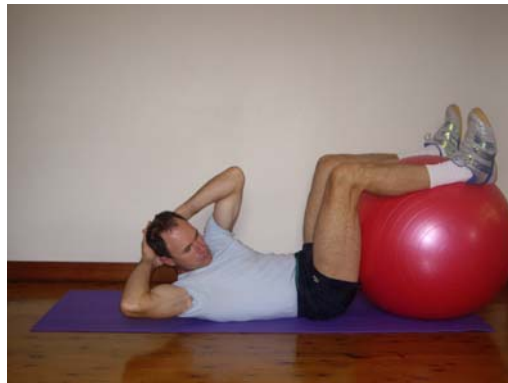




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## **CORE STABILITY**

*Activating, Stabilising And Strengthening The Core Muscles In Handball Training*



*2007*



# CORE STABILITY

## *ACTIVATING, STABILISING AND STRENGTHENING THE CORE MUSCLES IN HANDBALL TRAINING*

### Introduction



During my recent study to become a Personal Trainer, my attention turned to the field of core stability. As I started to study the area closely, I began to think about its application in handball training. In this article, I would like to share the knowledge I collected and adopted, with my coaching colleagues. I hope that this article and the exercises I have included will give a different aspect of conditioning and add more variety to the preparation of handball players.

### About the core

In recent years, core stability has become one of the hottest trends in conditioning, fitness and rehabilitation. Contrary to traditional methods, where the emphasis was put on strengthening the limbs, the focus of training turned to the centre of the body – the core. Why? Simply because **good core stability helps to maximize performance, prevent injury and protect the spine** - in sport as well as in everyday life.

Biomechanical researches proved that, *“power is derived from the trunk region of the body and a properly conditioned core helps to control that power, allowing for smoother, more efficient and better co-ordinated movement in the limbs.”* <sup>3</sup> Also, medical evidence suggests that, *“decreased core stability may predispose injury, while appropriate training may reduce the risk of injury.”* <sup>10</sup> Apart from that *“the muscles of the core help to protect the spine from extreme ranges of movement and from the excessive or abnormal forces acting on the body.”* <sup>3</sup>

Improvement in **performance**, injury **prevention** and **protection** of the vertebral column what sport can afford to ignore these benefits?

Handball, particularly, is very strenuous on the body. The combination of the three basic movement elements - running, jumping, throwing – puts a lot of pressure on the muscular - skeletal structure. However, a stable core can add value to just about every area of our game. For the attacker to put extra power into the jump shot when the player is in an unsupported position, in the air, or for the goalkeeper to be able to save a close range shot with his leg at shoulder-height, a solid base of power, a strong core is essential. Moreover, to take the impact of the landing or to diminish the collision when checking the opponent on the ground or particularly in the air, strong muscle support around the spine is not just effective but prevents injury.

Modern handball requires the handball player to develop an “athlete’s body”. Building should start from the basic...so let’s start with the core!



## FUNCTIONAL ANATOMY OF THE CORE

In anatomical terms, core stability describes the “*muscular control required around the lumbopelvic - hip region to maintain functional stability.*”<sup>9</sup> In practice, the core serves as:

1. A **muscle corset** that works as a unit to stabilize the body and spine with and without the movement of the limbs.
2. The **centre of the kinetic chain**, where the large muscle groups meet and cross into each other, providing stability for the rotating force.
3. The **powerhouse**, where all movements are generated from and transformed to the extremities.

The main muscles involved in core stabilisation can be divided into two categories:

**Global** (dynamic, phasic) **muscles** are the large muscle groups lying close to the surface. They link the pelvis to the rib cage and apart from providing general trunk stabilisation, their *main function is movement*. These are:

- **External Obliques** - lying on the side and front of the abdomen around the waist, helping to twist the torso.
- **Internal Obliques** - the muscles lying beneath the external obliques, running in the opposite direction, also acting in the twisting motion.
- **Rectus Abdominis** - is a long muscle that extends along the abdomen, in the middle section of the torso, helping to curl the trunk.
- **Erector Spinae** - is a group of three muscles running along the spine and the rib-cage, from the lower back to the neck, acting when the back is in extension.

