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## Basic Ball Exercise Manual Train your Core

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# CORE STABILITY: Why the ball??

Strengthening core stability on the ball is about training the brain and body to utilise the stabilising muscles for balance while the rest of the body performs certain activities. It is multi-functional and improves both proprioception and coordination. Proprioception is a component of balance and your physiotherapist will explain this to you during your rehabilitation.

In short, the “core muscles” refers to the muscles between the ribs and hips namely the small spinal muscles, the deep abdominal muscles and the muscles of the pelvic floor. These muscles are all responsible for supporting your lower back.

The ball provides an unstable base therefore more than one muscle group is active at any given time. Traditional gym machines only train single movements without incorporating balance. The ball challenges balance which is a more functional way to train since it mimics the activities you perform in your everyday life, where you always recruit multiple muscles to perform even the simplest of actions, like brushing your teeth.

Strengthening the core muscles has been proven successful in the treatment of low back pain and because the ball requires multi-functioning of the brain and all the muscles, it is the ideal second phase rehabilitation for almost any pain incident or injury. Economically it is a low cost, portable gym!

## Results that you can expect from exercising on the ball:

- improved posture
- improved muscle tone
- improved strength and control of stabilising muscles
- increased speed and agility
- decreased risk of injury
- decreased recurrence of chronic pain.

## General Principles when training:

Ask your physiotherapist how much pain you should be experiencing when you train. When recovering from an injury a little bit of pain might be acceptable as long as it dissipates as soon as the exercise is completed. **No pain after exercising is acceptable!** It could mean you are doing the exercises incorrectly or doing too much too soon. If you don't have an injury and are doing these exercises because you downloaded it from the internet, or were given the programme by a friend, please note that **NO PAIN** should be felt! Refrain from attempting any new exercises that you are unsure of without consulting your treating physiotherapist from Linda Steyn Physiotherapists Inc. Should you do so, it is at your own risk of injury.

## Progression:

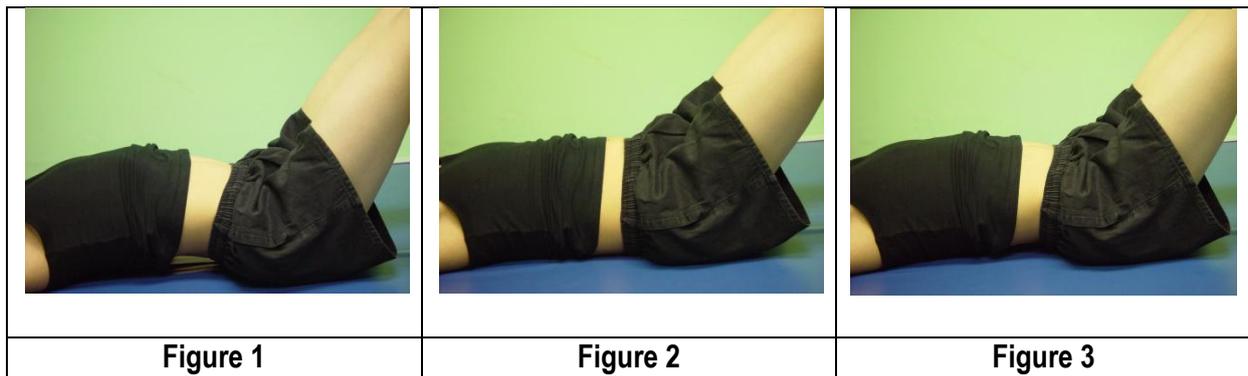
- Start with one set of 5 repetitions of each exercise.
- Then progress to 3 sets of 5 repetitions.
- Then progress to 3 sets of 10 reps
- Then progress to 3 sets of 20 reps.



