

We've looked at how to train the upper and lower body. Now this booklet focuses on the "bit in the middle", the abdominals and lower back – otherwise known as the core.

Many people think that training their "abs" is all about building a six-pack – but there's a lot more to it than aesthetics. A strong and well-balanced mid-section is instrumental in practically all sports and physical performance, as well as in maintaining good posture and preventing injury.

Sit-ups are the standard move used to work the six-pack muscle, and the two-minute sit-up test is one of the principal muscular endurance tests used by the Army – but they shouldn't be the only ab exercise in your repertoire. The more trunk muscles you work, and the more angles you work them from, the better the results will be.

Note This booklet gives you plenty of exercises for strengthening your abdominals and lower back. If, however, at any point you experience discomfort or pain in your back, stop immediately – and reduce the number of reps and sets in your next session.

Core stability

You may have heard the term "core stability". It refers to a specific type of training focusing on the deep-set trunk muscles, which aims to enhance these muscles' ability to stabilise the spine and pelvis.

The primary role of these "stabiliser" muscles is to hold the body – or part of it – stable, sometimes while another part of the body is moving. For example, the core stabilisers are used to hold the spine in its usual S-shape as you pick a weight up off the floor. While the core muscles do not need brute strength, they do need to be able to "switch on" when they are needed, and to be able to work continuously at a low level of contraction.

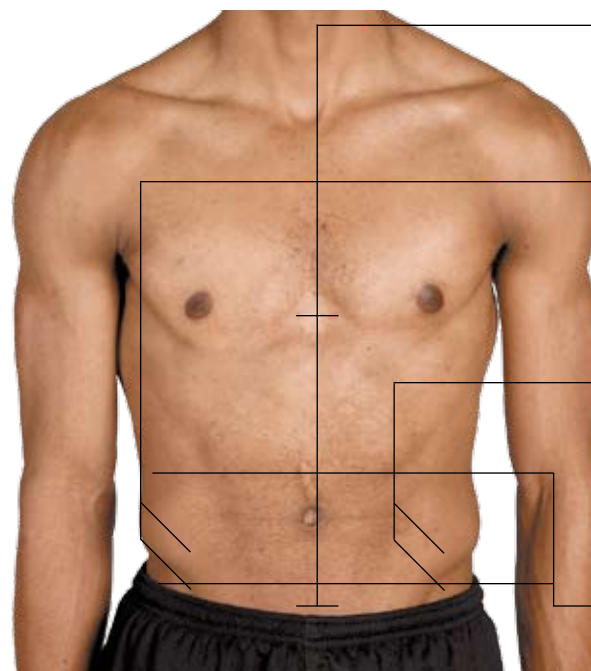
This is why you'll find that many of the exercises in this booklet don't involve lifting weights – in fact, some don't even involve moving at all. But rest assured, you are still working on improving function and endurance in these key muscles – which will enhance your overall fitness.

HOW MANY REPS AND SETS?

When putting together your abs and back training programme, aim for 10 repetitions per set of each exercise that you select. Rest for 60-120 seconds between each set to allow the muscles to recover before they work again, and complete 2-4 sets of each exercise. Aim to work the abs and back 2-3 times per week, on non-consecutive days.

Please note, however, that these guidelines do not apply to the core stability exercises, which individually indicate how many reps to do, and how long to hold the position for.

The muscles that make up the trunk of the body



RECTUS ABDOMINIS

Runs along the front of the stomach from the pubic bone to the sternum. This muscle flexes the trunk forwards, and assists with lateral flexion (to the side).

