

NEW

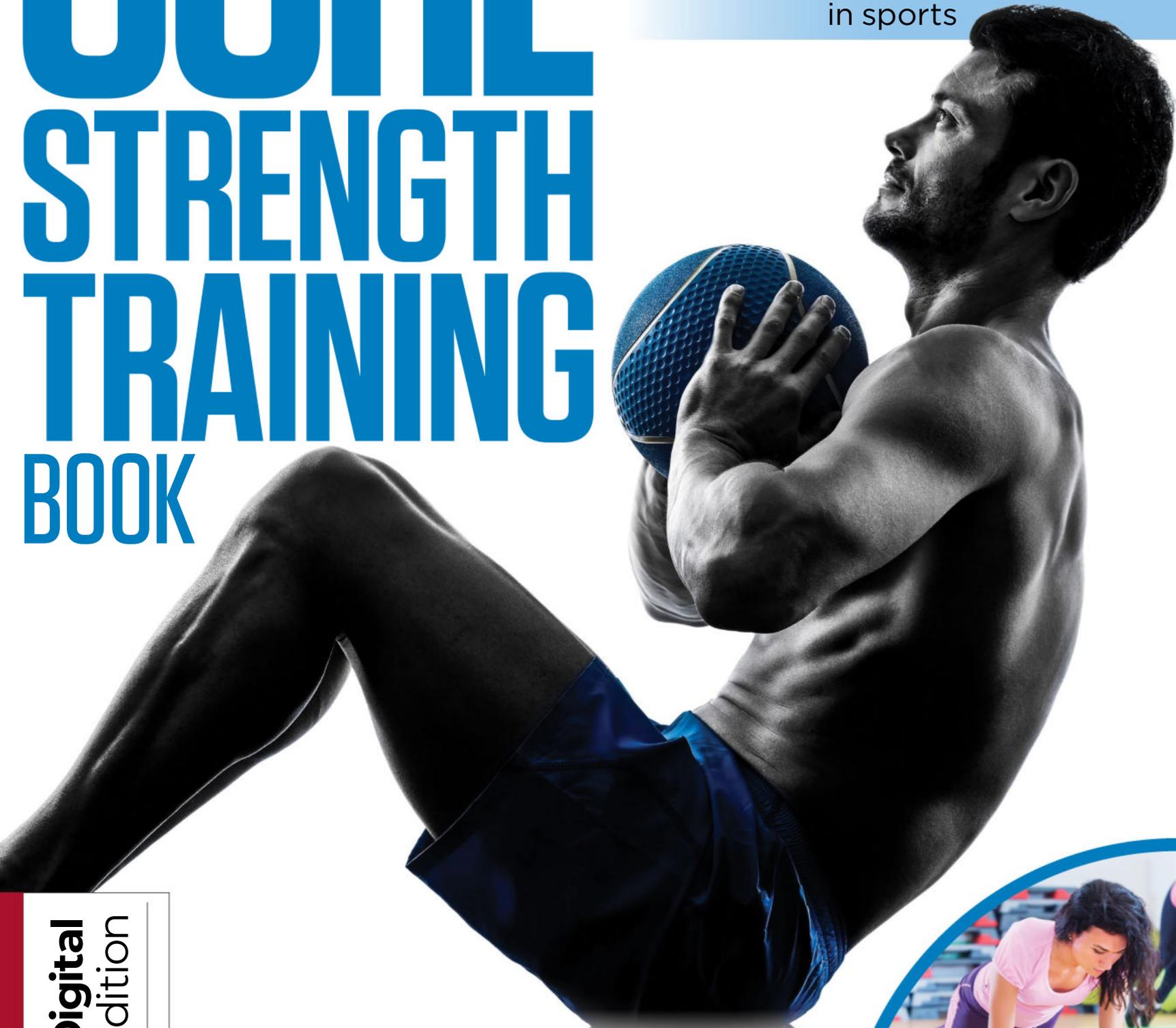
MORE THAN **150** BODY-SCULPTING EXERCISES

CORE STRENGTH TRAINING BOOK

Packed with instructions
to suit all levels of skill

Detailed anatomical
diagrams & descriptions

Boost your performance
in sports



**Digital
Edition**

FUTURE
SIXTEENTH
EDITION

The complete step-by-step guide to a stronger
body and better posture for men and women



CORE STRENGTH TRAINING BOOK

Improve your strength, posture and fitness with this essential core-training handbook. Modern day lifestyles can be highly sedentary, meaning certain core muscles may become inactive. If you don't exercise your core muscles regularly, you will lose the ability to engage them instinctively while performing everyday movements such as bending and lifting.

The Core Strength Training Book is packed with over 150 exercises with additional variations and progressions to make each as versatile and challenging as possible. Clear annotations will help you achieve the best possible form, and precise anatomical illustrations include details about the location and function of each of your core muscles – and how they work together in body movements. Loaded with step-by-step, user-friendly instructions, this is the definitive guide to building a stronger core.

┌ FUTURE ┐
└ ─── ─── ┘

CORE STRENGTH TRAINING BOOK

Future PLC Quay House, The Ambury, Bath, BA1 1UA

Editorial

Editor **Hannah Westlake**
Designer **All Innes**

Compiled by **Alice Pattillo & Steve Dacombe**

Head of Art & Design **Greg Whitaker**

Editorial Director **Jon White**

Managing Director **Grainne McKenna**

Cover images

Thinkstock

Photography

All copyrights and trademarks are recognised and respected

Advertising

Media packs are available on request
Commercial Director **Clare Dove**

International

Head of Print Licensing **Rachel Shaw**
licensing@futurenet.com
www.futurecontenthub.com

Circulation

Head of Newstrade **Tim Mathers**

Production

Head of Production **Mark Constance**
Production Project Manager **Matthew Eglinton**
Advertising Production Manager **Joanne Crosby**
Digital Editions Controller **Jason Hudson**
Production Managers **Keely Miller, Nola Cokely,**
Vivienne Calvert, Fran Twentyman

Printed in the UK

Distributed by Marketforce – www.marketforce.co.uk
For enquiries, please email: mfcommunications@futurenet.com

GPSR EU RP (for authorities only)

eucomply OÜ Pärnu mnt 139b-14 11317, Tallinn, Estonia
hello@eucompliancepartner.com, +3375690241

The content in this book appeared previously in the DK book *Core Strength Training*

This bookazine is published under licence from Dorling Kindersley Limited.
All rights in the licensed material belong to Dorling Kindersley Limited and it may not
be reproduced, whether in whole or in part, without the prior written consent of
Dorling Kindersley Limited.
Copyright © 2025 Dorling Kindersley Limited.

This 2025 edition published by Future Publishing Ltd

The Core Strength Training Book Sixteenth Edition (LBZ6695)
© 2025 Future Publishing Limited

We are committed to only using magazine paper which is derived from responsibly managed,
certified forestry and chlorine-free manufacture. The paper in this bookazine was sourced
and produced from sustainable managed forests, conforming to strict environmental and
socioeconomic standards.

All contents © 2025 Future Publishing Limited or published under licence. All rights reserved.
No part of this magazine may be used, stored, transmitted or reproduced in any way without
the prior written permission of the publisher. Future Publishing Limited (company number
2008885) is registered in England and Wales. Registered office: Quay House, The Ambury,
Bath BA1 1UA. All information contained in this publication is for information only and is, as far
as we are aware, correct at the time of going to press. Future cannot accept any responsibility
for errors or inaccuracies in such information. You are advised to contact manufacturers and
retailers directly with regard to the price of products/services referred to in this publication. Apps
and websites mentioned in this publication are not under our control. We are not responsible for
their contents or any other changes or updates to them. This magazine is fully independent and
not affiliated in any way with the companies mentioned herein.



Future plc is a public
company quoted on the
London Stock Exchange
(symbol: FUTR)
www.futureplc.com

Chief Executive Officer **Kevin Li Ying**
Non-Executive Chairman **Richard Huntingford**
Chief Financial Officer **Sharjeel Suleman**

Tel +44 (0)1225 442 244



CONTENTS



How To Use This Book	8
----------------------	---

INTRODUCTION

What Is The Core?	12
The Spine	14
The Anterior Core Muscles	16
The Posterior Core Muscles	18
What Is Core Training?	20
Core Training And Everyday Activities	22
Core Training And Posture	24
Core Training And Sport	28
Core Training And Pregnancy	30
Assessing Your Core	32
Developing Your Core	33
Equipment For Core Training	34

MOBILIZATION

Thoracic Roller	38
Lat Roller	38
Glute/Piriformis Roller	38
Lumbar Roller	39
Tfl/Itb Roller	39
Neck Rotation	40
Neck Extension And Flexion	40
Neck Side Flexion	41
Shoulder Rotation	41

Torso Rotation	42
Torso Side Flexion	42
Lying Trunk Rotation	43
Lying Waist Twist	44
Cat And Camel	44
Threading The Needle	45
Hip Flexor Stretch	45
Hip Circle	46
Child's Pose	46
Cobra Extension	47
Scorpion Stretch	47
Back Roll	48
Skier	48
Standing Roll-Down	49

ACTIVATION

Active Pelvic Floor	50
Pillow Squeeze	52
Heel Slide	53
Knee Fold	54
Toe Tap	56
Prone Abdominal Hollowing	58
Dart	59
Oyster	60
Prone Leg Lift	61
Star	62
Back Extension	63
Superman	64

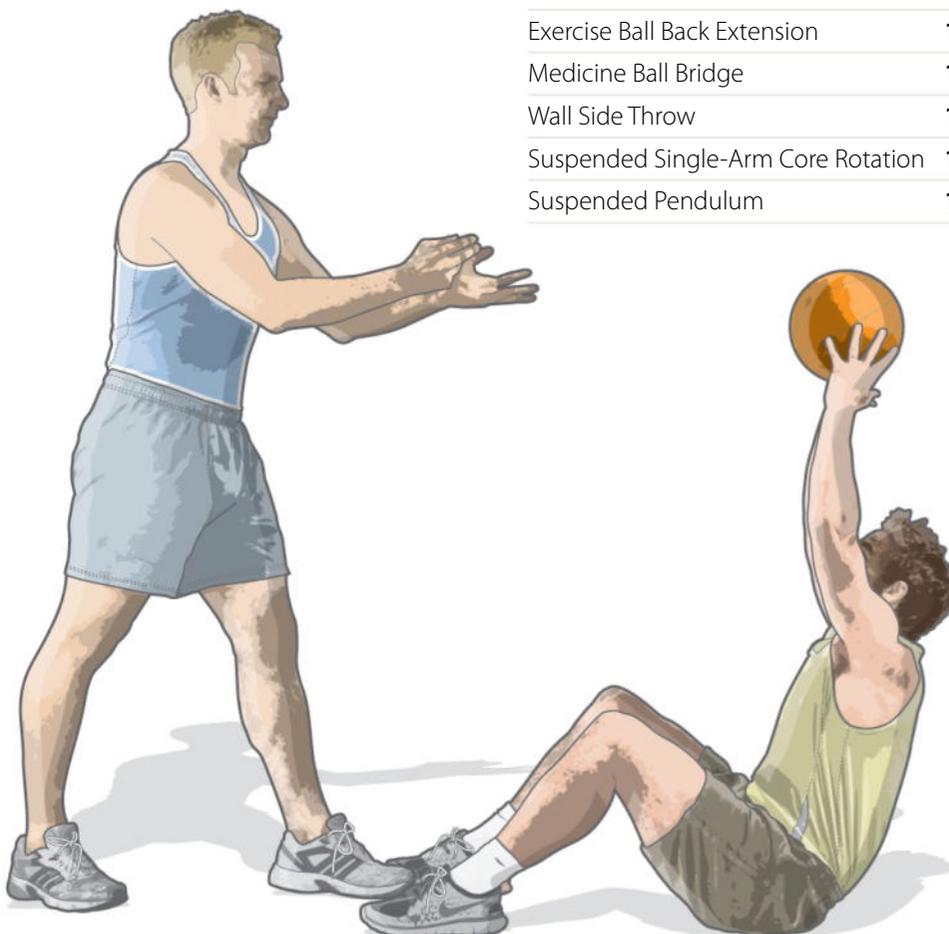
FOUNDATION

Abdominal Crunch	66
Leg Circle	68
Reverse Curl	69
Dorsal Raise	70
Sit-Up	72
Oblique Crunch	73
Side-Lying Lateral Crunch	74
Side Bend	75
Heel Reach	76
Roman Chair Side Bend	77
Side-Lying Leg Lift	78

Oblique Reach	80
Hip Roll	82
Roll-Back	84
Roll-Up	85
V Leg-Raise	86
V Sit-Up	87
Swim	88
Super-Slow Bicycle	89
Sprinter Sit-Up	90
Horizontal Balance	91
Bridge	92
Double-Leg Lower And Lift	94
Plank	96
Side Plank	98
Single-Leg Extension And Stretch	100
Double-Leg Extension And Stretch	101

INTERMEDIATE

Partner Ball Swap	102
-------------------	-----



Hanging Knee-Up	104
Windmill	104
Good Morning	106
Roman Chair Back Extension	106
O-Bar Rotation	108
Standing Plate Twist	110
Kettlebell Round-Body Swing	111
Mountain Climber	112
Russian Twist	113
Medicine Ball Slam	114
Medicine Ball Reverse Throw	115
Exercise Ball Back Extension	116
Medicine Ball Bridge	117
Wall Side Throw	118
Suspended Single-Arm Core Rotation	120
Suspended Pendulum	121
Long-Arm Bridge Pull-Over	122
Kettlebell Swing	123
Exercise Ball Knee Tuck	124
Core Board Rotation	125
Exercise Ball Roll-Out	126
Suspended Crunch	128
Suspended Oblique Crunch	129
Medicine Ball Chop	130
Lawnmower	131

ADVANCED

Ghd Sit-Up	132
Pike	133
Stick Crunch	134
Exercise Ball Jackknife	136
Ghd Back Extension	137
Pulley Chop	138
Pulley Lift	140
Single-Leg, Single-Arm Cable Press	142
Hanging Toe Tuck	144
Sandbag Shouldering	145
Plank Plate Push	146
Stepped Plank Walk	148
Turkish Get-Up With Kettlebell	150
Exercise Ball Hip Rotation Kick	152
Slide Board Wiper	154
Raised Pike Dumbbell Hand-Walk	156
Wall Walk	158

Acknowledgments	160
-----------------	-----

HOW TO USE THIS BOOK

Used together, the two sections of this book offer an integrated, user-friendly guide to core training. The introduction provides an excellent

platform for the exercise section, which features a comprehensive range of stretches and core-training movements.

INTRODUCTION

The book's introduction offers a clear and simple guide to the basics of core training. Beginning with a definition of what the core is, and how it works, the chapter explains how core strength helps with everyday activities, posture, sport, and pregnancy. With useful guidance on assessing and developing your core strength, it also provides essential advice on how to engage the key core muscles, and a range of suggested exercises to help with specific activities.

ANATOMICAL CORE DIAGRAMS

Detailed anatomical illustrations of your core muscles include details about the location and function of each and how they work together in body movements.

14 INTRODUCTION

THE ANTERIOR CORE MUSCLES

The muscles of the front and sides of your abdomen are known as the anterior core muscles and drive core movement while supporting your spine by maintaining posture inside the abdomen and the chest.

The muscles of the hips and abdomen are involved in supporting and stabilizing the spine and are important in sitting, standing, and walking. Together with the muscles of the back, they form the core of your body. Your core strength is a vital role in building core strength.

THE MUSCLES

Rectus abdominis The rectus abdominis is the "six-pack" muscle. It is responsible for flexing the trunk and is the primary muscle in flexing the trunk. It is located in the front of the abdomen.

Transverse abdominis A deep muscle that runs across the abdomen. It is responsible for maintaining the stability and is involved in all core movements.

External oblique The external oblique are surface muscles located on either side of your torso. They are important in rotational core movements and side flexion. They also provide lateral stability and are involved in all core movements.

Internal oblique Located beneath the external oblique, these muscles help you to perform movements that involve the rotation and side flexion of your torso. As with the external oblique they are also important in stabilizing the spine against forces from either side.

Pelvic floor Running from the pubic bone to the tailbone, the group of vital but important muscles provides a support structure for the organs inside your abdomen. As a result, they play a crucial role in effective core strength and stability.

Hip flexors Located within the hip joint, the hip flexors (groin muscle group) control flexion movements in the hip. That is, when you bend from the hip or raise your leg, it is important to keep these muscles flexible, as they can often be overworked, leading to lower-back pain.

HOW THE MUSCLES WORK

The muscles of your core are key to the efficient functioning of your body. They allow posture, balance, coordination, and stability and stabilize your trunk during movements. This table provides details of your anterior core muscles of your abdomen, hips, and pelvic floor that work together, and how they contribute to basic everyday movements.

MUSCLES	LOCATION	MOVEMENT	FUNCTION
Rectus abdominis	Superficial	Flexion of spine	Flexing the trunk (e.g., sit-ups)
Transverse abdominis	Deep	Stabilization of trunk	Maintaining good posture; Maintaining normal abdominal pressure; Supporting the internal organs; Maintaining respiration - coughing, sneezing and laughing
External oblique	Superficial	Rotation	Twisting and rotation
Internal oblique	Deep	Rotation	Maintaining good posture; Maintaining normal abdominal pressure; Supporting the internal organs
Pelvic floor muscle	Deep	Stabilization of trunk	Maintaining normal abdominal pressure; Supporting the internal organs; Maintaining respiration - coughing, sneezing and laughing
Hip flexors	Deep	Flexion of the hip	Twisting and rotation; Getting up from the floor

CORE-TRAINING EXERCISES

This section features over 150 exercises with additional variations and progressions to make each as versatile and as challenging as possible. The chapter's main four main sections (pp.50-159) progress in order of increasing difficulty, and start with a selection of mobility stretches (pp.38-49).

Each of the core-strength exercises featured in the main sections are accompanied by an information panel, which provides details of the Target Muscles, Target Movement, and Difficulty Rating of the exercise, along with an annotated anatomical artwork that shows you where each of the relevant muscles are located.

TARGET MUSCLES

Buttons on the panel show at a glance which core muscles the exercise works. Details of these 12 muscles and their function are provided in Introduction (pp.16-19).

DIFFICULTY RATING

The bar at the foot of the panel shows provides a score of 1-10 to give you an idea of how challenging each exercise is. Full details of this grading system are provided in the Introduction.

72 CORE STRENGTH EXERCISES

FOUNDATION

The exercises in this section are the building blocks of good core strength and stability. You should aim to master them before moving on to those in the Intermediate and Advanced sections. To ensure you get the best results, focus on performing each exercise correctly, maintaining good form throughout and controlling the movements with your core.

ABDOMINAL CRUNCH

Target Muscles: Rectus abdominis, Transverse abdominis, External oblique, Internal oblique, Pelvic floor muscle.

Difficulty Rating: 1-10

Target Movement: Flexion

Progression 1: Lying on your back with your knees bent, your feet flat on the floor, and your arms extended upwards. Lift your head and shoulders off the floor. Hold for 10 seconds. Repeat 10 times.

Progression 2: Lying on your back with your knees bent, your feet flat on the floor, and your arms extended upwards. Lift your head and shoulders off the floor. Hold for 10 seconds. Repeat 10 times.

Progression 3: Lying on your back with your knees bent, your feet flat on the floor, and your arms extended upwards. Lift your head and shoulders off the floor. Hold for 10 seconds. Repeat 10 times.

Progression 4: Lying on your back with your knees bent, your feet flat on the floor, and your arms extended upwards. Lift your head and shoulders off the floor. Hold for 10 seconds. Repeat 10 times.

Progression 5: Lying on your back with your knees bent, your feet flat on the floor, and your arms extended upwards. Lift your head and shoulders off the floor. Hold for 10 seconds. Repeat 10 times.

Progression 6: Lying on your back with your knees bent, your feet flat on the floor, and your arms extended upwards. Lift your head and shoulders off the floor. Hold for 10 seconds. Repeat 10 times.

EXERCISE PROGRESSIONS

Increasingly difficult versions of key exercises are provided to challenge your core as your training progresses and your core strength, stability, and mobility improves.

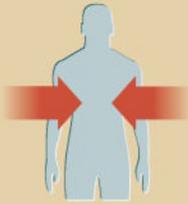
STEP-BY-STEP SEQUENCES

User-friendly text and illustrations guide you through each of the exercises in a clear, straightforward way, with useful annotation to help you achieve the best possible form.

TARGET MOVEMENTS

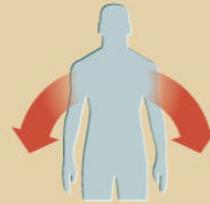
The icon on the panel shows which of the six core movements are involved in the exercise - Isometric, Flexion, Extension, Side Flexion, Rotation, or Complex (box opposite).

TARGET MOVEMENT ICONS



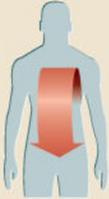
ISOMETRIC

Isometric strength is the ability to hold your body in a fixed position or resist an external force, such as when you are carrying a heavy weight.



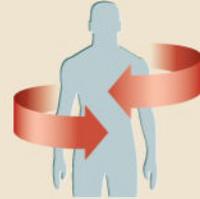
SIDE FLEXION

This movement involves bending from side to side from your waist or reaching overhead to either your left or your right.



FLEXION

Flexion involves bending forwards – for example, when you are picking something off the ground, or moving to sit or stand from a lying position.



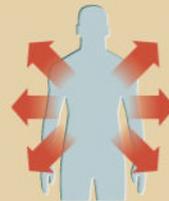
ROTATION

Rotation involves turning movements from your waist, such as twisting to look over your shoulder.



EXTENSION

Extension involves bending your back to stand from a bent-over position, or arching your back to stretch up to reach something.



COMPLEX

Complex movements involve a combination of one or more of the other five movements listed in this table.



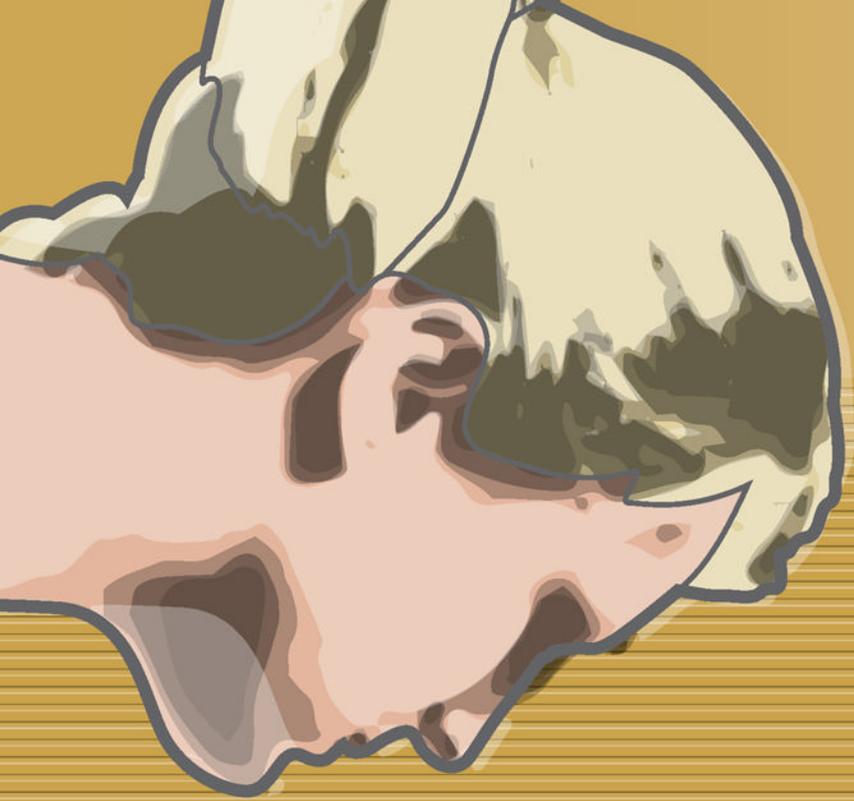
SAFETY INFORMATION

All physical activity involves a potential risk of injury. Participants must therefore take all reasonable care during exercise. Any training programme should be carried out under the guidance of the appropriate professionals, and participants should also seek the advice of their doctor, or equivalent healthcare professional, before beginning any form of exercise.

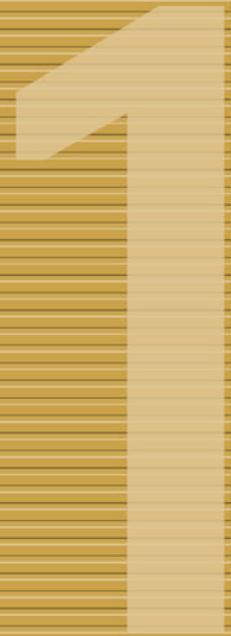
The publishers of this book and its contributors are confident that the exercises described herein, when performed correctly, with gradual increases in resistance and proper supervision, are safe. However, readers of this book must ensure that the equipment and facilities they use for their training are fit for purpose, and they should adhere to safety guidelines at times, including both those outlined in this book and any required by the manufactures and/or owners of the facilities. They should also ensure that supervisors have adequate insurance and relevant, up-to-date accreditations and qualifications, including emergency first aid.

The publishers, consultant editors, and contributing authors of this book take no responsibility for injury to persons or property consequent on embarking upon the advice and guidelines included herein.





INTRODUCTION



WHAT IS THE CORE?

The core is the foundation for your movements, enabling mobility in the upper and lower body, directing power efficiently to your limbs, and stabilizing your spine, ribcage, and pelvis against the stress of those movements, or of external forces exerted upon them.

The core plays a key role in everyday biological functions. It creates internal pressure within the abdominal cavity, holding the internal organs in place, and helping with the expulsion of air from the lungs, and of bodily waste. The core muscles, in particular the transverse abdominis and pelvic floor (»p.17), are also active during childbirth.

AN INACTIVE CORE

Modern lifestyles are highly sedentary, meaning certain core muscles may become inactive. If you do not exercise your core muscles regularly, you will lose the ability to engage them instinctively while performing everyday movements such as bending and lifting. When this happens, other muscles may take over from them, which can lead to muscular imbalances – where one muscle is stronger than its opposing muscle – and, possibly, injury in the longer term. A common example of this is poor posture (»pp. 24 – 25), which can cause imbalance in your hip and buttock muscles, resulting in lower-back pain. Core training helps to improve strength, stability, and mobility, reducing the likelihood of such imbalances developing.

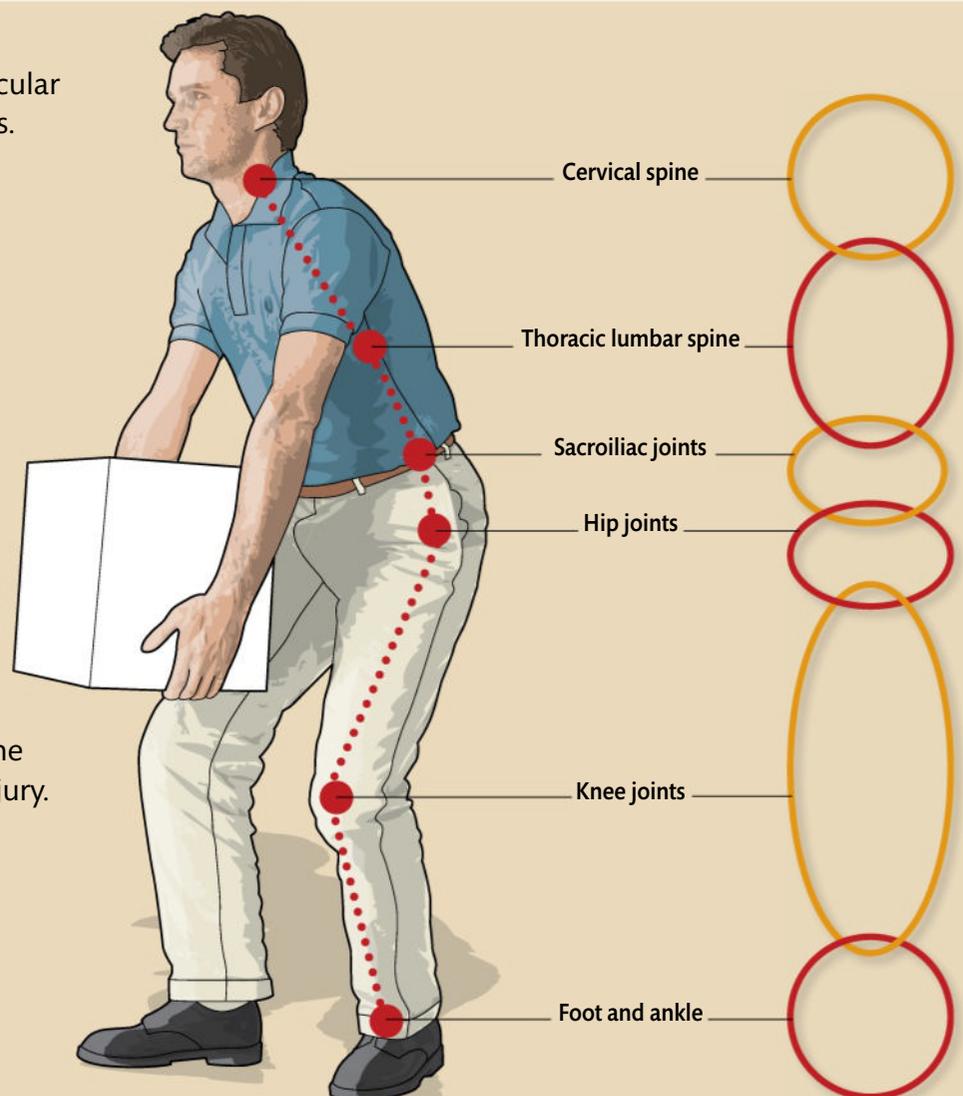
THE KINETIC CHAIN

The kinetic chain is a movement system consisting of myofascial (muscular), articular (joints), and neural (motor) components. Each of these individual elements are dependent on the others for optimum performance, both when the body is moving and when it is stationary but active – for example when you are holding a weight in your arms.

The idea behind the kinetic chain, as demonstrated in the illustrations shown here, is that every part of your body, including muscles, joints, and nerves, must work together to produce movements. It is particularly important to keep this in mind when bending and lifting, exercising, and playing sport to ensure you are using the right muscles in the right way, thus reducing the possibility of muscular imbalance and injury.

Everyday activities

Something as simple as lifting a box sets off a chain of movement running through the body. Movement produced at any joint in the kinetic chain directly affects the joints above and below it.



THE IMPORTANCE OF THE CORE

Your core acts as an axis along which the muscles of the hips, abdomen, and back interact to support and stabilize the spine, providing a solid base for movement in the legs and arms. It is a key part of your body's support structure – if you were to strip the spine of all muscle, leaving just bones and ligaments, it would collapse under 9kg (20lb) of load. Strong core muscles generate the strength, stability, and mobility needed to carry out everyday activities such as carrying shopping, climbing the stairs, and getting into a car. They also play a crucial role in more demanding dynamic sports, helping to transmit increased power and stability, and performance, while also reducing the risk of sustaining injury. As a result, core development is a key objective of elite athletes and their coaches.

FUNCTIONS OF THE CORE

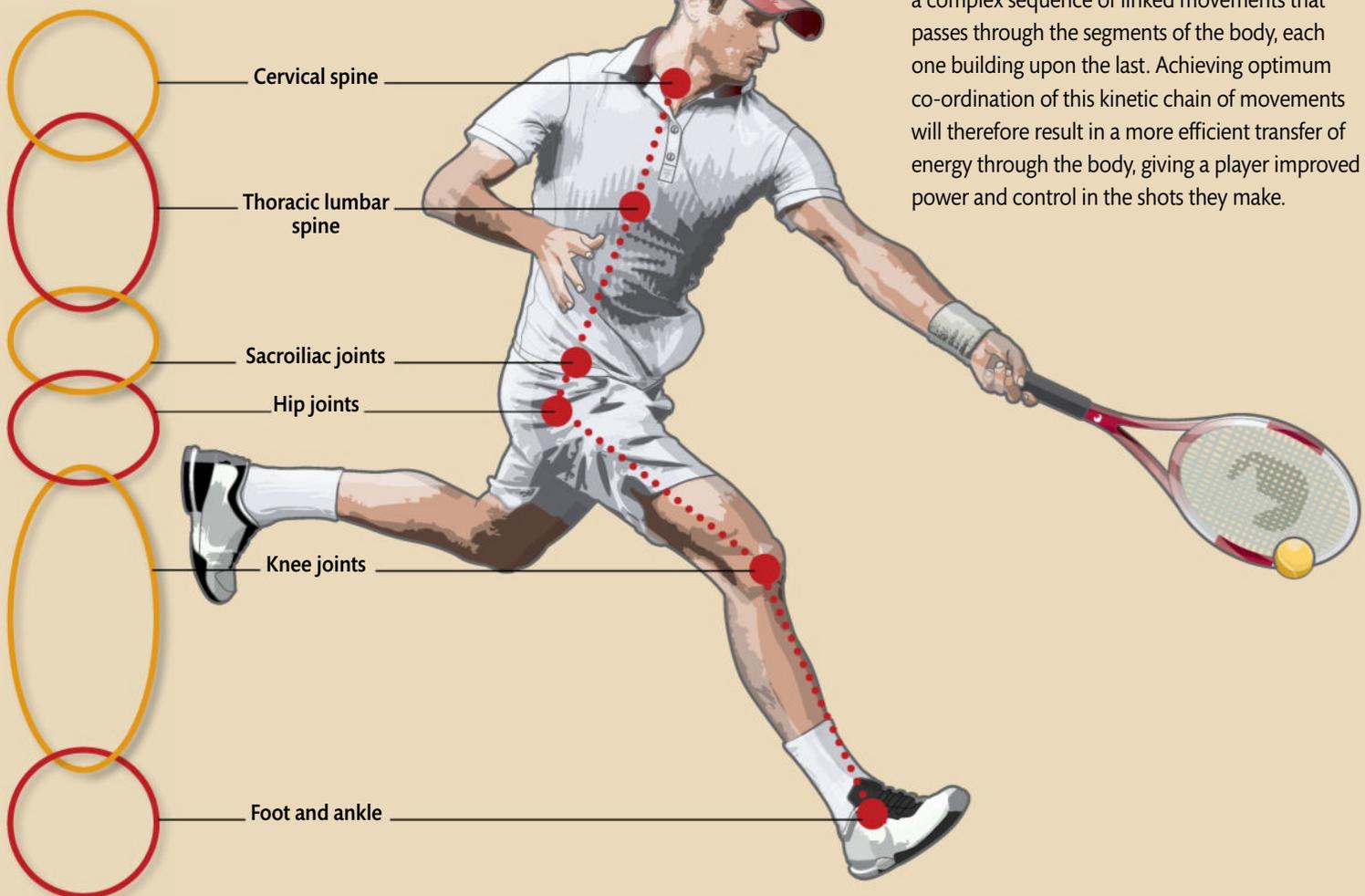
Although traditionally associated with the abdomen, the core plays an important role in functions throughout the body:

- Stabilizing the thoracic cage and pelvis during movement
- Providing internal pressure for biological functions
- Maintaining the strength, stability, and mobility of the spine
- Providing an axis of power for the kinetic chain (**below**)

BENEFITS OF CORE TRAINING

A balanced and focused core-training programme can have a positive impact on your physical wellbeing as a whole. The benefits of core training include:

- Improved posture
- Increased protection and “bracing” of your back
- Greater balance and co-ordination
- Greater power and speed



Playing sport

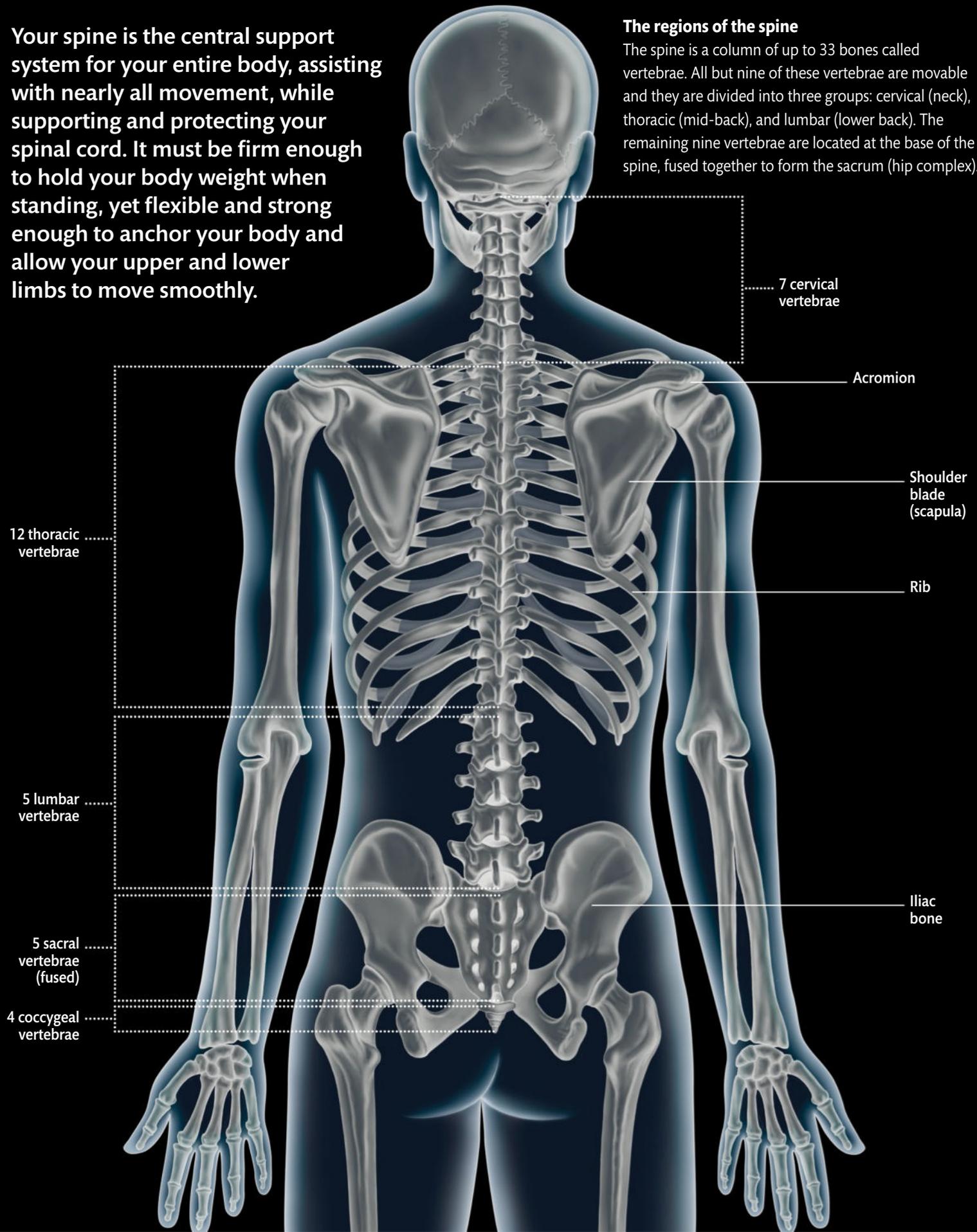
Striking the ball in tennis, for example, involves a complex sequence of linked movements that passes through the segments of the body, each one building upon the last. Achieving optimum co-ordination of this kinetic chain of movements will therefore result in a more efficient transfer of energy through the body, giving a player improved power and control in the shots they make.

THE SPINE

Your spine is the central support system for your entire body, assisting with nearly all movement, while supporting and protecting your spinal cord. It must be firm enough to hold your body weight when standing, yet flexible and strong enough to anchor your body and allow your upper and lower limbs to move smoothly.

The regions of the spine

The spine is a column of up to 33 bones called vertebrae. All but nine of these vertebrae are movable and they are divided into three groups: cervical (neck), thoracic (mid-back), and lumbar (lower back). The remaining nine vertebrae are located at the base of the spine, fused together to form the sacrum (hip complex).



HOW THE SPINE WORKS

To understand how the spine supports the body and controls movement, it is helpful to divide it into four main sections – the neck (cervical), mid-back (thoracic), lower back (lumbar), and hip complex

(sacrum). Individually, these perform different primary functions, such as controlling movement of the head; together they bring about movements that involve the whole body.

Movement of the spine

There is very little movement between adjacent vertebrae of the spine. However, the combined movement of vertebrae along the length of the spine enables considerable total body movement.

7 cervical
vertebrae

12 thoracic
vertebrae

5 lumbar
vertebrae

Sacrum



■ **The cervical spine** (or neck) is made up of the first seven vertebrae in your spine. It is the most flexible part of your vertebral column and controls movement of your head and neck. It is strong enough to support your head, which can weigh as much as 6–9kg (13–20lb), while being sufficiently flexible to allow you to turn your head while looking and listening. At the same time, your neck must be stable enough to avoid upsetting the organs in your inner ear that are responsible for controlling balance.

■ **The thoracic spine** (or mid-back) is the longest portion of your spinal column and is made up of the middle 12 vertebrae. The primary function of your thoracic spine is to protect the organs in the chest cavity by holding your ribcage in place. Although the ribcage's bulk provides protection, it also greatly restricts the amount of movement possible in your thorax. As a result, movement of your mid-back is mostly restricted to rotation – when you twist your upper body, it rotates around the thoracic spine – and a small amount of flexion and extension.