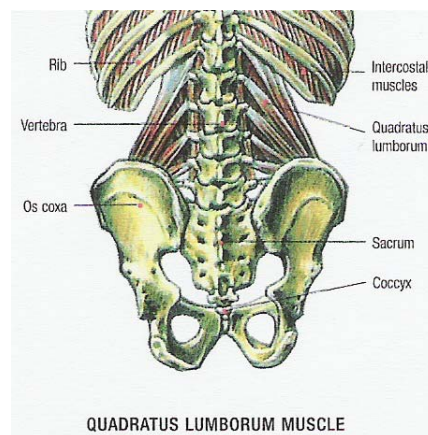
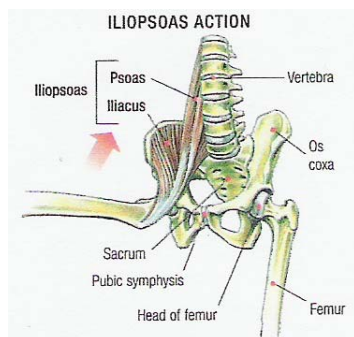
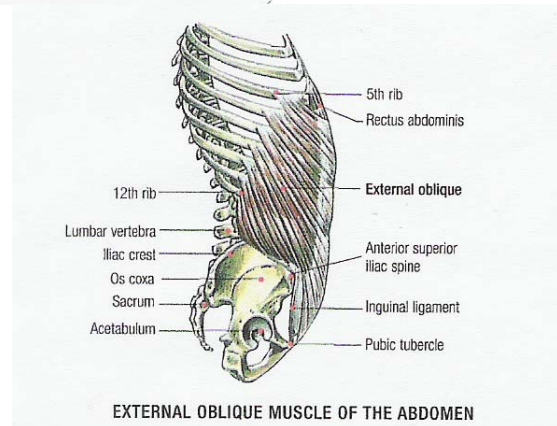
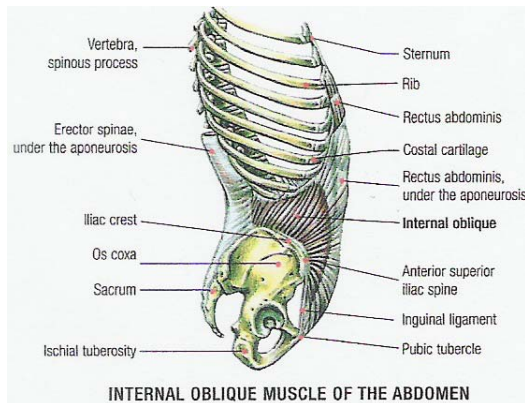
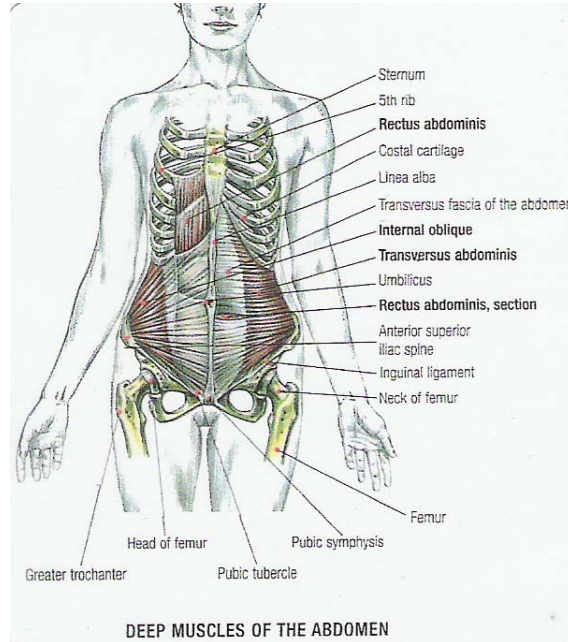
**Local** (postural, tonic) **muscles** are smaller muscle groups lying deep in the abdomen. They attach directly to the lumbar vertebrae and are responsible for *providing segmental stability* by controlling the lumbar segments during movement. These are:

- **Transverse Abdominis** - the deepest lying muscle around the abdomen which acts like a corset, protecting the organs and stabilising the spine.
- **Multifidus** - small muscles which lie along the spine with short fibres, connecting one vertebra to the other.
- **Iliopsoas** - two muscle groups, originating from inside the pelvis and from the vertebrae column join, and together exert on the femur, taking an important part in hip flexion.
- **Quadratus Lumborum** - strings of muscles connecting the pelvic crest to the ribs and to the vertebrae in the lower back, helping the side movements of the trunk.
- **Pelvic floor muscles** - short and strong muscles lying deep at the bottom of the pelvis, responsible for letting go or holding urine.

While previously the major emphasis of exercising the core has been put on strengthening the global muscles, now the theory is that both the global and the local muscle groups must be working together efficiently. Also, working on the activation and endurance of the muscle are just as important as strength, when exercising the core.



## ANATOMICAL IMAGES OF THE CORE MUSCLES



(Images taken from Frederic Decavier, *Strength Training Anatomy*)



## PRINCIPLES OF EXERCISING THE CORE

The principles of exercising the core is a selected summary, based on what the pioneers of conditioning such as yoga, Pilates and weight training experts laid down in the past. In fact, these points can be taken as an organised statement of what is required to perform any exercise programme effectively.

**Concentration:** Exercise, which does not involve the brain, is wasted. The mind must be alert at all times; controlling every movement instead of letting the body function on automatic. Concentration is what connects mind and body and this is very important from the point of view of developing proprioceptive sense thus, injury prevention.

*Proprioception is the awareness of movements derived from the muscular, tendon and articular sources, a feedback on the status of the body, the ability to adjust, compensate unexpected movements.*

In order to reach the optimum level of concentration, you have to be as relaxed as possible when performing your routine.

**Control:** In order to maximise the effect of muscle work, it is important to do the exercise exactly as described – no more and no less. Apart from ensuring to focus on the particular muscle group, control is also vital in order to avoid injury. Even the simplest routine it is important to execute smooth and relaxed sets of movements with full control. Visualising the relevant muscles working during the movement may be of great assistance for developing proper control.

**Centre:** When the body is functioning correctly in terms of its muscular activity the source of all the power and movement is located at the centre of the body. Energy and control for all the exercises begins in the core and flows out to the extremities. Therefore, when exercising, the primary focus should be set on the core, keeping the centre active and strong. The key to core stabilisation is learning to use the deep muscles of the trunk. *Activating the core means to tighten up the pelvic floor muscles, just like stopping the flow when urinating and bracing the abdomen by pulling the navel towards the spine.*

**Posture:** Ideal postural alignment is essential for optimal human movement and performance. The spine should be in the neutral position when exercising the core. *Neutral spine describes the posture that maintains three normal curves in the spine: in the neck, in the upper back and in the lower back.* These three curves help to absorb stress and impact on the body while standing or sitting as well as when moving.

**Breathing:** In everyday life, we have a tendency to use the chest to control our breathing, using the muscles between our ribs to lift the ribcage. This is very inefficient since it does not supply new air to the lower lungs and something less than one third of the lung's surface will have new oxygen to distribute. However, with lateral breathing the lung expands outwards, thus its capacity can be increased significantly.

*Lateral breathing means using the diaphragm and the abdominal muscles.*



It is very important to coordinate breathing with the exercise, in order to establish the rhythm. The general principle is that as you prepare for the movement, you breathe in and as you perform it, you breathe out.