## POSTURE, ALIGNMENT, NEUTRAL SPINE AND BREATHING

Your body can be described as building blocks stacked on top of each other: head, shoulders, ribs, hips and legs. In order for your body to function 100%, these blocks should be aligned in such a way that your centre of gravity remains optimal for your body specifically. Your physiotherapist will help you find your optimal posture as well as a crucial component of optimal alignment, namely neutral spine.

Neutral spine refers to the “mid-position” of your lower back where your lower spine is neither arched (Figure 1), nor completely flat (Figure 2), when the deep abdominals are contracted (navel to spine), while the hips remain level (Figure 3).



You should be able to hold this position quite comfortably whilst breathing. Your breathing should come from your ribs and diaphragm, not your stomach! We use the acronym **CAPS** to remind you of this:

- **C – Control**
- **A – Abdominals**
- **P – Pelvis**
- **S – Spine**

For optimal results it is crucial to perform the ball exercises with the correct posture while maintaining neutral spine. Therefore progress slowly since it can take anything from a couple of hours to a couple of weeks to perfect. Before attempting any exercises on the ball, it is very important that you are able to find neutral spine in the following positions:

### **Supine on the floor:**

Lie on mat with knees bent, feet flat on the floor. Tighten the lower abdominals and pelvic floor muscles. Your back should be in the neutral spine position as explained previously. Continue breathing using the rib cage and not the abdominals.

### **Sitting on the ball**

Sit on the ball with knees bent; feet hip width apart and flat on the floor. Straighten your spine to the neutral spine position. Tighten the lower abdominals and pelvic floor muscles, while pulling your navel towards your spine. Relax shoulders and gently squeeze the shoulder blades towards the lower back. Continue breathing into the rib cage, without moving the abdominal muscles while breathing (Figure 1).



### **Prone on the ball**

Kneel in front of ball. Roll over until the ball is underneath your hips. Draw your navel towards your spine while tightening the lower abdominals and pelvic floor muscles. The back should look like a table top (Figure 2).

### **Supine on the ball**

Start by sitting on the ball. Now walk forward slowly until the ball is underneath your shoulders. Rest your neck comfortably on the ball with the feet underneath the knees and arms outstretched for balance if necessary. Lift your hips so that the spine is in the neutral position. Pull navel to spine while tightening lower abdominals and pelvic floor muscles (Figure 3).

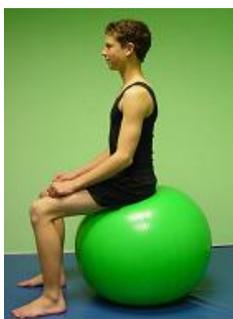


Figure 1



Figure 2



Figure 3

**Should you have any queries with regard to any of the exercises, please ask your physiotherapist.**

### **SAFETY TIPS**

- Never hold your breath when exercising. It can lead to increased blood pressure amongst other things.
- Always breathe in to prepare for a movement
- Breathe out during the movement.
- It is advisable not to exercise within an hour after a large meal
- Always exercise on a non-slip surface with enough free space to move around (your bed is not a good idea).
- Wear comfortable clothing that will allow you to move freely and won't slide on the ball. If possible don't wear shoes (bare feet or light socks are better).
- Read the manufacturer's instructions on ball storage. As a rule of thumb don't store the ball near temperature extremes as this will influence the expansion properties of the ball.
- Inflate using either a bicycle pump or the nearest air pump at the petrol station. The ball should be inflated over a period of two days. On the first day only inflate the ball until it reaches a round shape (it should still be quite soft and flat). Leave for 24 hours to enable the material to stretch and settle (otherwise the ball loses its round shape and becomes oval). After 24 hours add more air until the following is achieved: pick up the ball to hip height, then drop it (don't throw it down) and the ball should comfortably bounce back to the height of your hands.



## WARM UP AND STRETCHES

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A warm up before any form of exercise is important because it:

- prepares the muscles and joints for the activities to come
- reduces the risk of injury
- increases the circulation to the muscles, heart and lungs.