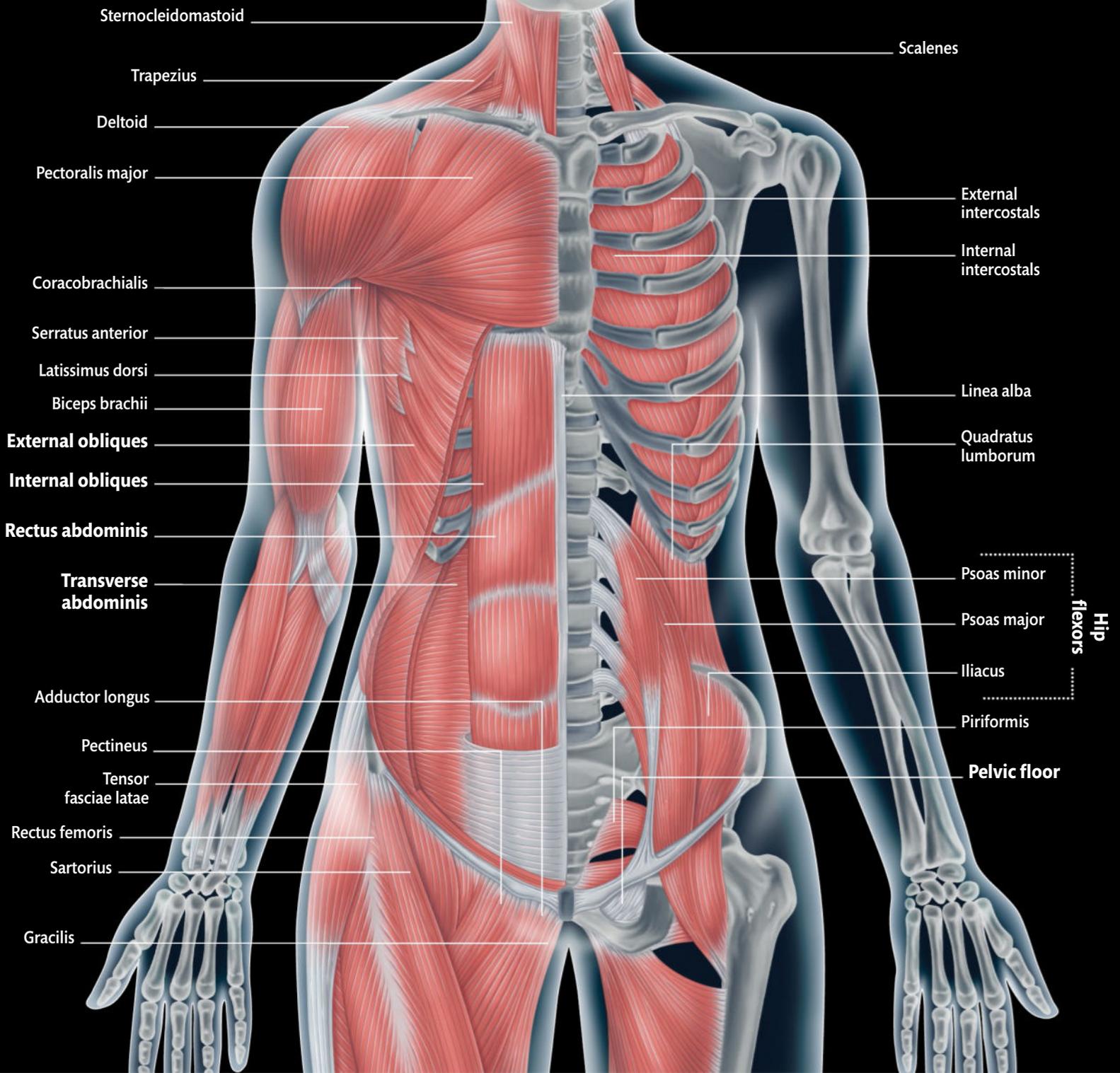
■ **The lumbar spine** (or lower back) is a more mobile part of your vertebral column. It consists of five vertebrae and sits immediately below your thoracic spine. You use this section of the spine for many basic activities, such as bending forwards, walking, and running. Connected to your pelvis, which is relatively immobile, this area is key to generating the power of core movements and bears most of the weight when your body is upright.

■ **The sacrum** (or hip complex) is made up of five fused – and therefore relatively immobile – sacral vertebrae that are important for stabilizing the other bones and muscles of your pelvis and hips. The sacrum is noticeably different in men and women, with the bone being longer and narrower in men than it is in women. The sacral vertebrae are connected to the vertebrae at the end of your spine – known as the coccygeal vertebrae – by a joint called the sacrococcygeal symphysis. Together, the coccygeal vertebrae form the coccyx, or tailbone.

THE ANTERIOR CORE MUSCLES

The muscles to the front and sides of your abdomen are known as the anterior core muscles and drive core movement while supporting your spine by maintaining pressure inside the abdomen and the chest.

The muscles of the hips and abdomen
 The anterior core muscles work with those of the back and buttocks in supporting and stabilizing the spine, and are important in driving rotational movement and hip flexion. Together with the lumbar region of the back, these muscles play a vital role in building core strength.



THE MUSCLES

Rectus abdominis The rectus abdominis is the “six-pack” muscle, its appearance caused by the three fibrous bands running across it and the vertical band (the linea alba) running down the middle. It is mainly involved in flexion (bending).

Transverse abdominis A deep muscle that runs around the abdomen, the transverse abdominis acts like a girdle, holding the muscles of your core together. It is key to isometric core strength (resisting external forces) and stability, and is involved in all core movements.

External obliques The external obliques are surface muscles located on either side of your rectus abdominis. They are important to rotational core movements and side flexion (bending from side to side). Together with the internal obliques (**right**), the muscles also help to stabilize the spine against lateral (sideways) forces.

Internal obliques Located beneath the external obliques, these muscles help you to perform movements that involve the rotation and side flexion of your core. As with the external obliques they are also important in stabilizing the spine against forces from either side.

Pelvic floor Running from the pubic bone to the tailbone, this group of small but important muscles provides a support structure for the organs inside your abdomen. As a result, they play a crucial role in effective core strength and stability.

Hip flexors Located within the hip joint, the hip flexors (psoas muscle group) control flexion movements in the hips – that is, when you bend from the hip or raise your legs. It is important to keep these muscles mobile, as they can often be overworked, leading to lower-back pain.

HOW THE MUSCLES WORK

The muscles of your core are key to the efficient functioning of your body – they affect posture, balance, co-ordination, and mobility, and stabilize your trunk during movements. This table provides details

of your anterior core muscles (those of your abdomen, hips, and groin) – their location, their main functions, and how they contribute to basic everyday movements.

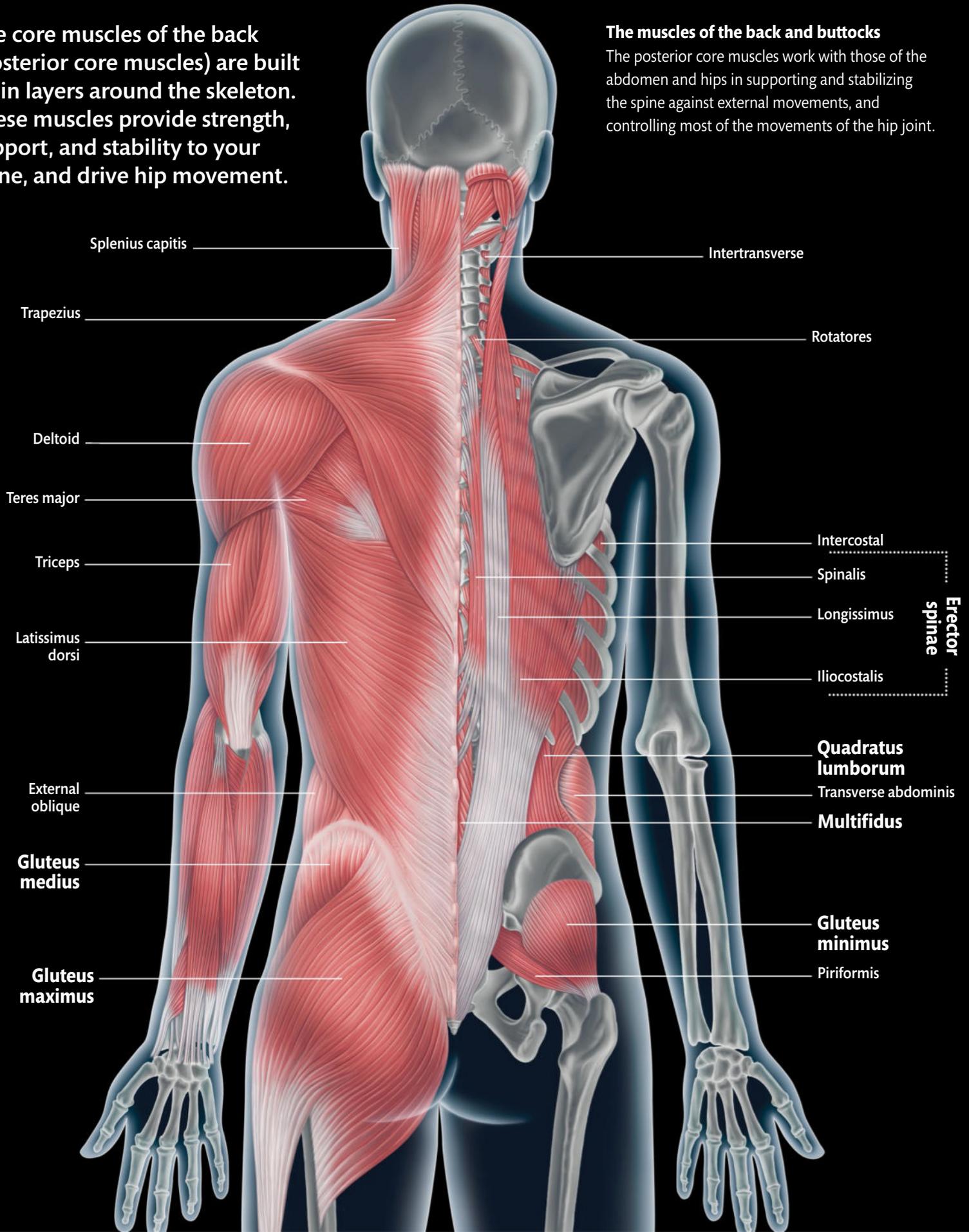
MUSCLES	LOCATION	MOVEMENT	FUNCTION
Rectus abdominis	■ Superficial	■ Flexion of spine	■ Bending ■ Moving from lying to sitting
Transverse abdominis	■ Deep	■ Isometric – trunk stability	■ Maintaining good posture ■ Maintaining internal abdominal pressure ■ Supporting the internal organs ■ Helping forced expiration – coughing, sneezing, and laughing
External obliques	■ Superficial	■ Rotation ■ Some sideways flexion ■ Isometric – trunk stability	■ Twisting and rotation ■ Maintaining good posture
Internal obliques	■ Deep	■ Isometric – trunk stability ■ Sideways flexion	■ Maintaining good posture ■ Maintaining internal abdominal pressure ■ Supporting the internal organs
Pelvic floor muscles	■ Deep	■ Isometric – trunk stability	■ Maintaining internal abdominal pressure ■ Supporting the internal organs ■ Assisting when lifting ■ Helping to control urination ■ Assisting with childbirth
Hip flexors	■ Deep	■ Flexion of the hip ■ Lifting of the legs	■ Walking and running ■ Going up and down stairs

THE POSTERIOR CORE MUSCLES

The core muscles of the back (posterior core muscles) are built up in layers around the skeleton. These muscles provide strength, support, and stability to your spine, and drive hip movement.

The muscles of the back and buttocks

The posterior core muscles work with those of the abdomen and hips in supporting and stabilizing the spine against external movements, and controlling most of the movements of the hip joint.



THE MUSCLES

Erector spinae The erector spinae (spinal erectors) are a group of long tendinous muscles that run the length of the spine. They provide support to your spine when you flex it (bend forwards) and extend it (bend backwards), and are also involved in stabilizing it against sideways movement.

Multifidus The multifidus is a series of muscles attached to the spine, which work to keep it straight and stabilized while helping to distribute body weight evenly along it. They also play a protective role, stiffening the spine to resist forces that might cause it to bend.

Quadratus lumborum The inner portion of the quadratus lumborum is adjacent to the spine and counters any sideways force, such as that caused by holding a suitcase or shopping bag in one hand.

Gluteus minimus The smallest of the muscles in the buttocks, the gluteus minimus lies beneath the gluteus medius, with which it works to abduct the thigh (lift it outwards). It is also involved in hip rotation and helps to hold the pelvis in a stable position.

Gluteus medius The second-largest muscle in the buttocks, the gluteus medius lies between the gluteus minimus and maximus. It assists with hip abduction and rotation, whilst also providing stability to the pelvic region.

Gluteus maximus The largest and most superficial of the three gluteal muscles, the gluteus maximus gives the buttocks their shape and appearance. It is involved in hip abduction, rotation, and extension, while also stabilizing the whole of the pelvic area.

HOW THE MUSCLES WORK

The muscles of your back and buttocks play a key role in core strength. Your back muscles affect posture, balance, co-ordination, and mobility, and stabilize your trunk during movements. This table provides details

of the posterior core muscles found in your lower back and buttocks – their location, their main functions, and how they contribute to everyday movements.

MUSCLES	LOCATION	MOVEMENT	FUNCTION
Erector spinae	■ Deep	<ul style="list-style-type: none"> ■ Extension ■ Provides support during flexion ■ Support and straightening of the spine 	<ul style="list-style-type: none"> ■ Bending forwards and backwards ■ Maintaining good posture
Multifidus	■ Deep	<ul style="list-style-type: none"> ■ Extension ■ Sideways flexion ■ Isometric – trunk stability 	<ul style="list-style-type: none"> ■ Maintaining good posture ■ Stiffening the spine to resist bending forces
Quadratus lumborum	■ Deep	<ul style="list-style-type: none"> ■ Sideways flexion 	<ul style="list-style-type: none"> ■ Stabilizing the spine against lateral movement ■ Lifting heavy objects ■ Carrying a suitcase
Gluteus minimus	■ Deep	<ul style="list-style-type: none"> ■ Hip abduction ■ Transverse hip abduction ■ Internal hip rotation 	<ul style="list-style-type: none"> ■ Getting out of a car
Gluteus medius	■ Deep	<ul style="list-style-type: none"> ■ Hip abduction ■ Transverse hip abduction ■ Internal hip rotation ■ External hip rotation (during hip abduction) 	<ul style="list-style-type: none"> ■ Stepping sideways
Gluteus maximus	■ Superficial	<ul style="list-style-type: none"> ■ Hip abduction ■ Hip extension ■ External hip rotation 	<ul style="list-style-type: none"> ■ Walking ■ Running ■ Jumping ■ Cycling ■ Going up and down stairs

WHAT IS CORE TRAINING?

Core training focuses on three areas: core mobility, core stability, and core strength. Each of these plays an important role in the health, support, and function of your body, and so achieving a balance between them is vital. The starting point of this process lies in learning how to activate, strengthen, and control the muscles of your pelvic floor.

WHAT IS CORE MOBILITY?

Core mobility refers to the movement of your spine and hips. There are five main movement patterns involved: isometric, flexion, extension, side flexion, and rotation. It is vital to mobilize your spine and hips before exercise, to loosen tight muscles and encourage weaker, under-used muscles to function correctly. This helps to balance the relationship between muscle length and movement patterns, and allows for deeper muscle activation, improving your core stability and strength. It is best to maintain a full, natural range of motion to keep your body functioning properly. Joints and muscles that are hypomobile (stiff) or hypermobile (too mobile) will inevitably lead to imbalances. When this happens, one area of the body is forced to compensate for the lack, or increased range, of movement in another – increasing your chances of injury.

WHAT IS CORE STABILITY?

Core stability is the ability to control the position and movement of your mid-section (trunk), in order to improve your posture and improve the efficiency of your limb movement. Core-stability training targets the deep muscles of your abdomen, hips, and spine to create a base for support. The main deep muscles are the multifidus, transverse abdominis, and pelvic floor, which form a “cylinder” around the lower torso, with the transverse abdominis to the front, the multifidus to the back, and the pelvic floor forming the base. During most types of body movement – lifting, bending, sitting, twisting, walking, running, or jumping – these three muscles work to stabilize your lumbar spine, while your gluteus and quadratus lumborum muscles work to stabilize your pelvis.

The stability of your back depends on all of these muscles being strong and working together effectively. Because of the complex network of muscles and fascia (connective tissues) involved in this structure, activating or “waking up” your core is a key part of training. You may find it hard to activate the deeper core muscles to start with, so you should begin by following the basic exercises in *Activating Your Core* (»p.27), before you move on to those in the *Activation* section of *Core-Training Exercises* (»pp.50–65).

WHAT IS CORE STRENGTH?

Core strength is the ability to perform challenging physical tasks that demand good form and control. As it involves all of the muscles of your core – both deep and superficial – it has a key role in core training, but it is important to remember that good core strength requires a foundation of good core stability first. Core-strength training works by pushing your core muscles beyond their normal demands or by holding positions to increase endurance strength. The greater the force exerted upon the body, the greater the amount of core muscle engagement, and thus the degree of core muscle activation and strength required. As you develop core strength through exercise, your movements will become adapted to a higher level of skill and performance.

CORE TRAINING AND THE PELVIC FLOOR

The pelvic floor is the group of muscles and fascia that form the base of your abdominal cylinder. These muscles and fascia have a number of functions – holding your pelvis together; maintaining the position of the pelvic organs, and supporting them against gravity; and helping to control the flow of urine from your bladder and waste from your rectum. Poor physical fitness, as well as pregnancy, ageing, and injury, can cause a weakening of the muscles in this area, so it is important to keep them as strong as possible.

These muscles also play a key role in effective core strength because they help to activate the transverse abdominis, along with the other stabilizing muscles of your core. It is therefore important to learn how to control and activate your pelvic floor muscles (»p.27), possibly with Kegel exercises (the conscious engagement and contraction of your pelvic floor muscles), before attempting any of the movements in the exercise sections (»pp.36–159).

CORE TRAINING - KEY AREAS

Although different activities make different demands on your core, an overall core workout should focus on three primary areas: mobility, stability, and strength. Where possible, you should try to develop a

training programme that combines these with the five main types of core-based movement – isometric, flexion, extension, side flexion, and rotation.

MOBILITY

- Encourages natural range of movement and increases flexibility
- Balances the muscle lengths between antagonistic muscles groups
- Promotes relaxation and tension relief
- Aligns the body and improves posture

- Improves efficiency of muscle activation and reactivity
- Increases stability and strength
- Decreases the risk of pain and injury
- Good core mobility exercises include:



Roll-back
■ (>>p.84)



Hip roll
■ (>>pp.82-83)



Medicine ball chop
■ (>>pp.130)



Exercise ball back extension
■ (>>p.116)

STABILITY

- Improves posture and skeletal alignment
- Helps prevent pain and injury
- Increases body awareness, control, and balance
- Resists unwanted movement of the spine

- Provides the stability and support for daily tasks
- Helps to build muscle strength and improve limb movement
- Improves performance in sporting activity
- Good core stability exercises include:



Toe tap
■ (>>pp.56-57)



Leg circle
■ (>>p.68)



Bridge
■ (>>pp.92-93)



Plank
■ (>>pp.96-97)

STRENGTH

- Enhances all-round body strength and function
- Makes it easier to perform a range of everyday tasks
- Improves balance and control
- Increases speed and agility

- Helps to enhance power of your movements
- Improves performance in sporting activity
- Creates lean muscle tone
- Good core strength exercises include:



V leg-raise
■ (>>p.98)



O-bar rotation
■ (>>pp.108-109)



Sandbag shouldering
■ (>>p.145)



Exercise ball hip rotation kick
■ (>>pp.152-153)

CORE TRAINING AND EVERYDAY ACTIVITIES

Every day, you perform numerous core-related movements. In addition to obvious activities like exercise or sport, work-based tasks and chores, such as sitting at a desk or carrying bags, all place demands on your core. Building and maintaining good core strength is therefore essential.

Learning correct postural alignment and how to stabilize your spine can help to ease the strain of everyday activities, prevent pain and injury, and make you feel stronger and more confident. Whether you are digging in the garden, lifting heavy objects, or carrying your child, it is the strength from the deep centring muscles of your abdomen and lower back (lumbar spine) that will enable you to perform these tasks safely.

THE BODY'S "POWERHOUSE"

Your core is often referred to as the body's "powerhouse", a central region providing a girdle of strength and connecting the abdomen with the lower back and hips. The abdominal area, in conjunction with the deep spinal muscles, create a stable base for generating strength and providing support

for all movement. As a result it is important to understand the concepts behind core strength and train correctly. Pushing your body too far or too fast, without the support of your core, can lead to you using the wrong muscles and ingraining poor movement patterns, which, over time, may lead to muscular imbalance, reduced power and possibly even injury. However, while it is important to practise core activation, constantly holding your deep abdominals in a braced contraction may potentially interfere with the pump-like motion of your diaphragm, restricting the efficiency of your breathing. You should therefore look to engage your core as part of a fitness programme, or before attempting to lift a load, rather than on a moment-to-moment basis.

Many of us are not used to training the deep muscles of the core, often focusing instead on the more visible outer muscles of the torso such as the rectus abdominus. These large muscles, known as primary movers, can be felt when performing everyday activities and training for fitness. Due to their size and power they can often take over the work of the stabilizing muscles, leaving the body less supported and vulnerable to strain. For this reason, a balanced and comprehensive approach to core training is vital.

CORE STRENGTH AND EVERYDAY ACTIVITIES

Sitting at your desk

■ Core strength benefits

- ▶ Stability in lumbar spine ▶ Mobility in back, shoulders, and hips ▶ Strong sitting posture
- ▶ Reduced lower back tension, hunched shoulders, and tightness in hip flexors
- ▶ Reduced risk of back pain and injury

■ Core exercises that can help

- ▶ Back extension (»p.63)
- ▶ Oyster (»p.60)
- ▶ Leg circle (»p.68)



Using a phone

■ Core strength benefits

- ▶ Mobility in neck and shoulders ▶ Stability in upper body and shoulders ▶ Strong postural muscles ▶ Good sitting posture ▶ Reduced risk of neck and back pain and injury

■ Core exercises that can help

- ▶ Dart (»p.59)
- ▶ Dorsal raise (»pp.70-71)
- ▶ Superman (»pp.64-65)



Lifting

■ Core strength benefits

- ▶ Mobility in neck and shoulder ▶ Stability in upper back and shoulders ▶ Strong postural muscles ▶ Isometric strength ▶ Good lifting technique ▶ Reduced risk of back pain and injury

■ Core exercises that can help

- ▶ Superman (»pp.64-65)
- ▶ Dorsal raise (»pp.70-71)
- ▶ Double leg lower and lift (»pp.94-95)



Carrying bags (laptop or handbag)

■ Core strength benefits

- ▶ Isometric strength ▶ Spinal stability against lateral (sideways) forces ▶ Strong postural muscles ▶ Strong, balanced posture ▶ Reduced shoulder muscle tightness ▶ Reduced risk of injury

■ Core exercises that can help

- ▶ Swim (»p.88)
- ▶ Hip roll (»pp.82-83)
- ▶ Side bend (»p.75)



EXERCISES FOR EVERYDAY ACTIVITIES

Listed below is a selection of exercises that will help you to strengthen, stabilize, and mobilize your core, and assist with a wide range of

everyday activities. It is important to train your core properly to maintain good movement and reduce the risk of sustaining injury.

EXERCISE	BENEFITS	EXERCISE	BENEFITS
Active pelvic floor (»p.50)	■ Activation of deep abdominals. Improves posture; helps with lifting and carrying.	Leg circle (»p.68)	■ Hip and lumbar stability. Helps with sideways movement, and lifting uneven loads.
Pillow squeeze (»p.52)	■ Hip stability. Aids lateral (sideways) movements, such as getting in and out of a car.	Dorsal raise (»p.70)	■ Thoracic mobility and strength; shoulder alignment. Improves posture.
Oyster (»p.60)	■ Hip stability. Assists lateral movements, such as getting in and out of a car.	Side-lying leg lift (»pp.78-79)	■ Spinal alignment; hip and lumbar stability and strength. Assists lifting and carrying.
Dart (»p.59)	■ Spinal and shoulder alignment. Improves posture; helps with lifting and carrying.	Hip roll (»p.82)	■ Lumbar rotation, mobility, stability, and strength. Improving seated posture.
Toe tap (»p.56)	■ Lumbar and thoracic stability. Helps with lifting and maintaining good posture.	Roll-back (»p.84)	■ Mobility and strength in muscles of spine, deep core, and hip flexors. Aids posture.
Prone leg lift (»p.61)	■ Glute and hamstring strength. Improves posture; can ease lumbar pain from sitting.	Swim (»p.88)	■ Spinal stability and strength. Assists with lifting and carrying uneven loads.
Star (»p.62)	■ Spinal stability; hip and shoulder alignment. Aids posture, and lifting and carrying.	Bridge (»p.92)	■ Hip and spinal mobility and strength. Aids sideways movements, and lifting and carrying.
Abdominal crunch (»p.66)	■ Cervical and thoracic mobility and strength. Assists bending and climbing the stairs.	Plank (»p.96)	■ Spinal alignment and strength. Improves posture; helps with lifting and carrying.

Lifting your baby

■ Core strength benefits

- ▶ Strong postural muscles ▶ Stability in lumbar spine against lateral (sideways) and rotational forces ▶ Lateral, rotational, and isometric strength
- ▶ Good posture ▶ Reduced lower back tension, and risk of injury

■ Core exercises that can help

- ▶ Star (»p.62)
- ▶ Super-slow bicycle (»p.89)
- ▶ Bridge (»p.92)



Doing housework

■ Core strength benefits

- ▶ Stability and strength in all movements
- ▶ Stability in upper back and lumbar spine against lateral (sideways) and rotational forces
- ▶ Reduced lower back pain and stiff shoulders, and risk of injury

■ Core exercises that can help

- ▶ Oblique reach (»pp.80-81)
- ▶ Dart (»p.59)
- ▶ Side-lying leg lift (»pp.78-79)



Gardening

■ Core strength benefits

- ▶ Spinal mobility ▶ Isometric, lateral (sideways), and rotational strength ▶ Spinal stability against lateral and rotational forces ▶ Reduced tension in lower back and shoulders

■ Core exercises that can help

- ▶ Oblique crunch (»p.73)
- ▶ Back extension (»p.63)
- ▶ Plank (»pp.96-97)



Driving your car

■ Core strength benefits

- ▶ Mobility in neck, shoulders, and lumbar spine ▶ Lumbar stability and strength
- ▶ Isometric and extension strength
- ▶ Strong posture ▶ Reduced lower back, shoulders, and hip flexor pain

■ Core exercises that can help

- ▶ Dorsal raise (»pp.70-71)
- ▶ Oyster (»p.60)
- ▶ Horizontal balance (»p.91)



CORE TRAINING AND POSTURE

The lumbar region is crucial in developing core strength. Consequently, it is important to keep your lower back healthy by maintaining good posture. The best posture for you is the one in which your back is put under the least strain. Whether you are standing or sitting, the muscles in your back should be relaxed without being slack, and your spine should be gently S-shaped.

GOOD POSTURE

The way you stand and hold yourself makes a big difference to the way you look and feel. A “good” standing posture is one in which your body looks symmetrical – equally aligned from side to side and back to front (**near and far right**). This position puts less stress on your spine, minimizing wear and tear, and reducing the risk of injury.

The key to good posture lies in developing and maintaining a combination of good core strength and general fitness. Core-strength training gives you a feel for the way your body works – particularly the natural patterns of movement. General fitness helps you to maintain a healthy weight, reducing stress on your weight-bearing muscles and joints. It also promotes mental and emotional balance, making you less likely to tense your muscles, further benefiting your posture.

BAD POSTURE

Although “bad” posture is generally used to mean slack posture, an excessively rigid body position can be equally bad for you (**middle right**). In reality, bad posture is generally classed as anything which puts your spine under unnecessary strain, resulting in tension in the back and placing stress on the muscles, ligaments, discs, and spinal joints.

THE CAUSES OF BAD POSTURE

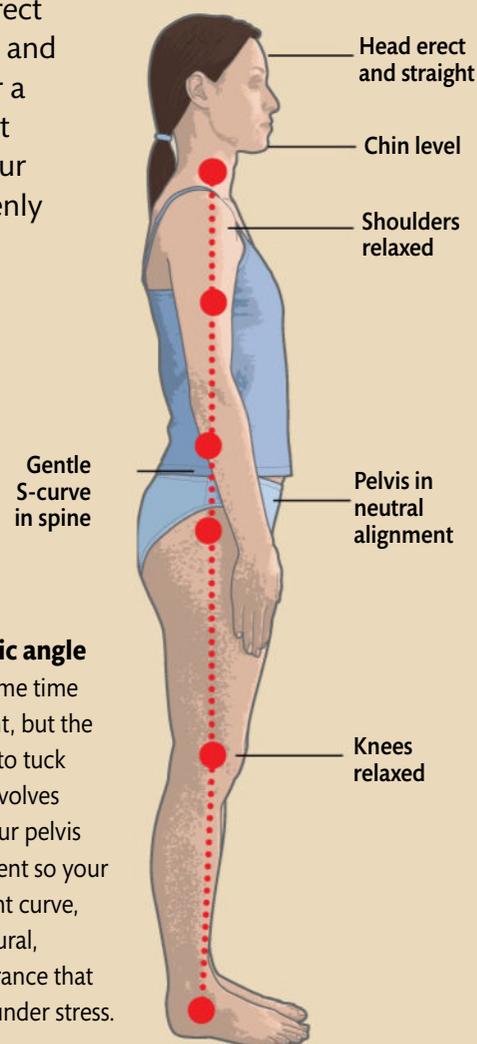
Whether you are standing, sitting, or performing movements of any kind, your muscular system tends to take the path of least resistance with regards to posture. If you are fit and your body is functioning properly and efficiently, this should not cause problems. However, poor posture can occur if certain muscles or muscle groups are overactive, underactive, or imbalanced. Causes of these problems include a lack of

mobility; poor technique when exercising or performing everyday tasks; and the effect of gravity on your spine over time.

If the natural movement patterns of your hips and spine are restricted – if you work at a desk, for example – imbalances can occur in your muscles, causing bad posture, and possibly back pain and injury. To combat this take regular breaks from your desk, and use stretches to keep your muscles and joints mobile. Exercising or performing household tasks with poor or incorrect technique can also result in bad posture, because you are engaging the wrong muscles at the expense of the right ones. Being more aware of your movements will allow you to move in the right way, as well as identifying the source of any problems.

STANDING POSTURE

Posture has a direct impact on joints and muscles. Aim for a balanced upright posture, with your body weight evenly distributed from front to back.



✓ Correct pelvic angle

It may take some time to get this stance right, but the trick is to remember to tuck in your pelvis. This involves consciously tilting your pelvis into a neutral alignment so your lower back has a slight curve, rather than an unnatural, hollowed-out appearance that puts the lower back under stress.

The day-to-day compressional pressure of gravity on your spine can affect posture in the long term, which is why it is important to use your core to stand tall and sit up straight.

GOOD SITTING POSTURE

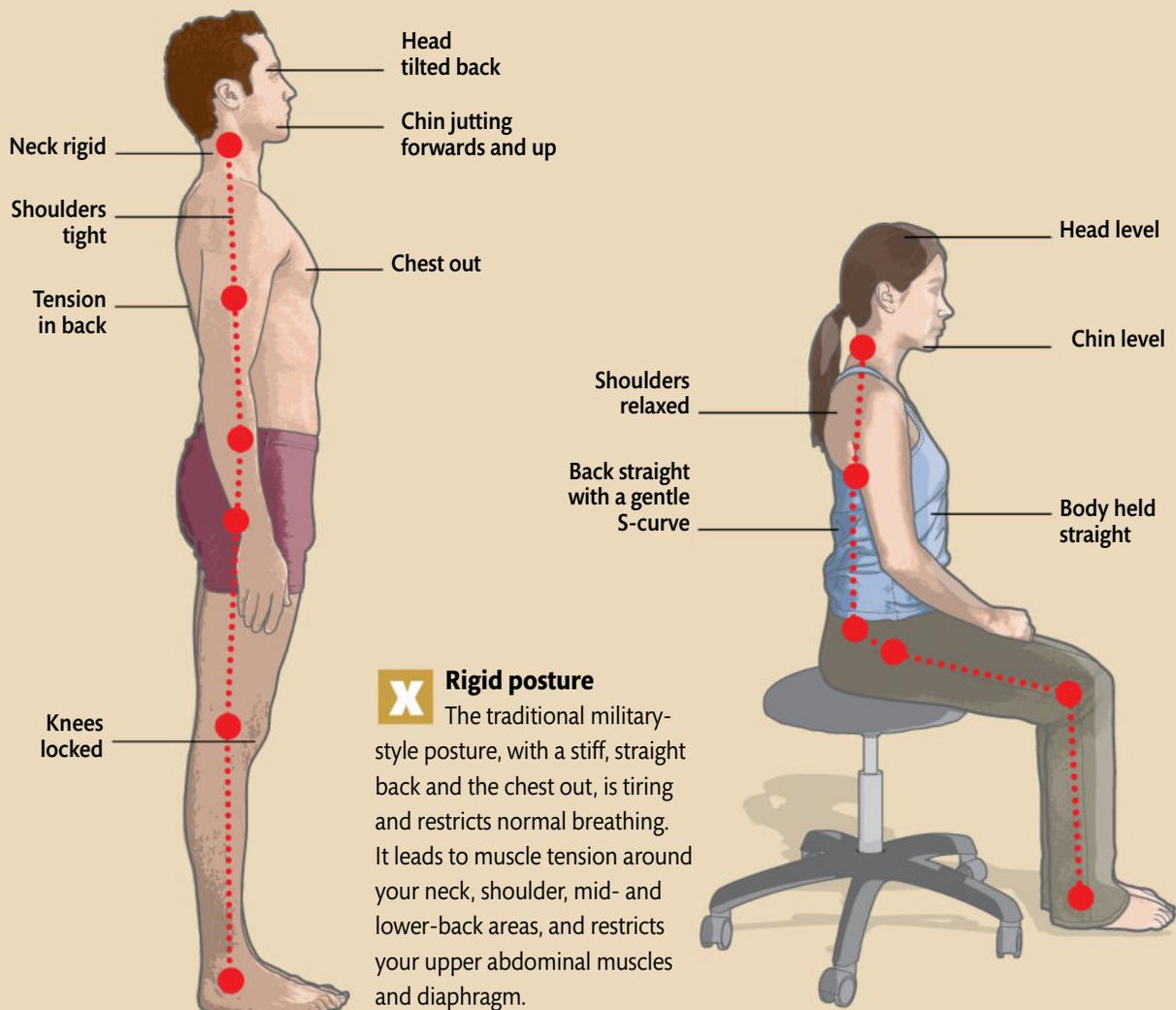
Sitting for prolonged periods of time can trigger pain in your lower back because sitting places a greater strain on your spine than standing or walking. Adopting a good sitting position is not difficult and will reduce the stress you place on your back.

A good sitting position does not require you to sit up straight for long periods – you must relax in order to avoid straining your muscles. Anyone attempting to sit bolt upright will gradually slip into a relaxed, slouched position. Practitioners of postural education methods such as the Alexander Technique encourage people to find just the right amount of curve in their neck, mid-back, and lower back.

If you use a desk for long periods of time, sit in a well-designed chair, set up your workstation to avoid stretching or straining, and try to take regular breaks. At home, choose a comfortable chair with enough space to let you change your position and move around while watching television or reading. You can also place cushions behind your lower back to support your spine.

BAD SITTING POSTURE

Many of us spend our days sitting at a desk so it is important to get into the habit of maintaining good posture. Slouching – with your shoulders and pelvis pushed forwards – is one of the most common forms of poor sitting position. It causes problems throughout the body ranging from backache to musculoskeletal pains, joint pains, and tension headaches. Slouching forwards also compresses your diaphragm, resulting in restricted breathing.



THE IMPORTANCE OF CORRECT HIP PLACEMENT

The pelvis is the key weight-bearing centre of your body. Not only does it support your spine and head but it is also the vital link between your upper body and your legs. Any movements you make with your pelvis trigger movements in your spine: tilting your pelvis backwards and forwards creates spinal flexion and extension, while moving from side to side and twisting causes side flexion and spinal rotation. Establishing and maintaining correct hip placement are therefore important to the alignment of your spine as well as to your overall core strength. Most everyday activities and sports involve a combination of movements across the body and maintaining correct hip placement will

enable you to perform these with good posture and form, thus reducing pressure on your spine and your risk of injury.

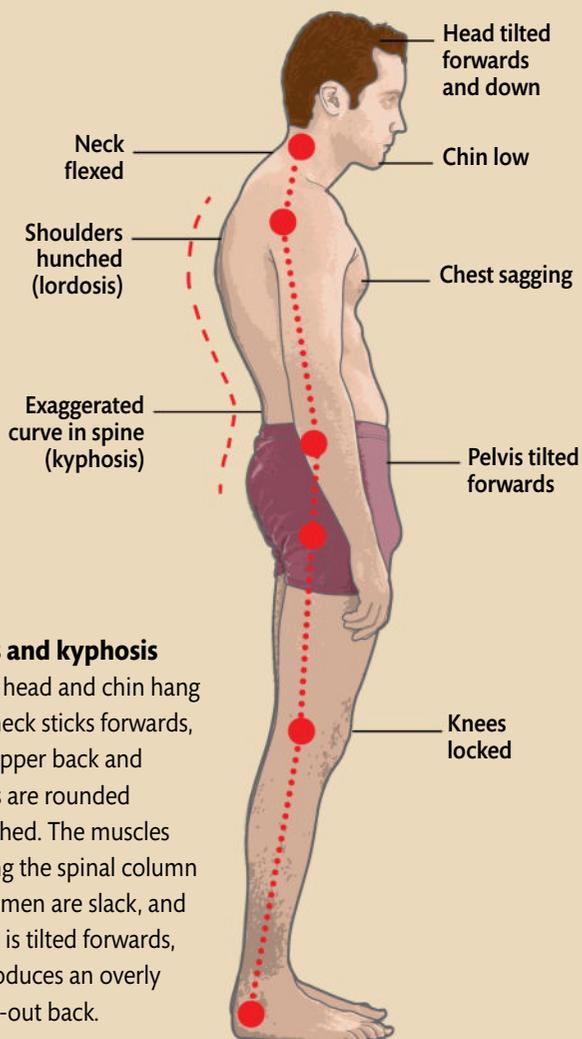
NEUTRAL HIP AND SPINAL ALIGNMENT

When your pelvis is in a “neutral” position, the front hip bones are horizontally aligned to one another and vertically aligned with the pubic bone, so the pelvis should neither be tilted forward, backward, or rotated. This is the most even balanced position for the pelvis, in relation to your spine and thigh bones, providing a stable base for your body to move. This is therefore an ideal starting position for most movements that will encourage correct spinal alignment and balance the joints and muscles that support it.

POSTURAL PROBLEMS

Acquired and genetic conditions can alter the shape of the spine, resulting in impaired movement and pain. Building your core strength

can limit the impact of these problems, improving your balance and posture, or prevent them occurring in the first place.



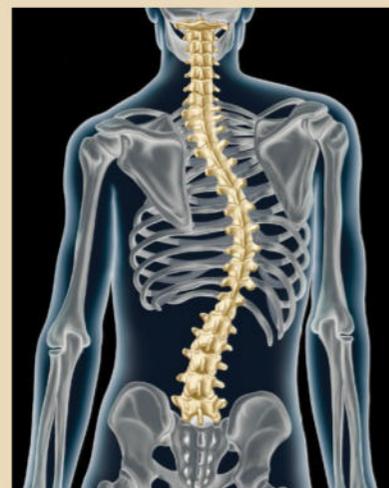
Lordosis and kyphosis

Here, the head and chin hang low, the neck sticks forwards, and the upper back and shoulders are rounded and hunched. The muscles supporting the spinal column and abdomen are slack, and the pelvis is tilted forwards, which produces an overly hollowed-out back.

■ **Lordosis** (or sway back) is a common postural problem that occurs when the lumbar curve becomes over-pronounced. Viewed from the side, this means the belly tends to stick out to the front and the buttocks to the rear. Often occurring in conjunction with kyphosis (below), it can be caused by poor core stability, or tight hip flexor muscles and weak back muscles. The condition can be treated with corrective exercises, but left untreated, it can cause lower-back pain and disc problems.

■ **Kyphosis** is a spinal curvature leading to the rounding of the back. Often linked with lordosis (above) it is sometimes caused by over-shortened chest muscles pulling on the shoulder girdle. In mild cases, it appears as a slouching posture; in extreme cases it can leave sufferers with severe hunching. Most cases only require routine monitoring but serious ones can be debilitating, or even life threatening, due to the pressure placed on internal organs.

■ **Scoliosis** (right) is a curvature of the spine to one side. The condition often begins in childhood and can be mild, with few or no symptoms. Severe cases, however, can cause problems with posture, breathing, and walking. Obvious signs of the condition might include uneven shoulders, a tendency to lean to one side, or one prominent shoulder blade.



ACTIVATING YOUR CORE

Learning how to achieve a neutral hip and spinal alignment, and to engage or “switch on” the muscles of your core are crucial first steps to developing a strong and stable foundation for core training. Engaging

ACHIEVING NEUTRAL PELVIS AND SPINAL ALIGNMENT

The pelvis is the base support of your body and supports your spine. For optimum movement your pelvis should be in a “neutral” position – that is the most balanced position possible. A neutral pelvis will help to align your spine, improve posture, and provide a stable platform for all of your body’s movements.



Lie on your back with your hands on your lower stomach, making a triangle with your thumbs and index fingers. Allow your weight to press down through your tailbone. When your pelvis is in neutral, your hands will be level and your lumbar spine in a neutral curve.

LOCATING YOUR TRANSVERSE ABDOMINIS

Your transverse abdominis muscle is the deepest layer of your abdominals. Wrapping around your midsection like a corset, it forms the front wall of your abdominal cylinder, stabilizing your lower back and pulling in the lower abdominal wall. Learning to activate and control your transverse abdominis is a vital component of good core strength. The first step in this process is to learn how to locate, or feel, where it is.

Point your fingers towards your pubic bone



Stand up straight with your back in a neutral position, with your hands forming a triangle over the front of your pelvis. Cough strongly. You will feel your transverse abdominis move beneath your fingers. Next, breath in and out. You will feel the muscle contract as you do so.

your core effectively means activating and controlling the muscles that make up your “abdominal cylinder”. The two key muscles to learn to control are your pelvic floor and your transverse abdominis.

ACTIVATING YOUR PELVIC FLOOR MUSCLES

Your pelvic floor muscles form the base of your abdominal cylinder. In addition to their primary role in controlling the passing of urine and faeces from your body, they also help you to activate your transverse abdominis and other core stabilizers. Learning to control these muscles is therefore key to core strength.



Lie on your back with your spine in a neutral position. Gently press the small of your back into the floor and tilt your pubic bone upwards. Contract the muscles that help you control the flow of passing urine. Repeatedly tense and release these muscles 10–20 times then relax.

ACTIVATING YOUR TRANSVERSE ABDOMINIS

Once you have located your transverse abdominis muscles (**left**), the next stage involves learning to activate and control it, in order to give you a good base for all other core strength exercises. The key is to focus on drawing your navel towards your spine, hollowing your stomach, and tightening your waistline. You should aim to contract the muscle so that it feels solid and stable, but not overly tensed.

Draw your abdomen in and upwards towards your spine



Lie face down on a mat with a rolled-up towel beneath your head, arms beside you, pointing forwards, palms down, your elbows bent at right angles. Draw your abdomen towards your spine in a slow controlled movement, hollowing your middle while keeping your hips and legs relaxed. Aim to contract your transverse abdominis around a third of the way in, so that it feels strong and stable.