**Timing:** Repetitions of the individual exercises and the sequence of exercises should be performed as a whole unit, with continuous, flowing movements. There should be no variation of speed between exercises and the range of movement in each should be the same. When exercising the *Inhale/Exhale ratio indicates the speed and length of the movements desired* (e.g.: 2:3 means that it should take approximately 2 seconds to raise, then 3 seconds to lower your legs ).

**Precision:** Perfect technical execution is not an additional extra, but central to the effectiveness of the whole process. It requires a lot of time, patience and concentration. However, time and effort spent in attaining precision at the beginning will be repaid in terms of benefit. Without this precision, the value of the routine is compromised, while with practice and patience precision becomes a beneficial habit. It requires developing the ability to visualise exactly how you are moving during the exercise. Therefore, a large mirror while practising can be very useful.

## EXERCISE SELECTION

Since it requires minimum experience in training, very little space and just a few items of equipment, core stabilisation exercises can be easily organised and carried out. Amongst the numberless exercises suitable to improve core stability, I have specifically selected and designed a few basic movements, which can provide an effective start when training handball players.

The concept is to train the whole ranges of core muscles with exercises in different positions - on the back, on the stomach and on the side. Each exercise starts with using only the body and progresses through stages with simple equipment and resistance, in order to challenge the athlete further.

It is advised to master the movement of the given stage and then move on to the next level only when the existing exercise is carried out perfectly with ease and no longer challenges the body and mind.

## STAGES OF EXERCISING THE CORE

### Stage I: Core Control

*Aim: to establish the training routine, learn the movements and activate the right muscles in a supported position.*

The most important objective of this stage is to achieve core activation and control. For building up confidence and for better control, it is advised to start the training with *static* exercises in a *supported* position, on the floor. At first, take the correct starting position





with the appropriate joint alignment and neutral spine, then by pulling the navel into the spine and bracing the abdominals, activate the core. Then go through the whole range of movement with the right breathing technique and hold the position for approximately 30 seconds before returning to the starting position. Repeat the exercise 3-4 times with 30-second intervals.

When you become confident and fluent with the technique, move from static training to *dynamic* repetitions, still maintaining the *supported* position. Go through the range of movement then return to the starting position in a 2 sec. / 2 sec. ratio 10 times, without break. Repeat the exercise 3-4 times with 30-second intervals.

## **Stage II: Core Stabilisation**

***Aim:** to maintain the training routine, to master the movements and to stabilise muscles in an unsupported position.*

This is the stage where proprioceptive training comes to the fore. By forcing the body and mind to adjust and compensate to the unstable position, fine proprioceptive sense will develop.

For building up confidence again and for better control in the changed, *unsupported* position it is advised to start the training with *static* exercises again. Adjust your body position to the equipment, maintain the appropriate joint alignment and activate your core. Go through the whole range of movement with the right breathing technique, and then hold the position for approximately 20 seconds, before returning to the starting position. Repeat the exercise 3-4 times with 20-second intervals.

When you become confident and fluent with the technique, once again move from static training to *dynamic* repetitions, while you are in an *unsupported* position. Go through the range of movement then return to the starting position in a 2 sec. / 2 sec. ratio 10 times without break. Repeat the exercise 3-4 times with 30-second intervals.

## **Stage III: Core Strengthening**

***Aim:** to modify the training routine, to master the new movements and to strengthen muscles in an unsupported position, with resistance.*

This is the stage to strengthen further the controlled and stabilised core. When introducing resistance training while your body is in an *unsupported* position, it is advised to start with *static* exercises again. Adjust your body position to the equipment / resistance, maintain the appropriate joint alignment and activate your core. Go through the whole range of movement with the right breathing technique, hold the position for approximately 10 seconds, before returning to the starting position. Repeat the exercise 3-4 times with 10-second intervals.

When you become confident and fluent with the technique, once again move from static training to *dynamic* repetitions, still maintaining the *unsupported* position. Go through the range of movement then return to the starting position in a 2 sec. / 2 sec. ratio 10 times, without break. Repeat the exercise 3-4 times with 30-second intervals.