You can use the same stretches to warm up and cool down. Each stretch should be gentle, yet strong, lasting at least 3 times 30 seconds to improve flexibility. If you want to maintain flexibility the stretch should be at least 20 seconds. Your physiotherapist will help you to select the most appropriate stretches and repetitions for your specific rehabilitation programme.

### PRONE STRETCH (FORWARD BENDING)



Kneel in front of the ball, and then roll forward so that the ball is under your abdomen. Relax in this position, allowing your body to mould over the ball.

### SUPINE STRETCH (BACKWARD BENDING)



Sit on the ball. Walk forward until the ball is under your lower back. Gently sink into the ball and then lean backward over the ball. Don't let your neck hang too far back.

### SPINE STRETCH (KNEELING TWIST)



Kneel in front of the ball. Slowly roll the ball away from your head and sink into your heels. Keep your hands on either side of the ball and relax your head between your arms. Slowly roll the ball from side to side, rotating and lifting the upper body to look through arms (hands stay on the ball).



## SHOULDER STRETCH



Kneel with the ball in front of your head. Place one hand at a time on the ball. Relax your body down towards your heels until you feel a stretch in the front of the shoulder.

## PIRIFORMIS STRETCH



Lie on the floor with your right leg straight and foot on the ball. Place your left ankle on your right knee and gently let the left knee drop towards the floor. Bend your right knee and roll the ball closer toward your body until you feel a stretch in the left buttock area. Repeat with the left.

## HIP FLEXOR STRETCH



Stand with your left leg next to the ball, and lower your right side into the ball so that your thigh is resting on the ball. Keep your spine straight and gently push your thigh into the ball until you feel a stretch at the top of the thigh – don't arch your back!! Repeat with left leg.

## HAMSTRING STRETCH



Lie on the floor with the ball underneath bent legs. Take hold of your right leg and gently pull it as far as possible toward your chest (keep your hips on the floor), then slowly try to straighten the knee as far as possible. Repeat left.



## SIDE LATERAL STRETCH



Kneel upright next to ball with ball on your left side. Left knee bent and right leg stretched to side. Slowly lean over ball toward your left. Extend the right arm over the head and relax the neck. Repeat right.

## QUADRICEPS STRETCH



Lie on right side with your neck positioned comfortably. Bend your right knee 90° so that your knee is in line with your hip, and your foot in line with your knee. Take hold of your left ankle with your left hand (or towel) and gently pull your knee backwards until you feel a stretch in the front of the thigh. Don't arch your back.

## CORE STABILITY:

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### 1. BALL BRIDGE



**Starting position:**

Lie on back with arms next to sides and straight legs and feet on the ball.

**CAPS**

**Action:**

Push feet into ball and lift pelvis off the floor until your body is diagonal from shoulders to feet. Hold for a few seconds.



## 2. ADVANCED BALL BRIDGE:



**Starting position:**

Start with ball bridge (exercise 1).

**CAPS**

**Action:**

Slowly raise the hands from the floor towards the ceiling. Hold for a few seconds. Lower the hands to the floor, then slowly lower the hips back to the floor.

## 3. BALL BRIDGE WITH LEG LIFTS:

**Starting position:**

Start with ball bridge (exercise 1).

**CAPS**

**Action:**

Lift one leg from the ball and hold for a few seconds. Repeat with the other leg.



#### 4. BALL BRIDGE WITH DOUBLE KNEE BEND:



**Starting position:**

Start with ball bridge (exercise 1).

**CAPS**

**Action:**

Holding the bridge position, roll the ball toward the buttocks without moving the feet. Slowly return to the straight leg position whilst keeping the pelvis off the floor.

#### 5. HIGH BALL BRIDGE:

**Starting position:**

Lie on your back with arms next to your sides. Bend your knees and place your feet flat on the ball (hips and knees at 90°).

