



The Lunge

Traditionally thought of as a leg muscle exercise, the **lunge** is a perfect example of a **dynamic stability exercise**. To perform the movement perfectly requires a great deal of co-ordination of all the trunk and pelvic stabilising muscles. You would be surprised how many elite athletes cannot perform the lunge exercise with perfect posture and alignment even with just bodyweight. To perform the lunge perfectly involves the following muscle functions:

- **to maintain a neutral lumbar spine** throughout the whole movement requires sufficient flexibility of the hip flexors and spine extensors, plus sufficient recruitment of the transverse abs and gluteals;
- **for one hip to flex and the other to extend** slightly requires the pelvis and the lumbar spine to be dissociated from one another. This requires good recruitment of the gluteals, otherwise the pelvis sways forward as the knee bends instead of lowering down in line with the shoulders;
- **for the front knee to remain aligned with the hip and the foot** (no movements in or outside that line) requires recruitment of the gluteus medius and adductor muscles in addition to sufficient flexibility of the ITB and good stability in the front ankle;
- **for the back to remain upright** (no leaning forward as the knees bend) requires good strength in the abdominal, oblique and spine extensor muscles
- **for the upper back to retain good posture** requires sufficient flexibility in the thoracic spine and chest muscles.

How to assess an athlete performing the lunge

Ask your athlete to wear shorts and a vest or T-shirt tucked into the shorts.

Get the athlete to perform two lunges on each leg while you look from the side. Watch for the position of the chest – does it drop forward or stay upright? Watch the lumbar spine and pelvis – does the back increase the lordotic curve or stay in neutral, or do the hips sway forward instead of lowering down? Note any differences between left and right sides.

Next, get the athlete to perform two more lunges each side while you watch from the front. Observe the line of the knee as the front foot comes forward – does it stay in line with the hip and foot? Also check out the pelvis to see if it stays level or whether it drops down on the rear foot side.

If your athletes cannot perform the lunge perfectly without instruction then it means that their core or pelvic muscles are not coordinating effectively. It doesn't really matter which of the stabilising muscles aren't working, because when the athlete learns to move and stay aligned correctly the likelihood is that all the right muscles will be working at the right time.

Get your athletes to perfect the lunge. And perfect means 100% perfect.

This approach to core stability training does not work if you let the athletes get away with sloppy movements or posture that is slightly out of line. This means that to teach the movements, it often helps to place your athletes into position and encourage them to touch certain muscles or body parts to ensure all is correct. For example: in the lunge, if the athlete places his/her hand in the small of the back they can feel if their lumbar spine change position as they lunge.

Why the lunge?

The lunge exercise is included in the Alexander technique as one of the standard exercises. If you think about it, the lunge position is fundamental to many sporting movements as well as those in daily activity. Any time you have one foot in front of the other you are in a variation of the lunge position; it's just the range of motion that is different. Learning to attain the perfect motor pattern during a full range of movement will help athletes to achieve better stability and coordination during many different movements and positions, including running.

Dynamic stability requires keeping the core stable while the limbs move. Any exercise that places this demand on the core muscles can be effective if performed correctly, including many traditional weight-lifting exercises. Use your imagination, as well as your current repertoire of exercises, to think of ways to improve your athletes' dynamic stability. The approach only works, however, if the athlete focuses 100% on posture and alignment. The aim is to develop the correct and efficient core muscle recruitment patterns, and thus it helps to use light weights even if the athlete has the limb strength to lift heavier ones.

Lunge variations

Once the lunge position has been perfected, then you can spice it up a little by adding upper body movements on top. These increase the challenge of the core muscles to maintain perfect alignment of the lumbar spine and pelvis.

1. Lunge and twist.

Use a stick or light bar for this exercise placed upon the back of your neck and shoulders. Go down into the lunge position and hold it at the bottom. Turn your shoulders towards the front leg. Do it slowly and focus on keeping your knee and pelvis completely still. The twist increases the demand of the hip muscles to maintain alignment.

2. Lunge and lift.

Use a medicine ball for this exercise: 3-5 kg is appropriate. Lunge forward holding a ball out in front of you. As you do so, lift the ball with straight arms overhead. Pause at the bottom position and push yourself back up. The aim is to keep the ball overhead whilst maintaining a perfect neutral spine position. The lift overhead increases the demand on the transverse abs and obliques to maintain the neutral spine position.

3. Lunge and chop.

You need a pulley cable machine or some elastic resistance tubing for this one. The cable or elastic need to be head height.

Stand to the side of the cable machine (elastic) and grab the handle with two hands. Go into the lunge with the foot away from the cable forward. Your hands will now be by your head. Keeping your arms straight, pull the cable (elastic) down and across your body. Your hands will now be by your opposite hip. It's just like chopping an axe across your body. Slowly return to the start position. The object of the exercise is to keep your pelvis aligned while the abs and obliques work hard during the chop movement. This exercise is very difficult to perform with perfect alignment. It is best to start with small weights.

Summary

Not all dynamic stability exercises need revolve around the lunge movement. The lunge, though, is a very good starting point because it is a fundamental motor pattern and requires a great deal of core co-ordination to be performed 100% perfectly. Challenge your athletes to perfect the lunge.