## **EXERCISE PROGRESSION**

(An overview)

Each of the core exercises should progress according to the following chart

<b>Stage</b>	<b>STAGE I.</b>		<b>STAGE II.</b>		<b>STAGE III.</b>	
<b>Main Focus</b>	CORE CONTROL		CORE STABILISATION		CORE STRENGTHENING	
<b>Type</b>	Static	Dynamic	Static	Dynamic	Static	Dynamic
<b>Position</b>	Supported	Supported	Unsupported	Unsupported	Unsupported	Unsupported
<b>Load</b>	Bodyweight	Bodyweight	Bodyweight	Bodyweight	Resistance	Resistance
<b>Repetitions</b>	1x	10x	1x	10x	1x	10x
<b>Sets</b>	3 – 4	3 – 4	3 – 4	3 – 4	3 – 4	3 – 4
<b>Inhale/Exhale ratio</b>	n/a	2 : 2	n/a	2 : 2	n/a	2 : 2

### **CORE STABILITY EXERCISES**

- 1. Abdominal Curl**
- 2. Back Extension**
- 3. Side Leg Raise**
- 4. Oblique Crunch**
- 5. Front Bridge**
- 6. Side Bridge**
- 7. Shoulder Bridge**
- 8. Leg Extension**
- 9. Front Leg Raise**
- 10. Torso Pullover with Leg Extension**





## Abdominal Curl

**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Arms relaxed on the thighs, legs slightly apart and bent at knees, feet flat on the floor.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out, curl your upper torso up and forward so that your shoulders just lift off the floor. Simultaneously slide the hands up on your thighs, towards the knees.

**Step 2:** At the top of the movement breathe in, make sure that your shoulders are not tilted, then gently and slowly lower your spine onto the floor, vertebra by vertebra.



**Starting Position:** Lie on the Fitball so that your spine follows the round shape of the ball. Legs shoulder-width apart and bent at knees, feet flat on the floor. Place your hands next to your ears and look directly up.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out curl your upper torso up towards the ceiling and finish in a crouched position, keeping your lower back on the ball.

**Step 2:** At the top of the movement breathe in, make sure that your shoulders and hips are not tilted, then gently and slowly lower your spine into the starting position.



**Starting Position:** Lie on the Fitball so that your spine follows the round shape of the ball. Legs shoulder-width apart and bent at knees, feet flat on the floor. Hands are stretched out in front of the chest holding a resistance band at shoulder-width.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out curl your upper torso up towards the ceiling and finish in a crouched position, keeping your lower back on the ball. Simultaneously, stretch the elastic out as far as you can, maintaining balance and control.

**Step 2:** At the top of the movement breathe in, make sure that your shoulders and hips are not tilted, then while gradually relaxing the tension of the resistance, gently and slowly lower your spine into the starting position.





## Back Extension

**Starting Position:** Lie on your stomach with legs straight out and your chin resting on your hands.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, slowly lift your head up and extend your upper back only until you do not feel pressure in your lower back.

**Step 2:** At the top of the movement breathe in, make sure that your hips are not tilted then by flexing your upper back slowly drop your head onto your hands.



**Starting Position:** Lie on your stomach with legs straight out, arms stretched above the head, palms down and your chin resting on the floor.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, slowly raise your opposing arm and leg off the floor until you do not feel pressure in your lower back. Following the extension of the upper back, lift your head as well, still facing down.

**Step 2:** At the top of the movement breathe in, make sure that your hips are not tilted and your arms and legs are fully extended. Then by flexing your upper back, slowly drop your limbs and head onto the floor, into the starting position. Change leg and arm then repeat the exercise.



**Starting Position:** Lie on your stomach with light dumbbells in hands and a resistance band around the ankles.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, slowly raise your opposing arm and leg off the floor against the resistance until you do not feel pressure in your lower back. Following the extension of the upper back, lift your head as well, but still facing down.