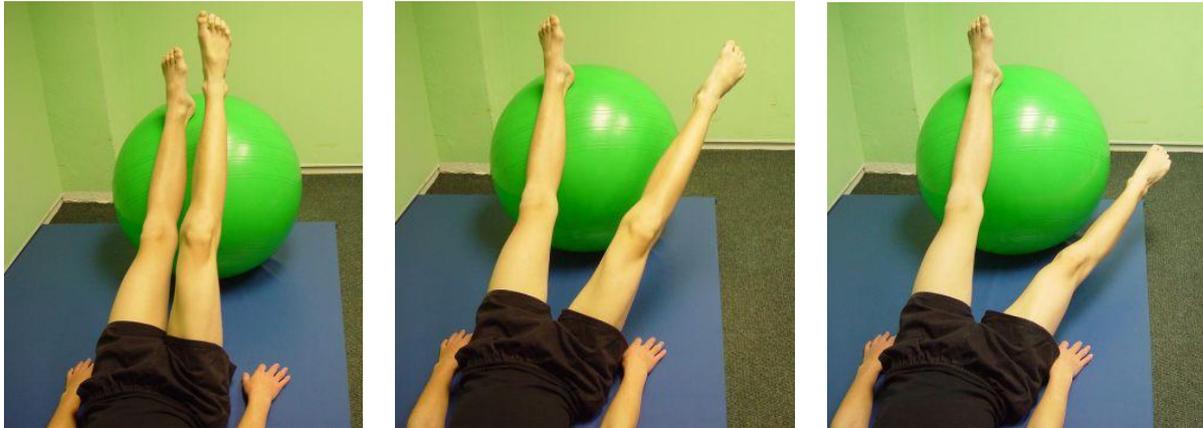
**CAPS**

**Action:**

Slowly raise your pelvis from the floor so your body is diagonal from knees to feet. Keep knees bent and feet on the ball. Hold for a few seconds.



## 6. LEG CIRCLES:



**Starting position:**

Lie on your back with arms next to your sides. Place feet on ball so that the ball is under the lower legs (don't lift the pelvis)

**CAPS**

**Action:**

Raise the right leg off the ball to about 45°. Slowly turn the leg outward from the hip and keep the knee and toes in a straight line. Draw circles in the air both clockwise and anti-clockwise. (This is a hip movement). Repeat with other leg.

## 7. SHOULDER BRIDGE:



**Starting position:**

Lie with the ball under your shoulders and feet on the floor, hip width apart (knees at 90°).

**CAPS**

**Action:**

Push hips up towards the ceiling until your body is horizontal from head to knees (don't arch your back). Hold for a few seconds.



## 8. SUPERMAN:



**Starting position:**

Stand on all fours with the ball under your abdomen. Hands directly under shoulders, knees straight yet relaxed.

**CAPS**

**Action:**

Slowly raise and stretch out your left arm and right leg until it is in line with the rest of your body. Hold the position for a few seconds. Repeat on the opposite side.

## 9. ADVANCED SUPERMAN I:



**Starting position:**

Start in superman position (exercise 8). Lift your hands off the floor and place them next to your sides. Walk yourself forward until your hips are pushing into the ball.

**CAPS**

**Action:**

Stretch your hands towards your feet so that you feel the pull between your shoulder blades. Slowly lift one foot off the floor. Hold the position for a few seconds. Repeat with the other leg.



## 10. ADVANCED SUPERMAN II



### Starting position:

Start in superman position (exercise 8). Walk forward on your hands until your feet lift off the floor, the ball should be under your hips.

### CAPS

#### Action:

Slowly lift right arm along your head until it is diagonal with the rest of your body. Hold for a few seconds. Repeat with the left arm.

## 11. BALL PUSH-UP:



### Starting position:

Start in superman position (exercise 8). Walk forward on your hands until your feet lift off the floor, the ball should be under your hips (hands under the shoulders).

