 513–518. Copyright 1991 by Sage Publications Inc.

What to do with the data: Enter Data in Move2Perform Software

Table 4.

Mean \pm Standard Deviation (Minimum–Maximum) for Male Subjects for Hop Test Absolute Scores on the Operative and Nonoperative Limbs, the Limb Symmetry Index (Operative Limb Expressed as a Percentage of Nonoperative Limb), and the Lower Extremity Functional Scale Scores on 4 Separate Test Occasions

| Test | Day 1 (16 wk Postoperatively) | Day 2 (+24–48 hr) | Day 3 (+24–48 hr) | Day 4 (22 wk Postoperatively) |
|--|--------------------------------|--------------------------------|---------------------------------|--------------------------------|
| n | 23 | 23 | 17 | 21 |
| Single hop | | | | |
| Operative limb (cm) | 117.0 \pm 36.8 (44.0–179.5) | 136.4 \pm 32.4 (70.0–187.5) | 136.7 \pm 35.4 (70.5–192.5) | 148.5 \pm 28.5 (96.5–187.5) |
| Nonoperative limb (cm) | 139.8 \pm 35.9 (71.5–204.0) | 165.1 \pm 26.9 (115.5–213.5) | 171.1 \pm 26.9 (123.0–215.0) | 167.3 \pm 25.3 (122.0–212.0) |
| Limb symmetry index (%) | 84.1 \pm 16.8 (33.8–110.1) | 82.1 \pm 11.0 (50.5–99.7) | 79.1 \pm 11.8 (51.6–92.9) | 88.5 \pm 8.8 (71.5–102.7) |
| 6-m timed hop | | | | |
| Operative limb (s) | 3.1 \pm 1.9 (1.7–9.1) | 2.7 \pm 1.1 (1.8–6.4) | 2.7 \pm 1.3 (1.7–6.0) | 2.4 \pm 0.6 (1.6–4.0) |
| Nonoperative limb (s) | 2.3 \pm 0.6 (1.6–4.5) | 2.2 \pm 0.4 (1.5–3.5) | 2.1 \pm 0.5 (1.5–3.1) | 2.1 \pm 0.4 (1.5–2.9) |
| Limb symmetry index (%) | 83.1 \pm 16.7 (33.8–99.6) | 82.4 \pm 12.5 (47.5–102.8) | 81.8 \pm 14.4 (50.2–100.3) | 89.5 \pm 9.2 (70.4–100.7) |
| Triple hop | | | | |
| Operative limb (cm) | 375.4 \pm 93.1 (183.0–532.5) | 391.3 \pm 86.0 (255.0–570.0) | 401.3 \pm 99.0 (231.5–553.5) | 419.8 \pm 87.7 (279.0–618.0) |
| Nonoperative limb (cm) | 438.8 \pm 86.1 (265.5–576.5) | 466.5 \pm 83.2 (317.5–606.5) | 496.0 \pm 85.4 (302.5–633.5) | 483.4 \pm 98.6 (310.5–666.5) |
| Limb symmetry index (%) | 85.6 \pm 12.9 (45.1–99.6) | 84.0 \pm 11.0 (55.5–99.7) | 80.6 \pm 12.7 (57.2–96.2) | 87.4 \pm 10.2 (68.0–101.3) |
| Crossover hop | | | | |
| Operative limb (cm) | 334.3 \pm 87.8 (157.0–514.0) | 349.9 \pm 94.0 (216.5–552.5) | 358.2 \pm 104.9 (206.5–544.5) | 377.2 \pm 88.3 (238.0–589.0) |
| Nonoperative limb (cm) | 390.6 \pm 91.1 (195.5–534.0) | 409.0 \pm 92.5 (204.5–602.0) | 438.3 \pm 88.1 (240.0–604.5) | 431.0 \pm 89.4 (240.5–618.5) |
| Limb symmetry index (%) | 85.8 \pm 12.1 (54.2–106.1) | 85.8 \pm 12.9 (58.2–112.5) | 80.9 \pm 12.6 (48.4–93.2) | 87.7 \pm 9.7 (69.2–99.0) |
| Overall combination of hops: limb symmetry index (%) | 84.7 \pm 13.1 (41.8–98.9) | 83.6 \pm 10.6 (52.9–100.8) | 80.6 \pm 11.3 (55.4–92.1) | 88.2 \pm 7.9 (72.1–98.1) |
| Lower Extremity Functional Scale | 67.4 \pm 11.2 (24–79) | 67.1 \pm 10.6 (28–79) | 64.9 \pm 11.4 (26–78) | 69.6 \pm 10.4 (30–80) |