**Step 2:** At the top of the movement breathe in, make sure that your hips are not tilted and your arms and legs are fully extended. Then relax the tension of the elastic and by flexing your upper back, slowly drop your limbs and head onto the floor, into the starting position. Alternate leg and arm then repeat the exercise.





## Side Leg Raise

**Starting position:** Lie on your side with straight legs and position your head on the upper arm stretched out. Place the other arm on the floor in front of your chest for support and set your pelvis so your top hip is stacked above the bottom one.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out lift up the straight top leg as high as you can, without rocking.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways then slowly lower your leg into the starting position. Repeat this movement a few times then do the same exercise on the opposite side.



**Starting position:** Lie on your side with legs raised straight just off the floor and position your head on the upper arm stretched out. Place the other arm on the floor in front of your chest for support and set your pelvis so your top hip is stacked above the bottom one.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out lift the top leg straight up from the bottom one, without rocking.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways and your bottom leg is still above the floor. Then, slowly lower your top leg onto the other one without pushing it down to the floor. Repeat this movement a few times then do the same exercise on the opposite side.



**Starting position:** Lie on your side and position your head on the hand resting on the floor with a bent elbow. Place the other arm on the floor in front of your chest for support and set your pelvis so your top hip is stacked above the bottom one. Legs are raised slightly apart just off the floor, with a light resistance band around the ankles.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out lift the top leg straight up from the bottom one, against the resistance.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways and your bottom leg is still above the floor. Then, gently relax the tension and slowly lower your top leg onto the other one without pushing it down to the floor. Repeat this movement a few times then do the same exercise on the opposite side.





## Oblique Crunch

**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Raise your legs and bend them so that you form right angles at your hips and at your knees, using the wall as support if needed. Place your hands gently on the side of your head.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out curl and twist your upper torso so that your left elbow reaches towards your right hip. Do not rock, keep your hips and legs as still as possible.

**Step 2:** At the top of the movement breathe in and gently and slowly lower your spine onto the floor, vertebra by vertebra. Repeat the movement by twisting your upper torso to the opposite direction.



**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Raise your bent and parted legs then put them on the Fitball. Place your hands gently on the side of your head.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out curl and twist your upper torso so that your left elbow reaches towards your right hip. Do not rock, keep your hips and legs as still as possible.

**Step 2:** At the top of the movement breathe in and gently and slowly lower your spine onto the floor, vertebra by vertebra. Repeat the movement by twisting your upper torso to the opposite direction.



**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Raise your bent and parted legs then put them on the Fitball. The hands are holding light dumbbells with elbows bent at right angle, on the side of the head.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out curl and twist your upper torso so that your left elbow reaches towards your right hip. Simultaneously, imitate a throwing motion with the arm moving towards the hip. Do not rock, keep your other arm, hips and legs as still as possible.

**Step 2:** At the top of the movement breathe in and gently and slowly lower your spine onto the floor, vertebra by vertebra. Repeat the movement with the throwing motion to the opposite direction.







## Front Bridge

**Starting Position:** Lie on the floor, face down, with legs straight out and hips on the ground. Position your elbows underneath the shoulders and place the forearms parallel to each other. Feet close together with only toes on the floor.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, slowly lift your hips off the ground, so that you form a straight line between your ankles and your shoulders. Keep your back flat, hips even and torso parallel to the floor.

**Step 2:** At the top of the movement breathe in then slowly drop your hips onto the floor, into the starting position.



**Starting Position:** Kneel in front of the Fitball with your torso slightly leaning forward and position your forearms parallel to each other on the top of the ball with feet slightly apart with only toes on the floor.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, slowly roll the ball away from your body until there is a straight line formed between your ankles and your shoulders. Keep your back flat, hips and shoulders even while balancing on the ball with your elbows.

**Step 2:** At the top of the movement breathe in, then slowly roll the ball back towards your body and gently drop on your knees, into the starting position.