EXTERNAL OBLIQUES

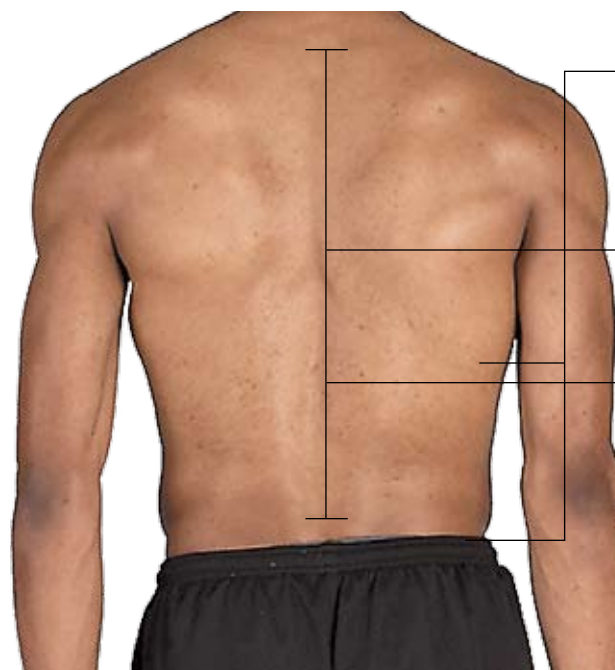
Sit along each side of the waist. They flex the trunk and rotate the same side, and rotate it to the opposite side (ie. the external obliques on the right flex the trunk to the right and rotate it to the left). They also assist with forward flexion.

INTERNAL OBLIQUES

Sit below the external obliques, and their fibres run in the opposite direction. They flex and rotate the trunk to their own side (ie. the internal obliques on the right flex and, in conjunction with the external obliques on the left, rotate the trunk to the right).

TRANSVERSUS ABDOMINIS

A deep-set "corset" of muscle that wraps around the trunk from the belly button to the spine. Its main action is to compress and flatten the abdomen.



QUADRATUS LUMBORUM

Sits towards the back of each side of the waist and is an important muscle in stabilising the pelvis and spine. It also flexes the trunk to the same side and "hitches" the hip by elevating the pelvis.

ERECTOR SPINAE

Situated along the entire length of the spine, they serve to extend it and also assist in lateral flexion of the spine.

MULTIFIDUS

These lie beneath the erector spinae, along each side of the spinal column, and are important spinal stabilisers. They also help to extend the spine and rotate it to the opposite side from their position.

Specific core warm-up exercises

Follow stages 1 and 2 of the general warm-up outlined in Booklet 1, then try these specific trunk mobilisations (do 6-12 of each)

TRUNK ROTATION

Stand with your feet hip-distance apart and arms at your sides. Keeping the hips facing the front, gently twist your torso to the side, leading with the arms and allowing the head to follow the spine. Then twist to the opposite side.



HUMP AND SLUMP

Start on all fours, with knees under hips and hands under shoulders. Round your back up into a C-shape, letting the head drop down and neck relax. Then take the spine back down into an arch, lifting your head and hips. Alternate between rounding and arching.

LYING TWIST

Lie on your back with knees bent and feet flat on the floor, arms outstretched to your sides. Drop your knees down first to the left side and then the right, keeping your shoulders and head on the floor.



The definitive Army sit-up

This is the classic exercise for strengthening your abs, and it also works the external obliques and hip flexors. In the Army's 2-minute sit-up test the feet are 'anchored' – here's a table to compare your performance

age	Under 30	30 - 34	35 - 39	40 - 44	45 - 49
gender	M/F	M/F	M/F	M/F	M/F
excellent	77+	72+	71+	67+	62+
very good	59-76	55-71	52-70	47-66	43-61
good	50-58	46-54	43-51	37-46	34-42
average	40-49	38-45	33-42	27-36	25-33
poor	0-39	0-37	0-32	0-26	0-24

ANCHORED SIT-UP

When sit-ups are performed with the feet anchored by a partner or low object, the hip flexors assist, making the exercise less taxing on your abdominals.

Start by lying on the floor with your knees bent and feet anchored. Have your hands across your chest. Maintaining a flat back, curl your head, shoulders and torso off the floor until your torso is in an upright position, then roll back down through the spine to the start position and repeat.

WARNING Do not perform sit-ups with anchored feet if you suffer from lower back pain. Cease performing sit-ups if you can no longer keep your back flattened and find it is arching off the floor.

Variations on the sit-up



HALF-SIT ▲

If you find the full sit-up too difficult, start off with this easier version, which works the *rectus abdominis* and external obliques.

Lie on the floor with your knees slightly bent. Place your hands on your thighs and curl up, sliding the hands up along your legs until the fingers extend beyond your knees. Lower and repeat.