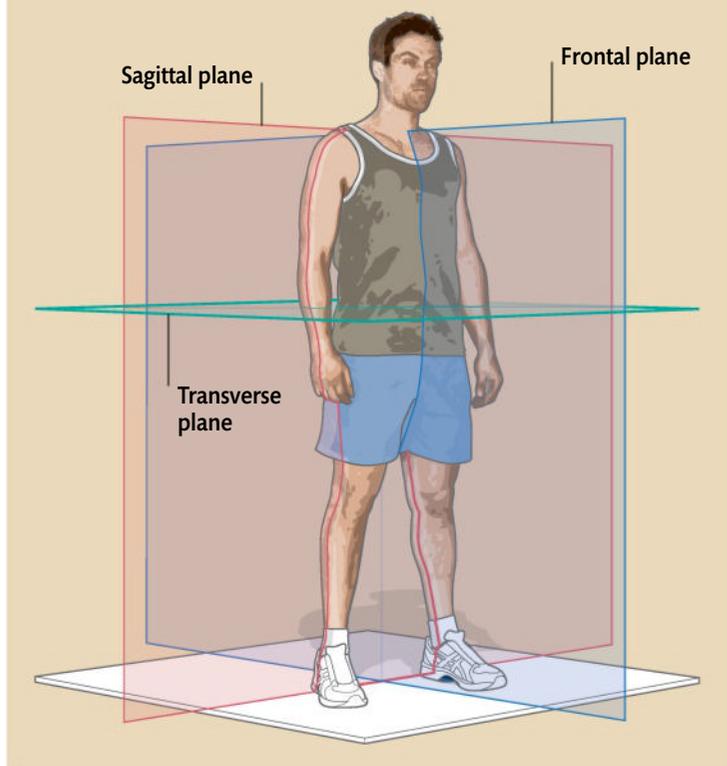
CORE TRAINING AND SPORT

Core training is important for sport, as all sports involve core-based movements of one form or another. Because training your core helps your mobility, stability, and strength (»pp.18-19), it will increase the power, efficiency, and consistency of the movements you make, while improving your stability and balance, and reducing your chances of injury.

Strengthening your core helps to stabilize your spine and pelvis. This provides a stronger platform for all of the movements you make, increasing your body's efficiency in transferring power to your limbs. In running, for example, it can help to prevent the forward or backward rotation of your pelvis, which is important because an awkward running gait will cost you speed and increase the chances of injury.

PLANES OF MOVEMENT

All bodily movements occur along three planes – sagittal (vertically forwards and backwards), frontal (vertically side to side), and transverse (horizontally) – with stabilization used to describe a stationary position.



Meanwhile, in sports that involve throwing movements, such as hammer, shot put, discus, javelin, and fielding in baseball or cricket, the efficient transfer of power to your throwing arm is especially important. Core strength also improves the consistency of your movements because it gives your limbs a stable base from which to work. This is particularly important in sports such as golf and tennis, in which the ability to repeat a movement consistently over the course of a match has a direct bearing on the outcome.

CORE STRENGTH AND BALANCE

Training your core also improves your balance. Most sports – especially team sports that involve running on an uneven pitch – involve movements that are unbalanced. To combat this, sports coaches will use a range of drills and exercises that combine unexpected and varying levels of resistance, with different directions of movement – forwards, backwards, lateral, and vertical. They may also incorporate unstable surfaces in training, using equipment such as stability discs or suspension bodyweight straps (»pp.34-35).

CORE STRENGTH AND INJURY

Ensuring you have a well-developed and balanced core will help to create a strong kinetic chain (»pp.12-13), resulting in all parts of your body working in harmony to improve your performance and achieve your desired goals, while also reducing your chances of muscular imbalances, which can cause both little niggles and more serious injuries.

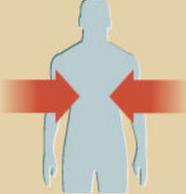
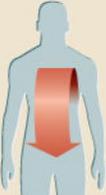
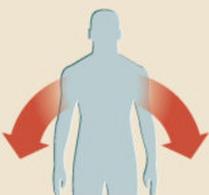
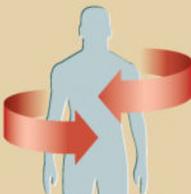
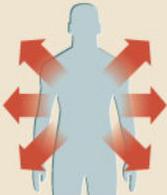
WHICH CORE EXERCISES ARE BEST FOR MY SPORT?

All sports are different and when designing your own core-training programme you should first analyse the movements that occur in your sport and train your core accordingly. Sports that require a lot of agility, such as football, gymnastics, or snowboarding, will require multi-plane core exercises, whereas sports such as cycling, kayaking, or bobsleigh, will not. However, most athletes will benefit from training the core in all planes of motion to some degree as this helps to stabilize the pelvis and spine, which is important for all sports. The extent to which you train these planes is dependent on programme design and the amount of time you are able to train.

CORE MOVEMENTS AND SPORT

In this book we have divided core-based movements into five main categories: isometric; flexion; extension; side flexion; and rotation. A sixth type, known as complex, represents a movement combining

two or more of the others. Movements in most sports could be described as complex, but some examples of the main ones are listed below.

MOVEMENT	CHARACTERISTICS	SPORTS SUCH AS...
 <p>Isometric</p>	<ul style="list-style-type: none"> ■ Plane of movement: Stabilization ■ Typical movements: Holding yourself in a fixed position; resisting an external force, such as a weight, or an opponent ■ Example exercises: Plank-based exercises ■ Exercise benefits: Strengthens and stabilizes your whole core 	<ul style="list-style-type: none"> ■ Boxing ■ Football ■ Wrestling ■ Gymnastics ■ Ice hockey ■ Rowing ■ Rugby league
 <p>Flexion</p>	<ul style="list-style-type: none"> ■ Plane of movement: Sagittal ■ Typical movements: Bending forwards or bending over; moving to sit or stand from a prone position ■ Example exercises: Sit-ups and crunches ■ Exercise benefits: Strengthens and stabilizes your ribcage and pelvis 	<ul style="list-style-type: none"> ■ American football ■ Netball ■ Judo ■ Football ■ Cycling ■ Volleyball
 <p>Extension</p>	<ul style="list-style-type: none"> ■ Plane of movement: Sagittal ■ Typical movements: Bending back to straighten the back from a bent-over position; the arching of the back ■ Example exercises: Back extensions; good mornings ■ Exercise benefits: Strengthens and stabilizes your back 	<ul style="list-style-type: none"> ■ Wrestling ■ High jump ■ Gymnastics ■ Swimming ■ Weightlifting ■ Basketball ■ Pole vaulting
 <p>Side Flexion</p>	<ul style="list-style-type: none"> ■ Plane of movement: Frontal ■ Typical movements: Bending from side to side from the waist; reaching overhead to either side ■ Example exercises: Windmills; side bends ■ Exercise benefits: Stabilizes your pelvis and improves posture 	<ul style="list-style-type: none"> ■ Climbing ■ Skiing ■ Snowboarding ■ Martial arts ■ Squash
 <p>Rotation</p>	<ul style="list-style-type: none"> ■ Plane of movement: Transverse ■ Typical movements: Turning movements; rotating from the waist ■ Example exercises: Pulley chops and lifts; super-slow bicycles ■ Exercise benefits: Improves your rotational strength and your ability to resist external rotational forces 	<ul style="list-style-type: none"> ■ Golf ■ Baseball ■ Softball ■ Shot put ■ Badminton ■ Hammer ■ Canoeing
 <p>Complex</p>	<ul style="list-style-type: none"> ■ Movement plane: Multi-plane ■ Typical movements: Combination actions that include two or more of those core movements detailed above ■ Example exercises: Medicine ball chops; Turkish get-ups ■ Exercise benefits: Combines the benefits of the movements 	<ul style="list-style-type: none"> ■ American football ■ Basketball ■ Tennis ■ Skiing ■ Football ■ Martial arts

CORE TRAINING AND PREGNANCY

Core training during pregnancy can help improve strength, stability, mobility, and balance, all of which may contribute to an expectant mother's overall sense of wellbeing. It will also help relieve back tension and accelerate the recovery of the abdominal muscles after birth.

During pregnancy many changes will happen to your body. Those that affect your spine, shoulder, and pelvic stability will all have an impact on posture and core strength. If this is your first pregnancy you are particularly vulnerable to back pain and injury, as well as experiencing a reduced sense of balance as your bump gets bigger. Hormone imbalances lead to an increase in the elasticity of connective tissues, causing joint instability. Focus on stability and postural strength, and

PREGNANCY AND POST-PREGNANCY CORE-STRENGTH TRAINING

STAGE	WHAT TO EXPECT	THINGS TO WATCH OUT FOR
First trimester (0–12 weeks)	<ul style="list-style-type: none"> ■ Considered to be the most delicate stage of pregnancy, this is when most of the changes to your body start to take place. ■ General changes include an increased metabolic rate; adjustments in hormone levels; fluctuations in mood or emotion; nausea; fatigue or predisposition to clumsiness; decreased blood pressure; pelvic changes; and slight weight gain. 	<ul style="list-style-type: none"> ■ An enhanced metabolic rate may cause a significant increase in internal core temperature. In extreme cases, this can lead to foetal hyperthermia (the foetus overheating). ■ Isometric exercises, such as the plank, increase core temperature. You can perform modified versions of them, but relax and breathe evenly throughout.
Second trimester (13–26 weeks)	<ul style="list-style-type: none"> ■ As your uterus becomes heavier to make room for the baby, your abdomen expands and your belly becomes more prominent. ■ This results in a decreased degree of movement and spinal flexibility. Lying flat on your back may become uncomfortable. ■ General changes may include increased energy levels; abdominal discomfort; constipation; heartburn; and back pain. 	<ul style="list-style-type: none"> ■ Increased oestrogen, progesterone, and relaxin levels cause ligaments and connective tissues to soften and relax, potentially leading to joint instability. ■ Lumbar spine flexion will be reduced as your bump gets larger, so try to minimize bending from your lower back. ■ Avoid exercises that test lumbar rotation stability and side bends that over-extend the spine.
Third trimester (27–40 weeks)	<ul style="list-style-type: none"> ■ In the late stages of pregnancy the growth of the baby will start to place pressure on the lower abdomen and shift your centre of gravity, altering core balance and postural alignment. Freedom to perform everyday tasks will become restricted due to the size of your bump. ■ General changes that may occur include back pain and shoulder stiffness; fatigue; shortness of breath; sciatica; haemorrhoids; and Braxton Hicks contractions (false labour pain). 	<ul style="list-style-type: none"> ■ Exercises that place further pressure on your lower abdomen may lead to incontinence. (Pelvic-floor activation (»p.50) may counteract this effect.) ■ Avoid lying on your back for prolonged periods of time. Compression on the vena cava may reduce blood flow to the placenta resulting in supine hypotensive syndrome – symptoms include dizziness and nausea.
Post-pregnancy (6+ weeks after birth)	<ul style="list-style-type: none"> ■ Months of inactivity and overstretched stomach muscles will weaken the abdominals, leaving new mothers prone to back pain or injury, especially if the diastasis recti (Warning box, top right) is enlarged. ■ Loss of core strength and balance is inevitable, and stability exercises will play an important part in recovering your pre-pregnancy strength. ■ If you have a Caesarean section, you must seek your doctor's approval before you start exercising again, because Caesarean sections involve cutting through the abdominal muscles. 	<ul style="list-style-type: none"> ■ Exercising immediately after birth. Usually you can begin exercising your core six weeks after birth but get clearance from a doctor, midwife, or nurse practitioner first. A diastasis recti check will decide if core training is safe to begin. ■ Avoid spine flexion exercise, such as crunches, if an enlarged diastasis recti (Warning box, top right) is present.

be careful not to over-work or over-stretch the joints of your spine and hips. Pilates or a specially-designed core training programme can help, but always seek guidance from your doctor or midwife before you begin. The benefits of core-strength training during pregnancy include:

- strengthening the muscles of your pelvic floor, transverse abdominis, hips, and lower back to assist with delivery
- increasing hip and spinal stability
- relieving back pain and tension
- reducing neck and shoulder tension
- accelerating the recovery of core muscles after birth

WARNING!

Diastasis recti is the separation that occurs along the centre line, or linea alba, of the rectus abdominis muscle. A separation of one or two fingers width is normal, but a gap any greater than this is a cause for concern. Performing abdominal (flexion) exercises with an enlarged

diastasis recti can cause the rectus abdominis muscle to strengthen and shorten in the separated position. This weakens the abdominal area, causing lower-back pain or injury and a possible risk of hernia. If you are concerned about this condition, seek advice from a doctor.

FOCUS ON	KEY EXERCISE	ADDITIONAL EXERCISES
<ul style="list-style-type: none"> ■ Pelvic-floor education. This is crucial in pregnancy. It is advisable to start activating the pelvic floor as soon as possible. ■ Deep abdominal stability to strengthen your back and improve your balance. ■ Exercises such as the dart (»p.59) to promote shoulder stability and alignment. 	<ul style="list-style-type: none"> ■ Active pelvic floor (»p.50) Improves core and hip stability throughout pregnancy. Also helps to maintain urinary and bowel continence in the later stages of pregnancy, and aids in the preparation for delivery. 	<ul style="list-style-type: none"> ■ Knee fold (»p.54) ■ Dart (»p.59) ■ Star (»p.62)
<ul style="list-style-type: none"> ■ Core stability, especially of your hips and lumbar spine. Pillow squeezes (»p.52) and bridges (»p.92) are particularly good exercises for this. ■ Pelvic-floor activation to help support the position of the baby. 	<ul style="list-style-type: none"> ■ Bridge (»p.92) Activates and strengthens the muscles of your lower back and hips, helping to stabilize your pelvis, improving pregnancy postures, and even helping reduce back pain. 	<ul style="list-style-type: none"> ■ Child's pose (»p.46) ■ Pillow squeeze (»p.52) ■ Heel slide (»p.53)
<ul style="list-style-type: none"> ■ Core-training exercises that help prepare for the delivery. ■ Strengthening your core and hip stability. Practise the four-point kneeling position, with your hands placed on the floor in front of you. This will encourage your baby into the correct position. Supermans (»p.64) will also help with this. 	<ul style="list-style-type: none"> ■ Superman (»p.64) Improves your core balance, strengthens your pelvic floor connection and back muscles, works to stabilize your hips, and helps your baby into the correct position. 	<ul style="list-style-type: none"> ■ Shoulder rotation (»p.41) ■ Oyster (»p.60)
<ul style="list-style-type: none"> ■ Strengthening your pelvic floor, abdominal muscles, and improving your posture. ■ Stability exercises, as you will still have increased levels of relaxin for months after the birth. ■ Activation and foundation level exercises, before gradually building up core strength over a period of about nine months. 	<ul style="list-style-type: none"> ■ Prone abdominal hollowing (»p.58) Builds the strength of the deep abdominal muscles. Helps in the support of the lower back and can be a positive influence on the repair of the diastasis recti (Warning box, top right). 	<ul style="list-style-type: none"> ■ Toe tap (»p.56) ■ Dorsal raise (»p.70) ■ Plank (»pp.96-97)

ASSESSING YOUR CORE

Regardless of your core-training goals, you will achieve much more if you think carefully and strategically about achieving a balanced training programme from the start.

The first step of your training should be to perform an assessment of your core. This will help you to identify any areas which require improvement, so you can target weaknesses and structure your training accordingly.

CORE STRENGTH ASSESSMENT

The following exercises challenge your core in a variety of ways, and can be used as a basic assessment to measure your core strength. Ask a partner to observe you and assess your form throughout, identifying

any movements you're unable to carry out with good technique. To resolve any areas of weakness, you should practise the recommended exercises, repeating the test regularly to gauge your improvements.

Toe tap (»pp.56-57)

- You should be able to: ► perform the exercise without extension in your lower back.
- If you can't, you should focus on: ► strengthening your abs and back to help stabilize your lumbar spine with exercises such as knee folds (»pp.54-55), darts (»p.59), and supermans (»pp.64-65).



Plank (»pp.96-97)

- You should be able to: ► perform the exercise without sagging through your spine, dropping your hips, or rotating your lower back.
- If you can't, you should focus on: ► strengthening your glutes, lumbar spine, and deep abdominals with exercises such as darts (»p.59), supermans (»pp.64-65), and bridges (»pp.104-105).



Abdominal crunch (»pp.66-67)

- You should be able to: ► perform the exercise without flattening your back or tucking your hips.
- If you can't, you should focus on: ► achieving correct hip placement and lumbar stability with exercises such as heel slides (»p.53), reverse curls (»p.69), and stars (»p.62).



Hip roll (»pp.94-95)

- You should be able to: ► perform the exercise without rotating your upper body.
- If you can't, you should focus on: ► stabilizing your lumbar spine and strengthening your abs with supermans (»pp.64-65), oblique reaches (»pp.80-81), and super-slow bicycles (»p.89).



Side-lying leg lift (»pp.78-79)

- You should be able to: ► keep your spine stationary and aligned.
- If you can't, you should focus on: ► strengthening your lumbar spine and glutes against side flexion and rotational forces with exercises such as supermans (»pp.64-65), side bends (»p.75), and heel reaches (»p.76).



Leg circle (»p.68)

- You should be able to: ► keep your spine and hips aligned while moving your leg.
- If you can't you should focus on: ► strengthening your deep abdominals, internal obliques, and deep glutes with exercises such as oysters (»p.60), stars (»p.62), and horizontal balances (»p.91).



Bridge with knee lift (»p.93)

- You should be able to: ► keep your spine aligned without rotating or dropping your hips.
- If you can't, you should focus on: ► strengthening your glutes, lower back, and deep abdominals with exercises such as oysters (»p.60), prone leg lifts (»p.61), and planks (»pp.96-97).



Swim (»p.88)

- You should be able to: ► maintain your spine and hip alignment without rotating your body, while moving your arms and legs.
- If you can't, you should focus on: ► stabilizing and strengthening the muscles of your lower back, deep abdominals, and glutes with exercises such as stars (»p.62), supermans (»pp.64-65), and planks (»pp.96-97).



DEVELOPING YOUR CORE

The primary purpose of the core is to provide mobility, stability, strength, and balance to the mid-section of your body. This creates a more stable and powerful platform for movement throughout the rest of your body.

Developing core strength is a gradual process. All of the exercises in this book are designed to test your strength at the same time as you develop it, and, as your training progresses, you will notice an improvement in your performance. Be patient in your approach to training, in order to build a solid base of core strength before you attempt any more advanced exercises.

ACTIVATING YOUR CORE

The first stage of your core training should involve learning how to engage your key core muscles and achieve a neutral pelvic position (»p.27). You should then focus on “activating” your core using the exercises in the Activation section of this book (»pp.50–65). At first you should work on the core in isolation, then start to incorporate it into more challenging movements. At this stage, you should keep your training simple – do not be tempted to push yourself too far, too quickly.

FOUNDATION-LEVEL CORE TRAINING

Once you have learned to activate your core, you can progress to a selection of simple bodyweight exercises, in which movement is limited to a single plane of motion such as side to side, or forwards and backwards. These are the exercises most people traditionally think of in relation to core training and include sit-ups, back extensions, and planks. Remember, even as you reach an intermediate level of training, the simplest programme is usually the best.

INTERMEDIATE AND ADVANCED CORE TRAINING

When you have achieved a basic level of core stability and strength, you can move to more complex single and multi-plane exercises using instability equipment, such as exercise balls, and weights to increase the difficulty of your programme. These exercises should be used to test your core to its maximum ability and include medicine ball slams, kettlebell swings, and suspended bodyweight crunches.

TESTING YOUR CORE

Depending on which core muscles you want to train, you first have to know which movements to perform regularly and which muscles are active during these movements. This knowledge and understanding will help you to design a balanced programme that incorporates all core muscles and movement types to maintain a strong and balanced core.

DEFINITION OF DIFFICULTY LEVELS

The exercises in this book have been awarded a difficulty level of 1–10, according to the following definitions. You should aim to progress through Levels 1–4 (Activation and Foundation) before you move on to Level 5–10 (Intermediate and Advanced) as it is crucial to have a good general level of core strength before you attempt complex, multi-joint movements.

Activation

Level 1 Basic-level exercises that “wake up” the muscles of the core

Foundation

Level 2 Exercises using bodyweight only

Level 3 Bodyweight exercises with limb movement, and/or varied speed of movement

Level 4 Isometric exercises

Intermediate

Level 5 Loaded exercises and isometric exercises with limb movements

Level 6 Power exercises and suspended bodyweight exercises

Level 7 Isometric and complex exercises requiring good core strength

Advanced

Level 8 Exercises involving external weight and full body extension

Level 9 Cable-based exercises with added instability

Level 10 Challenging exercises utilizing all movement types. (These require excellent core and full body strength and should not be attempted by novices.)

EQUIPMENT FOR CORE TRAINING

There are numerous pieces of equipment that you can use to increase the difficulty of exercises by adding weight or instability. However, it is important for you to master each of the basic movements first to ensure you are using the correct core muscles, before incorporating some weighted and unstable progressions into your core-training regimen.

PROGRESSING EXERCISES WITH WEIGHT

You can make an exercise more challenging by adding weight to the movement with equipment such as a medicine ball, kettlebell, or dumbbell. Extra weight increases the force the active or “working” muscles are required to produce – in other words, the heavier the weight the harder the exercise. However, you should never increase weight at the expense of your form or technique, as this will only increase your chances of sustaining an injury. You should only add weight once you can first perform the basic bodyweight exercise with good form for several reps and sets. When adding weight, you should aim to increase the load in increments of around 1–2kg (2.2–4.4lb) at a time to allow your body to adapt. Jumping from a 2kg (4.4lb) kettlebell to one weighing 10kg (22lb), for example, will stress your muscles and joints beyond their comfortable working ability.

PROGRESSING EXERCISES WITH INSTABILITY

In most cases you will first perform the basic version of an exercise on the floor or a stable surface, such as a weight bench. Once you have mastered this basic movement, however, you can make it harder by gradually increasing the level of instability. This may involve adjusting your body position to remove the support of your arms or legs, or reducing the stability of the surface bearing your weight by using a piece of gym equipment such as a stability disc or exercise ball. The unstable surface makes your core work harder or in a slightly different way to keep your body balanced. The table on the right ranks common pieces of equipment in increasing instability to help you decide what to use. It is important to note that the most effective way of progressing exercise is sometimes achieved by increasing instability, rather than by adding weight.

“FUNCTIONAL” CORE TRAINING

Instability training is sometimes referred to as “functional training”. The basic premise of functional training is that performing an exercise on a less stable base not only requires more work to be done by the primary working muscles you are targeting, but it also brings into play a number of other muscles to help to control and to stabilize the movement. These muscles are known as neutralizers and fixators (or stabilizers), and include both the core muscles and the smaller muscles of the limbs.

It is important to remember that these smaller, stabilizing muscle groups tire more quickly than the primary working muscles, meaning that less force can be applied to them, and less work completed by them. Instability training is therefore not appropriate for strengthening a single muscle group to its maximum, as this will lead to under-performance and reduced gains in strength. Instead, it is designed to train the body as a whole, strengthening and harmonizing the kinetic chain (»pp.12–13) to maximize performance and reduce the risk of injury. Your core muscles help to stabilize your spine, ensuring the efficient transfer of strength and stability to your limbs during movements. It is this that will give you the combination of strength, stability, and mobility required to perform some of the more challenging core exercises in this book, such as hanging toe tucks (»p.144), Turkish get-ups (»pp.150–151), and wall walks (»pp.158–159).

CORE TRAINING AND INSTABILITY

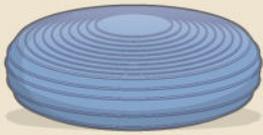
When adding instability to make an exercise harder (as in many of the progressions included in this book), it is useful to think in relative terms – for example, whether one piece of equipment offers more or less instability and freedom of movement than another. The following list ranks a number of options in order of increasing instability (the most stable at the top) to help you to assess and choose the appropriate exercise progression.



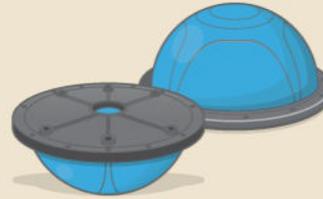
- 1 Fixed bodyweight
- 2 Fixed single leg or arm
- 3 Stability disc
- 4 Wobble board
- 5 Half-exercise ball
- 6 Exercise ball
- 7 Suspended bodyweight straps

EQUIPMENT FOR EFFECTIVE CORE TRAINING

EQUIPMENT THAT ADDS INSTABILITY

**Stability disc**

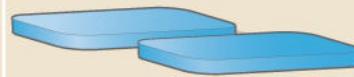
■ A cushion-sized inflatable disc that can be inflated/deflated to the required thickness to provide a simple unstable platform for basic instability exercises.

**Half-exercise ball**

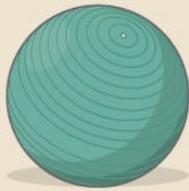
■ This combines half of a small inflatable ball with a hard platform. You can use the device as a support on both sides, but using it ball side down creates greater instability.

**Wobble board**

■ A platform designed to tilt in any direction. It offers less stability than a half-exercise ball, because the "ball" on the underside is smaller and made of a hard material.

**Slide board**

■ Slide boards are usually used in pairs to add an element of lateral instability, because they can slip along the floor in all directions when weight is placed on them.

**Exercise ball**

■ A large inflatable ball that rolls in all directions, and therefore offers very little stability. Choose one with a diameter roughly the same as the length of your arm.

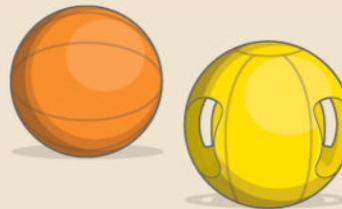
**Bodyweight suspension strap**

■ Fixed to a stable rack or bar, these straps suspend your arms or legs in the air, removing their support to increase the instability of an exercise.

EQUIPMENT THAT ADDS WEIGHT

**Kettlebell**

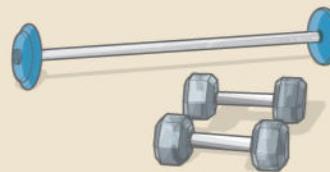
■ A cannonball-shaped weight with a different centre of gravity to a dumbbell. It can be held in one or both hands, and used for dynamic strength exercises.

**Medicine ball**

■ A football-sized weighted ball that may come with or without handles. It is primarily used for exercises that build dynamic strength and power.

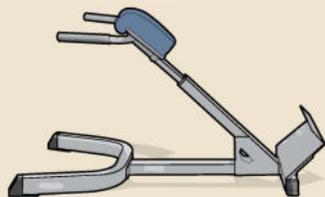
**Weight disc**

■ These are usually added in pairs to barbells and dumbbells, but can also be used as a hand-held weight, or as a weighted object to be pushed along the ground.

**Barbell/Dumbbell**

■ The most common form of weights for strength training: barbells are designed to be lifted with both hands, and dumbbells with one.

OTHER EQUIPMENT

**Roman chair**

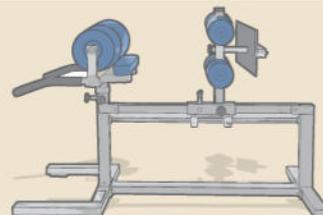
■ A piece of equipment that is used to hold the feet and legs in position in order to isolate and work the muscles of the lower back and glutes.

**Box**

■ A simple stable platform of various sizes. It can be used to add height to dynamic exercises, or raise supporting limbs to increase instability.

**Foam roller**

■ A cylinder of dense foam, the roller can be used to perform self-massage on tight muscles, and also as an unstable base that moves backwards and forwards.

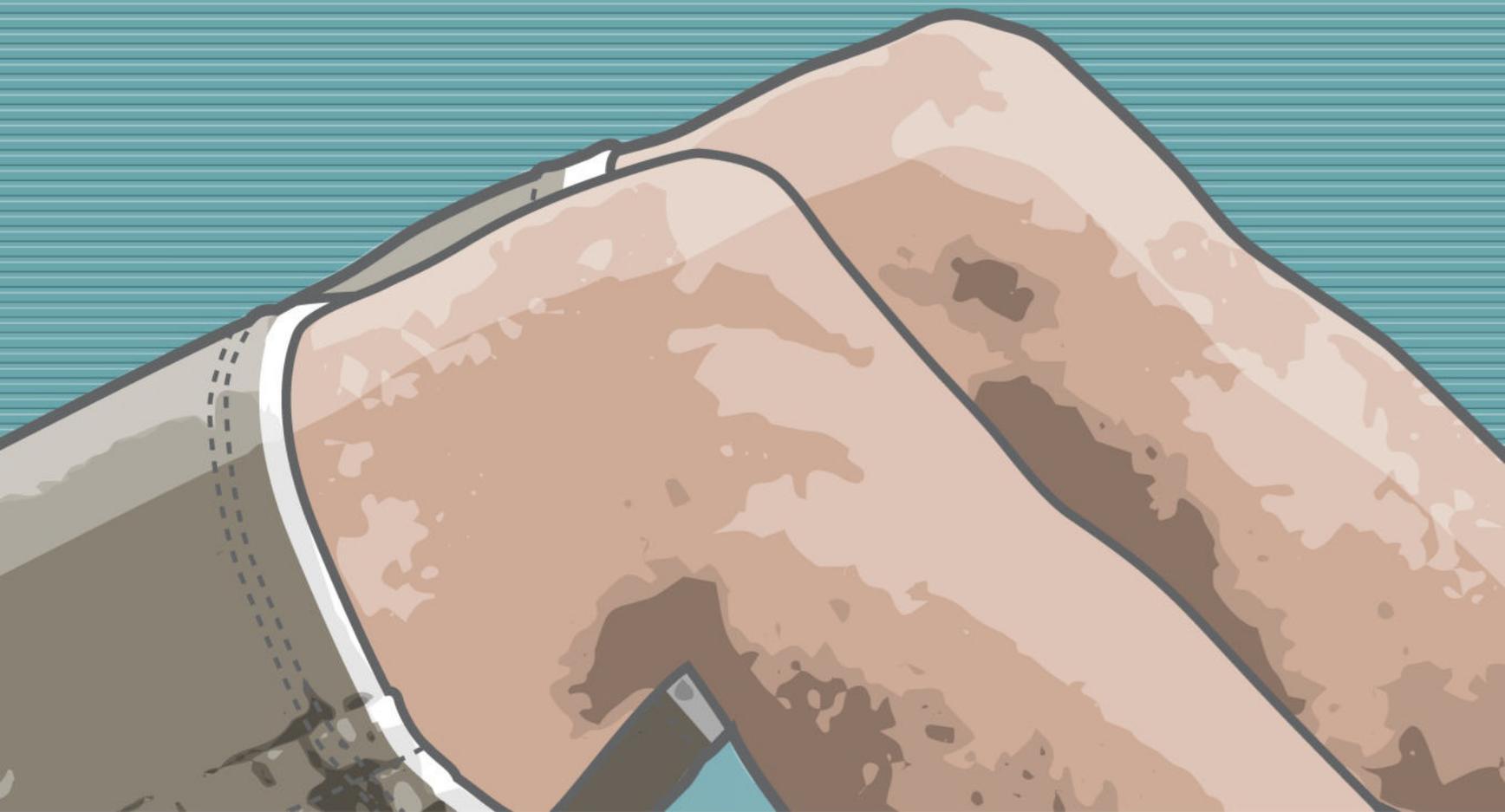
**GHD**

■ Similar to the Roman chair, the GHD (glute-hamstring developer) fixes your limbs in place to target the muscles of your lower back, glutes, and hamstrings.



CORE-TRAINING EXERCISES

2



MOBILIZATION

Mobility stretches are a key part of any exercise routine, helping you to get the best results and reducing your risk of injury. They lengthen and loosen your muscles, increasing your range of

movement and flexibility, and reducing stiffness and pressure on your discs, ligaments, and facet joints. When performing the movements, relax your body, and breathe deeply and rhythmically.

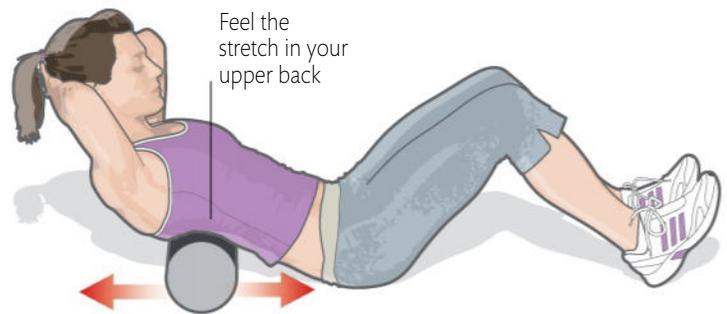
THORACIC ROLLER

In this exercise, the foam roller acts as a hinge to help improve the range of motion in your middle and upper

back. It is a good movement to mobilize the muscles of your neck and back.



1 Sit with your heels planted on the floor and the roller beneath the middle of your back. Lie back onto the roller so that it is just below your shoulder blades. Clasp your hands together and lightly cradle your head.



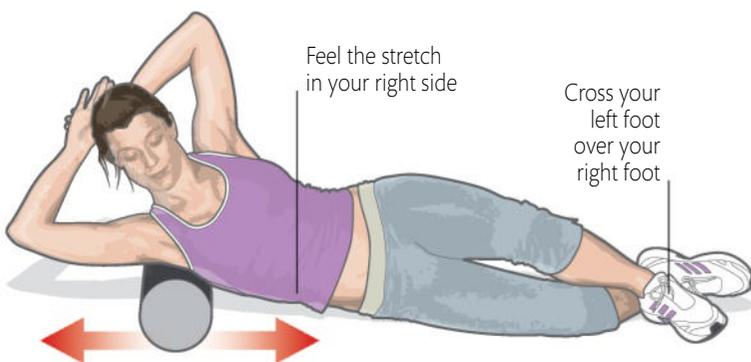
2 With your chin tucked in, slide up and down the roller, from your neck down to the level of your lowest ribs, but do not go too low into your lumbar spine. Repeat the exercise for at least 30 seconds.

LAT ROLLER

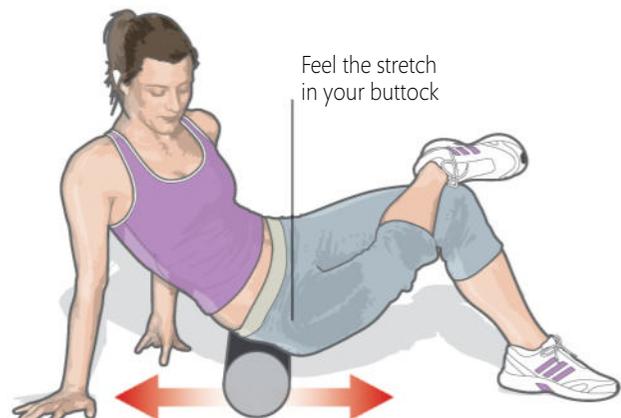
This exercise helps to loosen up the large muscles of your middle and upper back, reducing tightness, tension, and muscular pain.

GLUTE/PIRIFORMIS ROLLER

This exercise loosens up the gluteals at the outside of your buttocks and the piriformis towards the middle of them.



Lie on your right side with the roller positioned beneath your armpit, and place your hands behind your head for stability. Use your back muscles to roll down from your armpit to the base of your shoulder blade. Roll back up and repeat for at least 30 seconds, then switch sides.



Sit on the foam roller with your right buttock and cross your right leg over your left leg. Rolling backwards and forwards, work on the outside of your buttock before shifting your weight to the middle of your buttock. Repeat for at least 30 seconds before switching sides.

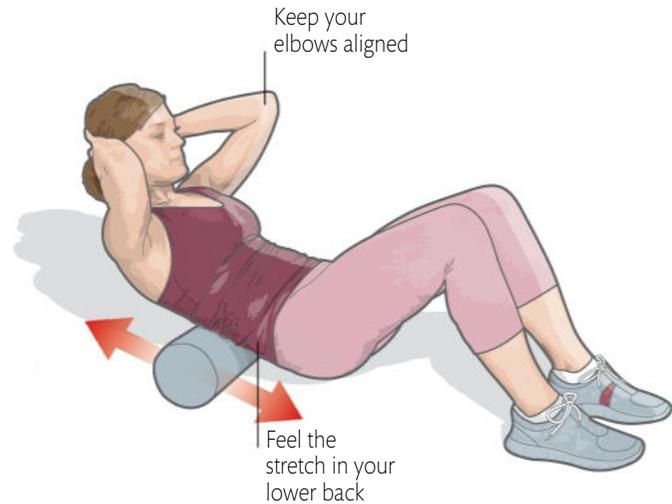
LUMBAR ROLLER

In this exercise, the foam roller works the muscles of your lumbar spine, helping to mobilize your lower back. A strong lower back is essential for

all sports, from running to weightlifting, and is important for anyone who spends a lot of time working at a desk.



- 1 Sit with your heels planted on the floor and the roller positioned beneath your lower back. Place your hands on either side of your head and cradle it lightly, without putting any strain on your neck.



- 2 Keeping your head stable, slowly and carefully slide up and down on the roller, from the bottom of your ribcage to the top of your pelvis. Repeat for at least 30 seconds.

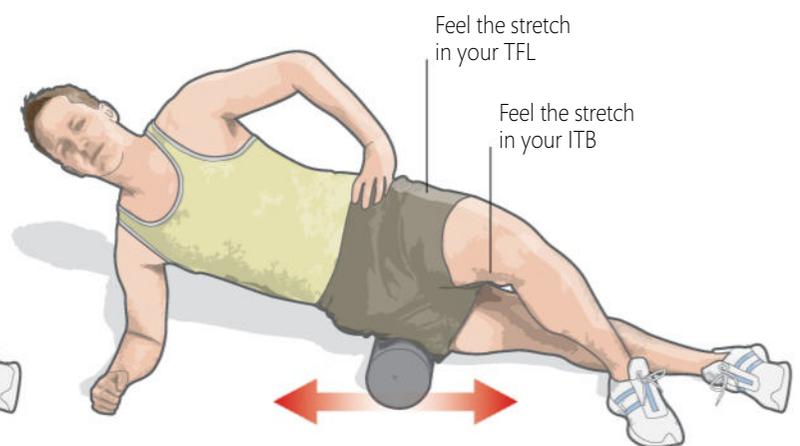
TFL/ITB ROLLER

This exercise loosens your iliotibial band (ITB), the band of muscular tissue on the outside of your upper leg, and helps general mobility in your glutes and

hip muscles. It also loosens your tensor fasciae lata (TFL), a muscle in the thigh that is utilized in sports from hurdling to horse riding.



- 1 Lie on your right side with the roller positioned beneath the outside of your thigh, just below your hip. Propping yourself up on your right forearm, with your left hand on your hip, cross your left leg over the right, placing your left foot flat on the floor for support.



- 2 Using your right forearm, gently push your body over the roller so that the outside of your right thigh slides up and down the roller, as far as your knee. Slide back the opposite way to your hip. Repeat for at least 30 seconds, then swap sides.

NECK ROTATION

This very simple movement can help ease neck aches. After a little practice, you should be able to

rotate your neck through at least 70 degrees to each side without feeling “pulls” or hearing cracking sounds.



1 Look straight ahead, keeping your spine in a neutral position. Keep the upper body relaxed and your arms loose by your sides.

2 Move your head slowly towards your right shoulder, without straining. Turn it as far as is comfortable and hold for a few seconds.

3 Move your head back through the starting position towards your left shoulder, without straining. Return to the start position.

NECK EXTENSION AND FLEXION

This simple dynamic stretch, which can be carried out standing or seated, will help prevent general neck

stiffness and is useful for sports in which head position and movement are important.



1 Stand upright with your arms by your sides in a relaxed posture. Look straight ahead and keep your spine in a neutral position.

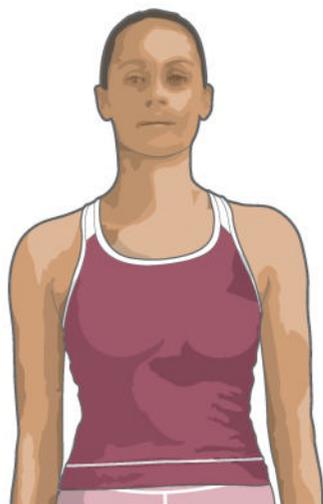
2 Extend your neck as far as is comfortable by slowly raising your chin so you are looking directly upwards. Hold for a few seconds.

3 Flex your neck by letting your head drop forwards without straining. Hold for a few seconds and return to the start position.

NECK SIDE FLEXION

This is a useful mobility stretch for the muscles of your shoulders and neck, helping to ease tightness and tension.

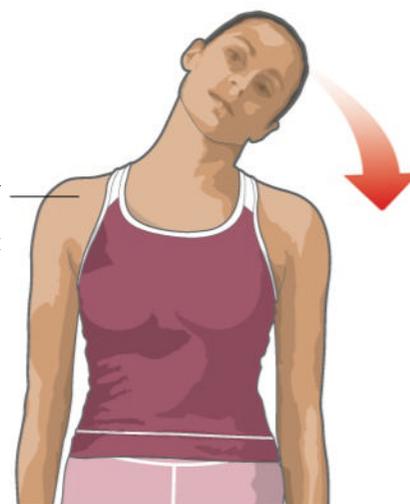
It is also good for mobilizing your spine, and so for improving your posture.



1 Stand upright, holding your body in a relaxed posture, with your shoulders loose and your eyes looking straight ahead.



2 Tilt your head so that your right ear moves towards your right shoulder as far as is comfortable. Hold for a few seconds.

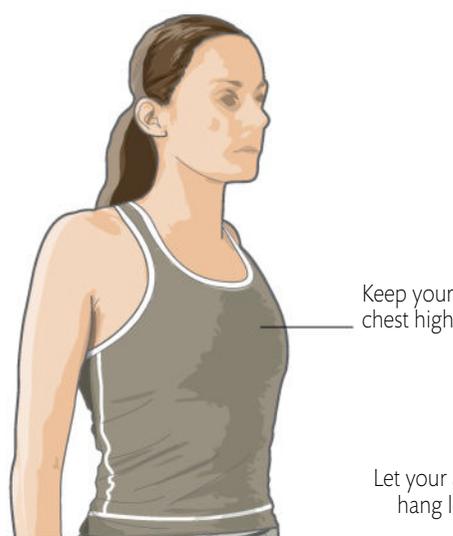


3 Flex your neck in the opposite direction as far as you can go. Hold for a few seconds and return to the start position.

SHOULDER ROTATION

This exercise provides an excellent way of freeing up the muscles and ligaments around your shoulder joints, and

of warming your trapezius muscles. This is particularly important before beginning a resistance training session.



1 Let your arms hang loose by your sides and relax your shoulders. Keep your head level and your spine in a neutral position.



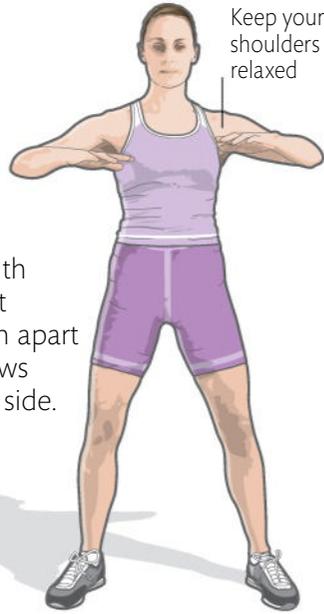
2 Rotate your shoulders forwards and up, raising them slowly towards your ears.



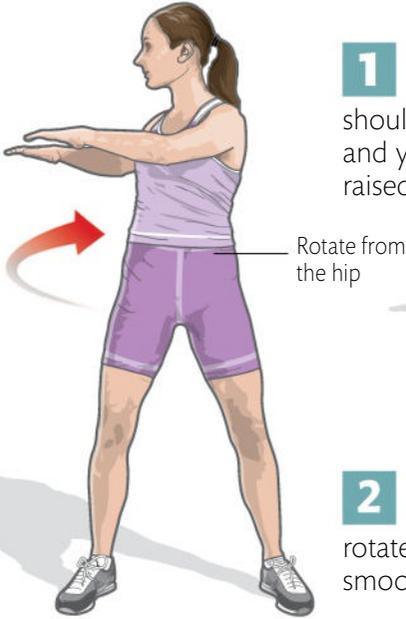
3 Hold the position for a few seconds, then reverse the movement backwards.

