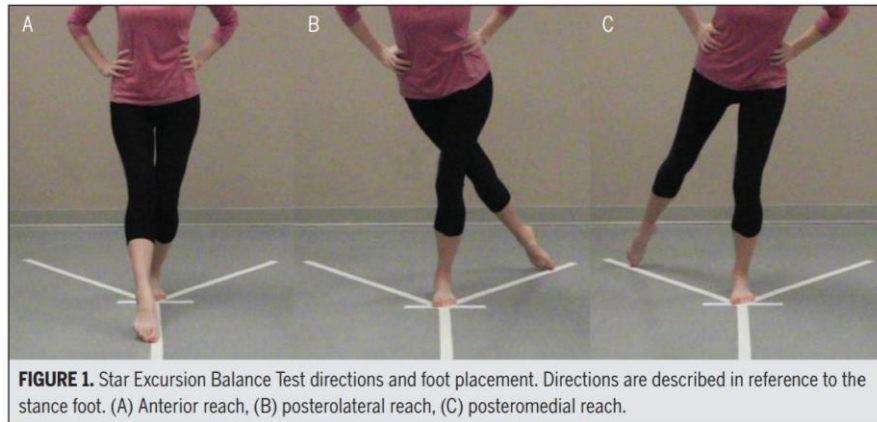




Modified STAR Excursion Balance Test (SEBT)¹



Test performance description:

- For each limb (barefoot):
 - Place most distal aspect of great toe in center of “Y”
 - While maintaining single leg stance, patient is asked to reach with their free limb in the anterior, posteromedial, and posterolateral directions
 - In each test direction, complete **3 recorded reaches**
- Discard and repeat trial if:
 - Stance foot is lifted or moved, weight is transferred to the reach foot, balance is lost, or hands are removed from hips
- Outcomes (Enter in Excel Spreadsheet):
 - Reach distances for both dominant and non-dominant limbs
 - **Anterior, Posterolateral, Posteromedial** directions

Use of SEBT:

| Population | Results |
|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Healthy D I athletes ¹ (Avg. ages: 19.3-20.5) | SEBT varies by sport and gender; side-to-side differences of 3-8% are normal |
| High school basketball players ² (9-12 th grade) | SEBT is a screening tool for prediction of LE injury: <ul style="list-style-type: none"> - Players with anterior side-to-side differences > 4 cm, 2.5x more likely injured - Female players with composite score < 94% of leg length, 6.5x more likely injured |
| Patients with LE injuries ³ | SEBT differentiates chronic ankle instability, ACLR, and patellofemoral pain syndrome SEBT is a marker of normalization of neuromuscular control after these injuries |
| Healthy individuals and chronic ankle instability ³ | SEBT identifies improvements in dynamic stability after exercise intervention focused on neuromuscular control |



Normal Data for Men/Women Across Sport¹:

| Sex/Sport | NORMALIZED REACH DISTANCE ON THE STAR EXCURSION BALANCE TEST FOR EACH LIMB, BY TEAM* | | | | | | | |
|--------------|--------------------------------------------------------------------------------------|-----------------------------|--------------------------------|----------------------------|----------------------------|------------------------------|--------------------------------|----------------------------|
| | Dominant Limb | | | | Nondominant Limb | | | |
| | Anterior | Posterolateral | Posteromedial | Composite | Anterior | Posterolateral | Posteromedial | Composite |
| Women | | | | | | | | |
| Basketball | 64.3 ± 6.9 (61.2, 67.4) | 88.7 ± 8.0 (85.1, 92.4) | 100.2 ± 7.1 (97.0, 103.5) | 84.4 ± 6.5 (81.5, 87.4) | 63.4 ± 7.9 (59.8, 67.0) | 85.7 ± 8.4 (81.8, 89.6) | 101.5 ± 7.7 (98.0, 105.0) | 83.5 ± 7.0 (80.3, 86.7) |
| Golf | 69.4 ± 5.5 (65.4, 73.3) | 86.5 ± 10.2 (79.2, 93.8) | 105.3 ± 10.0 (98.2, 112.4) | 87.0 ± 7.7 (81.5, 92.6) | 67.6 ± 4.4 (64.5, 70.8) | 85.9 ± 8.7 (79.7, 92.1) | 102.2 ± 7.8 (96.7, 107.8) | 85.2 ± 6.2 (80.8, 89.7) |
| Hockey | 66.6 ± 7.3 (64.1, 69.1) | 93.1 ± 10.7 (89.5, 96.8) | 110.3 ± 10.7 (106.2, 114.0) | 90.0 ± 8.6 (87.1, 92.9) | 67.0 ± 6.9 (64.6, 69.3) | 93.0 ± 11.0 (89.2, 96.7) | 113.1 ± 7.6 (110.5, 115.6) | 91.0 ± 7.5 (88.5, 93.5) |
| Soccer | 66.8 ± 5.3 (65.1, 68.5) | 88.7 ± 8.8 (85.9, 91.5) | 104.3 ± 8.0 (101.8, 106.8) | 86.6 ± 6.3 (84.6, 88.6) | 67.4 ± 5.2 (65.8, 69.1) | 90.2 ± 9.9 (89.1, 93.3) | 105.3 ± 8.1 (102.8, 107.9) | 87.7 ± 6.7 (85.5, 89.8) |
| Softball | 63.5 ± 5.6 (61.2, 65.9) | 87.0 ± 11.3 (82.4, 91.6) | 100.7 ± 8.8 (97.1, 104.3) | 83.7 ± 7.5 (80.6, 86.9) | 63.9 ± 4.8 (61.9, 65.8) | 85.3 ± 9.2 (81.5, 89.1) | 99.6 ± 9.3 (95.7, 103.4) | 82.9 ± 6.3 (80.3, 85.5) |
| Volleyball | 66.8 ± 7.1 (63.6, 69.9) | 86.6 ± 10.4 (82.0, 91.2) | 102.7 ± 10.5 (98.1, 107.4) | 85.4 ± 8.5 (81.6, 89.2) | 65.3 ± 5.4 (62.9, 67.7) | 88.4 ± 9.5 (84.2, 92.6) | 102.3 ± 7.9 (98.8, 105.9) | 85.3 ± 6.9 (82.3, 88.4) |
| Men | | | | | | | | |
| Basketball | 61.8 ± 4.3 (59.6, 64.1) | 86.6 ± 11.6 (80.6, 92.5) | 99.2 ± 7.8 (95.2, 103.2) | 82.5 ± 5.9 (79.5, 85.6) | 61.6 ± 4.8 (59.2, 64.1) | 86.9 ± 13.0 (80.2, 93.6) | 97.9 ± 7.9 (93.9, 102.0) | 82.1 ± 6.5 (78.8, 85.5) |
| Golf | 65.1 ± 6.2 (61.2, 69.1) | 83.9 ± 12.1 (76.2, 92.6) | 103.7 ± 9.0 (98.0, 109.4) | 84.2 ± 8.5 (78.9, 89.6) | 68.2 ± 4.7 (65.2, 71.2) | 85.3 ± 10.2 (78.9, 91.8) | 106.0 ± 7.2 (101.4, 110.6) | 86.5 ± 5.9 (82.8, 90.2) |
| Hockey | 67.3 ± 5.2 (65.6, 69.0) | 95.6 ± 9.5 (92.5, 98.7) | 110.9 ± 5.5 (109.2, 112.7) | 91.3 ± 5.0 (89.6, 92.9) | 67.6 ± 4.0 (66.3, 68.9) | 96.6 ± 10.6 (93.2, 100.1) | 111.2 ± 5.7 (109.4, 113.0) | 91.8 ± 5.6 (90.0, 93.6) |
| Soccer | 62.7 ± 4.9 (61.1, 64.2) | 89.9 ± 7.7 (87.5, 92.4) | 103.5 ± 8.6 (100.8, 106.2) | 85.4 ± 5.5 (83.6, 87.1) | 62.9 ± 5.0 (61.3, 64.5) | 89.9 ± 8.3 (87.3, 92.5) | 104.2 ± 8.8 (101.4, 107.0) | 85.7 ± 5.9 (83.8, 87.5) |
| Football | 62.2 ± 8.2 (60.4, 64.0) | 88.6 ± 12.9 (85.8, 91.5) | 99.8 ± 8.7 (97.9, 101.7) | 83.5 ± 7.9 (81.8, 85.3) | 61.9 ± 7.3 (60.3, 63.5) | 87.9 ± 13.0 (85.1, 90.8) | 99.8 ± 8.9 (97.9, 101.8) | 83.2 ± 8.0 (81.4, 85.0) |
| Wrestling | 66.7 ± 6.7 (64.7, 68.7) | 91.1 ± 11.9 (87.6, 94.6) | 110.3 ± 11.1 (107.0, 113.5) | 89.4 ± 8.2 (87.0, 91.8) | 67.8 ± 8.2 (65.4, 70.2) | 90.8 ± 10.3 (87.8, 93.8) | 111.0 ± 12.3 (107.4, 114.6) | 89.9 ± 8.3 (87.4, 92.3) |