TWIST SIT-UP ▼

The element of rotation in this sit-up focuses on the external obliques.

Start by lying on the floor with hands beside your head and knees slightly bent, feet on the floor. Curl your torso off the floor, rotating it to the right as you simultaneously bring your right knee in towards your chest. Lower, taking the foot back to the floor, then curl upwards again, twisting to the left and bringing your left knee into your chest. Continue to alternate from side to side for the set.



CRUNCH ►

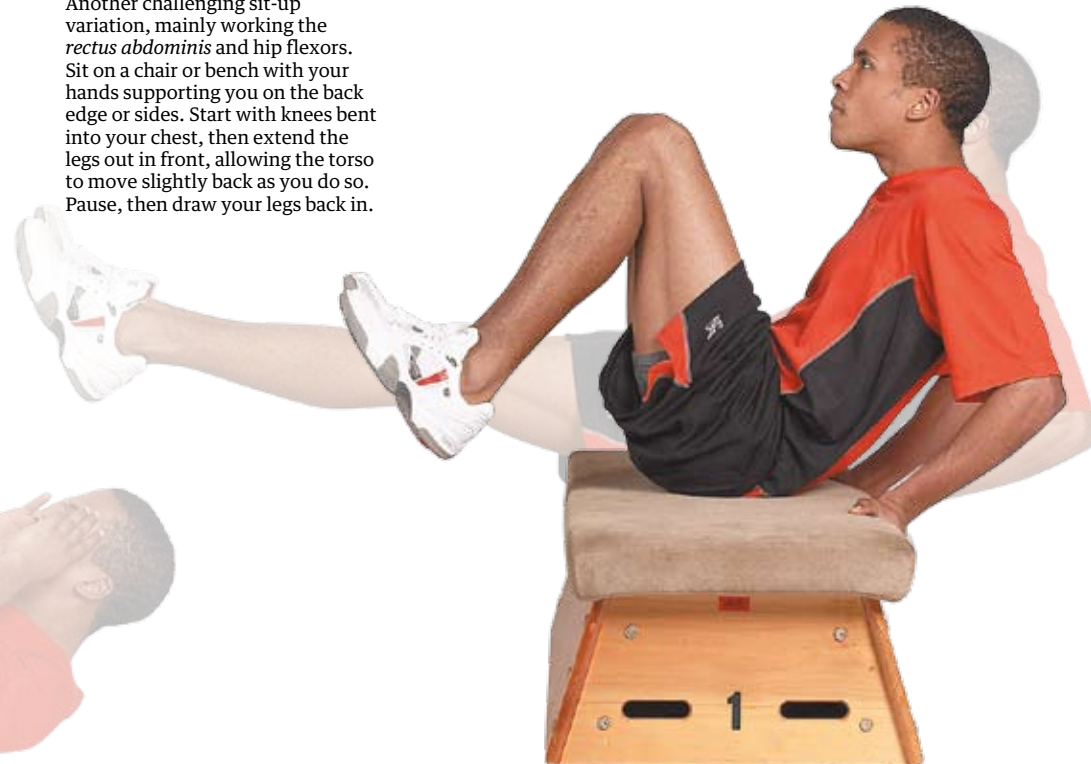
This advanced variation of a sit-up works most of the core muscles, as well as the hip flexors.

Start by lying on the floor with your hands beside your head. Sit up, bringing your knees to your chest, and then rock back, fully extending your legs before bringing the knees in to meet the chest again. Do not allow your feet to touch the floor in between reps.



SEATED LEG EXTENSION ►

Another challenging sit-up variation, mainly working the *rectus abdominis* and hip flexors. Sit on a chair or bench with your hands supporting you on the back edge or sides. Start with knees bent into your chest, then extend the legs out in front, allowing the torso to move slightly back as you do so. Pause, then draw your legs back in.



The classic plank

The plank is a key core stability exercise, honing in on the core muscles while holding a static position. The aim is to maintain good form for progressively longer periods – so you need only repeat each of the plank variations 3 times, rather than doing multiple sets of 10 repetitions



FULL PLANK ▲

Lie face down on a mat with your elbows below your shoulders and forearms pointing forwards. Draw your belly button towards your spine and raise your body off the floor, so that your weight is resting on your forearms and toes and your body forms a perfect straight line – don't let your back sag in the middle. Hold for as long as you can, breathing freely, and repeat 3 times.