TORSO ROTATION

This exercise is a useful rotational dynamic stretch for mobilizing your core muscles. Be sure that you keep your hips stationary throughout.



1 Stand with your feet shoulder-width apart and your elbows raised to each side.



2 Keeping your hips straight and aligned, rotate your upper body with a smooth motion to your right.



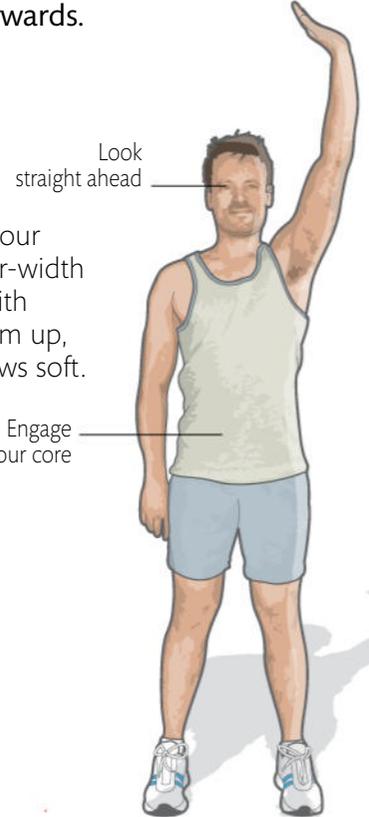
3 Pause at the edge of the movement, then rotate back through the start position, keeping your movement fluid, not jerky.



4 Continue the movement to your left side, keeping your hips and your elbows raised to each side. Pause at the edge of the movement, then rotate to the start position.

TORSO SIDE FLEXION

This is a great mobilizing stretch for the muscles of your obliques and upper back. To get the full benefit of the movement, elongate both sides of your torso as you reach up, and avoid leaning forwards.



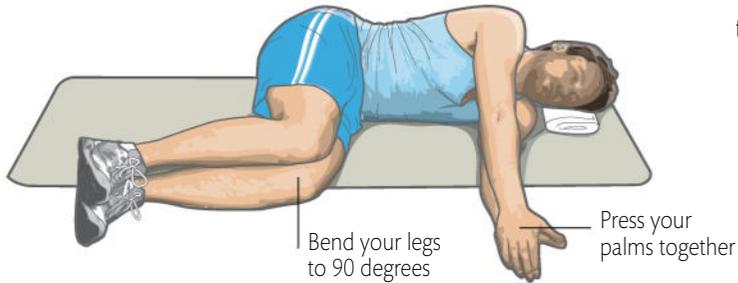
1 Stand with your feet shoulder-width apart. Reach up with your left hand, palm up, keeping your elbows soft.



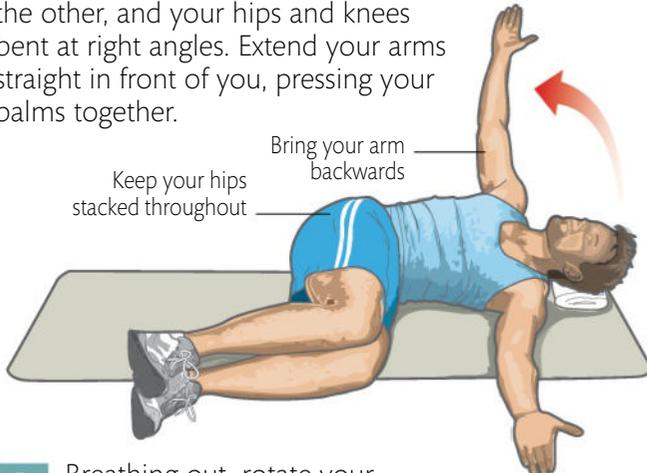
2 Keeping your back straight and your core engaged, stretch your left hand up and over your head, reaching down towards your right foot with your right hand. Hold briefly, then release to return to the start position. Repeat as required, before switching arms.

LYING TRUNK ROTATION

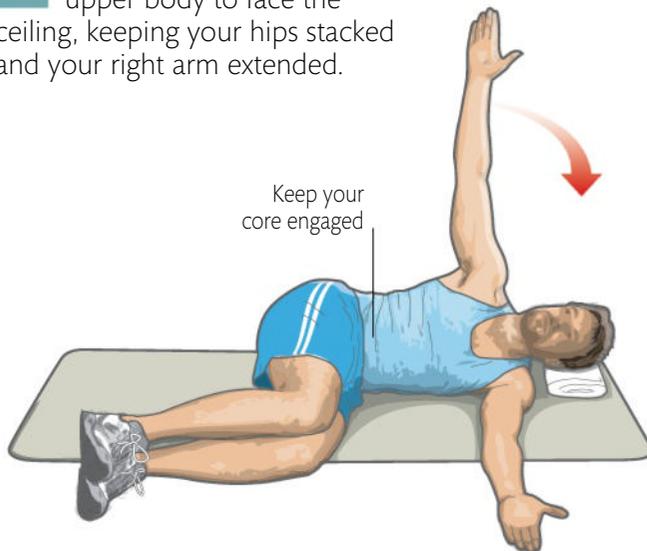
This exercise helps to improve the rotational mobility of your upper-back muscles and your thoracic spine, while also stretching the muscles of your chest.



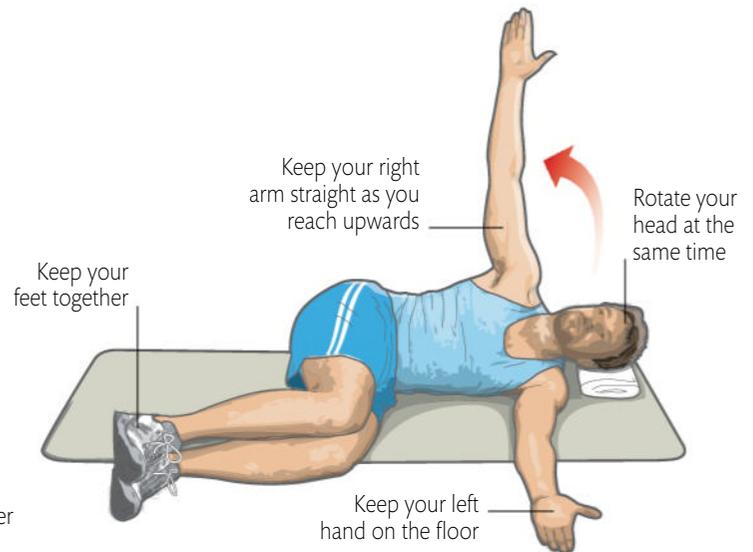
- 1** Lie on your left side with your hips, knees, and feet stacked one above the other, and your hips and knees bent at right angles. Extend your arms straight in front of you, pressing your palms together.



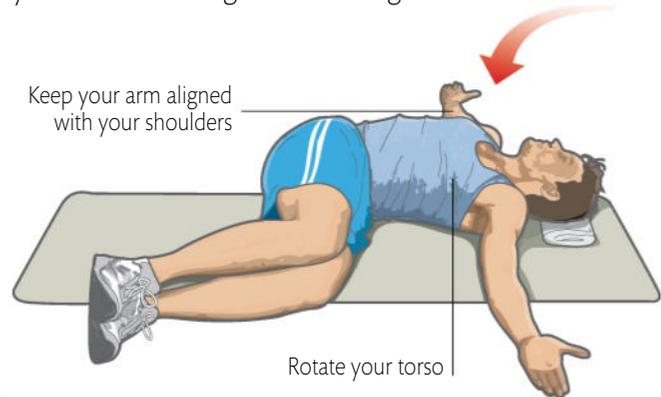
- 3** Breathing out, rotate your upper body to face the ceiling, keeping your hips stacked and your right arm extended.



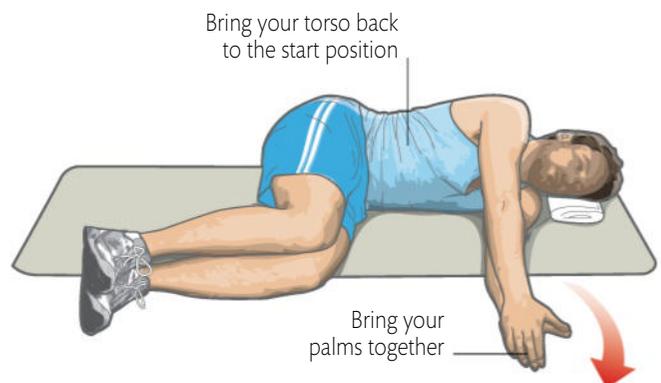
- 5** Breathing out, reach back towards the ceiling with your right arm, while rotating your torso back towards the start position slowly and under control.



- 2** Keeping your knees and feet together and your hips stacked, breathe in, brace your abdomen, and reach upwards and back with your right hand, while keeping your left arm straight and resting on the floor.



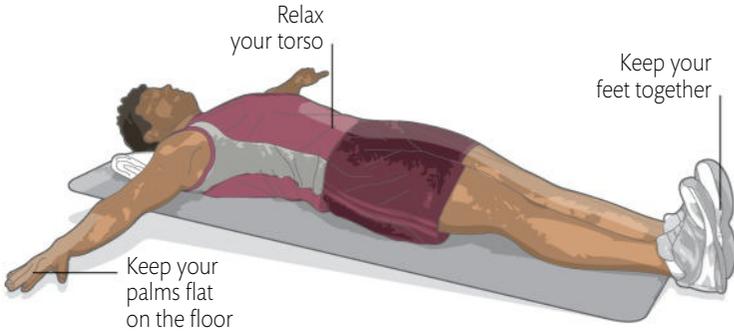
- 4** Continue the movement until you are as far back as possible, with your chest facing upwards and your hips still stacked. Hold the movement briefly, keeping your shoulders stable and level. Breathe in.



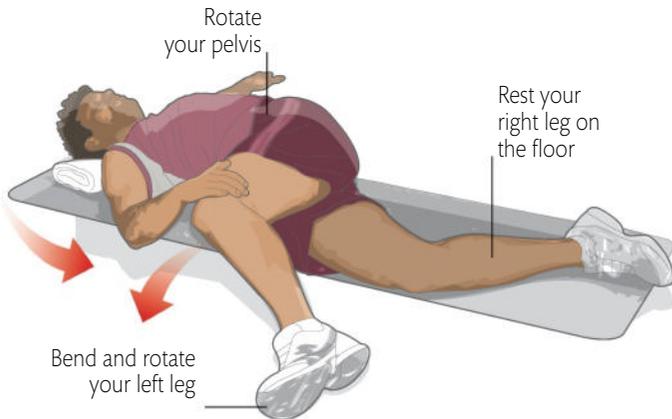
- 6** Continue the movement towards the start position and touch the palms of your hands together. Repeat the movement as required, then switch sides.

LYING WAIST TWIST

This exercise increases the mobility of the joints and muscles in your lower and upper back. Perform the same number of repetitions on both sides of your body.



1 Placing a folded towel under your head for extra support, lie on your back with your body relaxed and your arms loose but extended at a 90-degree angle from your upper body. Keep your legs and feet together.



2 Keeping your upper body flat against the mat, bend your left leg at the knee and bring it across your body, using your right hand to increase the stretch, and allowing your right leg to turn and bend in the same direction.



3 Hold the stretch for a few seconds, return to the start position, and switch sides.

CAT AND CAMEL

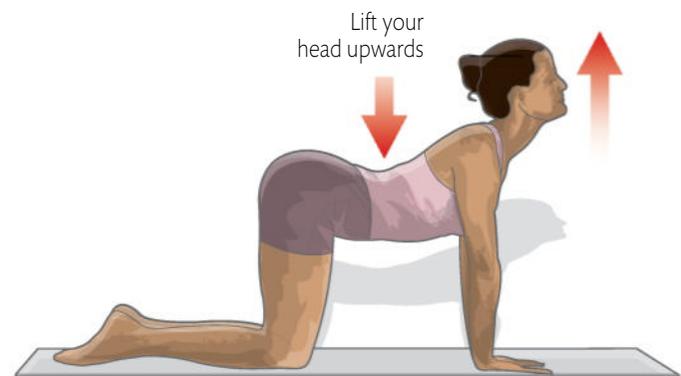
A great muscle-releasing exercise, this stretch helps to lubricate your spine and get your spinal discs moving. It is one of the best exercises you can do as part of a general warm-up.



1 Kneel on all fours with your hands flat on the floor and in line with your shoulders, your fingers pointing forwards, and your knees below your hips.



2 Round your back upwards and pull in your stomach, letting your head drop down as you do so. Hold the stretch for a few seconds at the top of the movement.



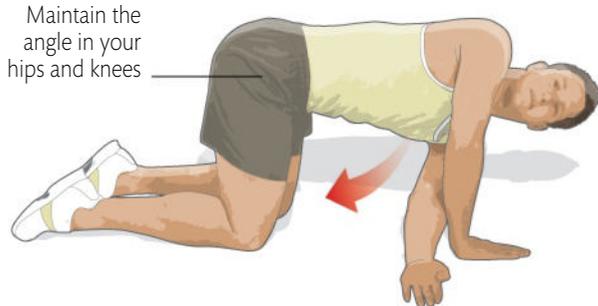
3 In one fluid movement, raise your buttocks and curve your spine downwards while lifting your head so that you are looking straight ahead. Hold the stretch for a few seconds, then return to the start position.

THREADING THE NEEDLE

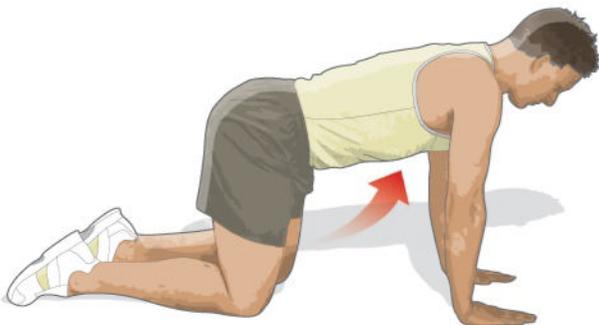
This dynamic stretch is good for mobilizing the spine and improving your spinal flexibility while warming up the muscles of your shoulders and lower back.



- 1** Kneel on all fours with your back flat and your neck in a relaxed position. Position your arms directly under your shoulders, and bend your hips and knees at right angles, keeping your feet together.



- 2** Supporting your weight with your right hand, reach under and across your chest with your left hand, turning your head to look to the right.



- 3** Hold the stretch for a few seconds then reverse the movement to the start position. Repeat as required and switch sides.

HIP FLEXOR STRETCH

This stretch is an excellent movement for your hip flexors, which may be particularly tight if you spend a lot of time sitting down. Good hip mobility is vital for balance and posture.



- 2** Lean forward, putting your weight on your left leg. Feel the stretch in your right thigh, and hold briefly at the edge of the movement. Labels indicate: 'Keep your head upright' and 'Push your pelvis forwards'.

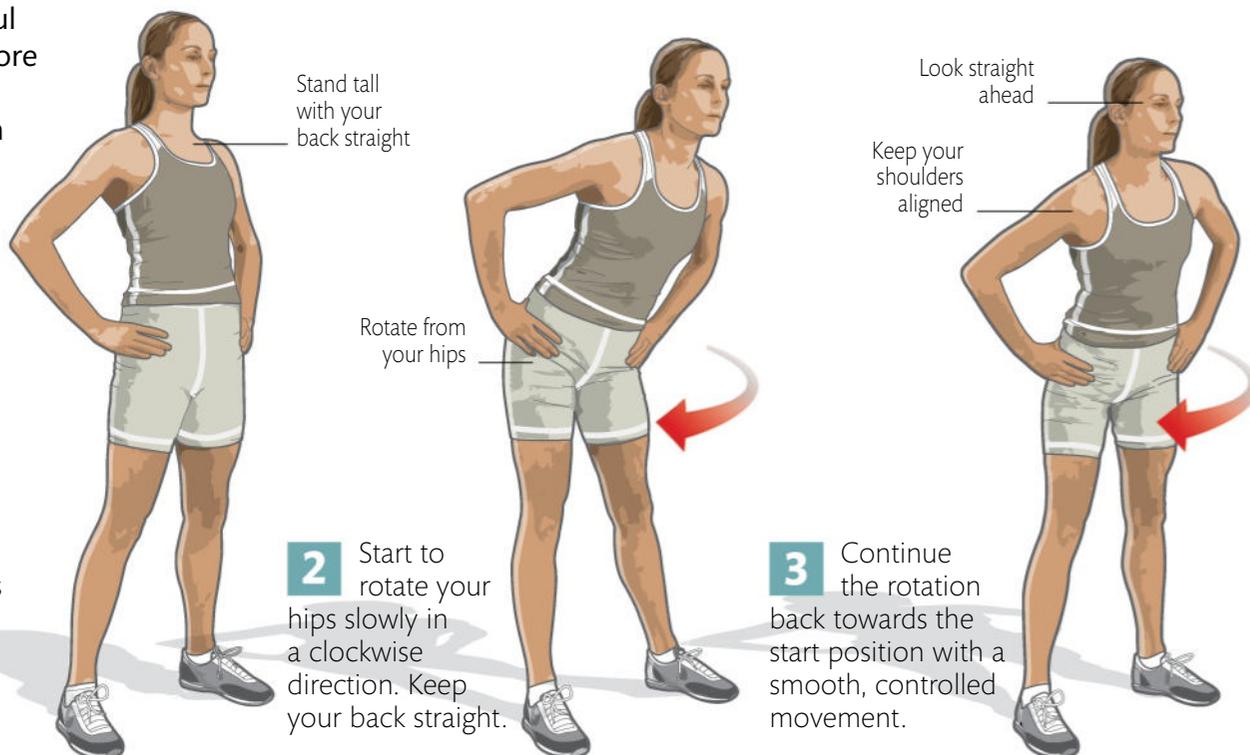


- 3** Release and reverse the movement back to the start position. Repeat the stretch with your right leg.



HIP CIRCLE

This rotational dynamic stretch offers a useful warm-up for your core muscles. In contrast to the torso rotation (»p.42) you should keep your upper body stationary while rotating your hips.



1 Stand upright with your hands on your hips, your legs straight, and feet shoulder-width apart.

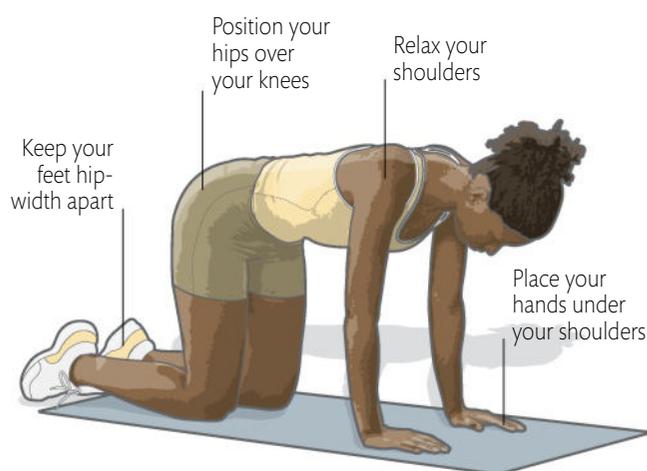
2 Start to rotate your hips slowly in a clockwise direction. Keep your back straight.

3 Continue the rotation back towards the start position with a smooth, controlled movement.

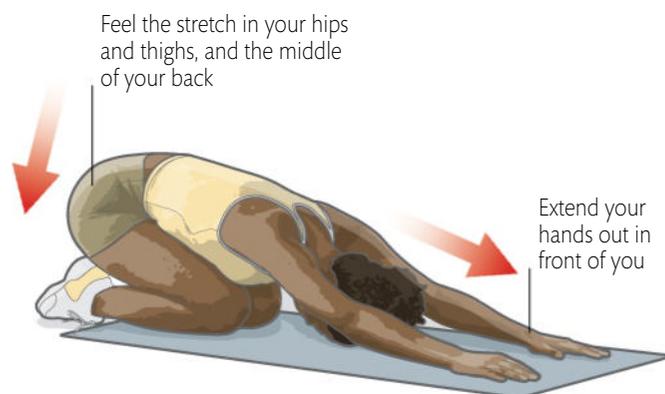
CHILD'S POSE

This movement gently mobilizes your spine and hips while also working your shoulders and upper back. If you find the exercise uncomfortable, you can place a

rolled-up towel between the back of your thighs and calves. To increase the stretch, reach your hands in front of you as far as you can.



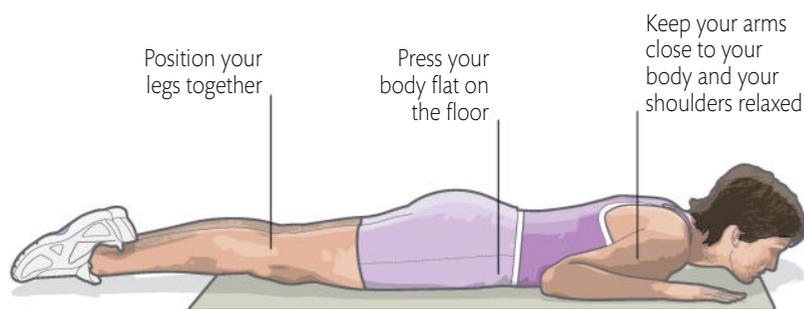
1 Kneel on all fours with your hands in line with your shoulders, your fingers pointing forwards, and your knees directly below your hips. Keep your back and neck straight.



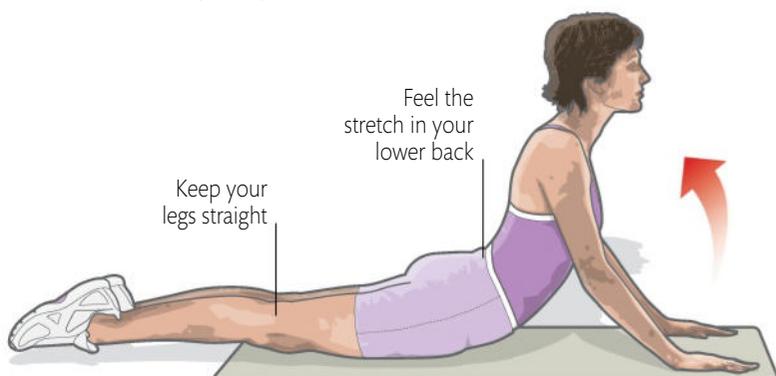
2 Keeping your hands in position, slowly lower yourself down onto your heels until your forehead touches the mat. Extend your hands in front of you as far as is comfortable.

COBRA EXTENSION

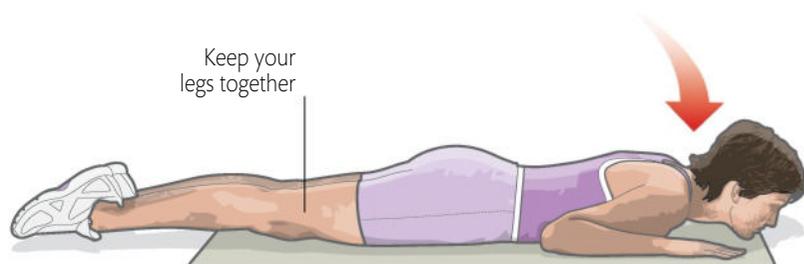
This simple exercise is designed to stretch and strengthen your lower back muscles and improve your spinal flexibility. You should aim to perform the movement with a slow, fluid motion, keeping your neck and shoulders relaxed throughout.



1 Lie face down on a mat with your hands flat on the floor and roughly level with your chin. Extend your feet, keeping your legs together. Breathe in.



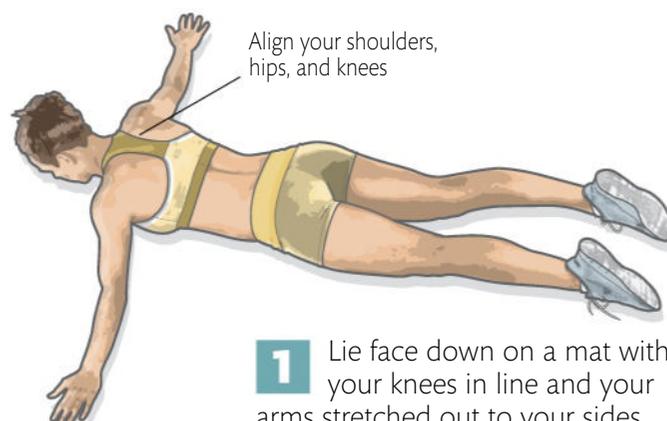
2 Pressing your hips against the mat and breathing out, lift your torso upwards slowly, using your arms for support. Raise your head and shoulders as high as you can, keeping your lower back relaxed.



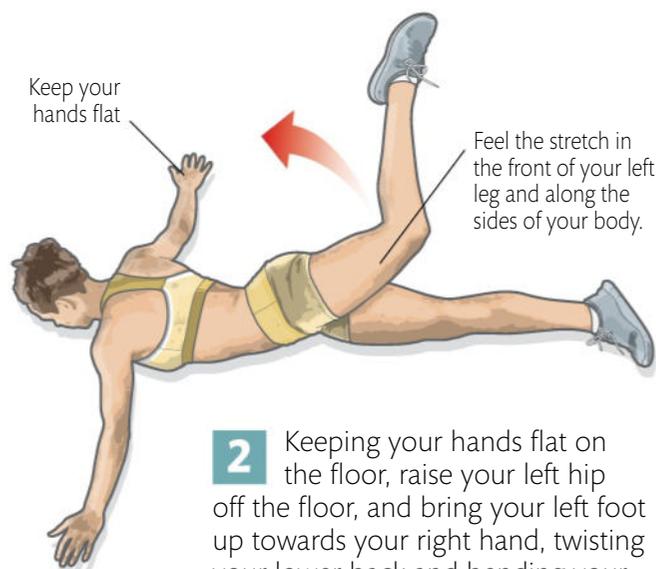
3 Pause briefly at the top of the movement, then lower your torso back to the start position with a smooth, controlled movement, and using your arms for support.

SCORPION STRETCH

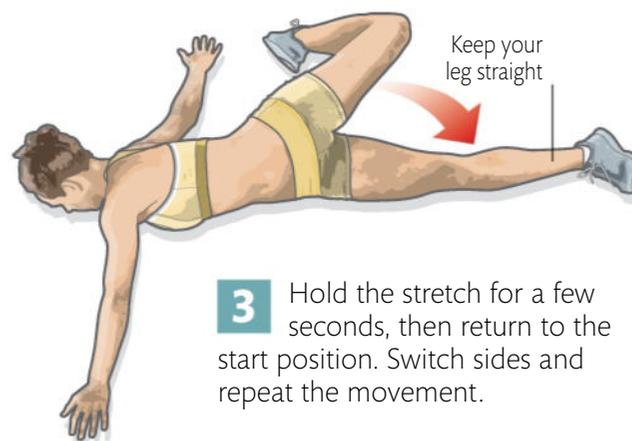
This is an excellent all-body stretch that improves your spinal flexibility. The movement can take some practice, but good technique is key, so focus on achieving the correct position rather than trying to push the stretch too far.



1 Lie face down on a mat with your knees in line and your arms stretched out to your sides, at right angles to your body.



2 Keeping your hands flat on the floor, raise your left hip off the floor, and bring your left foot up towards your right hand, twisting your lower back and bending your left knee as you do so.



3 Hold the stretch for a few seconds, then return to the start position. Switch sides and repeat the movement.

BACK ROLL

This dynamic stretch is an excellent way of mobilizing the muscles of your spine, lower back, and buttocks. Aim to perform the movement

with a slow, controlled movement, and use a mat to cushion your spine as you roll. Be careful not to place strain on your neck.



1 Sit upright on a mat with your knees drawn up to your chest and your feet lifted off the floor. Engage your core, grip your ankles, and relax your neck, keeping your head facing forwards.



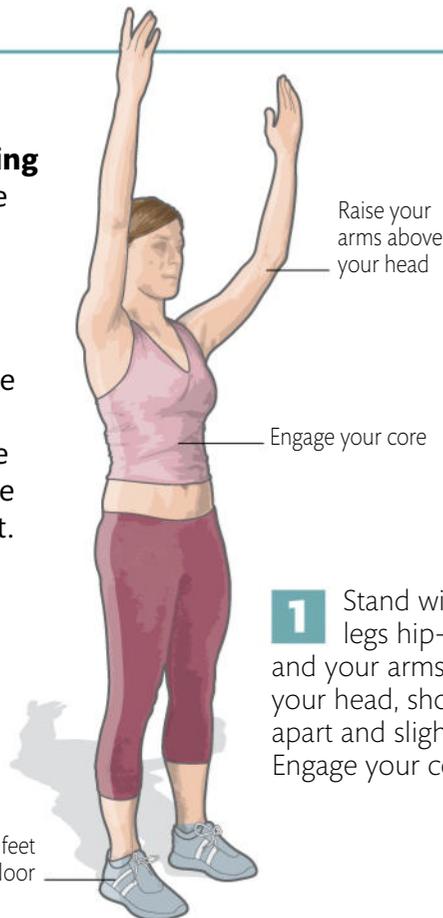
2 Gently roll backwards until your shoulder blades are resting on the floor, with your knees tucked up to your chest. Keep your core engaged and be careful not to roll onto your neck.



3 Hold the stretch for a few seconds, then reverse the movement with a smooth, controlled motion, rolling forwards to return to the start position.

SKIER

This excellent mobilizing stretch works your spine and shoulder joints in one fluid movement. It also encourages your upper and lower body to function as a unit. The exercise requires good co-ordination and range of motion, so it may take some practice to perfect.



1 Stand with your legs hip-width apart and your arms raised above your head, shoulder-width apart and slightly bent. Engage your core.

2 Bending your knees and dropping your buttocks back into a half squat, swing your upper body down and forwards, keeping your arms straight, your core engaged, and your back in a neutral position.



STANDING ROLL-DOWN

This dynamic stretch helps to mobilize the muscles of your lower back, while providing additional benefits to your hamstrings and shoulders. You should perform the exercise with a smooth, fluid movement.

1 Stand tall with your feet shoulder-width apart and your knees slightly bent. Engaging your core, raise your arms above your head, keeping your elbows soft.



2 Begin to roll down through the spine, initiating the movement from the head and upper back. Drop your arms forward and below the shoulders in a smooth controlled motion.



3 Continue the movement until you are as fully folded as possible, without straining. Relax your head, neck, and shoulders. Hold briefly, then return to start position in a slow, fluid motion.



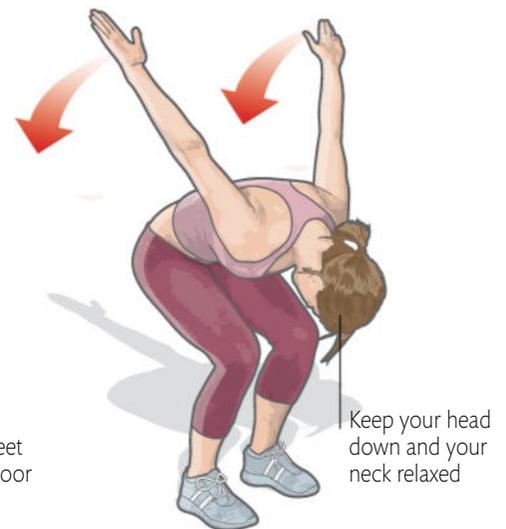
3 Remaining in the half-squat position, continue the swinging movement with your arms outside your legs, keeping your arms straight and your elbows soft.



4 Keeping your arms straight, continue the swinging movement of your arms hands past your knees and towards your hips.



5 Extend the swing back and upwards, rotating at your shoulders until your arms are roughly parallel with your thighs. Pause briefly at the edge of the movement, then reverse the sequence to the start position.

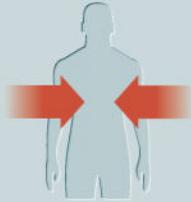


ACTIVATION

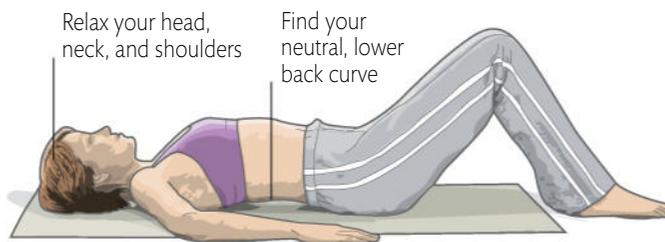
Activation is a fundamental part of core training, helping to strengthen your core and prevent injuries. The “deep” core muscles responsible for stabilization are not as easy to feel as

“surface” muscles, and engaging them therefore requires time, focus, and control. Concentrate on your breathing and technique to ensure you are performing the movements correctly.

ACTIVE PELVIC FLOOR

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Pelvic floor	
■ Multifidus	
DIFFICULTY LEVEL 	

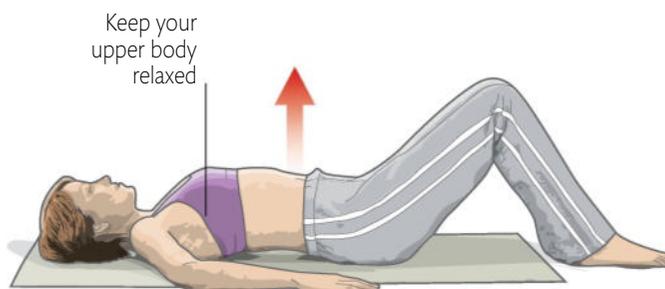
This exercise gently stretches the muscles and ligaments of your back, strengthening your core and improving your posture; it also helps relieve pressure on your facet joints. You should perform this exercise on the floor at first, but as your technique improves you can try it standing up.



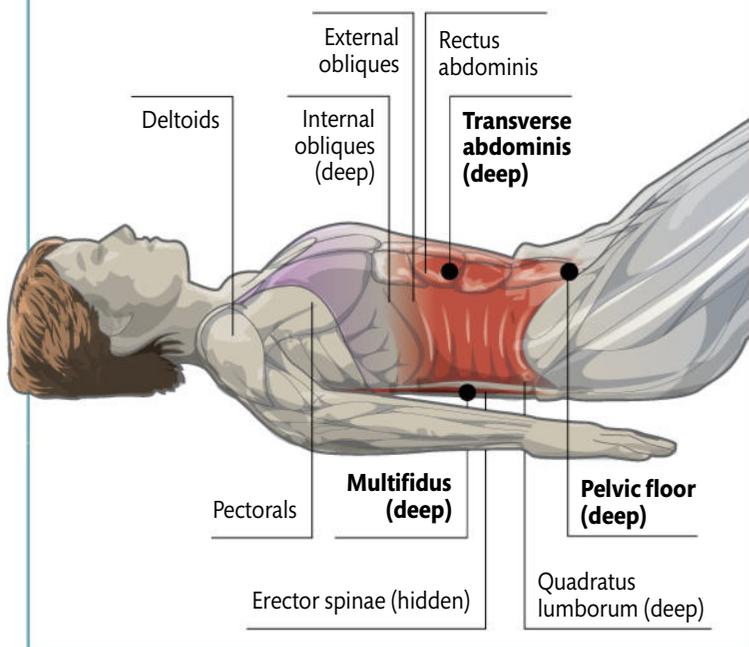
1 Lie on your back with your knees bent at a comfortable angle, your feet flat on the floor and hip-width apart, your arms by your sides, and your lower back in a neutral arch. Relax in this position before you begin.



2 Gently press the small of your back into the floor and tilt your pubic bone upwards by engaging your abdominal and pelvic floor muscles. Hold for at least three seconds.

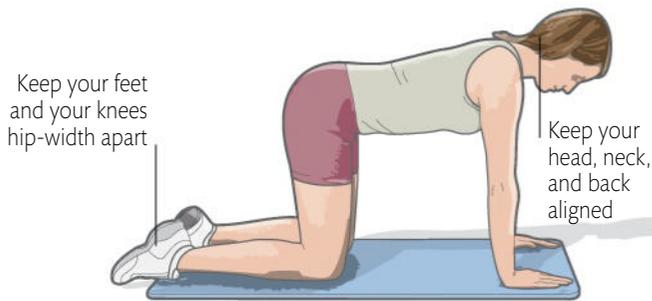


3 Relax and return to the start position, so that the small of your back is slightly arched once more. Repeat as required and relax.



PROGRESSION 1

This **kneeling pelvic tilt** helps if you have poor posture or a back complaint. Some experts recommend this as an alternative for the supine version of the exercise (left) because it gives you a greater range of movement.



- 1** Kneel on a mat with your hands under your shoulders and your knees under your hips, keeping your back in a neutral position, and breathe in deeply.



- 2** Breathe out, pulling your abdominals in tight, and suck in your belly button towards your spine. With one fluid motion, reverse the curve in your lower back and tilt your hips.



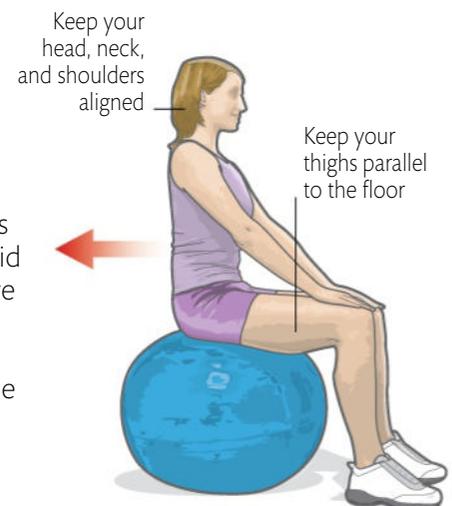
- 3** Release your spine to a neutral position, without dropping through your back. Inhale and exhale, feeling the movement within your abs. Repeat as required.

PROGRESSION 2

It is **harder** to perform the pelvic tilt in an upright posture, either standing or sitting, but doing this movement on an exercise ball provides a helpful guide, as the ball will shift forwards slightly when you do the exercise correctly.



- 1** Sit up straight on an exercise ball, with your feet parallel and hip-width apart. Rest your hands on your knees. Keep your back straight and your spine neutral. Breathe in deeply, maintaining this position.



- 2** Exhale forcefully, pulling your abdominals in tight and drawing them in towards your spine. With one fluid motion, reverse the curve in your lower back by tucking your hips under your torso and rolling the ball forward very slightly as you do so.



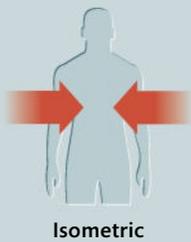
- 3** Hold the position for a few seconds, then release to return to the neutral position in step 1. Repeat as required and relax.

HEEL SLIDE

TARGET MUSCLES

- Transverse abdominis
- Internal obliques
- Pelvic floor
- Multifidus
- Quadratus lumborum

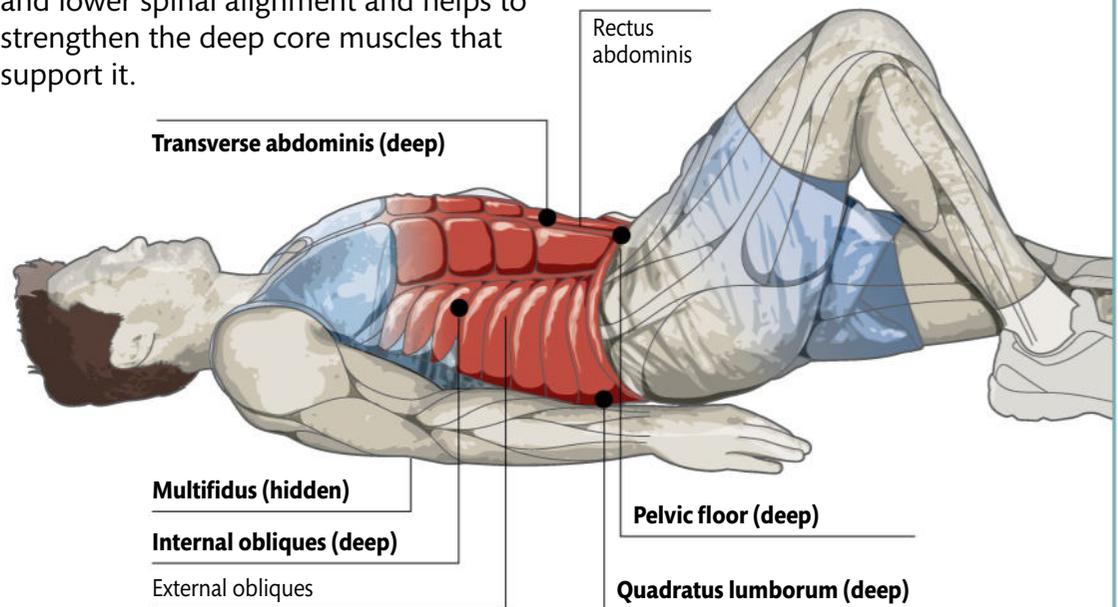
TARGET MOVEMENT



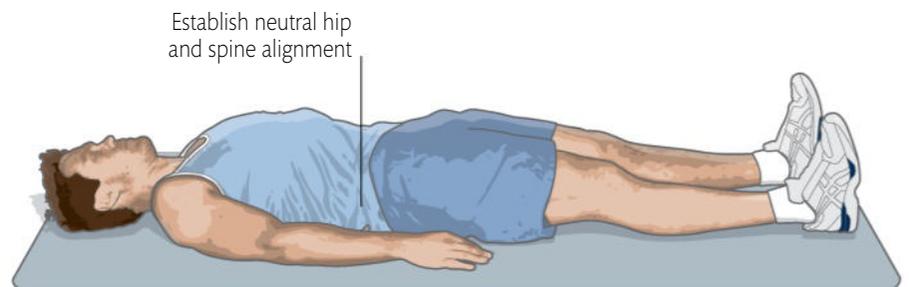
DIFFICULTY LEVEL



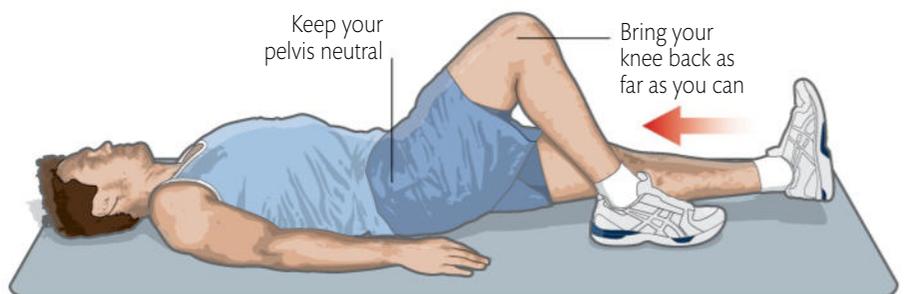
This exercise is good for improving your awareness and stability of neutral hip and lower spinal alignment and helps to strengthen the deep core muscles that support it.