*Values are mean ± SD (95% confidence interval) percent limb length.

| Sex/Sport | SIDE-TO-SIDE REACH-DISTANCE ASYMMETRIES ON THE STAR EXCURSION BALANCE TEST, BY SPORT AND SEX* | | | | | | | |
|--------------|-----------------------------------------------------------------------------------------------|--------------------------|-------------------------|-------------------------|---------------------------------------|-------------------------|-------------------------|-------------------------|
| | Normalized Reach Distance Asymmetry, Percent Limb Length [†] | | | | Absolute Reach Distance Asymmetry, cm | | | |
| | Anterior | Posterolateral | Posteromedial | Composite | Anterior | Posterolateral | Posteromedial | Composite |
| Women | | | | | | | | |
| Basketball | 4.3 ± 2.7 (3.3, 5.2) | 5.2 ± 3.2 (3.4, 7.0) | 5.2 ± 3.2 (3.8, 6.6) | 4.9 ± 2.1 (4.0, 5.8) | 3.5 ± 2.9 (2.2, 4.8) | 4.6 ± 3.3 (3.1, 6.1) | 4.5 ± 3.7 (2.9, 6.2) | 4.2 ± 2.4 (3.1, 5.3) |
| Golf | 2.8 ± 1.4 (1.4, 4.1) | 5.1 ± 2.8 (2.4, 7.7) | 5.3 ± 3.2 (3.3, 7.4) | 4.4 ± 1.8 (3.1, 5.7) | 2.0 ± 1.6 (0.9, 3.1) | 3.4 ± 2.9 (1.3, 5.5) | 4.5 ± 2.7 (2.6, 6.5) | 3.3 ± 1.5 (2.2, 4.4) |
| Hockey | 3.4 ± 2.5 (2.7, 4.2) | 6.3 ± 4.0 (4.9, 7.7) | 6.0 ± 3.8 (4.9, 7.0) | 5.2 ± 1.8 (4.6, 5.9) | 2.5 ± 2.2 (1.8, 3.2) | 5.1 ± 4.0 (3.8, 6.5) | 4.6 ± 4.0 (3.2, 5.9) | 4.1 ± 1.7 (3.5, 4.7) |
| Soccer | 3.1 ± 1.9 (2.4, 3.7) | 6.0 ± 5.1 (4.7, 7.2) | 5.0 ± 2.5 (4.0, 6.0) | 4.7 ± 2.1 (4.0, 5.3) | 2.4 ± 1.9 (1.8, 3.0) | 4.6 ± 4.8 (3.1, 6.1) | 4.1 ± 2.7 (3.3, 5.0) | 3.7 ± 2.0 (3.1, 4.3) |
| Softball | 2.9 ± 2.0 (2.1, 3.7) | 8.0 ± 5.3 (5.9, 10.2) | 5.7 ± 5.7 (3.4, 8.1) | 5.5 ± 3.6 (4.1, 7.0) | 2.3 ± 1.8 (1.5, 3.0) | 6.6 ± 5.0 (4.6, 8.7) | 4.6 ± 5.0 (2.6, 6.7) | 4.5 ± 3.1 (3.2, 5.8) |