MODIFIED PLANK ◀

If you aren't able to hold the full plank position for even a few seconds, try this modified version, and then work your way up to the full plank.

Begin as for the full plank but this time, when you raise your body on to your elbows, keep your knees on the floor so that your body forms a straight line from knees to crown. Hold for as long as you can, breathing freely, and repeat 3 times.

PTI TIP

Don't make the mistake of thinking that the core stabilisers only work during specific core stability exercises. These muscles are active in almost every movement we make so, to a certain extent, they are being trained all the time – but the focus on proper technique and good posture during dedicated core stability work helps to target them more closely.



Variations on the plank



SIDE PLANK ▲

This position works the *transversus abdominis*, *quadratus lumborum* and oblique muscles.

Lie on your side, propped up on the lower elbow, with your body in a straight line. Now raise your body up so that your weight is resting on your elbow and the lower foot. You can keep the upper arm close to the body, or raise it up straight in the air (a balance challenge). Hold for as long as you can, breathing freely, and repeat 3 times.

SUPINE PLANK ▼

This plank position works the stabilisers in the back, as well as the glutes and the muscles between the shoulder blades.

Start face up on your mat, propped up on your elbows with legs extended. Now lift your body off the floor to form a straight line. Keep your neck in line with the spine by looking at the ceiling. Hold for as long as you can, breathing freely, and repeat 3 times.

If this feels easy, try extending alternate legs up into the air, keeping the body stable without rocking from side to side.



PTI TIP

Drawing your belly button towards your spine prior to adopting the plank position helps engage the core stabilisers. Try to get into the habit of “engaging the core” before you perform any exercise (not just sucking in your stomach and holding your breath) to protect the spine and work these important muscles.



LATERAL FLEXION WITH JERRY CANS

Lateral flexion (bending to the side) works both sets of obliques and the muscles that flex the spine to the side.

Hold a dumbbell or weight in each hand by your side, and stand with your feet hip-distance apart. Keeping the hips centred, bend directly to the side as far as you can comfortably. Come back to the centre and bend to the opposite side. Continue to alternate for the set.



Focus on the lower back

These exercises strengthen your lower back muscles – an area that's prone to pain and injury in both the very active and the sedentary



DORSAL RAISES ▲

Lie face down on the floor with palms facing down and fingertips together. Now lift your torso off the floor, being careful not to jerk or force the movement, and keeping your head in line with the spine. Pause and lower to repeat.

SUPERMANS ▼

A good progression from, or alternative to, dorsal raises, Supermans also work the back extensor muscles.

Lie face down on the floor with your arms extended flat on the floor over your head. Lift your right arm and left leg off the floor simultaneously, keeping the hips and pelvis centred and your head in line with the spine. Lower, then lift your left arm and right leg off the floor. Continue to alternate for the set.



PTI TIP

The lower back muscles are often neglected during training, because people tend to focus on the more visible area at the front of the torso. However, it's important to work the front and back of the body equally, in order to achieve good posture and avoid muscular imbalance.



BRIDGE ▲

This exercise strengthens the lower back extensors, gluteals and inner thigh muscles.

Lie on the floor with your knees bent and feet flat. Raise your body up enough to form a straight line from your knees to your shoulders. Hold the position for 10 seconds, then release. Do this 5 times.

BRIDGE WITH LEG EXTENSION ▼

Once you can do the bridge exercise comfortably, do the same as above but, once your pelvis is raised, alternately extend one leg and then the other, without allowing the pelvis to rock from side to side.



Swiss ball skills

Swiss balls are a fantastic exercise tool. They create an unstable surface on which to exercise, so the stabilising muscles are called upon more to help you maintain your position

BALL BALANCE ON KNEES ►

This is an advanced exercise to challenge your balance.

Stand in front of a Swiss ball. If you are new to this exercise, either get a friend to stand the opposite side of the ball to help you balance, or have a wall the other side that you can hold on to if necessary.