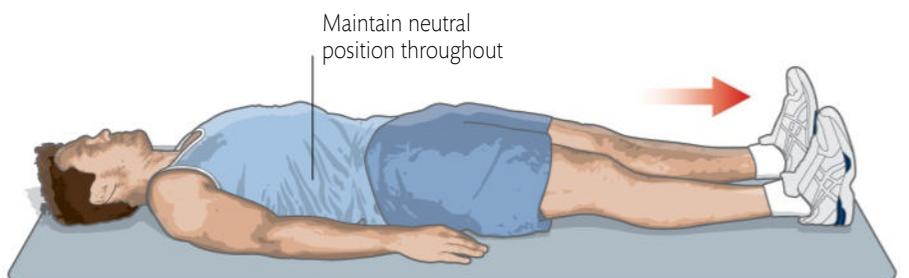
1 Lie on your back with your legs stretched out straight in front of you, your arms by your sides, and your heels pressed lightly against the floor. Locate your neutral hip and spine position before you begin this exercise.



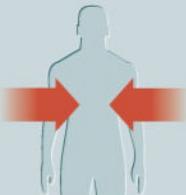
2 Slowly bend your right knee up by sliding your right heel along the ground. Bend it as far as you can without rocking or lifting your hips off the ground, or disturbing the lumbar spine position. Keep your core engaged throughout.



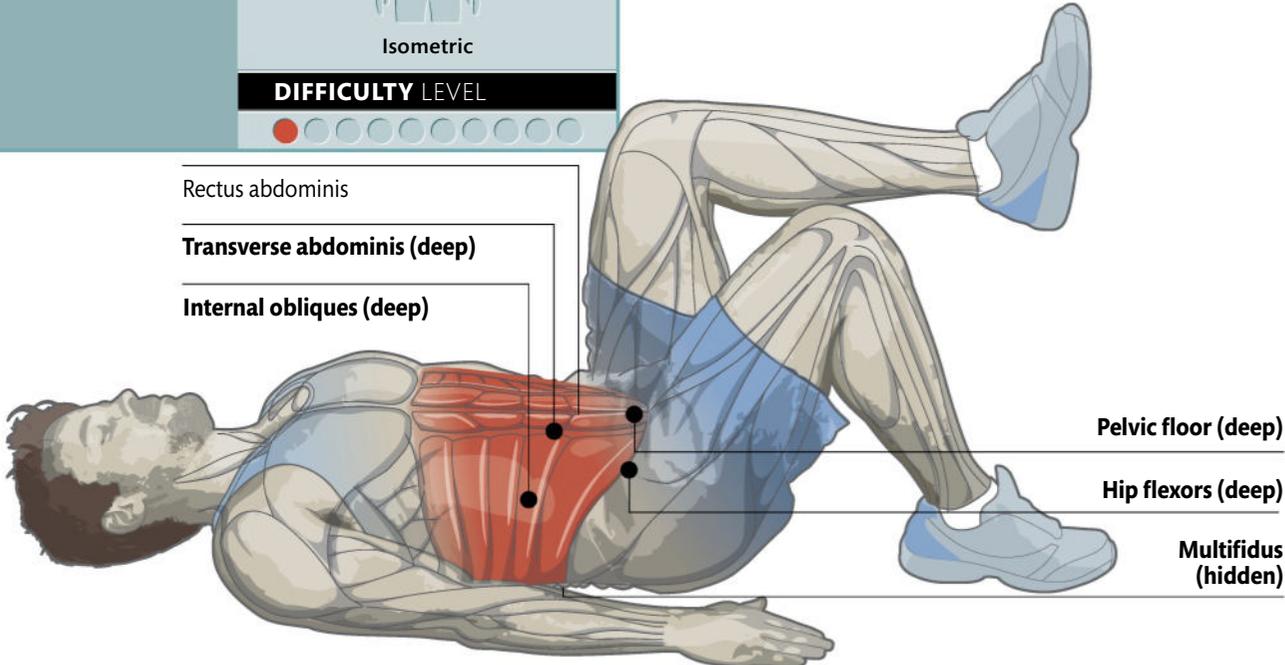
3 Slide your right leg back to the start position, without allowing the hips to rock to one side. Stay weighted in the tailbone and keep your core engaged. Alternate with each leg for the required number of reps, then relax.



KNEE FOLD

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Internal obliques	
■ Pelvic floor	
■ Hip flexors	
■ Multifidus	
DIFFICULTY LEVEL 	

This is a moderate-impact core-stabilizing exercise that helps to strengthen the deep muscles of your abdomen and your lower back. It can also be a useful exercise for preventing pain in your lumbar region. To get the best results from the exercise, keep the muscles of your core engaged throughout.

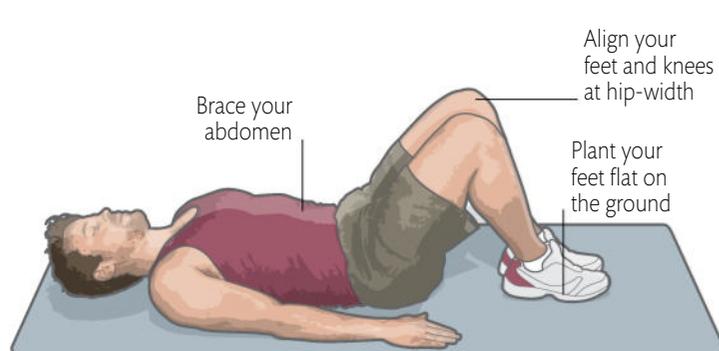


Rectus abdominis
Transverse abdominis (deep)
Internal obliques (deep)
 Pelvic floor (deep)
 Hip flexors (deep)
 Multifidus (hidden)

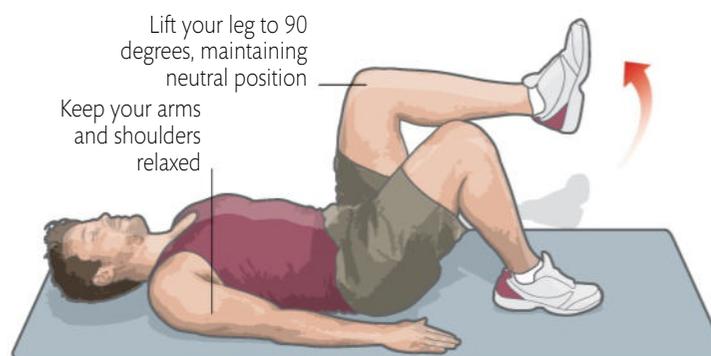
VARIATION

This simple version of the movement keeps one foot anchored on the floor at all times – use this variation if you need a gentle warm-up, or if you

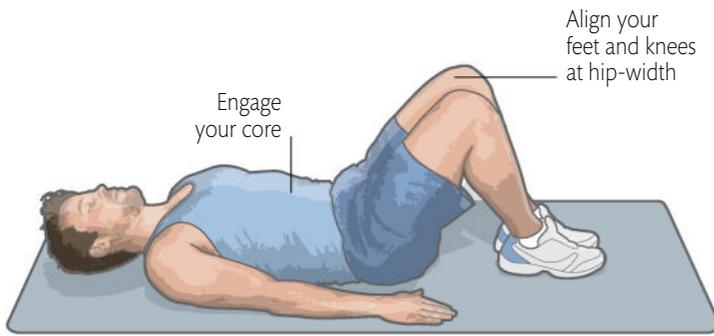
want to try a less demanding version of the exercise. Keep your core engaged throughout and concentrate on maintaining good form.



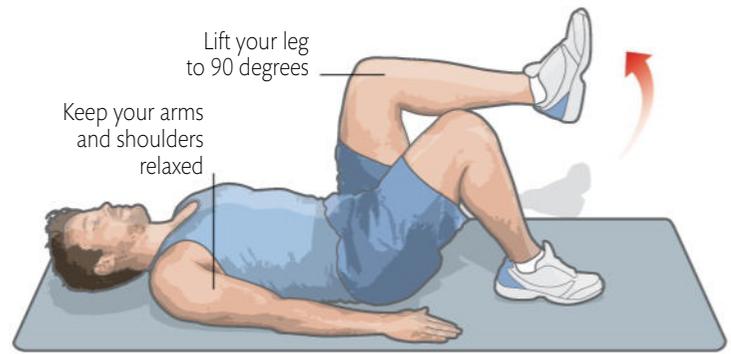
1 Lie on your back with your spine and hips in a neutral position. Relax your upper back and shoulders, bend your knees, and engage your core.



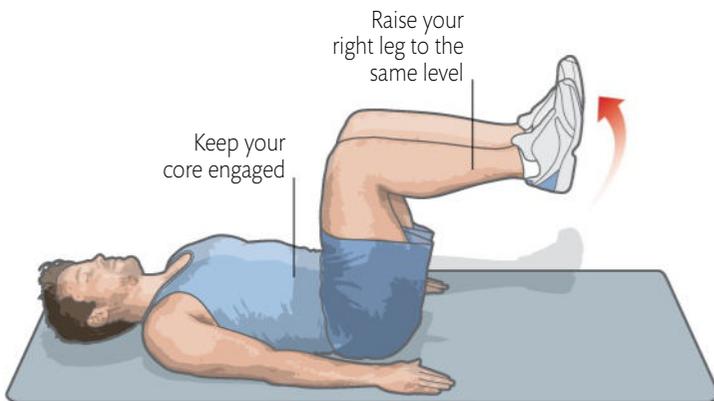
2 Lift your left leg so that your hip and knee are at right angles, while maintaining hip and lower-back alignment. Hold this position for a few seconds, then slowly lower your legs to the start position. Repeat as required, then switch legs.



1 Lie on your back and bend your knees, with your feet flat on the floor. Relax your shoulders and upper back, engage your core, and keep your spine and hips in a neutral position.



2 Keeping your core engaged, lift your left leg so that your hip and knee are at right angles. Keep your right foot on the floor and maintain neutral position.



3 With your core engaged, lift your right leg until it is level with your left. Hold this position for a few seconds; avoid tilting your hips and dropping your back.



4 Keeping your core engaged, slowly lower your left leg until your left foot is flat on the floor, without letting your lower back arch, then lower your right leg.

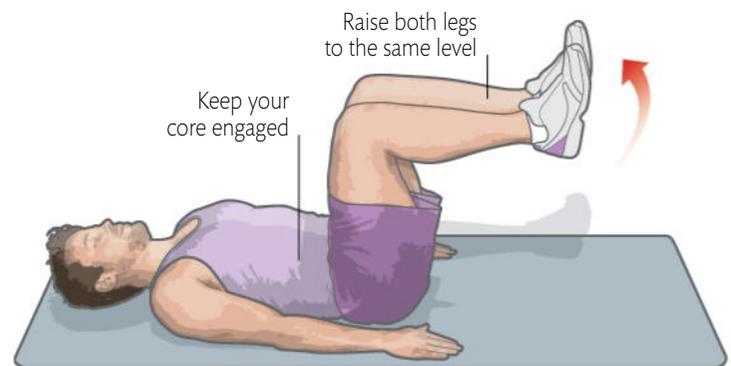
PROGRESSION

Once you have mastered the basic exercise, try this more demanding progression, in which you raise both legs at once. Focus on maintaining core stability and neutral alignment throughout the

movement. Keep your core engaged and your knees bent at a consistent angle, and avoid dropping or over-arching through your lower back.

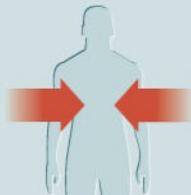


1 Lie flat on your back, relaxing your upper back and shoulders, and with your spine in a neutral position. Bend your knees, while keeping your feet flat on the floor at all times.

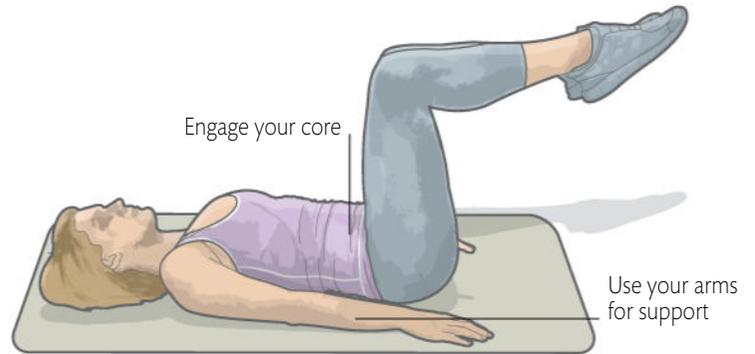
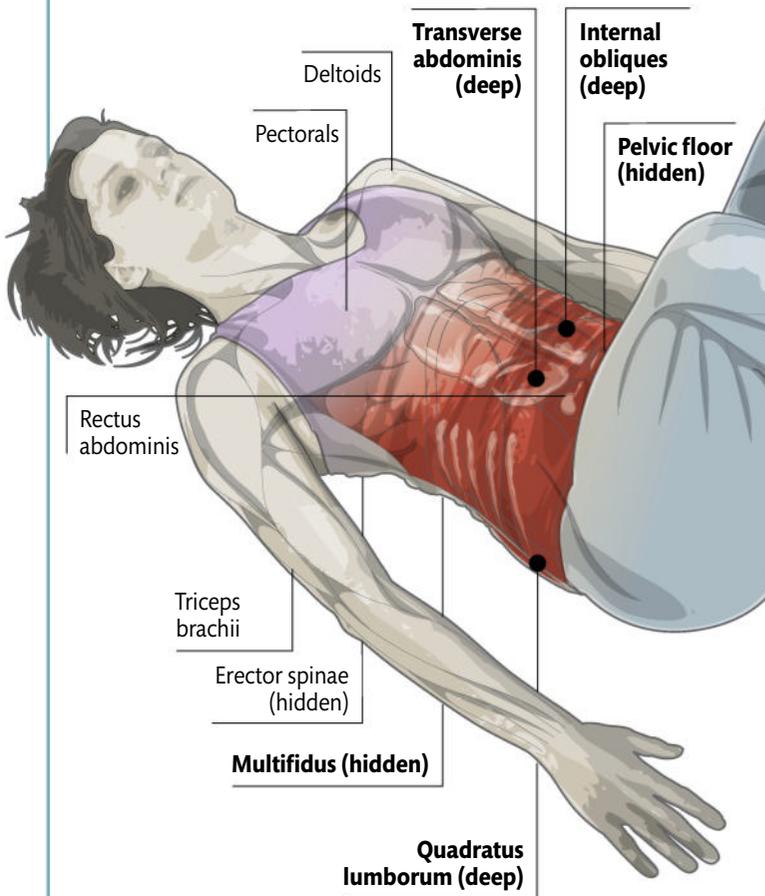


2 Engage your core. Lift both legs off the floor, keeping them aligned and hold neutral spine alignment. Hold this position for a few seconds, then slowly lower your legs to the start position without letting your lower back lift.

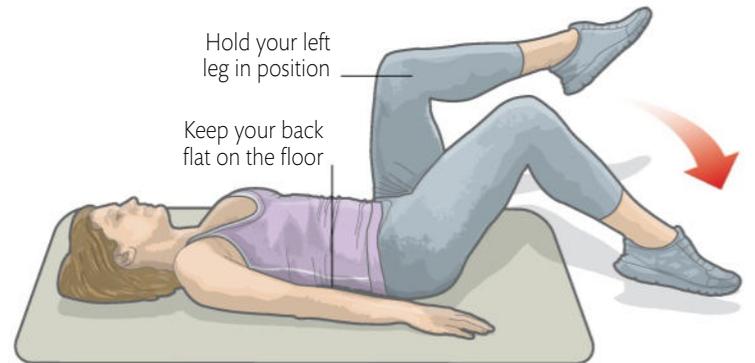
TOE TAP

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
DIFFICULTY LEVEL 	

This is a moderate-impact core-stabilizing exercise that can be helpful for strengthening the deep muscles of your abdomen and lower back. To get the best results from the movement, ensure you keep your core engaged throughout.



1 Lie on your back with your arms by your side. Engage the core and lift your legs in the air with your knees and feet at hip width. Keeping your spine and hips in a neutral position, relax your shoulders, using your arms to stabilize you if you need to.



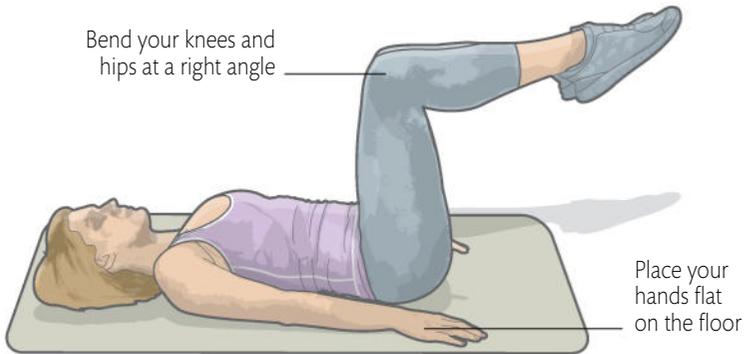
2 Keeping your core engaged, and holding your left leg at a right angle, lower your right leg towards the floor slowly and with control, without letting your back arch off the floor.



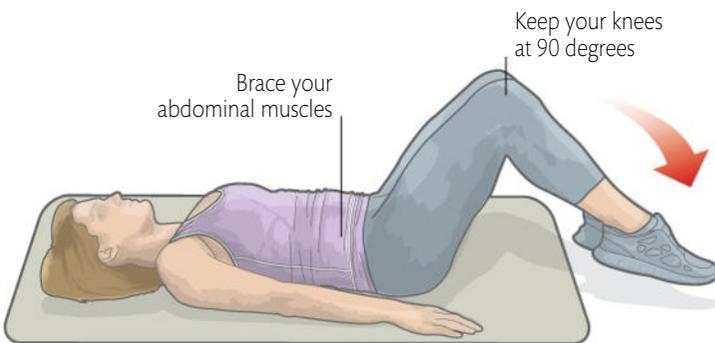
3 Hold at the edge of the movement, keeping your core braced, then return to the start position, maintaining control as you do so. Repeat as required, then swap legs.

PROGRESSION 1

Once you have mastered the basic movement you can make it harder by performing the exercise with both legs at the same time. This works the muscles of the abdomen and lower back much more intensely.



- 1 Lie on your back with your arms by your sides. Bracing your abdomen, lift your legs into the air with your knees and feet together, and your toes pointing out. Use your arms to stabilize yourself if necessary.



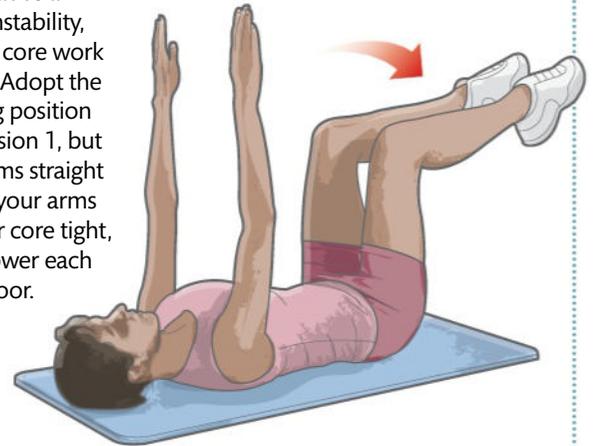
- 2 Keeping your core engaged, slowly lower both feet under control, without letting them drop to the floor.



- 3 Hold at the edge of the movement, then return to the start position, slowly and with good control.

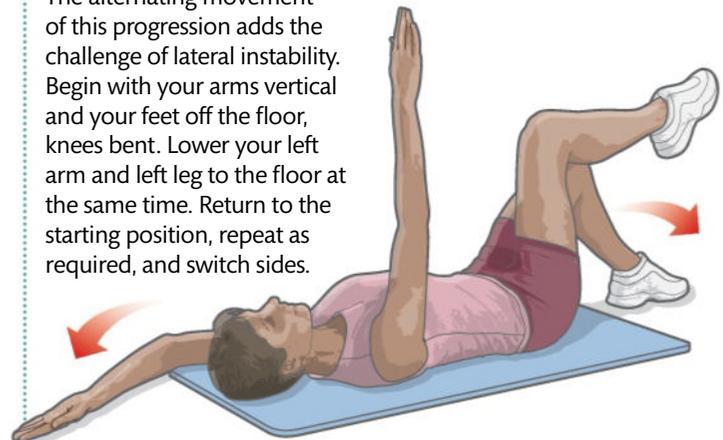
PROGRESSION 2

Raising your arms off the floor adds an element of instability, making your core work even harder. Adopt the same starting position as in Progression 1, but raise your arms straight up. Keeping your arms still, and your core tight, alternately lower each foot to the floor.



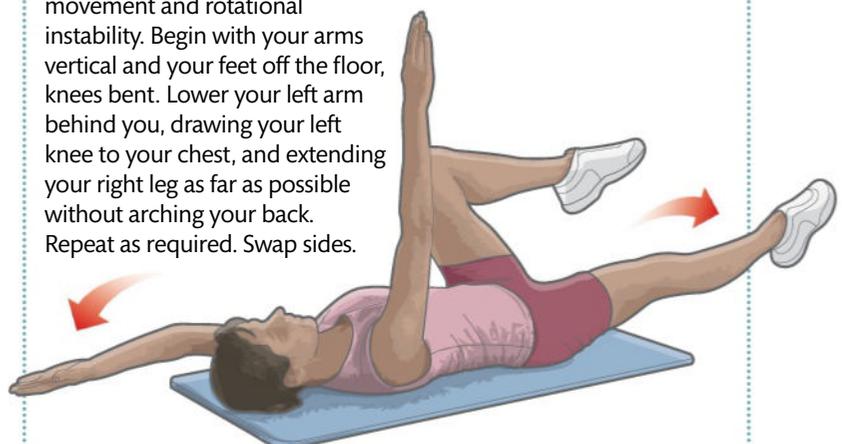
PROGRESSION 3

The alternating movement of this progression adds the challenge of lateral instability. Begin with your arms vertical and your feet off the floor, knees bent. Lower your left arm and left leg to the floor at the same time. Return to the starting position, repeat as required, and switch sides.

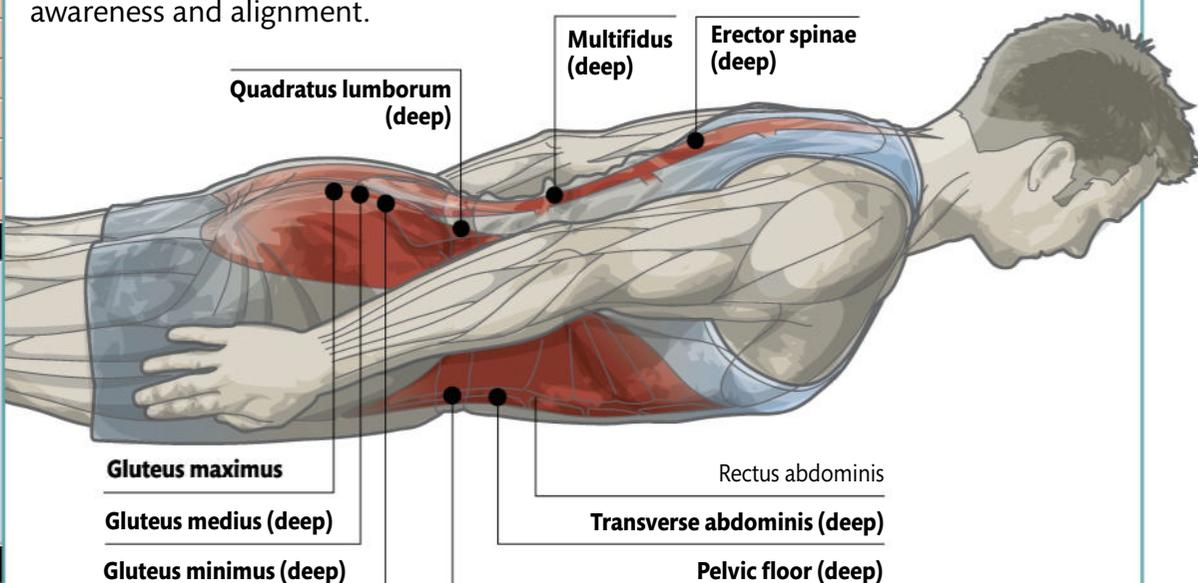


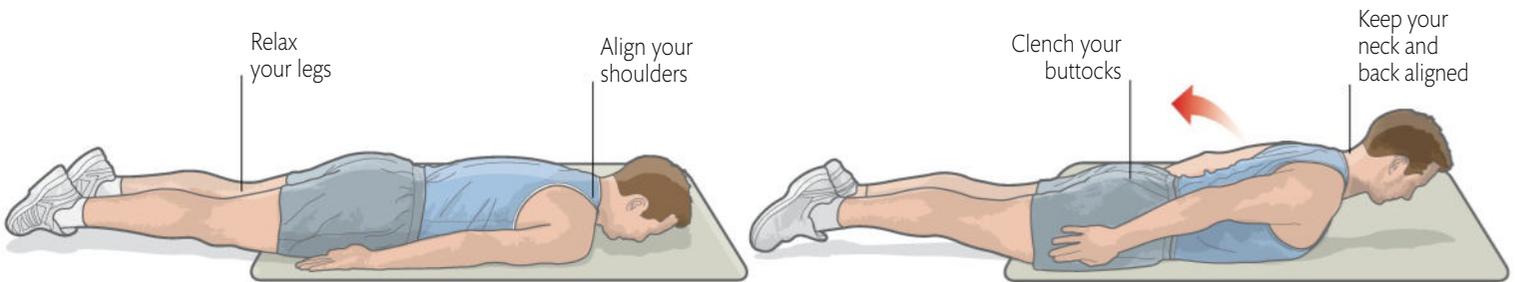
PROGRESSION 4

This progression adds dynamic movement and rotational instability. Begin with your arms vertical and your feet off the floor, knees bent. Lower your left arm behind you, drawing your left knee to your chest, and extending your right leg as far as possible without arching your back. Repeat as required. Swap sides.



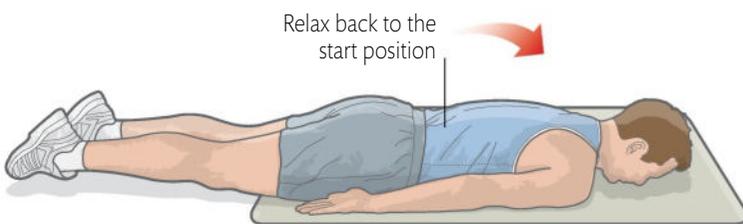
DART

TARGET MUSCLES	<p>This activation exercise encourages deep core stability and strengthens the muscles of your upper back and glutes. It is one of the most effective exercises for improving posture awareness and alignment.</p> 
■ Transverse abdominis	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
■ Gluteus maximus	
TARGET MOVEMENT	 <p>Extension</p>
DIFFICULTY LEVEL	



1 Lie face down on a mat, with your arms by your sides, palms up. Relax your trunk and legs. Breathe in, engaging your abdominals before you begin to move.

2 Lift your head, lengthening your neck. Raise your shoulders off the floor, rolling your palms in to face your thighs and draw your legs together to engage your glutes. Use your abs and lower back to control the movement.



3 Hold briefly, ensuring you maintain abdominal engagement, spinal length, and hip alignment, then return to the start position slowly and smoothly.

PROGRESSION

Once you have mastered the basic exercise, you can add a greater element of instability by placing a stability disc beneath your hips and lower abdomen. As before, control the movement using your glutes and the muscles of your lower back.

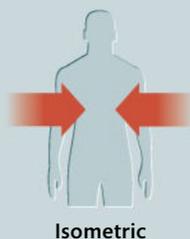


OYSTER

TARGET MUSCLES

- Transverse abdominis
- Pelvic floor
- Multifidus
- Gluteus medius
- Gluteus maximus

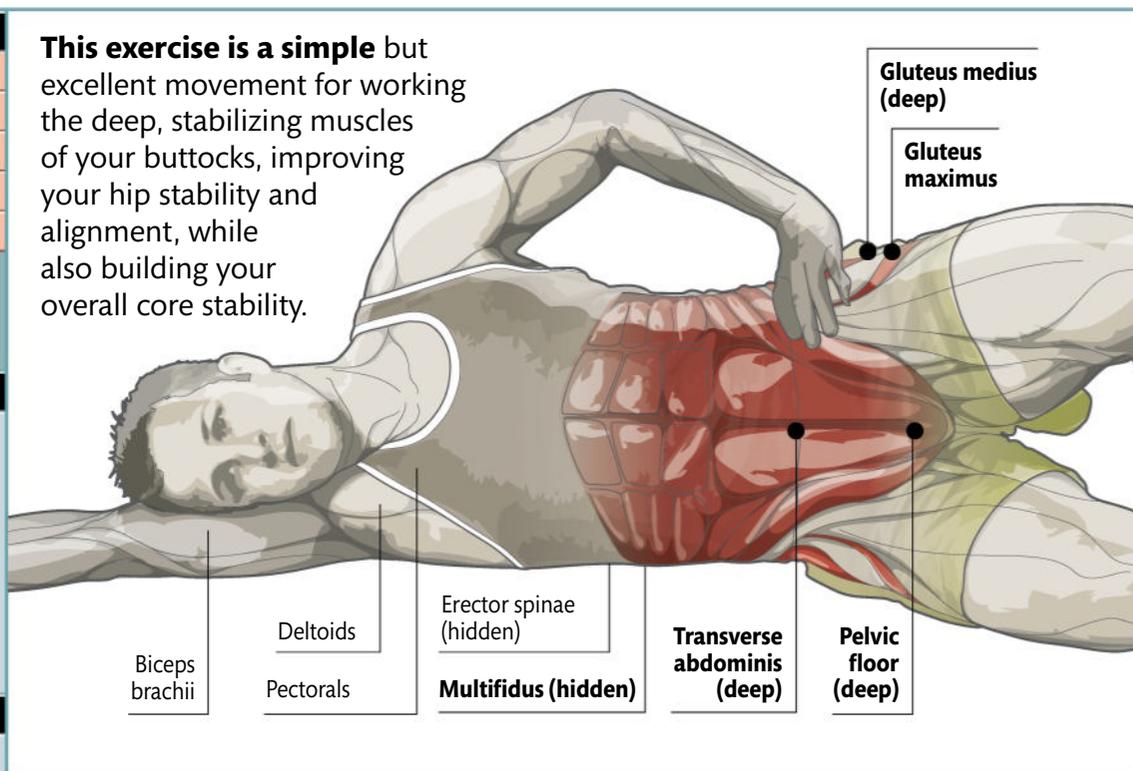
TARGET MOVEMENT



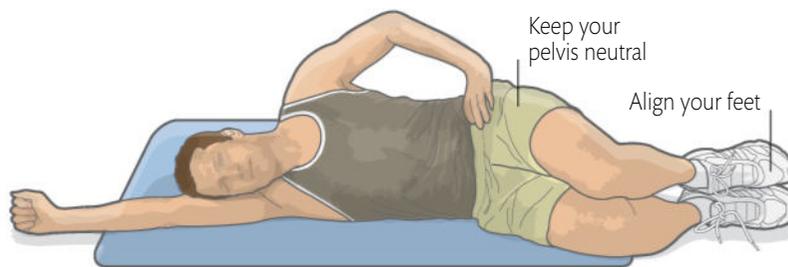
DIFFICULTY LEVEL



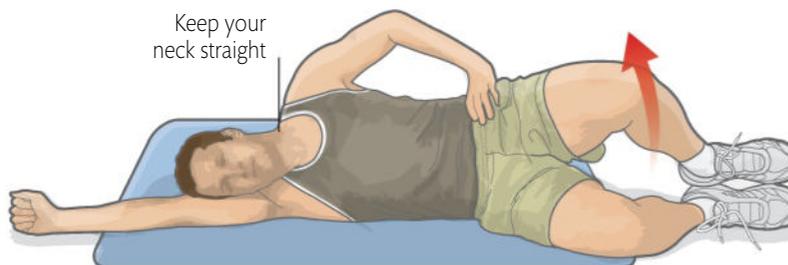
This exercise is a simple but excellent movement for working the deep, stabilizing muscles of your buttocks, improving your hip stability and alignment, while also building your overall core stability.



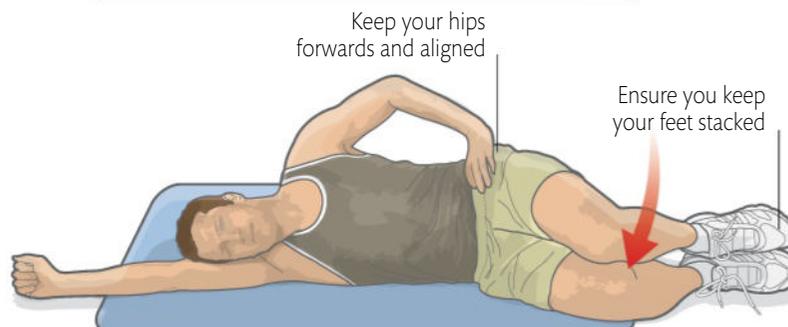
1 Lie on your right side, bending both the hips and knees at a 45-degree angle. Extend your right arm so that it is in line with the body, and rest your head on it. Bend your left arm at the elbow and place the left hand on to the floor in front of you.



2 Keeping your neck straight, your hips and shoulders in line, and your feet touching, engage your core and begin lifting the knee of your left leg, rotating at your hip.



3 Lift your left knee as far as it will go without straining, keeping your hips aligned. Slowly lower your knee back to the start position, and repeat for the required number of reps before swapping sides.

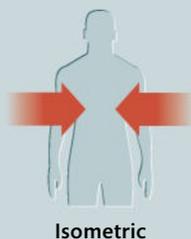


STAR

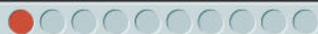
TARGET MUSCLES

- Transverse abdominis
- Pelvic floor
- Erector spinae
- Multifidus
- Quadratus lumborum
- Gluteus medius
- Gluteus maximus

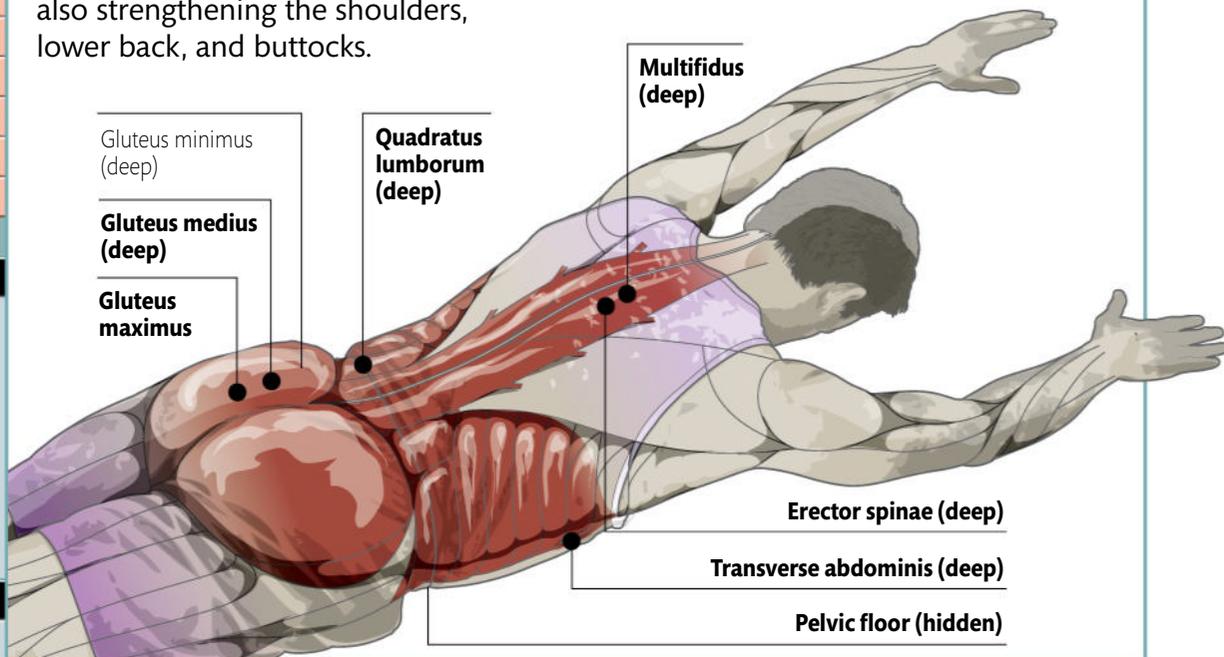
TARGET MOVEMENT



DIFFICULTY LEVEL



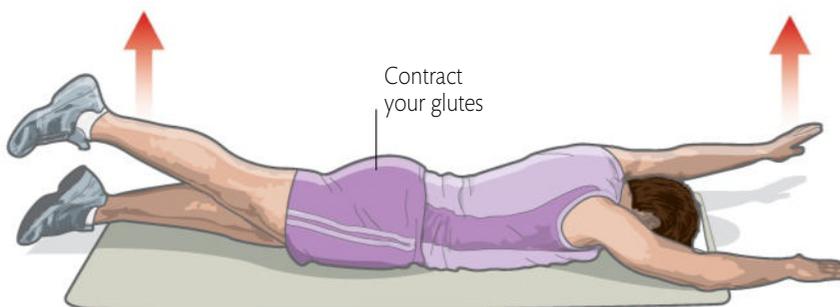
This exercise is useful for stabilizing the muscles along your spine, while also strengthening the shoulders, lower back, and buttocks.



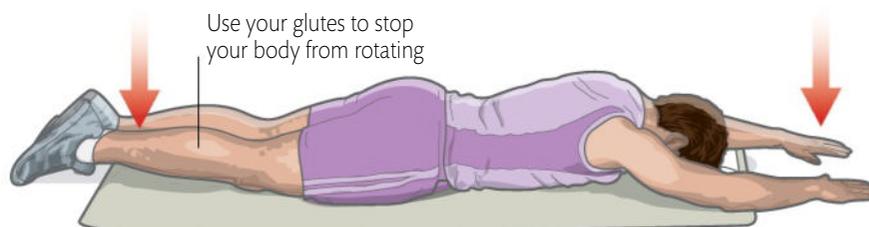
1 Lie face down with your forehead resting on a mat. Align your neck and head. Extend your arms in front of you with the palms facing down. Lengthen your torso by stretching your neck away from your body, and engage your core.



2 Keeping your head in line with your spine and your abs tight, raise the left arm and the right leg 8–15cm (3–6in) off the floor. Hold your glutes tight and avoid rocking your hips and dropping through your lower back.



3 Hold the position briefly. Lower your limbs slowly and with control to return to the start position. Repeat as required and switch sides.

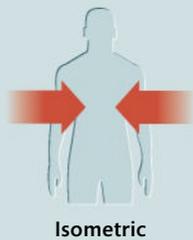


SUPERMAN

TARGET MUSCLES

- Transverse abdominis
- Pelvic floor
- Multifidus
- Quadratus lumborum
- Gluteus medius
- Gluteus maximus

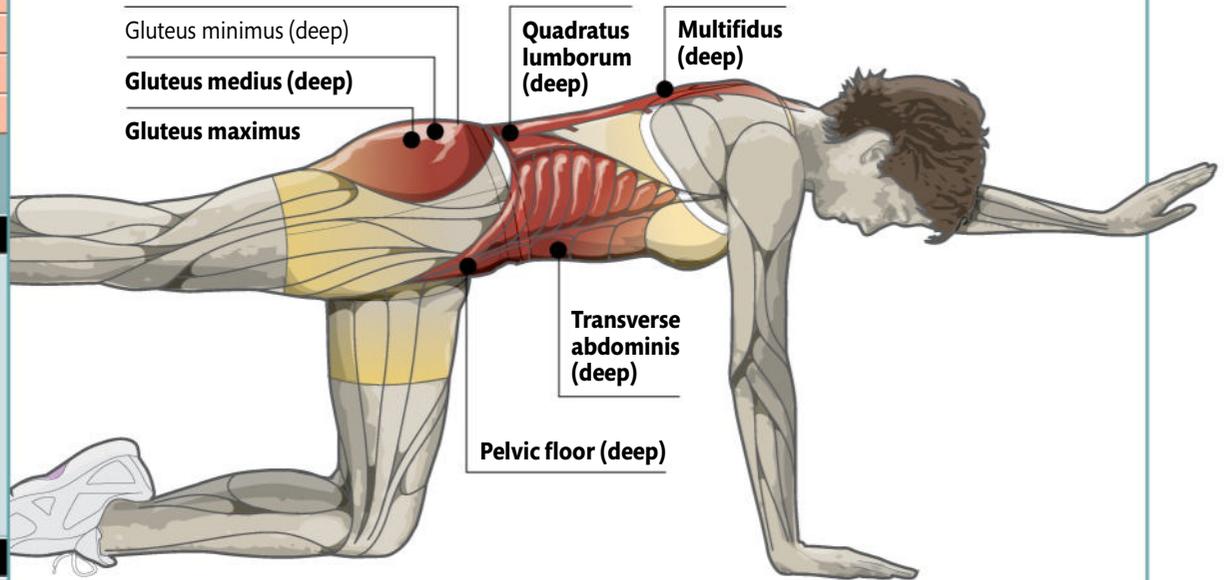
TARGET MOVEMENT



DIFFICULTY LEVEL

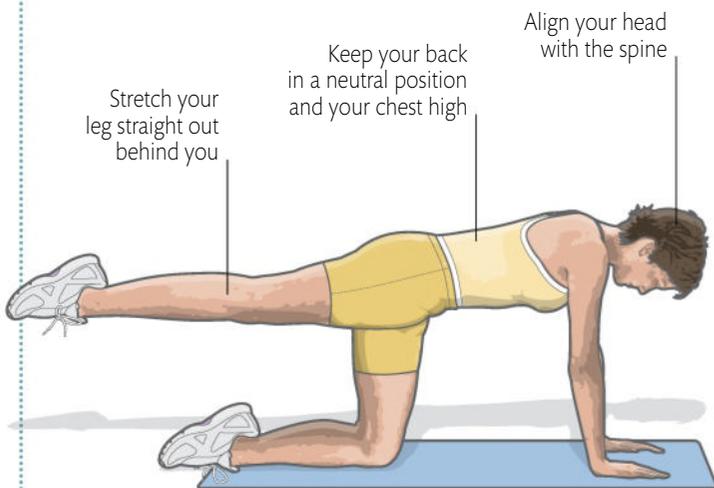


This exercise strengthens the spinal extensor muscles and deep spinal stabilizers, which support your spine, and builds strength and stability in your buttocks, lower back, and shoulders.