### CAPS

#### Action:

Slowly bend the elbows to lower the upper body as close as possible to the floor. Slowly straighten the arms to return to the starting position.



## 12. WALL EXTENSIONS:



**Starting position:**

Lie with the ball under your abdomen and your feet placed against a wall. Place your hands either side of your head.

**CAPS**

**Action:**

Slowly lift your upper body from the ball until you are in line from head to toe.

## 13. SEATED CRUNCH:



**Starting position:**

Lie with the ball under your abdomen and your feet placed against a wall. Place your hands either side of your head.

**CAPS**

**Action:**

Slowly lift your upper body from the ball until you are in line from head to toe.



#### 14. LYING CRUNCH:



**Starting position:**

Lie on back with ball under bent legs, knees hip width apart. Place hands on side of the head.

**CAPS**

**Action:**

Tuck chin and slowly raise upper body from the floor until the shoulder blades lift off the floor.

#### 15. LYING SIDE CRUNCH:



**Starting position:**

Lie on back with ball under bent legs, knees hip width apart. Place hands on side of the head.

**CAPS**

**Action:**

Tuck chin and slowly raise upper body from the floor until the shoulder blades lift off the floor.

#### 16. BEND AND STRETCH:



**Starting position:**

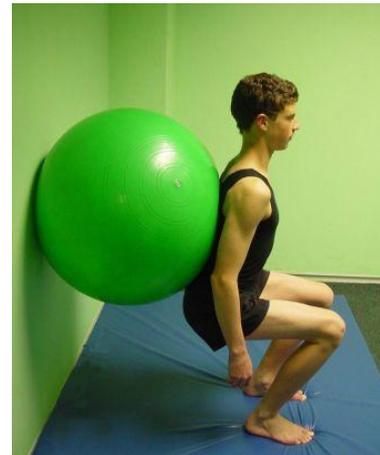
Start by lying on your back with elbows supporting the lower back. Knees bent as far up as is comfortable while holding the ball with your lower legs and feet.

**CAPS**

**Action:**

Slowly pick the ball up by straightening the knees (no hip movement). Hold for a couple of seconds. Slowly bend knees and put the ball down.

**17. BALL SQUAT:**



**Starting position:**

Stand with the ball between a wall and your lower back, feet shoulder width apart. You should be able to stand almost straight while maintaining neutral spine.

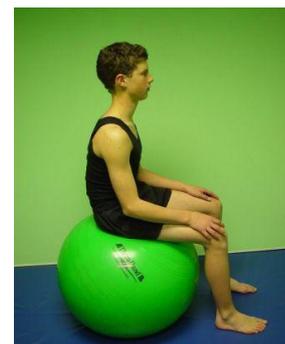
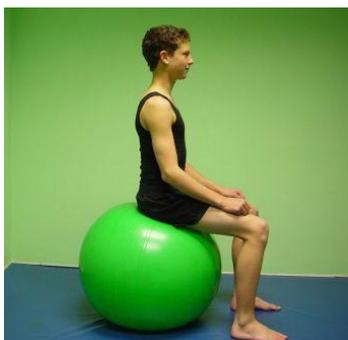
**CAPS**

**Action:**

Squat down no lower than 90°, keeping your knees in line with your second toe. Allow your lower back to follow the curvature of the ball. Hold for a few seconds.

**SPINAL MOBILITY:**

**18. PELVIC TILTS:**



**Starting position:**

Sit on the ball in neutral spine position.

**CAPS**

**Action:**

Tilt your pelvis forward and increase the arch in your lower back. Slowly tilt your pelvis backward and flatten your lower back. No shoulder movement.

**19. LATERAL PELVIC TILTS:**



**Starting position:**

Sit on the ball in neutral spine position.

**CAPS**

**Action:**

Use your pelvis to push the ball from side to side without leaning to the side.

**20. LUMBAR ROTATIONS:**



**Starting position:**

Lie on back with ball under bent legs, knees hip width apart.