In a swift movement, put your hands on the ball and rock your body forward to place both knees on it simultaneously. Roll the pelvis forward so you're kneeling up, then take your hands away. You need to adjust your body position constantly to stay balanced – focus on using the core muscles to help you.

Hold this pose for as long as you can. When it's easy, try extra challenges like getting someone to throw you a ball or balancing with your eyes shut.



SIT-UP ON BALL ◀

Lie on a Swiss ball with your feet on the floor. Adjust yourself so that your bottom is just off the front of the ball, with your buttocks unclenched and your hands either beside your head or crossed over your chest. Contracting the abdominals, raise and flex the upper torso as far as you can without moving the ball underneath you. Pause, then lower and repeat.



BACK EXTENSION ON BALL ►

This is an excellent exercise for the back extensors, because it allows your back to come from a flexed position to an extended one, working through a greater range than is possible on the floor.

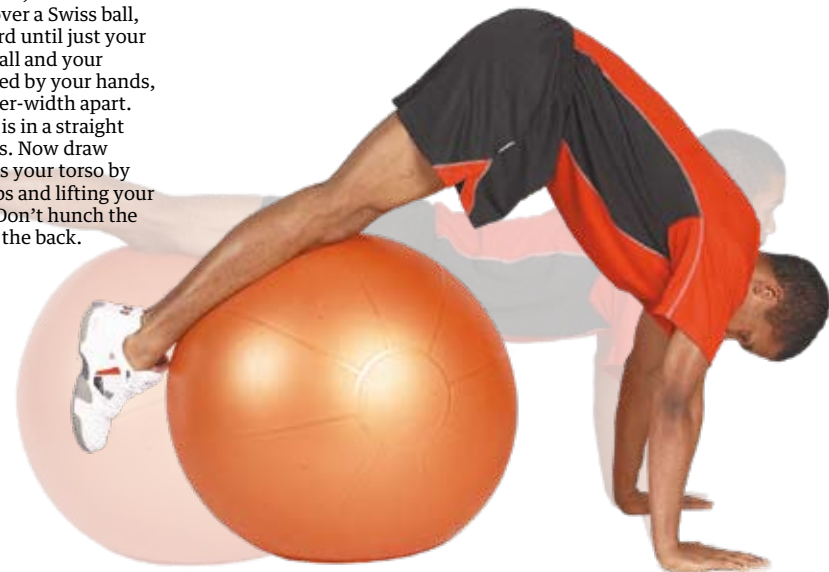
Lie face down on a Swiss ball with your feet anchored against the join of the wall and the floor, or get a friend to hold your feet. Adjust your position until your torso is lower than your hips, and put your hands beside your head. Now raise the torso up until it is just beyond a straight line with the legs, using the back and butt muscles. Hold, lower and repeat.



PIKE ON SWISS BALL ►

This advanced exercise works the core stabilisers, *rectus abdominis*, hip flexors and many upper body muscles, too.

Lie face down over a Swiss ball, then shunt forward until just your shins are on the ball and your weight is supported by your hands, your arms shoulder-width apart. Ensure your back is in a straight line with your legs. Now draw the ball in towards your torso by contracting the abs and lifting your hips into the air. Don't hunch the shoulders or arch the back.



PTI TIP

It's very important to choose the correct size of Swiss ball for your height – use the guidelines below to help you select the correct one. When you sit on the ball, your hips should be slightly higher than your knees.

Height 5ft - 5ft 5in = 55 cm ball
5ft 6 - 6ft 1 = 65 cm
6ft 2 - 6ft 8 = 75 cm



POST-WORKOUT STRETCHES

Once your workout is over, remember to stretch out the muscles you've worked using these stretches from booklet 1:

● Side stretch

Stand with feet hip-distance apart. Keeping the hips central, take your torso directly to the side, sliding your hand down the leg.

To increase the stretch, take the opposite arm up beside your ear.

● Lower back stretch

Lie on the floor and bring your knees into your chest, grasping your shins. Lift your head to your knees to increase the stretch.

● Modified cobra

Lie face down on the floor and raise yourself up on your forearms, elbows below shoulders, forearms pointing forwards. Press your hipbones into the floor and allow your back to extend, looking forwards not up or down.