The Y Balance Test™

Phil Plisky, PT, DSc, OCS, ATC, CSCS
Star Excursion Balance Test

- First described by Gary Gray 1995
- Requires 6 practice trials in each direction
- Then need to perform 3 measurements

Gray 1995, Hertel 2000
Star Excursion Balance Test (SEBT)

- Dynamic
- Requires
  - NM control
  - ROM/Flexibility
  - Strength
Star Excursion Balance Test as a predictor of lower extremity injury in high school basketball players

Identifies Athletes at Increased Risk of LE Injury

• 4 cm right/left anterior reach difference
  • (3x more likely)
• Bottom 1/3 of peers
  • (Women 6 times more likely to get injured)

Plisky 2006
Identifies Chronic Ankle Instability

• Hubbard 2007
  • Anterior, posteromedial, & posterolateral reach distance predicted CAI

• Hertel 2006
  • 2-4% side to side difference

• Gribble 2004
  • Fatigue amplified side to side difference
  • Altered neuromuscular control at knee and hip

• Olmstead 2002
  • 2.5-4 cm side to side difference
Improves After Training

• Chaiwanichsiri 2005
  • SLST improved after SEBT training
• Plisky & Gorman 2007 (in process)
  • SEBT improved after PEP
• Hale 2007
• English 2007
  • Improves after Pilates exercise program
Patellar Taping, Patellofemoral Pain Syndrome, Lower Extremity Kinematics, and Dynamic Postural Control

Naoko Aminaka, MS, ATC; Phillip A. Gribble, PhD, ATC

- Subjects with & without PFP
- Perform anterior SEBT reach with & without patellar taping
- PFP group had significantly decreased reach distance compared to controls
- After taping, PFP group had increased reach distance

Return to Sport Testing

- Greater than 4 cm right/left difference in anterior direction
- Identifies Chronic Ankle Instability
- Can be used to demonstrate functional symmetry

Plisky 2006, Olmsted 2002
Star Excursion Balance Test Measurement Error

- Touch down? (support?)
- How far off the ground? (1 inch...6 inches?)
- Capture movement instantaneously? (marking error?)
Star Excursion Balance Test

- Time consuming (144 reaches)
- Great variance in testing protocols
- Wide range of reliability (0.67-0.97)

Gray 1995, Hertel 2000
Which Direction Matters?

- Hertel et al. JOSPT 2006
- Plisky et al. JOSPT 2006
Posterolateral

Anterior

Posteromedial

Hertel 2007 & Plisky 2006
A Solution?

- Quick/Efficient
- Portable
- Consistent
- Objective
- Multiple Surface Applications
The Y Balance Test™

- Less than 3 minutes per athlete
- Standard Protocol
- Reliability
  - Excellent inter and intrarater
  - 0.88-0.99, p ≤ 0.01

Plisky et al 2008
(In Review)
The Y Balance Test™ Practicality

- Pre-participation Physicals
- Injury Prevention Screens
- Pre/Post Measures for Functional Rehabilitation
- Multi-sport Application
- Return to Sport Testing
The Y Balance Test™ Application

- Greater than 4 cm right/left difference in anterior direction
  - >2.5 times more likely to be injured
- Decreased overall performance (lowest 1/3 of individual scores) on test (total of all three directions)
  - Women over 6 times more likely to be injured

Plisky et al 2006
Return to Sport Testing

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Plisky 2006, Olmsted 2002
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