**Starting Position:** Kneel in front of the Fitball with your torso slightly leaning forward and position your forearms parallel to each other on the top of the ball. Feet should be slightly apart with only toes on the floor and a light resistance band around the ankles.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, slowly roll the ball away from your body until there is a straight line formed between your ankles and your shoulders. Simultaneously, move one leg up or sideways against the resistance keeping your back flat, hips and shoulders even while balancing on the ball with your elbows.

**Step 2:** At the top of the movement breathe in, then while returning the outstretched leg slowly roll the ball back towards your body and gently drop on your knees, into the starting position. Repeat the exercise with the other leg.





## Side Bridge

**Starting position:** Lie on your side with straight legs and position your elbow under the shoulder. Place the other arm on the top hip and make sure that it is directly above and in line with the bottom one.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out lift the hips up so the torso creates a straight line with the legs and head.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways then slowly lower your hips into the starting position. Repeat this movement a few times, repeat the same exercise on the opposite side.



**Starting position:** Lie on your side with straight legs and position your elbow on the top of a smaller sized Fitball, under the shoulder. Place the other arm on the side of the torso and drop your hips as much as you can.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out lift the hips up so the torso creates a straight line with the legs and head. Maintain proper joint alignment while balancing on the ball with one hand.

**Step 2:** At the top of the movement breathe in making sure that your hips and shoulders do not tilt sideways then slowly lower your hips into the starting position. Repeat this movement a few times then do the same exercise on the opposite side.



**Starting position:** Lie on your side with straight legs and position your elbow on the top of a smaller sized Fitball, under the shoulder. The other arm is raised above the head holding a light dumbbell with slightly bent elbow.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out lift the hips up so the torso creates a straight line with the legs and head. Simultaneously, swing the dumbbell on the side from the head to the knee.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways, then slowly lower your hips and raise your arm into the starting position. Repeat this movement a few times, doing the same exercise on the opposite side.







## Shoulder Bridge

**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Arms relaxed next to the body, legs slightly apart and bent at knees, feet flat on the floor.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out, tilt your pelvis slightly up and by using the abdominal muscles lifting your hips towards the ceiling.

**Step 2:** At the top of the movement breathe in, make sure that your hips do not tilt sideways and the muscles of your buttocks are not doing the work. Then, gently and slowly lower your spine onto the floor, vertebra by vertebra.



**Starting Position:** Shoulders and head on top of the Fitball, feet shoulder-width apart and flat on the floor. The upper torso and upper legs are declined, thus the hips depressed, while the hands are crossed on the chest.

**Step 1:** Breathe in and pull your navel into your spine. While breathing out, lift your hips balancing the head, neck and shoulders on the ball.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways. Then gently and slowly, lower your hips into the starting position, keeping your head and shoulders constantly on the ball.



**Starting Position:** Shoulders and head on top of the Fitball, feet shoulder-width apart and flat on the floor. The upper torso and upper legs are declined, thus the hips depressed. The arms are straight up and close together, holding light dumbbells above the chest.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out lift up your hip, balancing with the head, neck and shoulders on the ball. Simultaneously, lower your extended arms out to the side in line with the body.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways. Then, gently and slowly raise the arms and lower the hips into the starting position, keeping your head and shoulders constantly on the ball.





## Leg Extension

**Starting Position:** Lie on the ground in the position so that your head and shoulders are resting on the floor, arms relaxed next to the body, legs slightly apart and bent at knees, feet flat on the floor. Squeezing up from the gluteals, hips are elevated so that they line up with the knee and shoulder joints.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out extend one leg with pointed toe and lift it up until your hips start to drop.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways then slowly lower your leg to be level with your other knee. Repeat this movement a few times before you return to the starting position then do the same exercise with the other leg.



**Starting Position:** Shoulders and head on top of the Fitball, feet flat on the floor and shoulder-width apart. Squeezing up from the gluteals, hips are elevated so that they line up with the knee and shoulder joints. Hands are crossed on the chest.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out extend one leg with pointed toe and lift it up until your hips start to drop. Hold this leg still and extended while balancing on the ball with one foot on the floor.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways then slowly lower your leg to be level with your other knee. Repeat this movement a few times before you return into the starting position then do the same exercise with the other leg.