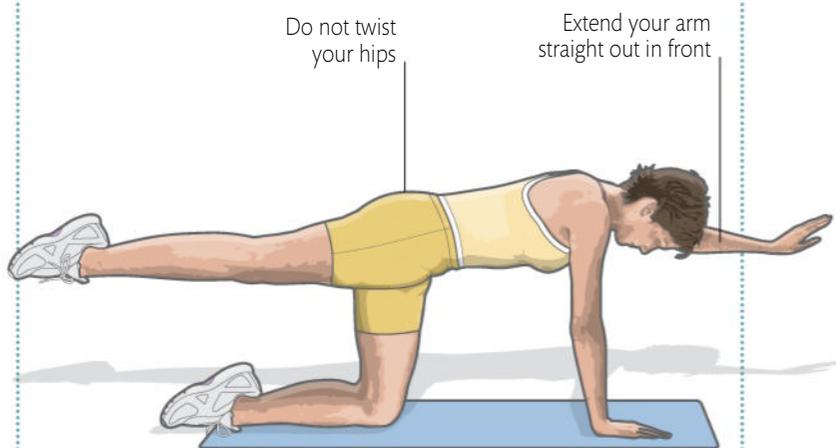
PROGRESSION 1

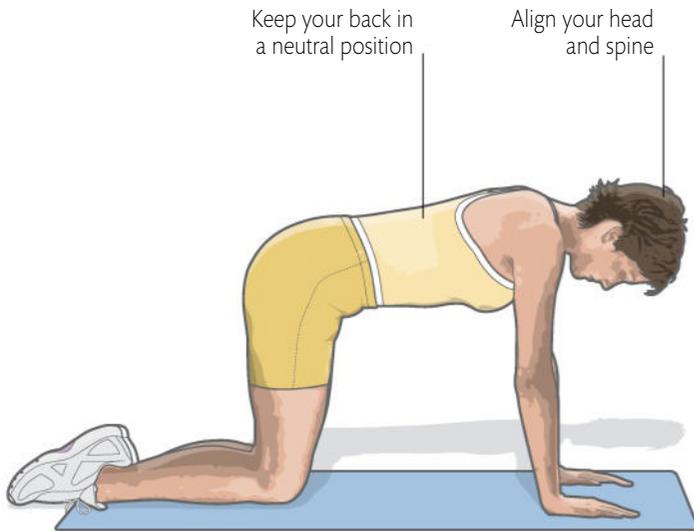
Assuming the main position with a leg raised, rather than an arm, demands greater balance and core control, because it increases the level of rotational instability working your spinal stabilizers and deep core muscles. To perform the movement, engage your core and lift your right leg behind you to hip height. Balance and hold for 10 seconds, then return to the start position, then switch legs. Be sure to keep your back straight and your shoulders and hips aligned.



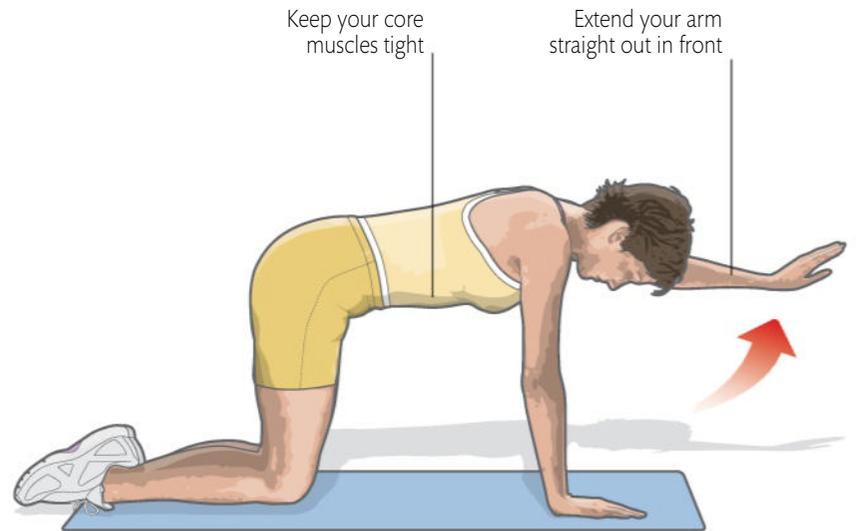
PROGRESSION 2

Combining an arm lift and a leg lift requires additional strength and stability as it increases rotational instability even more than removing the support of a leg. Contracting your abs, simultaneously lift your right leg behind you to hip height and your left arm forwards to shoulder height. Hold for 10 seconds, return to the start position, then repeat with your other leg and arm. Maintain a straight line from your shoulders to your hips throughout.





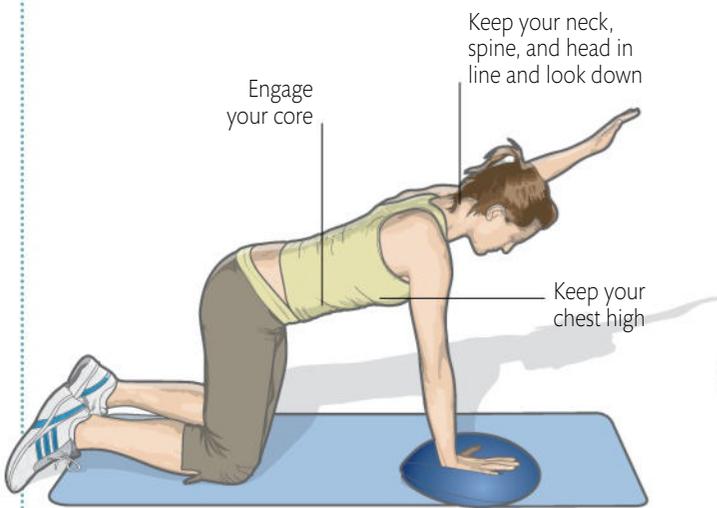
1 Kneel on all fours, with your knees aligned squarely beneath your hips. Keep your back straight and position your hands directly beneath your shoulders, pressing them flat on the ground and pointing forwards.



2 Engaging your core, raise one arm in front of you. Hold for 10 seconds, then return to the start position. Repeat the movement with your other arm and relax to the start position.

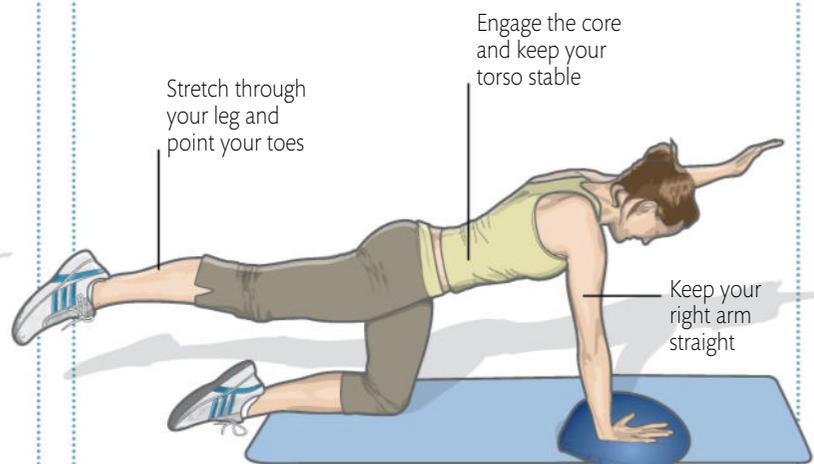
PROGRESSION 3

Placing a stability disc beneath your supporting arm makes your core work even harder to stabilize your spine. Assume the same position as in the main sequence, kneeling with your feet hip-width apart, and your right hand on the stability disc. Supporting your body weight on your right arm and knees, extend your left arm up, keeping it in line with your torso. Hold this position, then lower your left arm, relax, and swap arms. Keep your core engaged, your shoulders and hips in line, and your spine in a neutral position.



PROGRESSION 4

Using the body position of Progression 2 but placing a stability disc beneath your supporting arm offers an even greater challenge to your core. With your feet hip-width apart, support your weight on your right arm. In one smooth, controlled movement, extend your right leg out straight behind you and reach your left arm out in front. Hold, then return to the start position and switch arms and legs. Maintain a straight line from your shoulders to your hips and keep your core tight throughout.

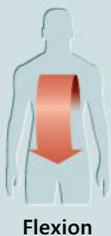


FOUNDATION

The exercises in this section are the building blocks of good core strength and stability. You should aim to master them before moving on to those in the Intermediate and Advanced

sections. To ensure you get the best results, focus on performing each exercise correctly, maintaining good form throughout and controlling the movements with your core.

ABDOMINAL CRUNCH

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Internal obliques	
■ Pelvic floor	
DIFFICULTY LEVEL 	

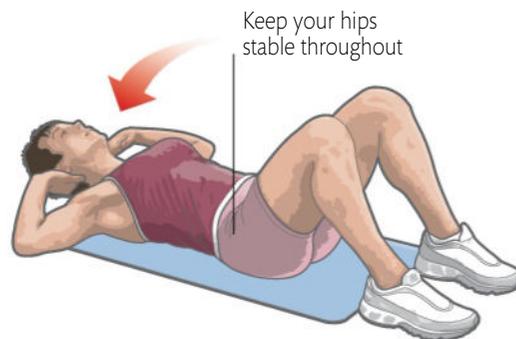
The basic abdominal crunch is one of the simplest and most popular of all core exercises. Good form is key – control the movement with your core and keep your shoulders and neck relaxed.



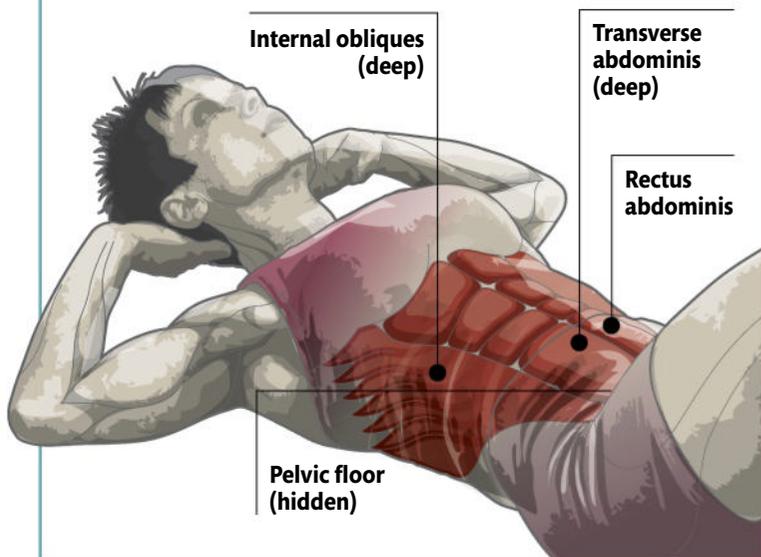
1 Lie on a mat with your knees bent, your feet flat on the floor, and your fingers against the sides of your head.



2 Crunching up from your core, lift your shoulders and upper back off the floor without straining.



3 Hold the position briefly, then lower your upper body slowly to the floor, controlling the downward phase with your core.



VARIATION

To work your abdominal area in a different way you can use a “pulsing” action. Pause at the top of the movement and slide your hands up and down your thighs. The movement of each pulse is very small, but aim to squeeze your abs a little bit tighter each time. Aim for around five pulses per crunch.



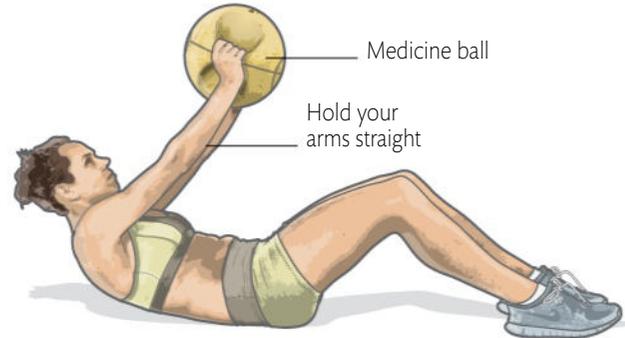
PROGRESSION 1

Removing the support of your legs adds an element of instability, making the muscles of your core work a little harder as you perform the crunch. From the original start position, extend your legs straight into the air with your knees together. Using your abs, crunch up as far as you can, then hold briefly before returning to the start position slowly and under control.



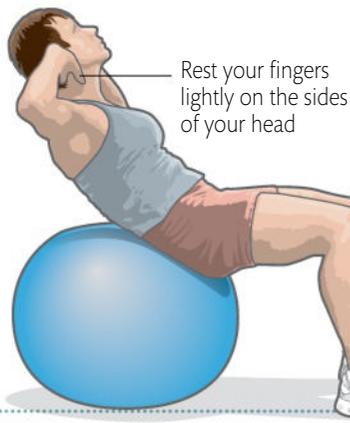
PROGRESSION 2

Performing the exercise while holding a medicine ball increases the load on your abs, making the movement more challenging. Holding the ball firmly with both hands, assume the normal starting position, then raise the ball in the air with your arms straight. Hold the ball in this position while you carry out the desired number of repetitions.



PROGRESSION 3

Resting your hips on an exercise ball requires good balance and stability. It makes it even harder for you to support your weight with your legs, because the ball can also move in any number of directions. To start, carefully lie back against the ball with your feet firmly planted on the floor and your knees bent at right angles. Crunch up with your upper body, hold, and return to the start position.



PROGRESSION 4

Positioning your feet on a bench works your core stabilizers harder and increases the range of movement. Lie on your back with your calves on the bench, so that your hips and knees are bent at right angles. Control the movement with your core, curling your torso towards your knees, and avoid "cheating" the movement by hooking your heels on the edge of the bench.



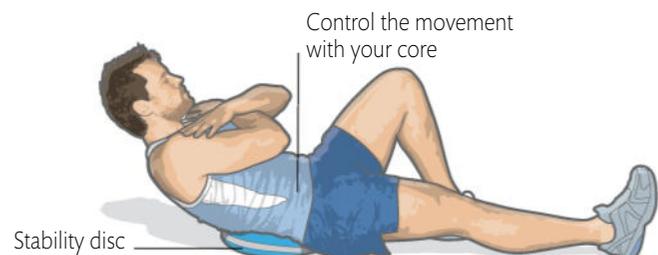
PROGRESSION 5

Using an unbalanced legs position introduces an element of lateral instability, which provides a further challenge to your core stabilizers. Lie with your back on the mat, and your hands across your chest. Straighten one leg along the floor and bend the other at 90 degrees with your foot flat on the floor. Crunch up with your abdominals to control the movement, pause at the edge of the movement, then return to the start position. Repeat as required and switch legs.

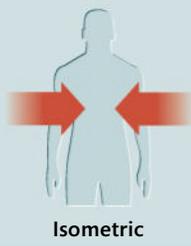


PROGRESSION 6

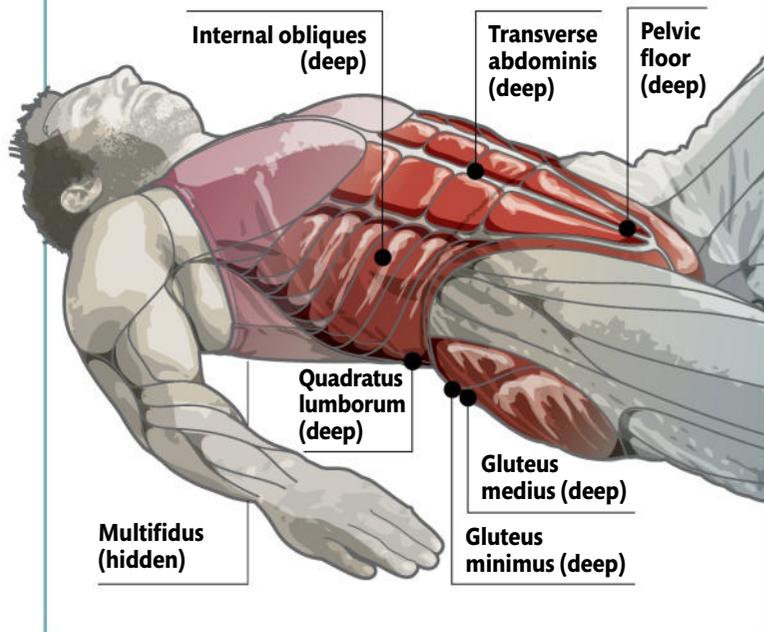
This even more challenging version of the movement involves a variation of the Progression 5 crunch - with your lower back resting on a stability disc to add even more instability. Lie at an angle with the disc under your lumbar spine and your hands crossed lightly on your chest. Control the crunch with your core, pause at the edge of the movement, before returning to the starting position. Repeat as required and change legs.



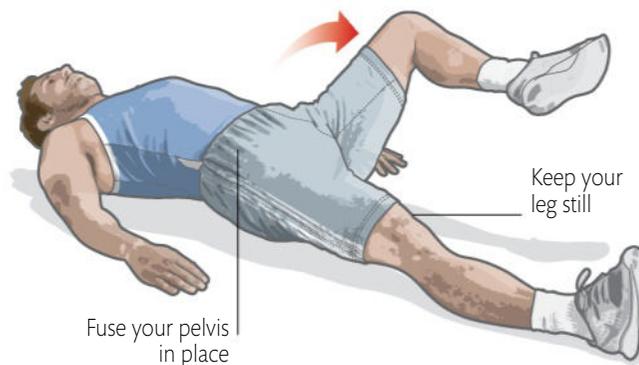
LEG CIRCLE

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
	DIFFICULTY LEVEL
	●●○○○○○○○○○○

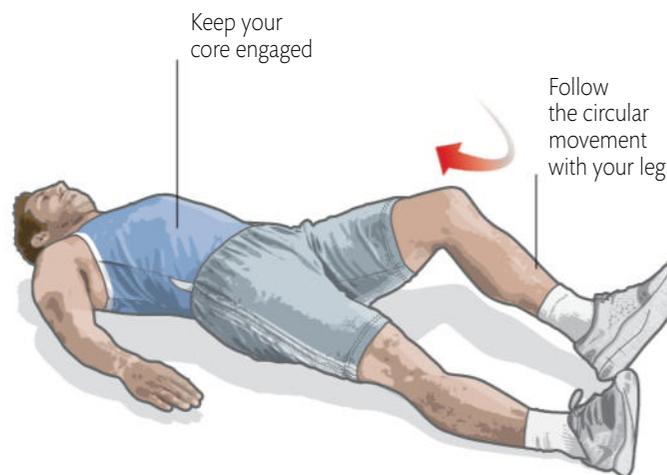
This activation exercise is simple but demands good form and hip flexibility. Keep your pelvis and core stationary, and avoid rocking from side to side. Use your palms to brace yourself against the floor, and keep your head as still as possible.



1 Lie on your back with your palms on the floor. Raise your left leg with the knee bent at a 90-degree angle.



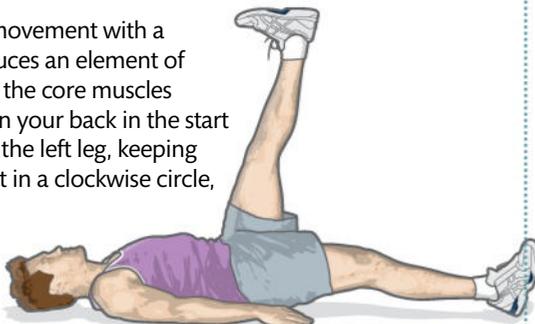
2 Rotate your left leg in a clockwise circle down and to the left, keeping your core engaged and your pelvis firmly anchored.



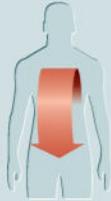
3 Follow the clockwise movement down to the bottom of the circle, keeping your left knee bent. Continue the movement around to the start position, repeat, and switch sides.

PROGRESSION 1

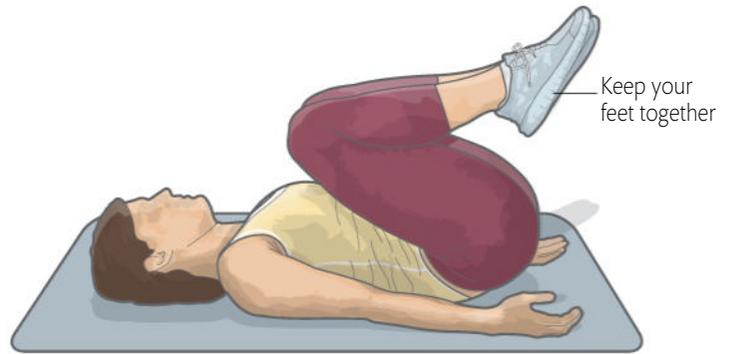
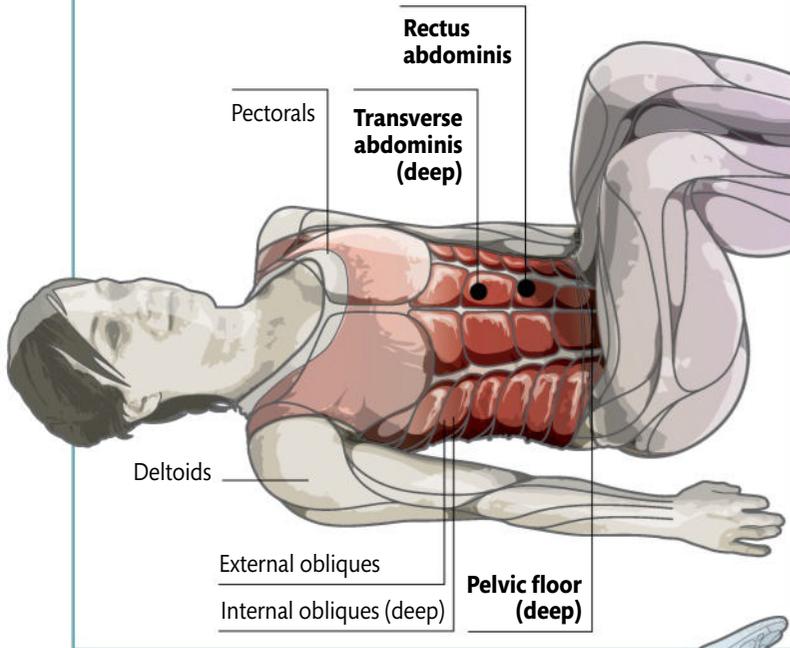
Carrying out the movement with a straight leg introduces an element of instability, making the core muscles work harder. Lie on your back in the start position and raise the left leg, keeping it straight. Rotate it in a clockwise circle, keeping your pelvis anchored. Repeat and switch sides.



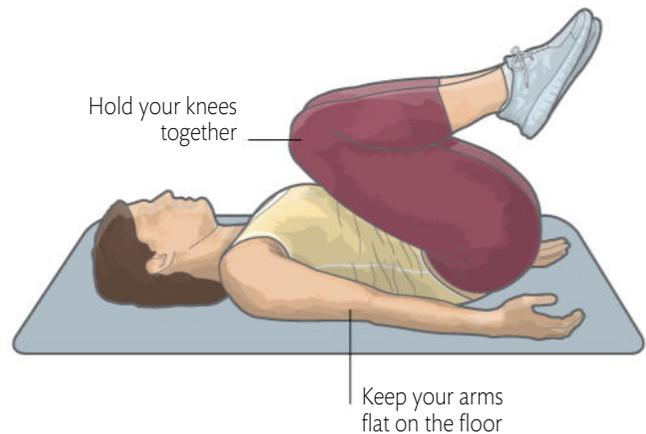
REVERSE CURL

TARGET MUSCLES	TARGET MOVEMENT
<ul style="list-style-type: none"> ■ Rectus abdominis ■ Transverse abdominis ■ Pelvic floor 	 <p>Flexion</p>
	DIFFICULTY LEVEL 

This exercise works in a similar way to the crunch, but involves you moving your legs rather than your torso. It works your lower abs, without placing stress on your shoulders and neck, which are resting on the floor.



1 Lie down with your arms by your sides, palms up, and draw your knees up towards your chest, keeping your lower back flat and your shoulders relaxed. Engage your core.



2 Resting your head on the floor and keeping the back in a neutral position, draw your knees further in towards your chest in a crunching movement. Repeat this movement the desired number of times.

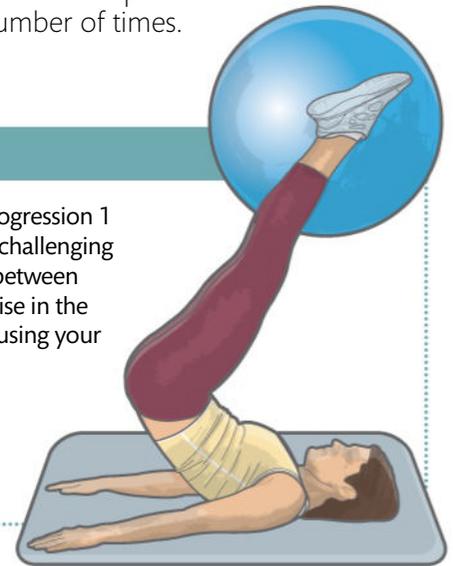
PROGRESSION 1

This progression of the basic exercise involves extending the movement to raise your legs and your torso off the ground. Because you have removed the support of your lower back, your core muscles have to work even harder to stabilize your body. Begin by lying on your back with your arms by your sides, palms pressed down for stability.



PROGRESSION 2

Once you have mastered Progression 1 you can make it even more challenging by holding an exercise ball between your legs. Perform the exercise in the same way as Progression 1, using your arms for support.



DORSAL RAISE

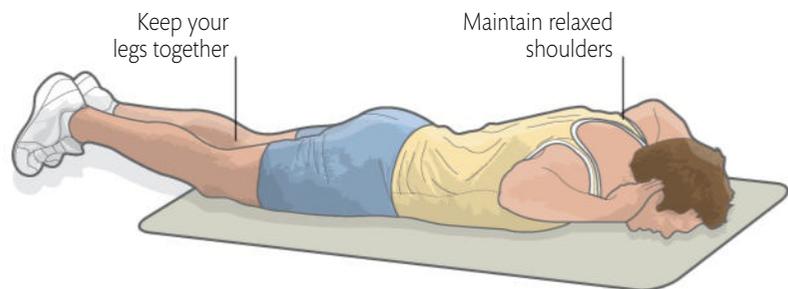
TARGET MUSCLES
■ Transverse abdominis
■ Pelvic floor
■ Erector spinae
■ Multifidus
■ Quadratus lumborum
■ Gluteus maximus

Target Movement: Extension

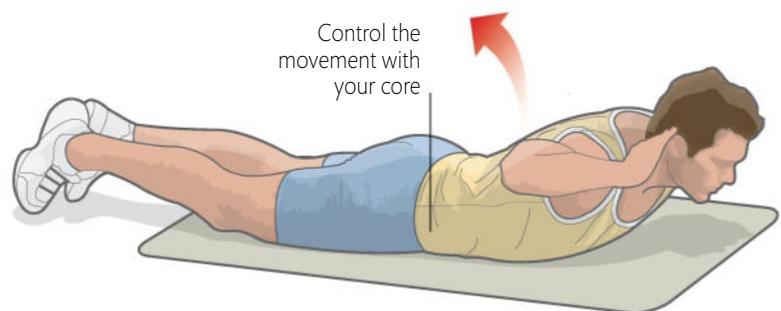
Difficulty Level: ●●○○○○○○○○○○

This simple exercise helps to strengthen the spinal stabilizing muscles of your lower back. Aim to perform the movement with good form and avoid jerking up with your shoulders, which can strain your neck.

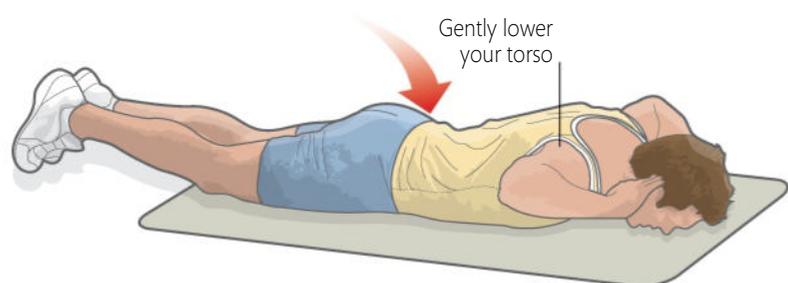
1 Lie face down with your legs together. Place your hands by the side of your head, keeping your shoulders relaxed and your core active. Breathe in.



2 Exhale as you lift your upper body off the floor. Perform the movement slowly, controlling it with your core. Be careful not to jerk your head or strain the muscles of your lower back or neck.

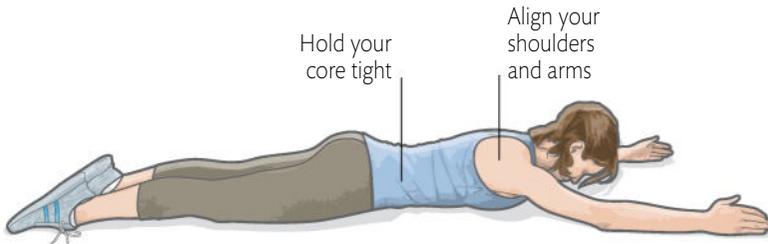


3 Breathe in, hold briefly at the top of the movement, maintaining an active core, then slowly and gently lower yourself back to the start position.

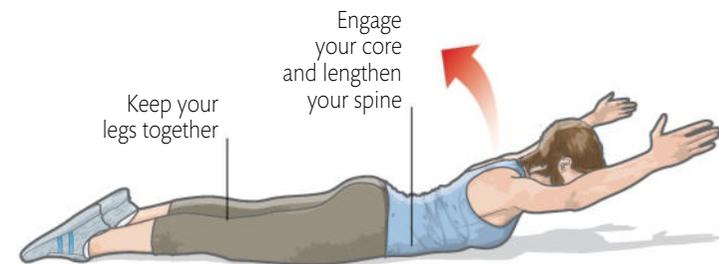


PROGRESSION 1

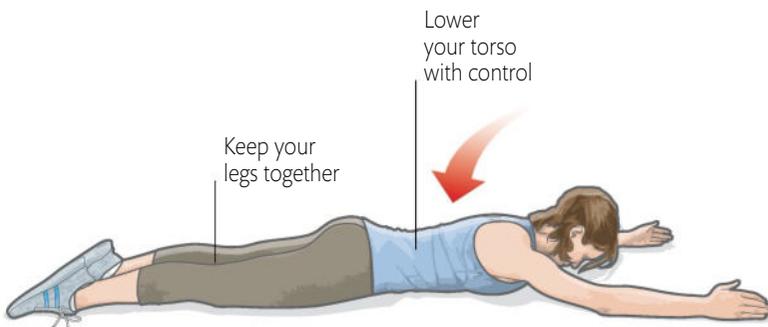
Performing the dorsal raise with your arms extended increases the load on your core, making the deep muscles of your abdominals, back, and glutes work harder to stabilize your torso.



1 Lie on your front with your legs together, and the top of your feet resting on the floor. Raise your arms above your head, with elbows soft, palms facing in, shoulders relaxed, and fingertips pointing forwards. Breathe in to prepare for the movement.



2 Engaging your core, breathe out as you lift the upper body off the floor. Keep your head and your upper body in line, and support from the abdominals to avoid over-extending in your lower back.



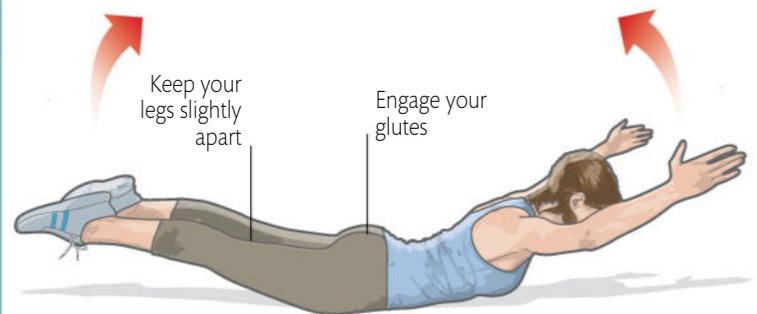
3 Hold this position for a couple of seconds, then return to the start position slowly and with good control. Repeat the movement as required.

PROGRESSION 2

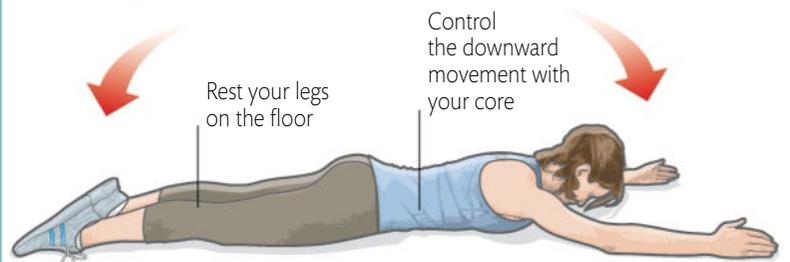
This further progression of the exercise involves raising both your arms and legs at the same time, removing the support of your legs and adding an even greater level of instability.



1 Lie down on your front with your legs slightly apart and your feet resting on the floor. With elbows soft, palms facing in, and shoulder relaxed, stretch your arms out and forwards. Breathe in.

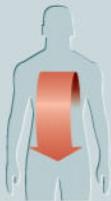


2 Engage your core and breathe out as you lift your upper body and legs off the floor. Keep your legs slightly apart and glutes engaged to help avoid over-extending the lower back.

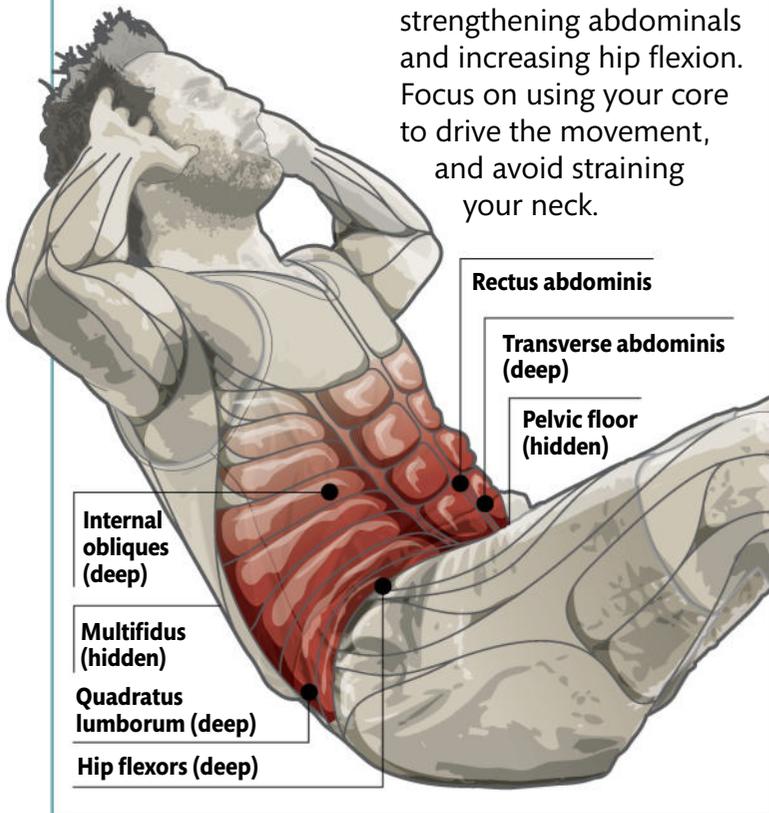


3 Hold this position for a couple of seconds, before lowering your arms and legs back to the start position. Repeat the movement as required.

SIT-UP

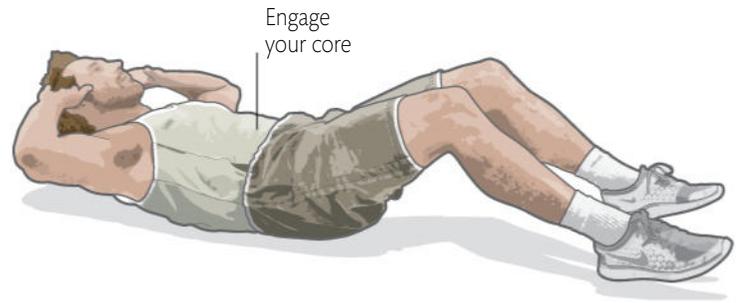
TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Internal obliques	
■ Pelvic floor	
■ Hip flexors	
■ Multifidus	
■ Quadratus lumborum	
	DIFFICULTY LEVEL
	●●○○○○○○○○

The sit-up is a well-used and effective exercise for strengthening abdominals and increasing hip flexion. Focus on using your core to drive the movement, and avoid straining your neck.

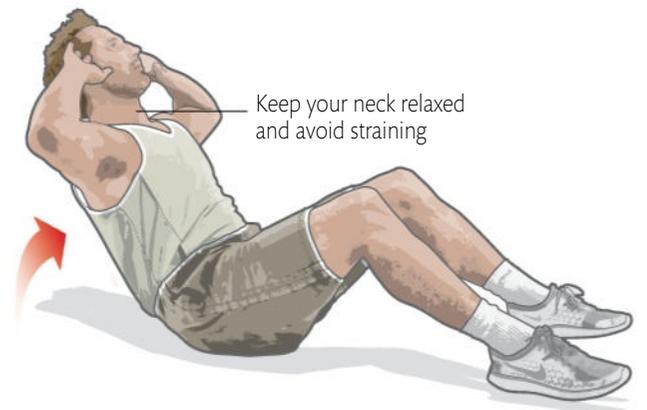


PROGRESSION

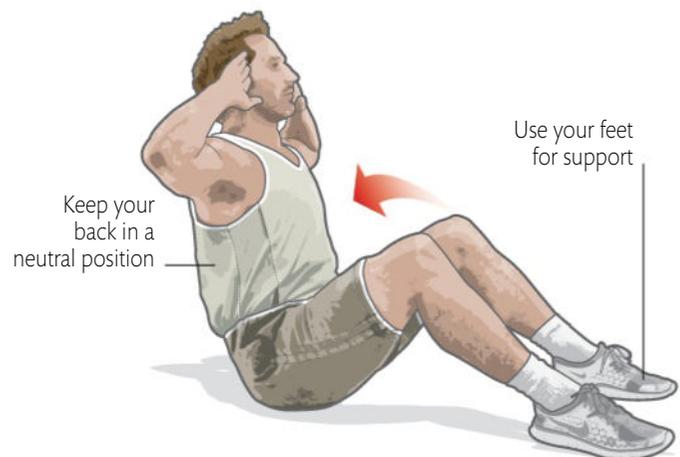
Changing the position of your arms alters the difficulty of the exercise. Extending your arms ahead of your knees provides the least resistance, while crossing your arms over your chest or holding them by your head increases difficulty. For an advanced workout, hold a weight plate to your chest.



1 Lie on your back with your feet on the floor and your knees bent. Place the tips of your fingers on either side of your head.

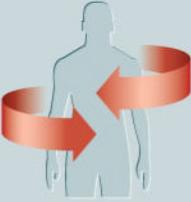


2 Engage your core muscles and raise your torso upwards, leaving just your buttocks and feet on the floor. Drive the movement entirely with your core.

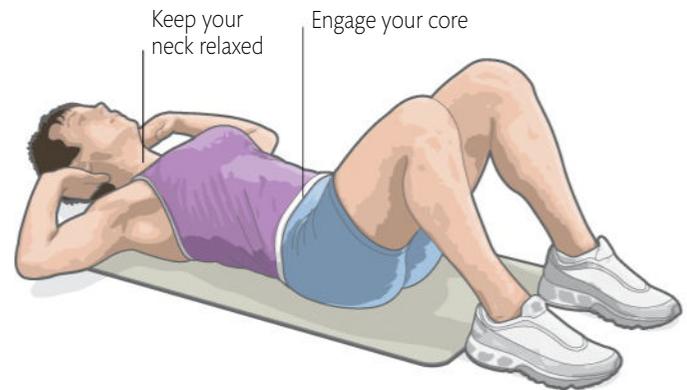
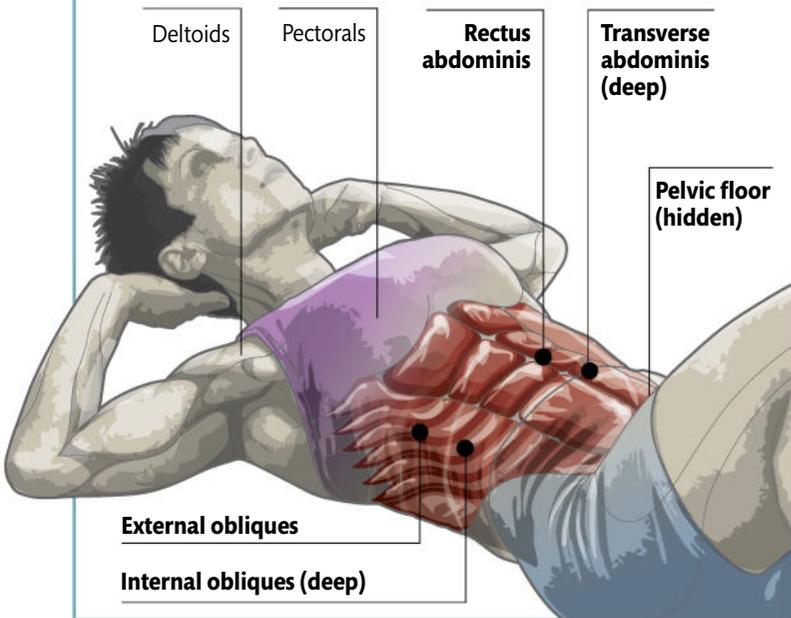


3 Pause at the edge of the movement, then slowly lower your upper body to the start position, controlling the movement with your core.

OBLIQUE CRUNCH

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Rotation</p>
■ Transverse abdominis	
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
DIFFICULTY LEVEL 	

This simple but effective core exercise works your obliques and transverse abdominis, building both rotational strength and the ability of your core to stabilize your spine and hips against external rotational forces.



1 Lie on a mat in neutral start position with your knees bent, your feet flat, and your fingers against the sides of your head. Breathe in.



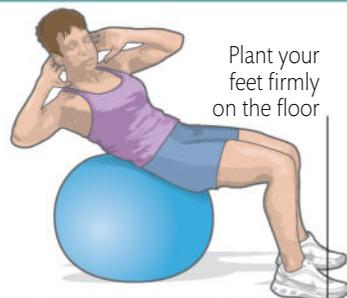
2 Engage your core, exhale, and rotate your upper back off the floor aiming your left shoulder towards your right knee. Work from your abdominals, keeping the hips still.



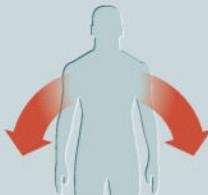
3 Hold for a moment then lower your upper body slowly to the floor, using your core to control the movement.

