Measuring Core Body Stability

Definition of Core Body -

The body's core is the area around the trunk and pelvis — is where your center of gravity is located.

A strong core provides:

- Increased back protection and "bracing" Controlled movement
- A more stable center of gravity
- A more stable platform for sports movements

When you have good core stability, the muscles in your pelvis, lower back, hips and abdomen work in harmony. They provide support to your spine for just about any activity.

A weak core can make you susceptible to poor posture, lower back pain and muscle injuries. Strong core muscles provide the brace of support needed to help prevent such pain and injury.

The lunge as a 'functional' strength test:

"In the training repertoire, the lunge is a strength exercise for the quadriceps and gluteals; however, it also serves as a 'functional' test of movement quality and postural control.

The lunge position is a basic movement pattern that is commonly executed in a range of everyday activities and has very broad applicability. Broken down, the exercise is complex and hard to perform perfectly, which makes it a good test and analytical tool."

How do you measure your core body stability?

Conditioning coach Raphael Brandon uses a simple functional test — the lunge — as a reliable guide to the key components of core stability.

Following the "functional movement screen" work of US orthopedic physician Gray Cook, Raphael Brandon has devised a full set of criteria against which you can judge your ability to do the lunge.

For more advice on how to interpret the results, read Raphael Brandon's article in publication *Sports Injury Bulletin 46*.

This important article also raises the debate about isolated muscle recruitment work vs functional stability work in order to achieve perfect movement patterns. Read the full discussion at **http://www.sportsinjurybulletin.com**

	ACTION	MUSCLE FUNCTION
Movement criteria	**1.** Patient begins the action, standing with feet together	
	2. Patient takes a lunge step forward until the front knee bends to 90° Front foot is flat on the floor with knee above ankle **3.** The knee of the back leg flexes during the lunge step. Back foot on is on the ball or toe	Restricted range of movement may show insufficient flexibility in hip flexor, quadriceps and calf group
	4. Upper body and arms remain relaxed throughout the movement **5.** Patient breathes regularly during the test (eg, breathe in during lowering and out on push up)	Tense upper body and poor breathing control or breath-holding indicate that the large superficial muscles (eg, rectus abdominis, upper trapezius, pectoralis major) may be overactive in helping to stabilise the trunk
Performance criteria (side view)	**1.** Trunk remains vertical throughout the movement; shoulders above hips	Deviation suggests poor or unbalanced muscle recruitment of trunk extensors
	2. No back extension occurs to assist leg and hip extension during the upwards movement. Spine remains tall & stable	Weak gluteals and/or poor coordination wil lead to the use of back extension to assist hip extension on the upwards phase
	3. Lumbar spine (anterior-posterior tilt) retains neutral position throughout the movement	Unstable pelvis shows poor muscular control and balance. Specifically, recruitment of deep abdominals and gluteus maximus may be weak or non-existent, and flexibility in hip flexor and lumbar extensors may be inadequate
Performance criteria (front view)	**1.** Head remains central over feet throughout movement **2.** The lunge is performed in a straight line with perfect balance – no sideways deviation	Wobbles and sideways leaning reveal poor balance
	3. The front knee points forwards over the small toes throughout the movement. No inward rotation of the knee at the bottom of the lunge	Deviations suggest muscular imbalance between lateral hip muscles, specifically weak recruitment of abductors and possibly poor flexibility in ITB and adductors
Performance criteria (rear view)	**1.** Pelvis remains level throughout movement. No lateral drop on the hip of the rear leg compared to the front hip	Inability to hold level pelvis indicates poor muscle recruitment of gluteals medius and minimus

Lunge (exercise)

http://en.wikipedia.org/wiki/Lunge_(exercise)

From Wikipedia, the free encyclopedia

Revolved lunge position

The lunge is a weight training exercise that is used to strengthen the quadriceps muscles, gluteal muscles and the muscles comprising the "hamstrings", the semitendinosus, the semimembranosus, and the biceps femoris.

A long lunge emphasizes the glutes whereas a short lunge emphasizes the quadriceps.