**Starting Position:** Shoulders and head on top of the Fitball, feet flat on the floor and shoulder-width apart. The hips are elevated so that they line up with the knee and shoulder joints. Hands are straight out and hold a light resistance band above the chest.

**Step 1:** Breathe in and pull your navel into your spine. Then, while breathing out extend one leg with pointed toe and lift it up until your hips start to drop. Simultaneously, stretch your arms out sideways against the resistance, while balancing on the ball with one foot on the floor.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways then slowly lower your leg to be level with your other knee. At the same time, slowly lift your arms back into the starting position and relax the tension of the elastic. Repeat this movement a few times doing the same exercise with the other leg.





## Front Leg Raise

**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Legs straight out, arms relaxed next to the body with palms down for support.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out, lift your legs straight up so your torso and legs are approximately at right angles.

**Step 2:** At the top of the movement breathe in, make sure that your hips and shoulders do not tilt sideways then slowly lower your legs onto the floor.



**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Raise the legs straight up so that your torso and legs are approximately at right angles. Arms relaxed next to the body with palms down for support.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out push the hips and legs vertically upwards.

**Step 2:** At the top of the movement breathe in, make sure that your hips and legs are in a balanced, straight position, shoulders still on the floor then slowly lower your legs and hips into the starting position.



**Starting Position:** Lie on your back with natural spine, head resting on the floor and looking up to the ceiling. Raise legs straight up so that your torso and legs are approximately at right angles. Place feet slightly apart with a light resistance band around the ankles. Arms should be placed a little bit away from the body with palms down for support.

**Step 1:** Breathe in and pull your navel into your spine. Then while breathing out push the hips and legs vertically upwards and simultaneously move the legs apart, against the resistance.

**Step 2:** At the top of the movement breathe in, make sure that your hips and legs are in a balanced, straight position, shoulders still on the floor then as you close your legs, slowly lower your hips into the starting position.





## Torso Pullover with Leg Extension

**Starting Position:** Sit on the floor with torso straight leaning back diagonally. Arms are stretched out in front of the chest with hands clutched; legs are slightly apart and bent at knees, feet flat on the floor.

**Step 1:** By pulling your navel into your spine, brace your abdominals to hold this position. Then, while breathing in, slowly lower your upper body onto the floor and extend one leg out, keeping it just above the floor.

**Step 2:** At the top of the movement make sure that your heel does not touch the floor and you are lying with natural spine. Then, gently and slowly lift your upper body off the floor and pull your leg back, into the starting position.



**Starting Position:** Sit on the floor with torso straight leaning back diagonally. Arms are stretched out in front of the chest holding a resistance band legs are close together and bent at knees, feet flat on the floor.

**Step 1:** By pulling your navel into your spine, brace your abdominals to hold this position. Then, while breathing in, slowly lower your upper body onto the floor and move the arms apart, against the resistance. Simultaneously, extend both legs out, keeping them just above the floor.

**Step 2:** At the top of the movement make sure that your heels do not touch the floor and your arms holding against the resistance are straight. Then, gently and slowly lift your upper body off the floor, relax the tension of the elastic and pull your legs back, into the starting position.



**Starting Position:** Sit on the floor with torso straight leaning back diagonally. Arms are stretched out in front of the chest holding a resistance band legs are close together and bent at knees, feet flat on the floor.

**Step 1:** By pulling your navel into your spine, brace your abdominals to hold this position. Then, while breathing in, slowly twist and lower your upper body onto the floor and move the arms apart, against the resistance. Simultaneously, extend both legs slightly out and twist them to the opposite direction, keeping them just above the floor.

**Step 2:** At the top of the movement rest your leg and opposite arm on the floor, with your arms still holding against the resistance. Then, gently and slowly lift your upper body off the floor, relax the tension of the elastic and pull your legs back, into the starting position.





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