| Volleyball | 4.2 ± 2.3 (3.2, 5.2) | 6.3 ± 2.9 (5.0, 7.5) | 5.0 ± 2.0 (4.1, 5.9) | 5.1 ± 1.7 (4.4, 5.9) | 3.1 ± 2.6 (2.0, 4.3) | 5.6 ± 3.5 (4.1, 7.2) | 3.2 ± 2.6 (2.1, 4.4) | 4.0 ± 1.9 (3.1, 4.8) |
| Men | | | | | | | | |
| Basketball | 3.7 ± 2.5 (2.6, 4.7) | 6.9 ± 4.3 (4.8, 8.9) | 4.6 ± 2.7 (3.0, 6.1) | 5.0 ± 2.0 (4.0, 6.0) | 3.3 ± 2.7 (2.0, 4.7) | 6.7 ± 5.4 (3.9, 9.4) | 4.2 ± 3.3 (2.5, 5.9) | 4.7 ± 2.3 (3.6, 5.9) |
| Golf | 4.2 ± 2.9 (3.0, 5.5) | 7.1 ± 5.4 (4.7, 9.5) | 6.2 ± 3.4 (4.4, 8.0) | 5.8 ± 2.5 (4.7, 7.0) | 4.0 ± 2.9 (2.1, 5.8) | 6.2 ± 5.7 (2.6, 9.8) | 5.9 ± 3.4 (3.7, 8.0) | 5.3 ± 2.2 (3.9, 6.7) |
| Hockey | 2.8 ± 1.9 (2.2, 3.5) | 6.2 ± 4.0 (4.9, 7.6) | 5.1 ± 4.0 (4.1, 6.1) | 4.7 ± 2.4 (4.1, 5.4) | 2.4 ± 2.2 (1.7, 3.1) | 5.3 ± 4.6 (3.8, 6.8) | 4.4 ± 3.9 (3.2, 5.7) | 4.0 ± 2.6 (3.2, 4.9) |
| Soccer | 2.9 ± 1.8 (2.2, 3.5) | 5.9 ± 3.8 (4.6, 7.2) | 4.5 ± 2.7 (3.5, 5.5) | 4.4 ± 1.7 (3.8, 5.1) | 2.2 ± 1.8 (1.6, 2.7) | 5.1 ± 3.6 (4.0, 6.2) | 3.5 ± 2.9 (2.6, 4.4) | 3.6 ± 1.6 (3.1, 4.1) |
| Football | 4.0 ± 2.9 (3.4, 4.6) | 6.6 ± 4.8 (5.6, 7.7) | 5.3 ± 3.0 (4.6, 5.9) | 5.3 ± 2.2 (4.8, 5.8) | 3.8 ± 3.0 (3.1, 4.4) | 5.7 ± 5.5 (4.5, 6.9) | 4.7 ± 3.5 (4.0, 5.5) | 4.7 ± 2.4 (4.2, 5.3) |
| Wrestling | 3.7 ± 3.2 (2.7, 4.6) | 6.0 ± 3.5 (5.0, 7.0) | 5.0 ± 2.8 (4.2, 5.9) | 4.9 ± 2.1 (4.3, 5.5) | 2.9 ± 3.2 (1.9, 3.8) | 4.3 ± 3.5 (3.3, 5.4) | 3.8 ± 3.0 (2.9, 4.6) | 3.7 ± 2.2 (3.0, 4.3) |

*Values are mean ± SD (95% confidence interval).
[†]No significant differences were found between sexes or sports.



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