PROGRESSION

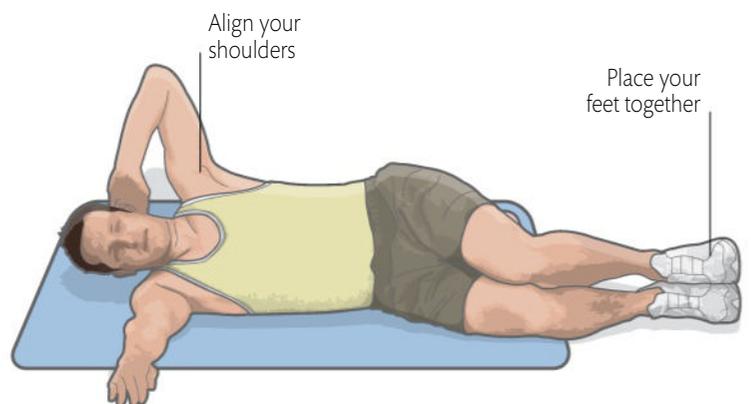
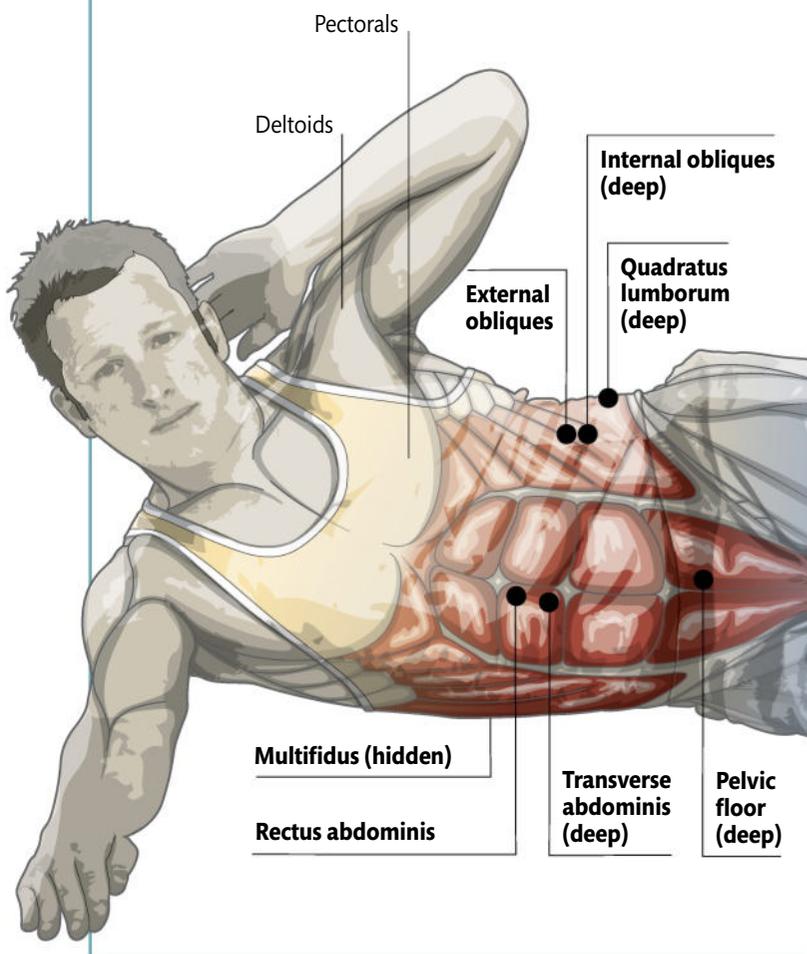
Performing the movement on an exercise ball makes it harder because the ball can move in any number of directions. Carefully lie back on the ball with your legs hip-width apart. Crunch up and rotate from your upper body, hold, and return to the start position.



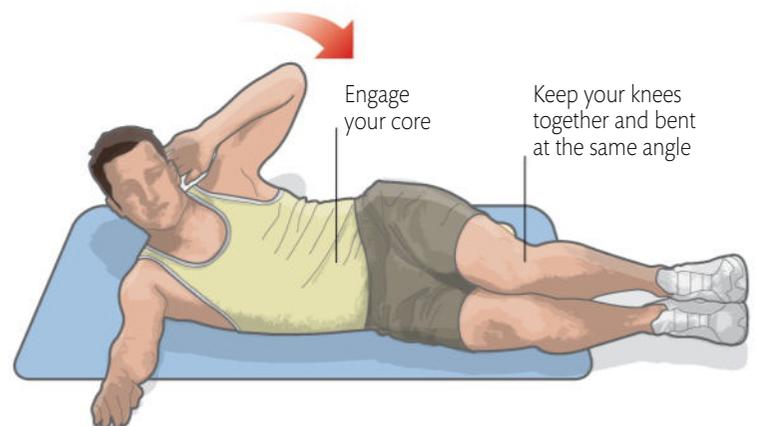
SIDE-LYING LATERAL CRUNCH

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Side Flexion</p>
■ Transverse abdominis	
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
DIFFICULTY LEVEL	
●●○○○○○○○○○○	

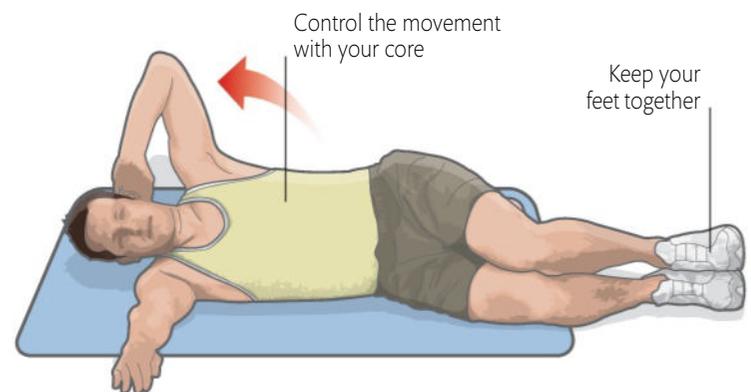
This exercise improves your strength and core stability, and targets your external and internal obliques, improving trunk stability and side flexion. To avoid straining your neck, ensure that you support your head with your hand and control the movement using the core. For maximum effect, perform the movement slowly.



1 Lie on your right side, with your right arm outstretched, palm down, and your left hand lightly supporting your head. Bend slightly from the waist so that your legs are at an angle of around 30 degrees to your torso.

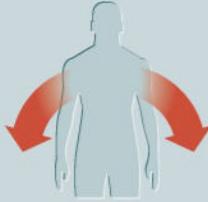


2 Squeeze your oblique muscles to raise your head and shoulders, taking care not to force the movement.

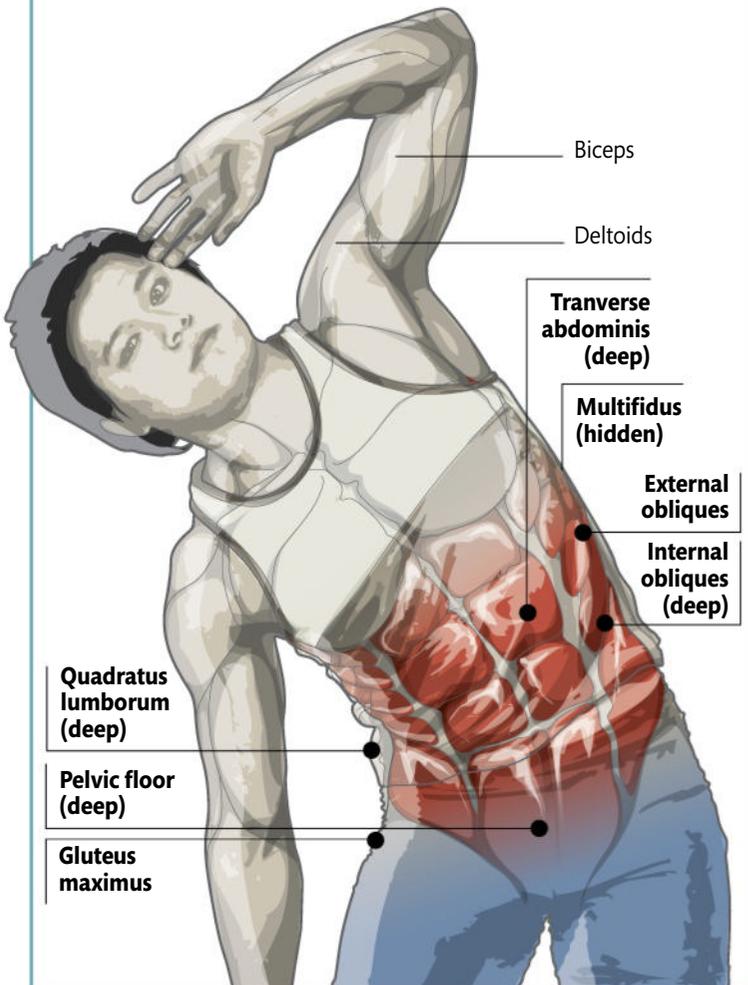


3 Pause briefly at the top of the movement, then return to the start position slowly and under control. Complete the desired number of reps, then switch sides.

SIDE BEND

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Side Flexion</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus maximus	
	DIFFICULTY LEVEL
	●●○○○○○○○○○○

This exercise is a simple but effective way of strengthening your obliques, and stabilizing your spine against lateral and rotational forces. Practice with a light weight until you have perfected the movement – focus on controlling the upward and downward phases with your core, rather than using your arms to raise and lower the dumbbell.



Rest your fingertips on your temples to help align your body

1 Stand upright with your knees slightly bent and one dumbbell resting on the side of your thigh. Keep your weighted arm straight.

Keep your feet flat and at least shoulder-width apart

Move your torso laterally, not forwards or backwards

2 Lean slowly to the right and slide the dumbbell down the outside of your right thigh to knee level while breathing in. Do not allow the weight to swing.

Lower the dumbbell to knee level

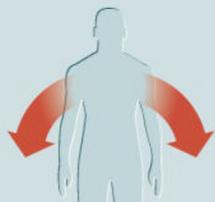
Contract your obliques to straighten your torso

3 Straighten your torso to the start position by contracting your obliques on the left of your torso, breathing out as you do so. Repeat as required and switch sides.

Keep your knees slightly bent

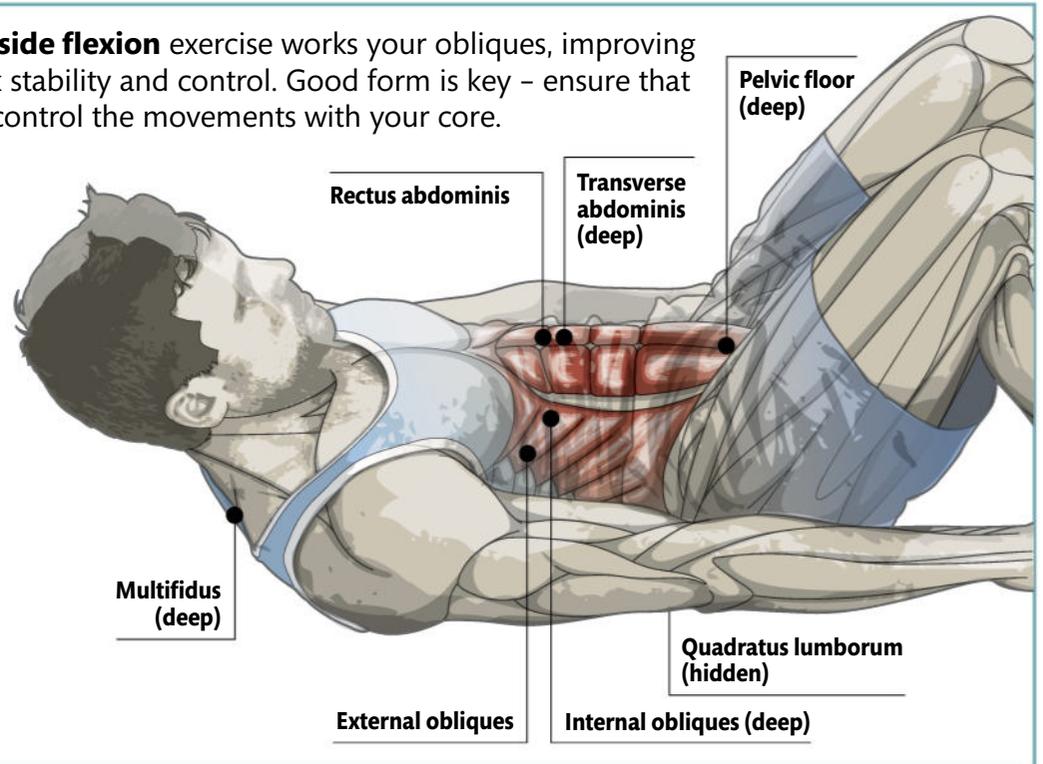
HEEL REACH

TARGET MUSCLES
■ Rectus abdominis
■ Transverse abdominis
■ External obliques
■ Internal obliques
■ Pelvic floor
■ Multifidus
■ Quadratus lumborum

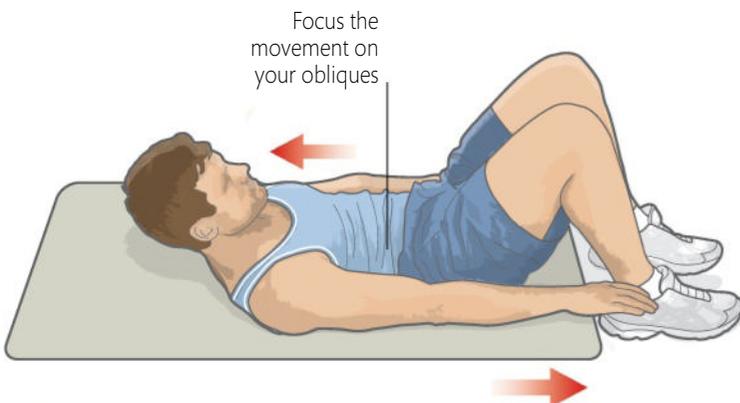
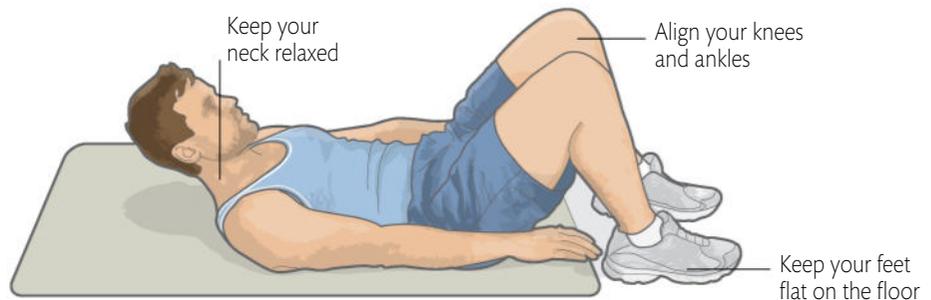
TARGET MOVEMENT
 <p>Side Flexion</p>

DIFFICULTY LEVEL


This side flexion exercise works your obliques, improving trunk stability and control. Good form is key – ensure that you control the movements with your core.



1 Lie on your back with your arms by your sides, palms down, and bend the knees. Engage your core to raise your shoulders and upper back off the floor, keeping your neck relaxed and your spine in a neutral position.



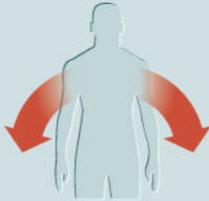
2 Reach down as far as you can towards your right foot with your right hand in a slow and controlled movement, crunching the left side of your abdomen to drive the movement and avoid straining with your neck.



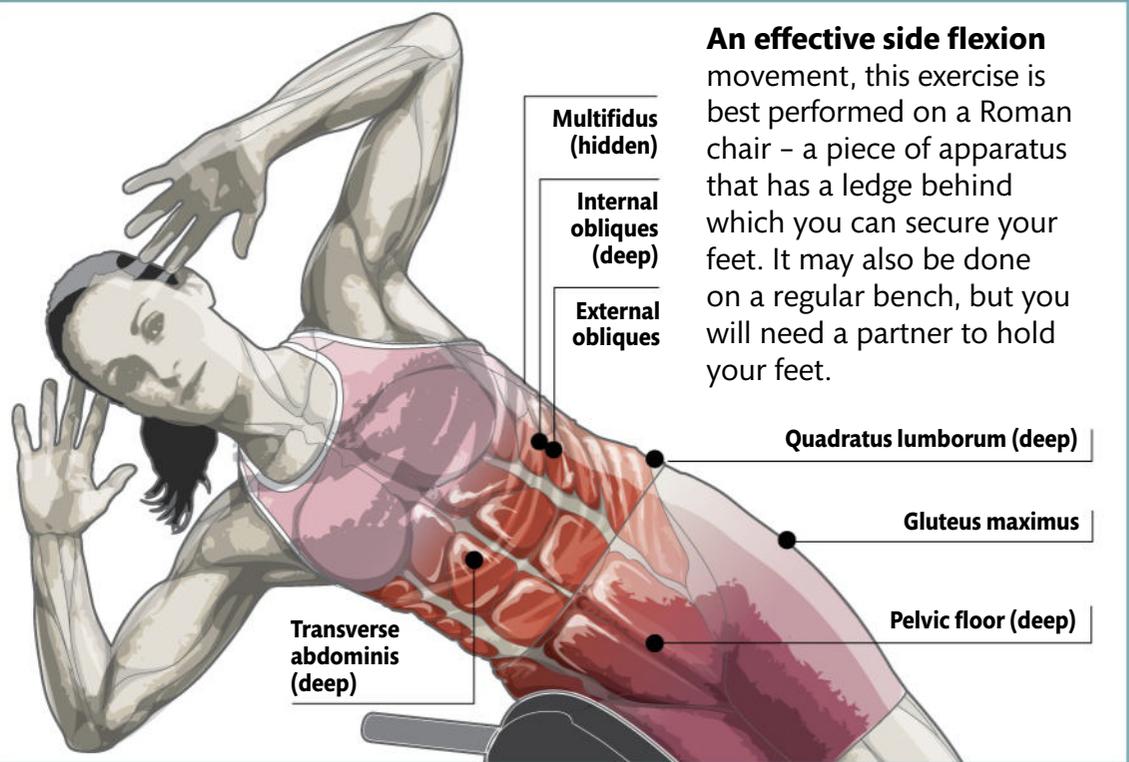
3 Pause briefly, then return to the starting position and alternate for the required number of repetitions. Repeat the movement to the left side of your body.

ROMAN CHAIR SIDE BEND

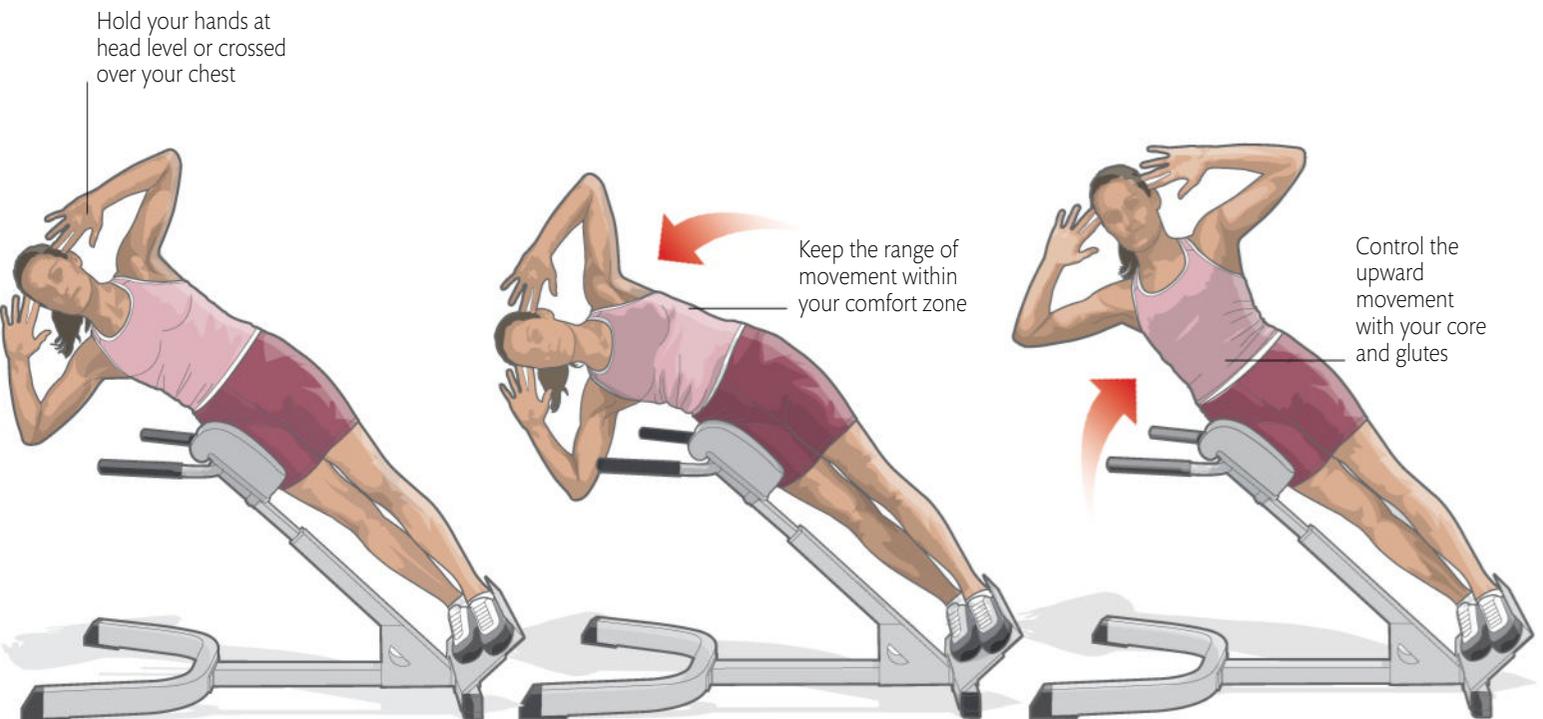
TARGET MUSCLES
■ Transverse abdominis
■ External obliques
■ Internal obliques
■ Pelvic floor
■ Multifidus
■ Quadratus lumborum
■ Gluteus maximus

TARGET MOVEMENT
 <p>Side Flexion</p>

DIFFICULTY LEVEL
●●○○○○○○○○○○



An effective side flexion movement, this exercise is best performed on a Roman chair – a piece of apparatus that has a ledge behind which you can secure your feet. It may also be done on a regular bench, but you will need a partner to hold your feet.



Hold your hands at head level or crossed over your chest

Keep the range of movement within your comfort zone

Control the upward movement with your core and glutes

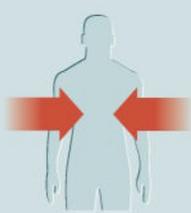
1 Lie sideways on the Roman chair; adjust it so that your upper body can pivot comfortably at your hips towards the floor.

2 Lean slowly sideways towards the floor as far as is comfortable, taking care not to lean forwards or back. Breathe in on your descent.

3 Pause at the edge of the movement, then gently raise your body to the start position. Repeat as required and switch sides.

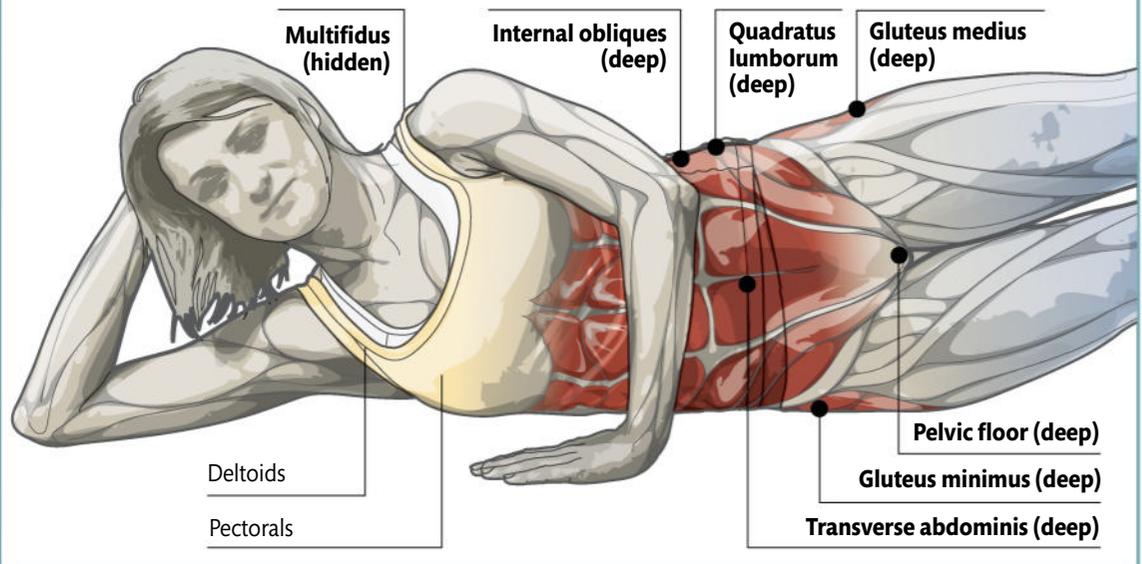
SIDE-LYING LEG LIFT

TARGET MUSCLES
■ Transverse abdominis
■ Internal obliques
■ Pelvic floor
■ Multifidus
■ Quadratus lumborum
■ Gluteus minimus
■ Gluteus medius

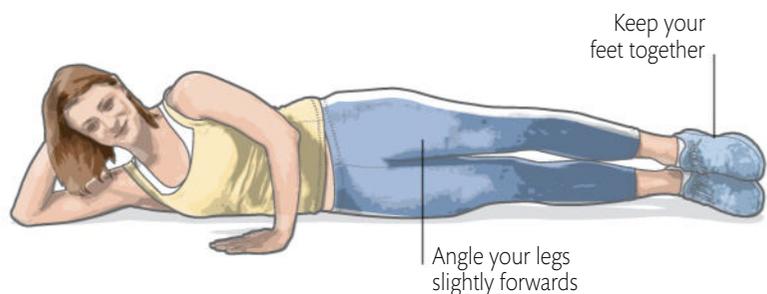
TARGET MOVEMENT
 <p>Isometric</p>

DIFFICULTY LEVEL

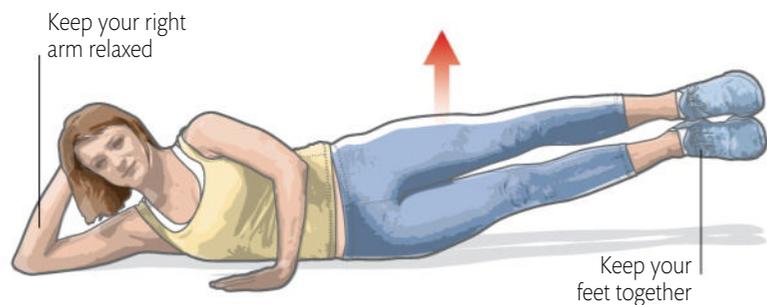

This exercise strengthens and stabilizes your core against lateral movements, while also working your glutes and hip flexors to improve your core control and balance.



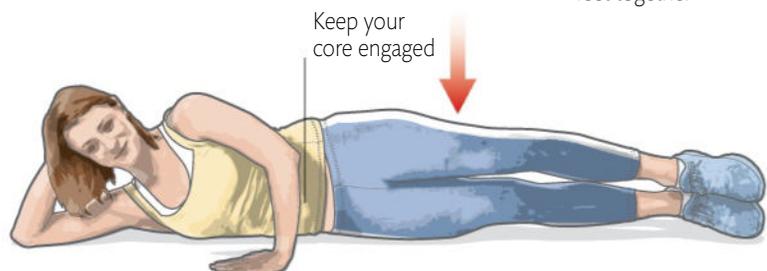
1 Lie on the right side of your body with your ankles stacked. Use the right hand to support your head, and place your left hand flat on the floor in front of you to help you stabilize.



2 Keeping your spine aligned, use the muscles of your core and upper legs to lift up your feet. Keep your feet stacked, and ensure your legs are aligned with your back.



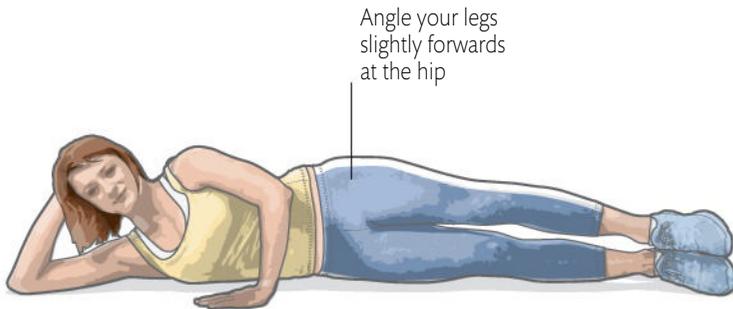
3 Pause at the edge of the movement, then lower your feet slowly back to the start position. Repeat as required, then switch sides.



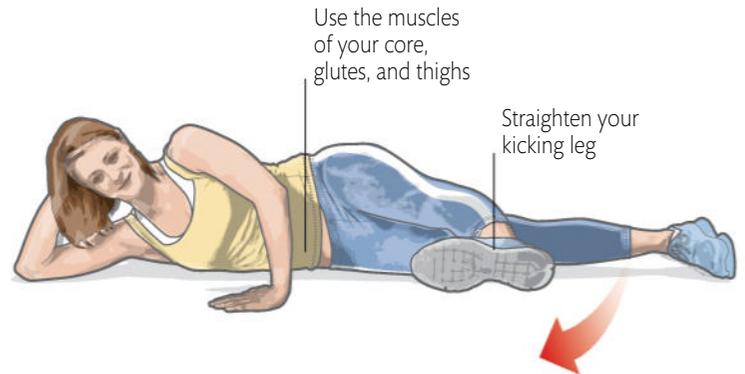
VARIATION

The **side-lying leg kick** offers a gentle balance exercise that also stretches the tendons in your legs, and provides a low-intensity workout for your core and arm muscles. Be careful on hard floors, or anywhere that might cause discomfort

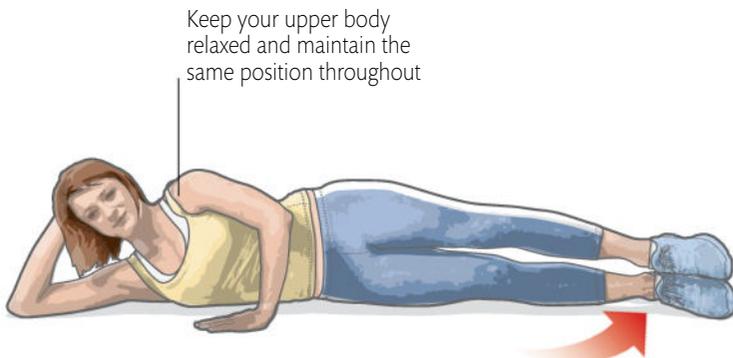
to your hips and elbows – use a mat if necessary. Remember to use slow, controlled movements when kicking your leg, and try to avoid placing any strain on the muscles of your neck while carrying out the desired number of repetitions.



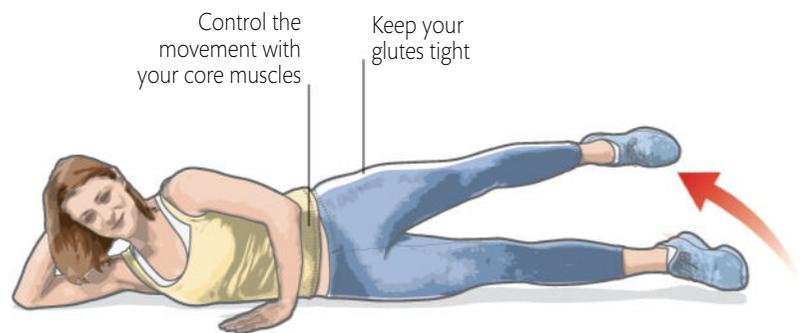
1 Lie on your right side with your ankles together. Plant your left hand flat on the floor in front of you to help you stabilize, and support your head with your right hand.



2 Keeping your upper body still, kick your left leg forwards as far as you can, using the muscles of your core and upper legs to control the movement.



3 Briefly hold the position before swinging your left leg back through the start position, controlling the movement with the muscles of your core and thighs.



4 Swing your left leg back as far as you can, keeping the movement as smooth and controlled as possible, and holding your upper body in position.



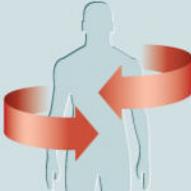
5 Pause at the edge of the movement, then swing your left leg forwards to return to the start position. Repeat the sequence as required, before switching legs.

PROGRESSION

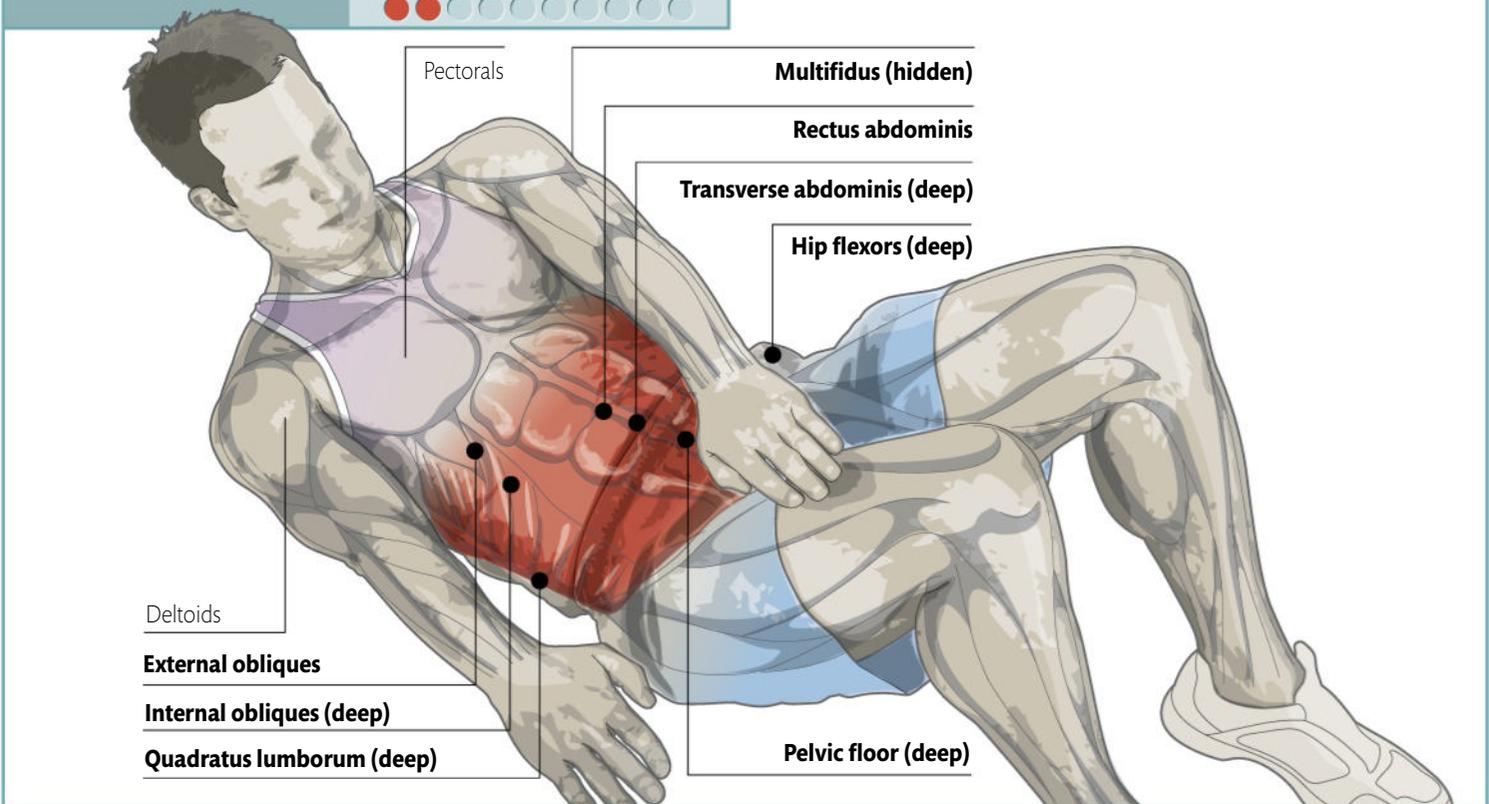
Placing a stability disc beneath your hip adds an element of instability, making the muscles of your core work harder to balance your body as you perform the movement. Follow the same steps in the main sequence and repeat as necessary, before switching sides.



OBLIQUE REACH

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Rotation</p>
■ Transverse abdominis	
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Hip flexors	
■ Multifidus	
■ Quadratus lumborum	
	DIFFICULTY LEVEL
	●●○○○○○○○○○○

This simple but effective rotational core exercise works most of the muscles of your “abdominal girdle” (»p.50), responsible for posture. The twisting movement involved particularly challenges your internal and external obliques and helps you increase your ability to stabilize your spine against rotational forces. It is important to ensure that you focus the movements on your core to get the best results.



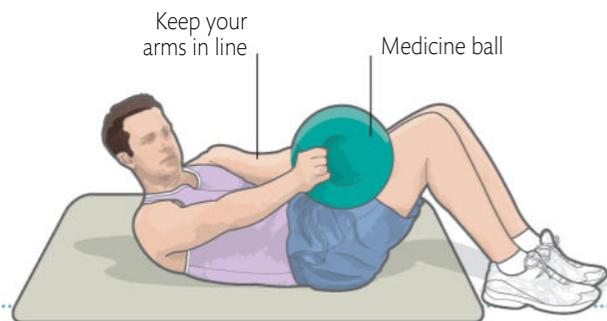
PROGRESSION 1

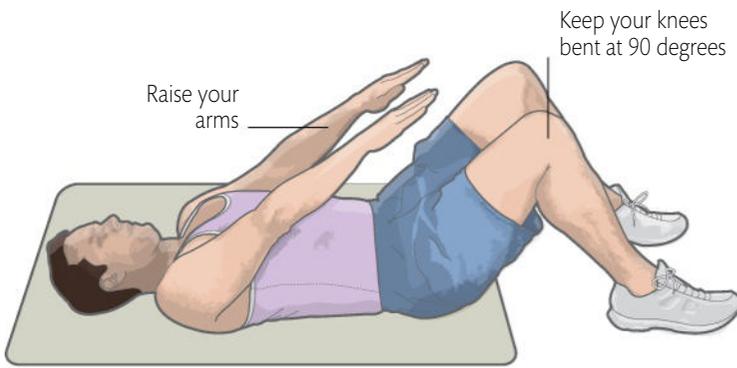
You can use a kettlebell to increase the load on your abdominal muscles. Grasp the weight in both hands and carry out the exercise as normal, controlling the movement with your core.



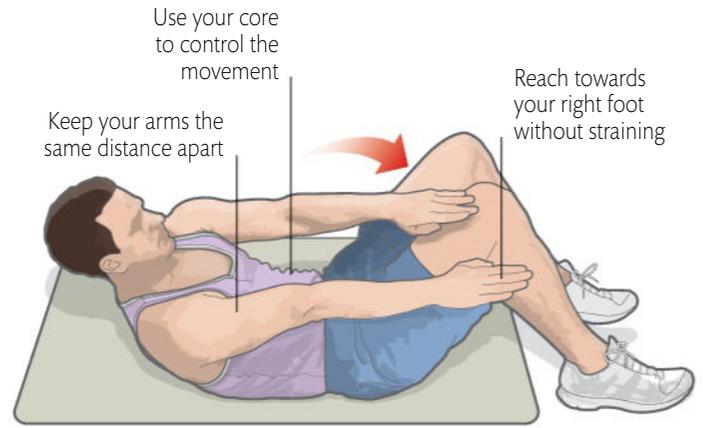
PROGRESSION 2

To increase the load on your abdominal muscles even further, replace the kettlebell with a medicine ball. Grasp the ball in both hands and carry out the exercise as normal.

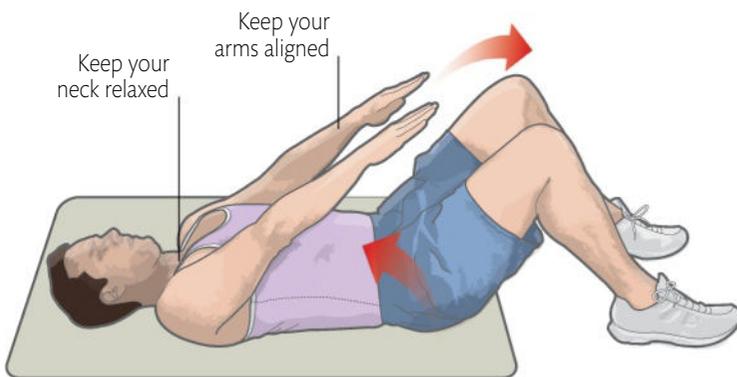




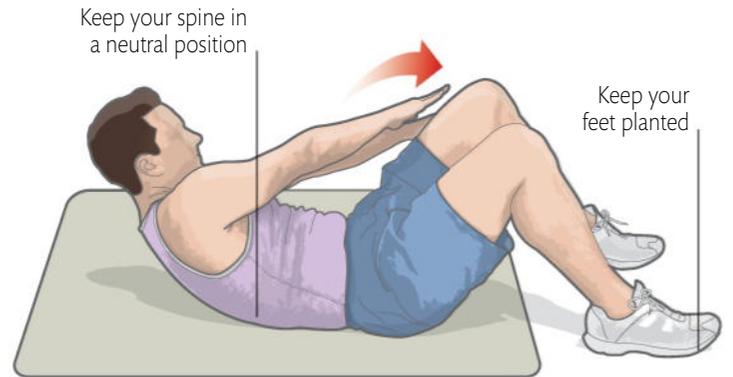
1 Lie on your back and raise your arms in front of you, palms down, fingers pointing to your knees. Lift your arms, then engage your core to raise your shoulders and upper back slightly, keeping the spine in a neutral position.



2 Reach as far as you can towards your right foot with both hands in a slow and controlled movement. Use your core muscles to drive the movement, crunching the right side of your abdomen to avoid straining with your neck.



3 Hold the position briefly, then slowly curl back to the horizontal, controlling the movement with your core. Keep your arms raised and slightly apart, and your knees bent at an angle of 90 degrees.



4 Switching the movement to the left side of your body, reach down as far as you can towards your left foot with both hands, crunching the left side of the abdomen. Hold the position briefly, then return to the start position.

PROGRESSION 3

Lifting your feet off the floor to perform the movement makes your core muscles work harder to stabilize your body. Bend your knees and hold them together, keeping your calves roughly parallel to the ground. Perform both phases of the movement under good control.