To perform the lunge, the individual stands with their feet shoulder-width apart, and then steps forward, landing with the heel first. The knee should be at 90 degrees and directly above the toes, not further (taking a shorter step can put added pressure on the knee).

The motion is continued until the back knee is nearly touching the ground. The individual then returns to his or her starting position by driving upward with the front leg.

There are variations on the basic structure lunge, with regard to both form and resistance in addition to varying the step length as mentioned above. The exercise is sometimes performed on an incline or on a bench to increase the difficulty.

The walking lunge is performed by walking with lunging steps as described above. The stationary lunge can be performed either by alternating legs or by focusing on a particular leg.

Many other variations of the lunge exist.

- Adobe Flash must be installed to view -

1. **Forward Lunge** - Core Performance. Retrieved on 2009-05-29
2. **Forward Lunch plus Twist** - Core Performance. Retrieved on 2009-05-29
3. **Backward Lunge** - Core Performance. Retrieved on 2009-05-29
4. **Backward Lunge plus Twist** - Core Performance. Retrieved on 2009-05-29
5. **Rotational Lunge** - Core Performance. Retrieved on 2009-05-29
6. **Drop Lunge** - Core Performance. Retrieved on 2009-05-29
7. **Knee Hug Lunge** - Core Performance. Retrieved on 2009-05-29
8. **Knee Hug Lunge Elbow to Instep** - Core Performance. Retrieved on 2009-05-29
9. **Knee Hug Lunge & Twist** - Core Performance. Retrieved on 2009-05-29
10. **Forward Lunge Elbow to Instep** - Core Performance. Retrieved on 2009-05-29
11. **Forward Lunge Elbow to Instep (Walking)** - Core Performance. Retrieved on 2009-05-29
12. **Forward Lunge Elbow to Instep (Crawling)** - Core Performance. Retrieved on 2009-05-29
13. **Backward Lunge with Lateral Flexion** - Core Performance. Retrieved on 2009-05-29
14. **Lateral Lunge** - Core Performance. Retrieved on 2009-05-29
15. **Lateral Lunge - Step & Return** - Core Performance. Retrieved on 2009-05-29
16. **Drop Lunge to Lateral Lunge** - Core Performance. Retrieved on 2009-05-29

Dumbbell Lunge

http://www.exrx.net/WeightExercises/Quadriceps/DBLunge.html

Dumbbell Lunge

This drop-knee version is the most basic lunge and, surprisingly, one of the harder versions.

The lunge can be performed without weights (i.e, bodyweight). However, weight trainers usually seek to increase the difficulty using either dumbbells (held in each hand) or a barbell with weights on it (held atop the neck and shoulders).

Advanced trainers may find that grip strength is an issue with the dumbbell lunge, and therefore prefer the barbell lunge.

Preparation

Stand with dumbbells grasped to sides.

Execution

Lunge forward with first leg. Land on heel then forefoot. Lower body by flexing knee and hip of front leg until knee of rear leg is almost in contact with floor. Return to original standing position by forcibly extending hip and knee of forward leg. Repeat by alternating lunge with opposite leg.

Comments

Keep torso upright during lunge; flexible hip flexors are important. Lead knee should point same direction as foot throughout lunge. A long lunge emphasizes Gluteus Maximus; short lunge emphasizes Quadriceps.

http://exercise.about.com/od/exerciseworkouts/ss/bestbuttexercis_3.htm

Here's how to do it the drop-knee version of the most basic lunge:

1. Stand in a split stance, with feet about 3 feet apart. You want both knees to be at about 90-degree angles at the bottom of the movement, so adjust accordingly.
2. Hold weights in each hand (or place a barbell behind the neck) for added intensity.
3. Bend the knees and lower the back knee toward the floor, keeping the front heel down and the knee directly over the center of the foot.
4. Keep the torso straight and abs in as you push through the front heel and back to starting position.
5. Don't lock the knees at the top of the movement.
6. Perform 1 to 3 sets of 10 to 16 reps according to your fitness level and goals.

Youtube demonstration of lunge

http://www.youtube.com/watch?v=dJ95qwNaD78