**CAPS**

**Action:**

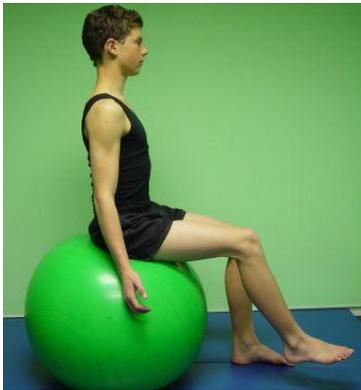
Gently hold the ball with your legs. Slowly rotate to the left side as far as is comfortable and keep right shoulder on the floor. Hold for a few seconds. Repeat right side.



## BALANCE:

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### 21. SEATED LEG LIFTS:



**Starting position:**

Sit on the ball in neutral spine position.

**CAPS**

**Action:**

Lift left foot off the floor without any movement of the ball and repeat with the right foot.

### 22. BALANCE SITTING:

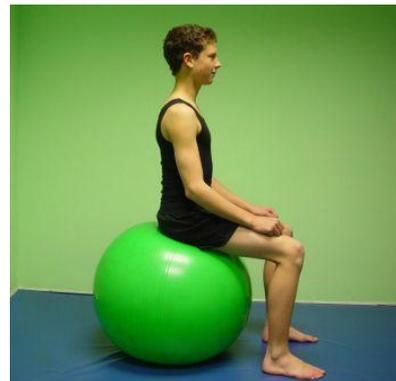
**Starting position:**

Sit on the ball in neutral spine position.

**CAPS**

**Action:**

Lift left foot off the floor without any movement of the ball and repeat with the right foot.



## UPPER LIMB:

### 23. SHOULDER LATERAL ROTATION:



**Starting position:**

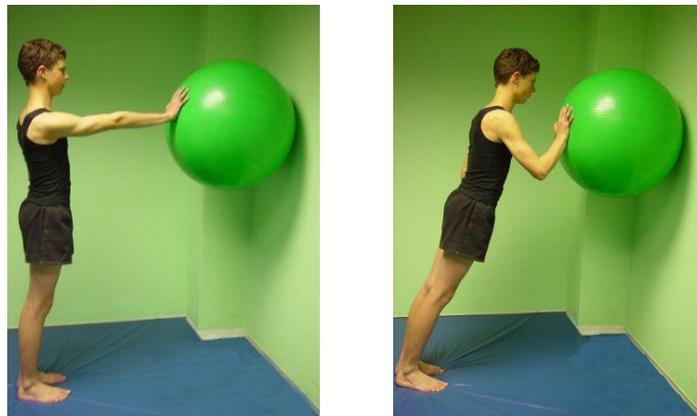
Lie with the ball under the right side. Bend the left elbow to 90° and keep it in your side.

**CAPS**

**Action:**

Slowly turn the forearm until your fist is in line with your body, hold for a few seconds. Repeat with left side.

### 24. SINGLE ARM WALL PUSH UP



**Starting position:**

Stand with feet shoulder width apart. Hold ball firmly with one hand against wall at chest level. Place the other hand by your side or behind your back.

**CAPS**

**Action:**

Slowly bend the elbow to lower your upper body towards the ball. Hold for a few seconds before straightening the elbow again. Repeat other side.



## 25. LYING SCISSORS:



**Starting position:**

Stand with feet shoulder width apart. Hold ball firmly with one hand against wall at chest level. Place the other hand by your side or behind your back.

**CAPS**

**Action:**

Slowly bend the elbow to lower your upper body towards the ball. Hold for a few seconds before straightening the elbow again. Repeat other side.

All the exercises in this booklet are meant to assist you in your individual rehabilitation programme. Please follow the recommendations of your physiotherapist. Once you have mastered all of the exercises in this booklet, you are ready to move onto the more advanced (and challenging) exercises.

# Enjoy your ball time!