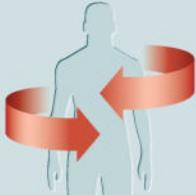


PROGRESSION 4

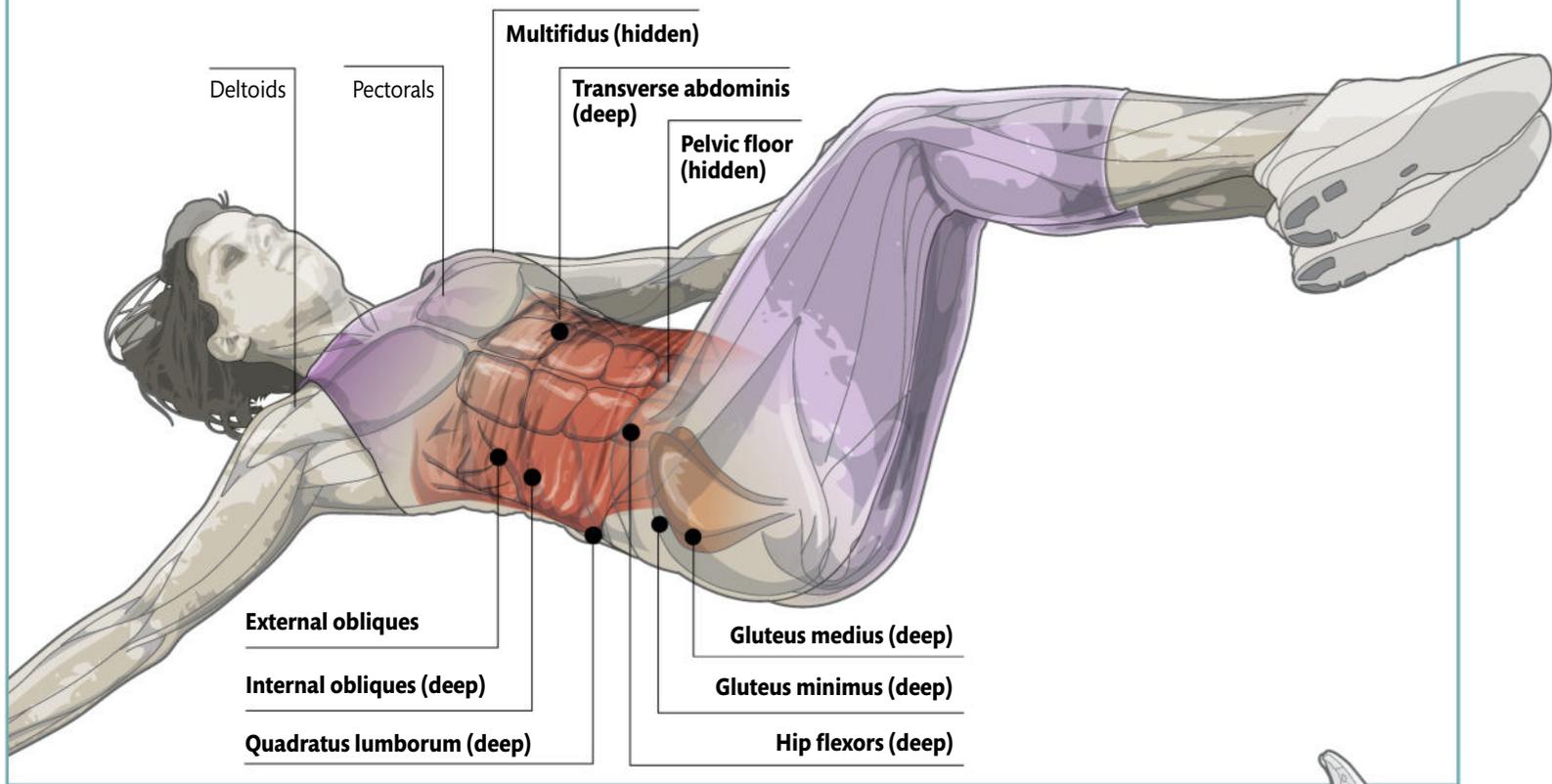
For an even more challenging exercise, perform the movement in Progression 3, but holding a kettlebell. Grasping a light kettlebell in both hands, carry out the exercise as normal, controlling movement with your core. Increase the weight as your strength increases.



HIP ROLL

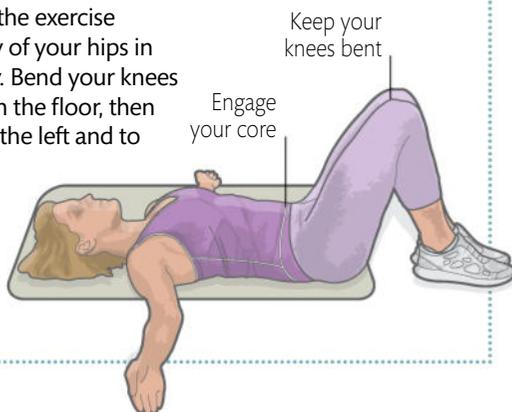
TARGET MUSCLES	TARGET MOVEMENT	
■ Transverse abdominis	 <p>Rotation</p>	
■ External obliques		
■ Internal obliques		
■ Pelvic floor		
■ Hip flexors		
■ Multifidus		
■ Quadratus lumborum		
■ Gluteus minimus		DIFFICULTY LEVEL
■ Gluteus medius		● ● ● ● ● ● ● ● ● ●

This exercise strengthens your abdominals and lower back, as well as improving the general mobility of your lower and mid-back. While carrying out the movement, it is important to focus on keeping your upper back and shoulders in a consistent, stable position, in order to avoid rolling the whole body from side to side when you move your legs and hips. To begin with, you may find it helpful to use your outstretched arms to brace against the floor, and to find a point on the ceiling on which to fix your gaze to avoid moving your head.



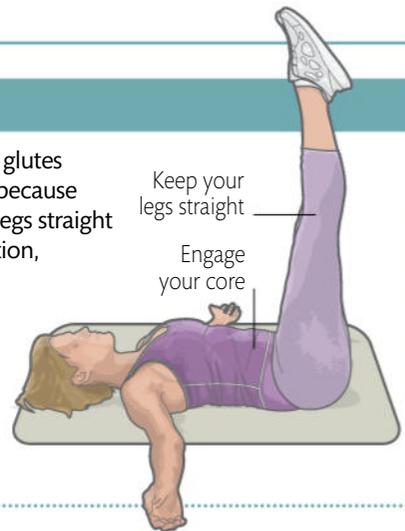
VARIATION

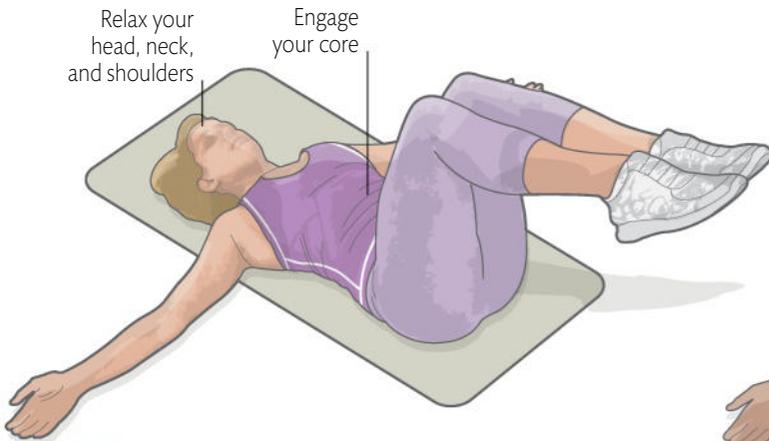
This easier version of the exercise improves the mobility of your hips in a less challenging way. Bend your knees and place your feet on the floor, then gently roll the hips to the left and to the right, keeping your upper back flat. Repeat as needed, then return to the start position.



PROGRESSION 1

This progression makes your glutes and hip flexors work harder because it requires you to keep your legs straight throughout. In the start position, raise your legs straight up in the air and, keeping your lower back in neutral, roll your hips to your left and right, controlling the movement from your core.

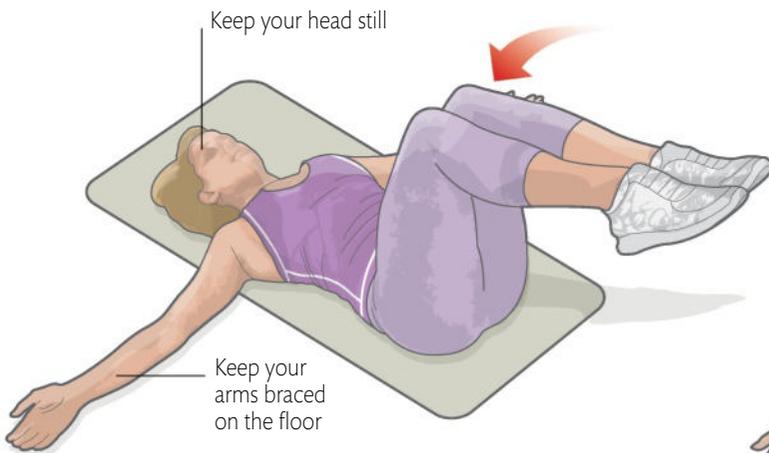




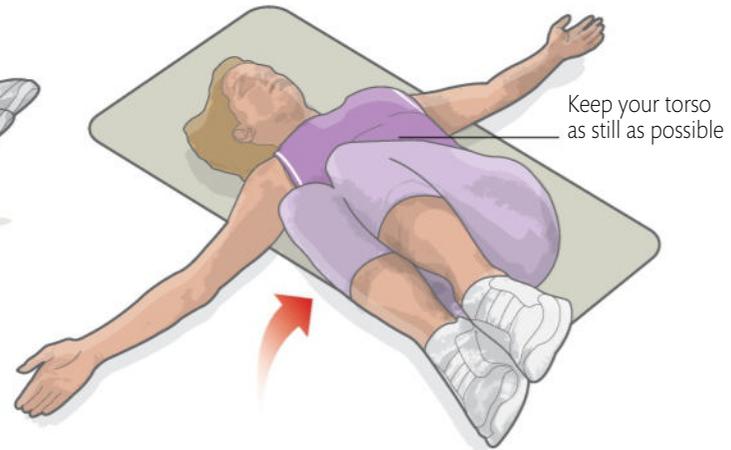
1 Lie on your back with arms outstretched, palms up. Raise your legs to 90 degrees, with knees together. Keep your core engaged and your lower back in a neutral position.



2 With arms flat on the floor and knees together, lift your right hip and roll your hips and legs to the left. Stop before your upper back begins to lift. Hold for a few seconds.



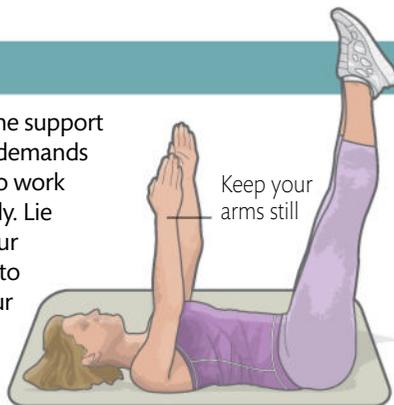
3 Initiating from your core, roll your hips and legs back to the centre, regaining your neutral position.



4 In the same way, roll your hips to the right, keeping your core engaged and using your arm for stability. Hold briefly, then return to start.

PROGRESSION 2

This progression removes the support of the arms, increasing the demands on your core, as you have to work harder to stabilize your body. Lie on your back, then raise your legs and arms straight up into the air. Roll your hips to your left and right, controlling the movement from your core. Repeat as required, then relax.

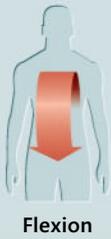


PROGRESSION 3

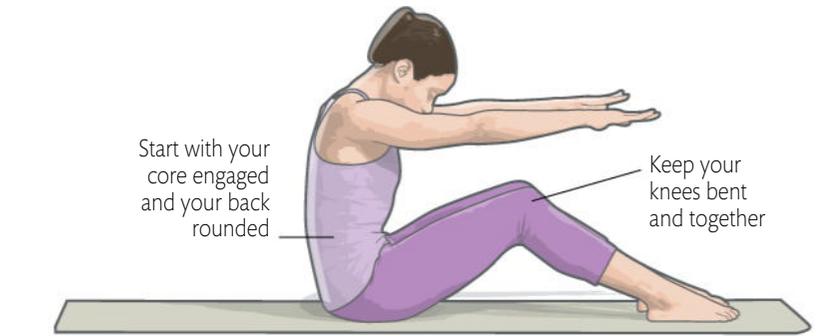
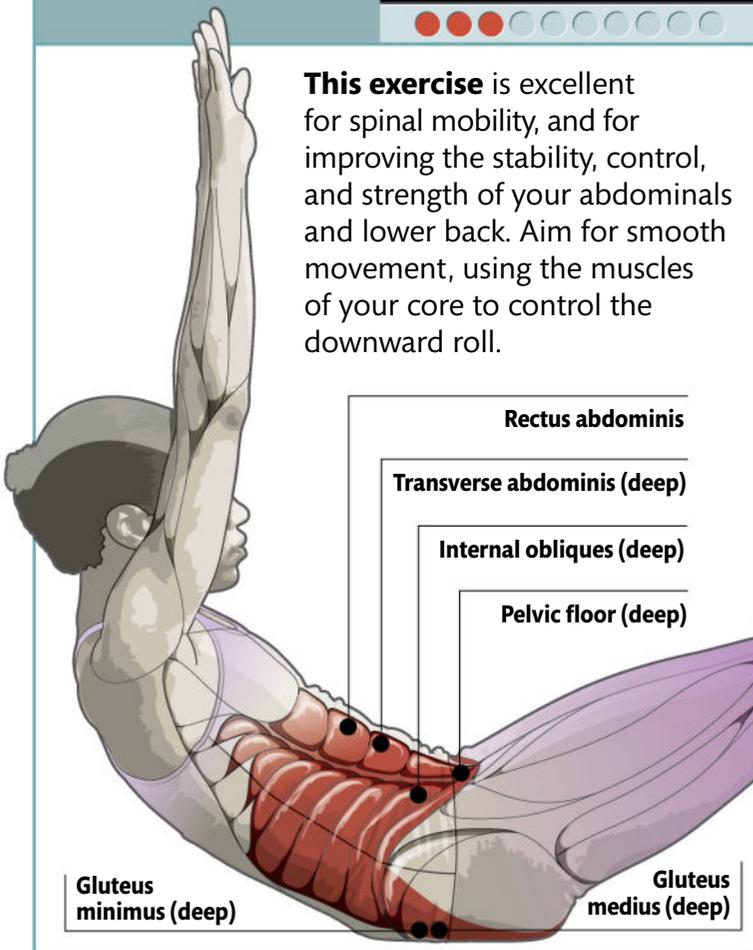
Introducing a medicine ball increases the work on your glutes and hip flexors, and engages the hip adductor and the muscles of your inner thigh. In the start position, grip a medicine ball with your knees, and roll your hips to the left and right.



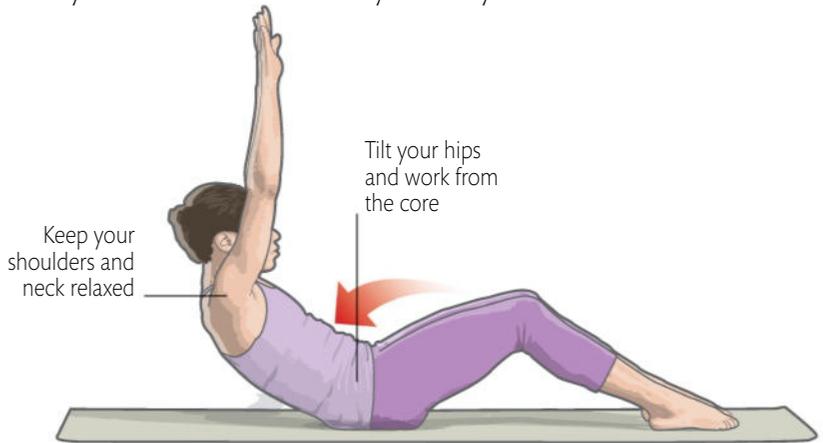
ROLL-BACK

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Internal obliques	
■ Pelvic floor	
■ Gluteus minimus	
■ Gluteus medius	
DIFFICULTY LEVEL 	

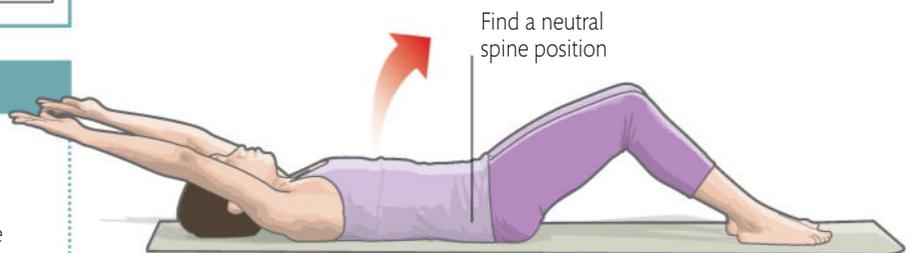
This exercise is excellent for spinal mobility, and for improving the stability, control, and strength of your abdominals and lower back. Aim for smooth movement, using the muscles of your core to control the downward roll.



1 Start seated, contracting your abdominals and gently rounding your spine. Keep your feet flat on the floor, with your arms out in front of you and your shoulders relaxed.



2 Tilt your hips, tucking your tailbone, and begin to roll slowly backwards, using your abs to control the movement. Keeping your arms straight, continue rolling back, until the back of the hips and lower back are on the floor, encouraging your lower back and hip flexors to release.



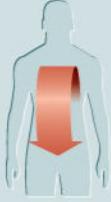
3 Roll down all the way, elongating your spine as you do so. Find a neutral spine position, pause, then return to the start position. Control the movement with your core, rather than allowing your arms or momentum to jerk you up.

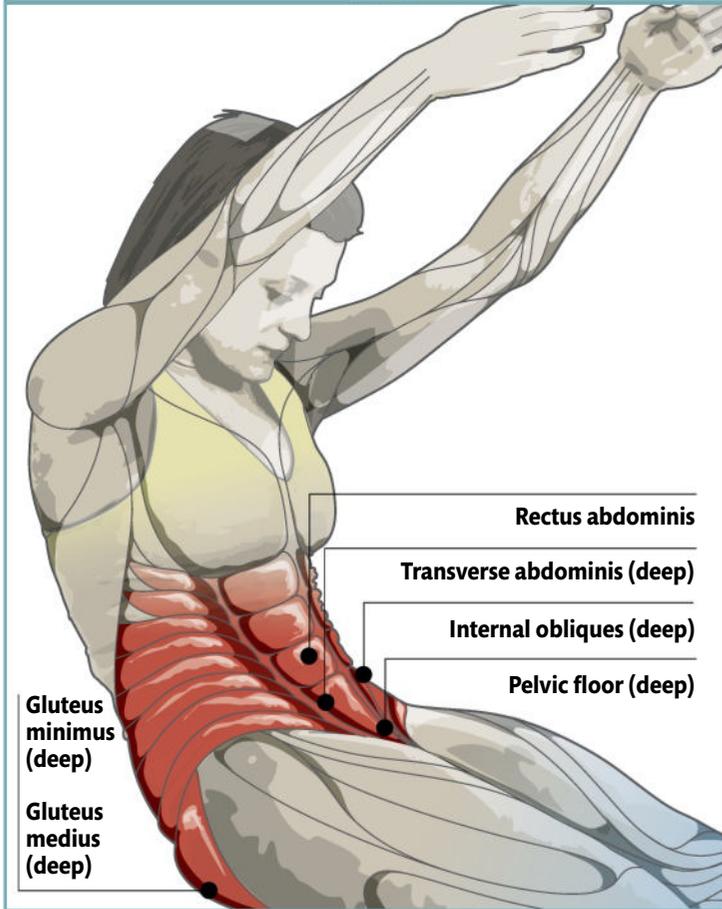
VARIATION

This easier version of the exercise uses the same basic starting position, but reduces your range of movement. Hold your thighs for support, as shown, and roll back so that only the small of your back lies flat against the floor. Hold the position before drawing yourself upright again.



ROLL-UP

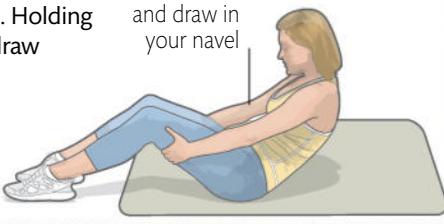
TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Internal obliques	
■ Pelvic floor	
■ Gluteus minimus	
■ Gluteus medius	
DIFFICULTY LEVEL 	



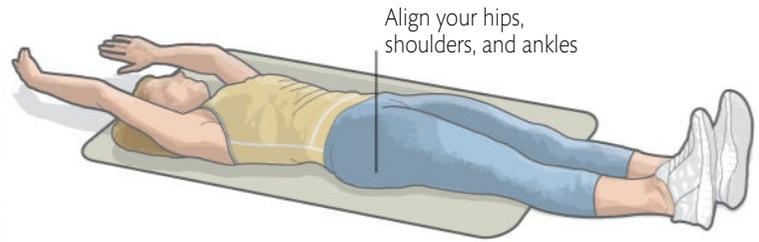
VARIATION

This easier version of the exercise, uses a half-sitting position to reduce your range of movement. Holding the back of your thighs, draw yourself into an upright position, controlling the movement with your core. Hold and return to the start position.

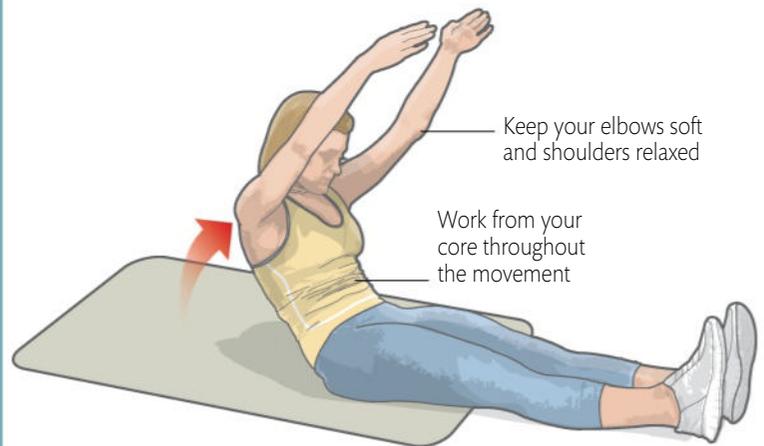
Hold your elbows wide and draw in your navel



This exercise – a reverse of the roll-back (left) – helps to build strength in your core and requires good control of your abdominals and hip stabilizers. Avoid the temptation to “swing” yourself up with your upper body, and focus on using your core muscles.



1 Lie on your back in a neutral hip and spine position, with your legs flat against the floor and your arms stretched out straight above your head. Engage the core to begin the movement.



2 Draw in your abdominals and nod your head to initiate the movement. Use the muscles of your core to roll you up slowly and with control. Keep your legs flat together and avoid pulling from your hip flexors.



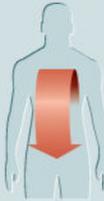
3 Continue the movement, stretching your fingertips towards your toes. Hold for a few seconds, then slowly lower yourself back to the starting position.

V LEG-RAISE

TARGET MUSCLES

- Rectus abdominis
- Transverse abdominis
- Pelvic floor
- Hip flexors

TARGET MOVEMENT



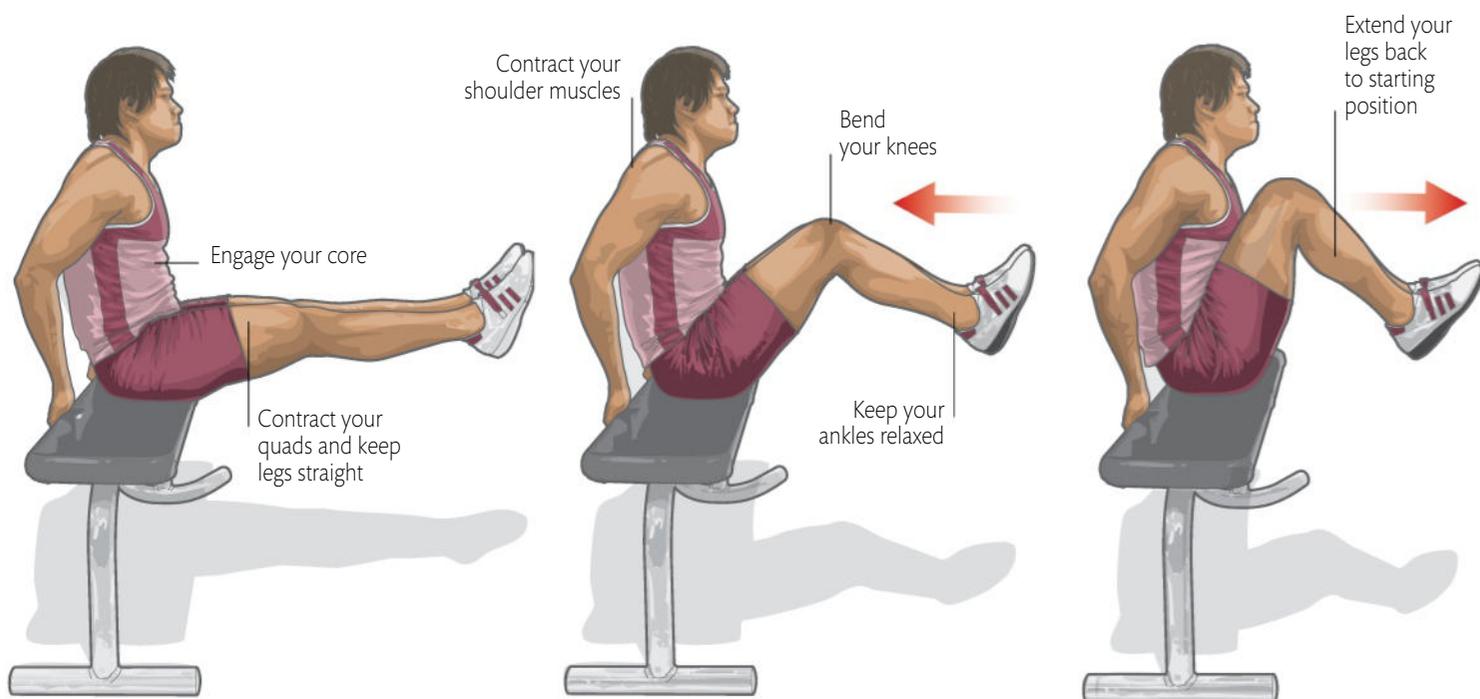
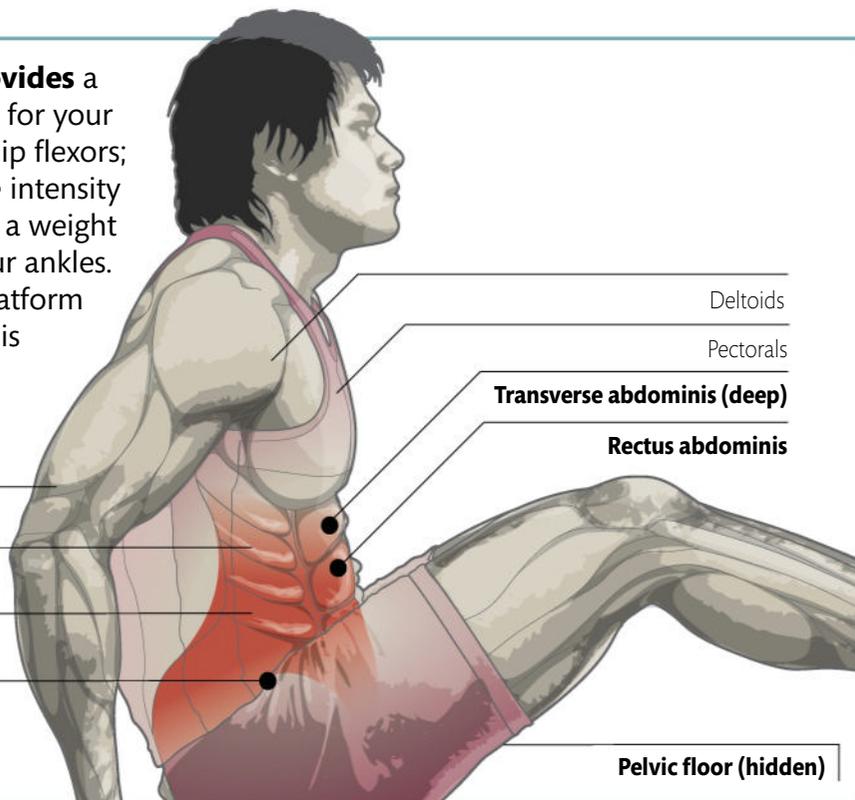
Flexion

DIFFICULTY LEVEL



This exercise provides a powerful workout for your abdominals and hip flexors; you can boost the intensity further by placing a weight between both your ankles. Ensure that the platform or bench you use is sufficiently stable.

- Triceps brachii
- Internal obliques (deep)
- External obliques
- Hip flexors (deep)**

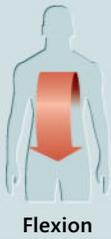
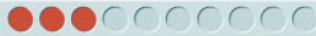


1 Sit on the bench, supporting yourself by gripping the pad behind you. Lift your legs together, keeping your toes pointed.

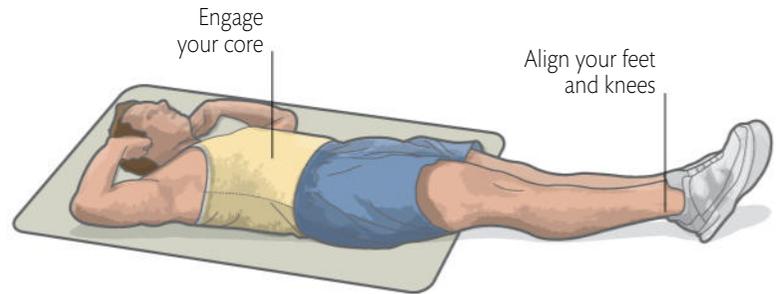
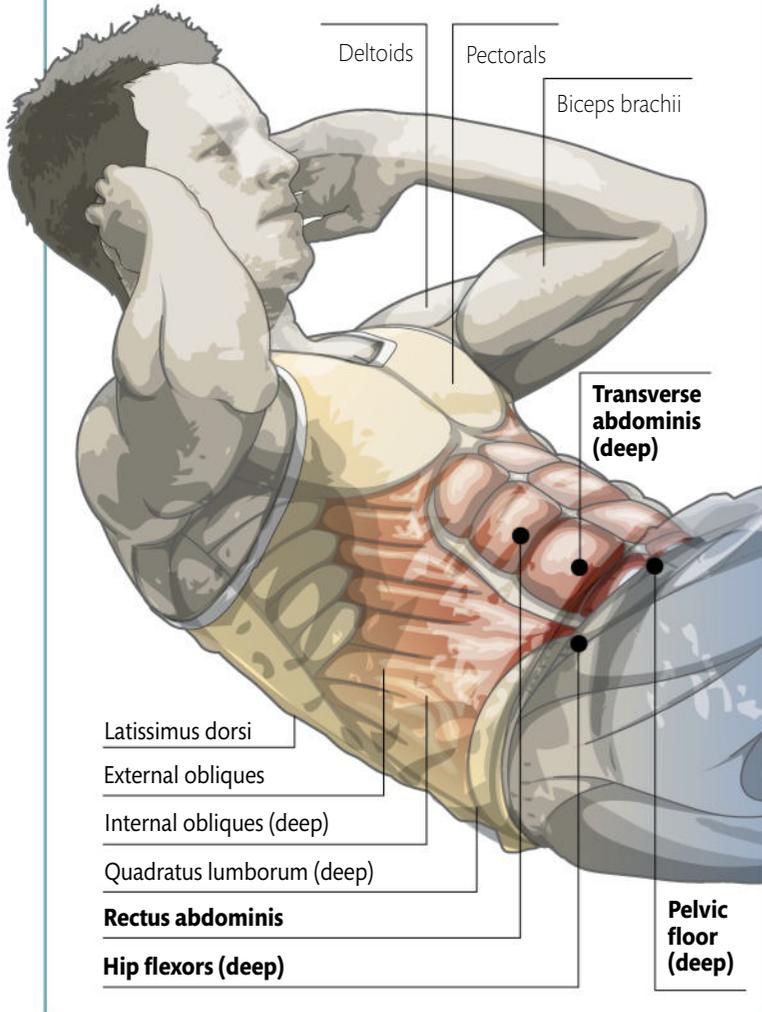
2 Keeping your legs and feet together, bend the knees and bring them towards your chest. Pull your torso forwards a little for balance.

3 Bring your knees as close to your chest as possible. Reverse the sequence to return to the start position, slowly and with control.

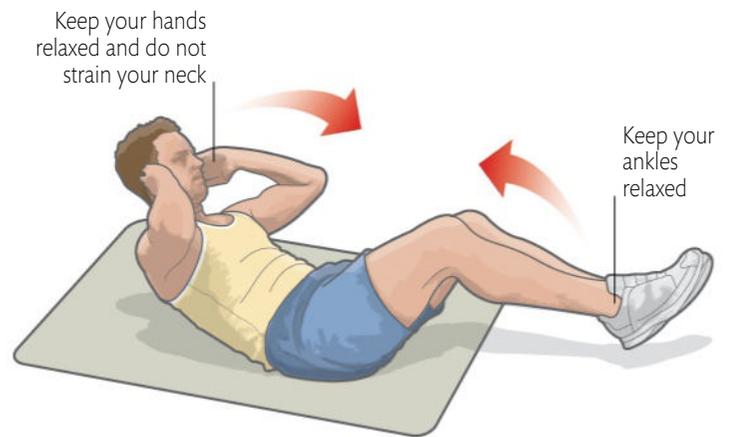
V SIT-UP

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Pelvic floor	
■ Hip flexors	
DIFFICULTY LEVEL 	

A similar movement to the V leg-raise (**opposite**), this exercise requires greater core stability to perform as you do not have the support of the bench. Good form is crucial. Control the movement with your abdominals and keep your neck and shoulders relaxed.



1 Lie with your feet together and your hands touching the sides of your head. Engage the core, and raise your head and feet slightly off the floor.



2 Keeping your feet and knees together, simultaneously crunch up with your upper body as you bend your knees and bring them towards your chest. Control the movement with your core.



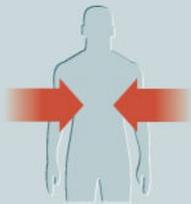
3 Continue the crunching movement, bringing your knees and chest towards each other as far as you can. Return by extending your hips and knees and leaning back to counterbalance. Repeat as required.

SWIM

TARGET MUSCLES

- Transverse abdominis
- Internal obliques
- Pelvic floor
- Erector spinae
- Multifidus
- Quadratus lumborum
- Gluteus minimus/medius
- Gluteus maximus

TARGET MOVEMENT

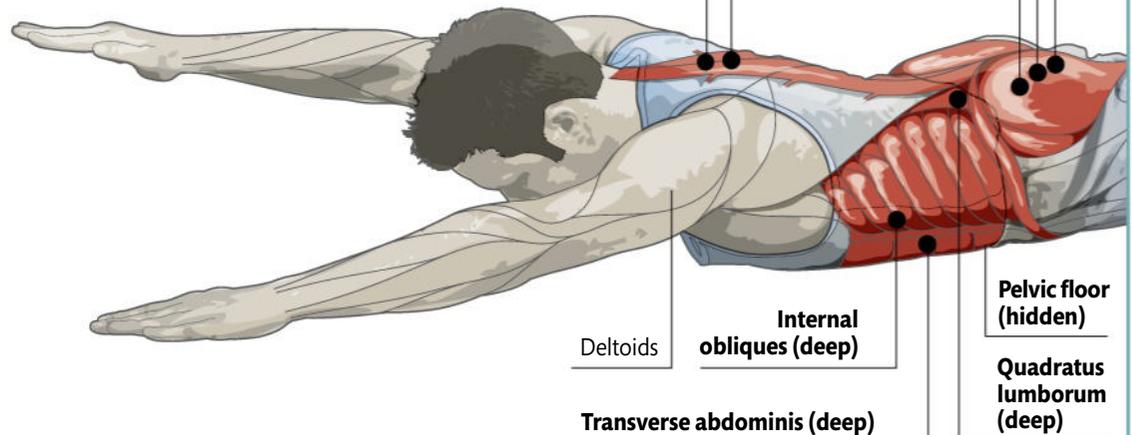


Isometric

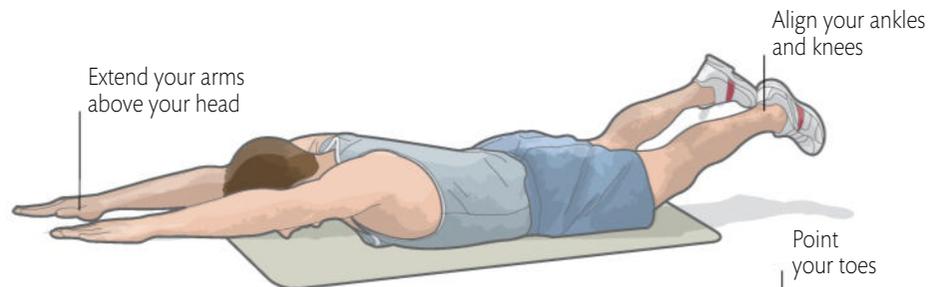
DIFFICULTY LEVEL



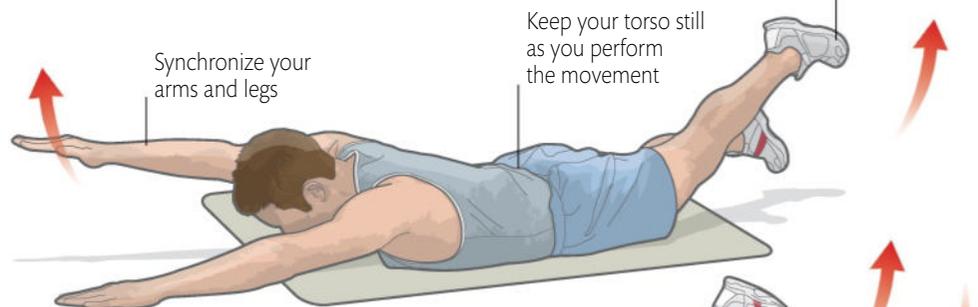
This exercise works the stabilizing muscles on either side of your spine, along with your buttocks and hamstrings. When performing it, try to make the movements on each side as symmetrical and balanced as possible. As you progress, you can speed the exercise up.



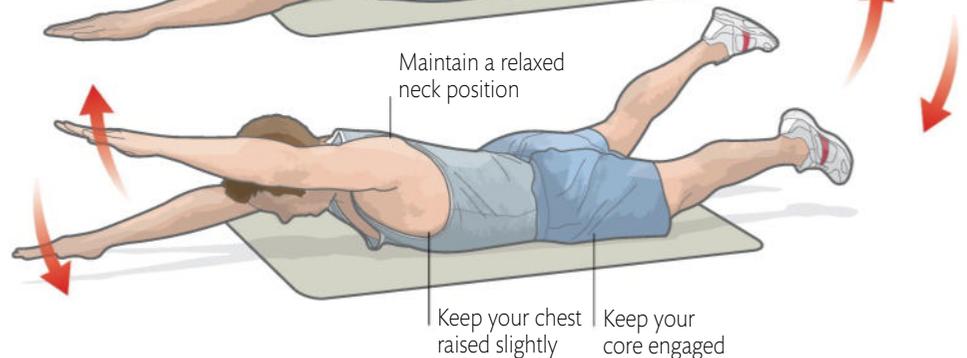
1 Lie face down on the floor, with your arms extended above your head, palms downwards. Engaging your core, raise your arms and legs slightly off the floor and stretch your neck to elongate your torso.



2 Lift your right arm and left leg at the same time, keeping all your limbs as straight as possible. Control the movement with your core to avoid rotating your torso and “cheating” the movement.

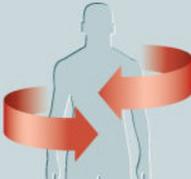


3 Simultaneously lower your right arm and left leg, and lift your left arm and right leg. Alternate for the required number of repetitions.

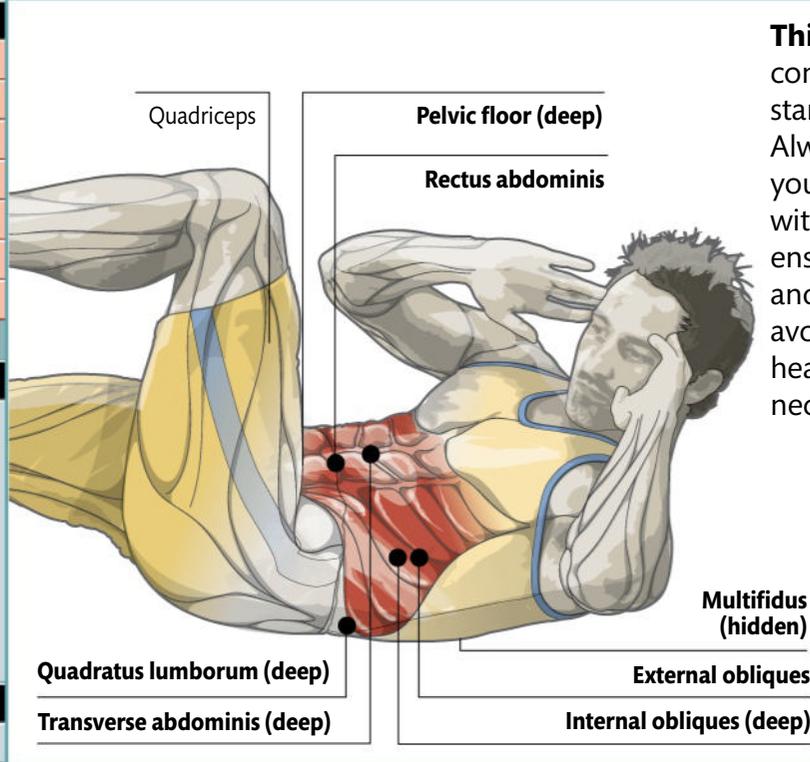


SUPER-SLOW BICYCLE

TARGET MUSCLES
■ Rectus abdominis
■ Transverse abdominis
■ External obliques
■ Internal obliques
■ Pelvic floor
■ Multifidus
■ Quadratus lumborum

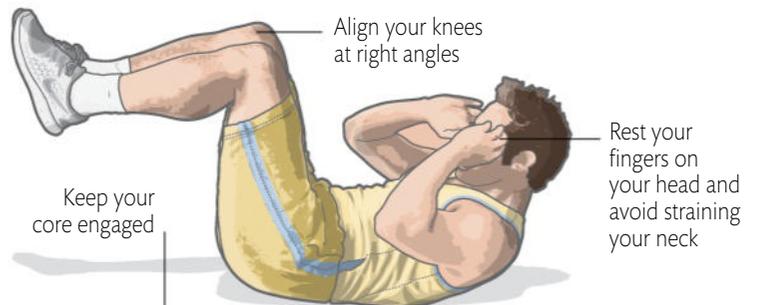
TARGET MOVEMENT
 <p>Rotation</p>

DIFFICULTY LEVEL
●●●○○○○○○○○○○

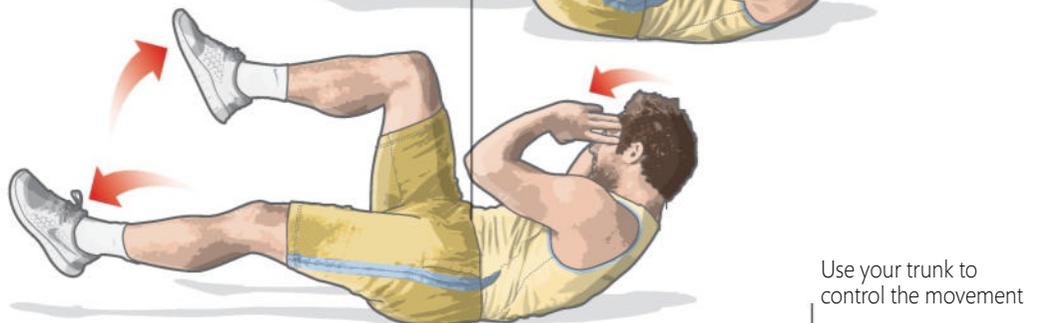


This exercise requires a combination of flexibility, stamina, and mobility. Always make sure that you are performing it with good, even form: ensure that you curl up and rotate your trunk, avoiding jerking the head or straining your neck muscles.

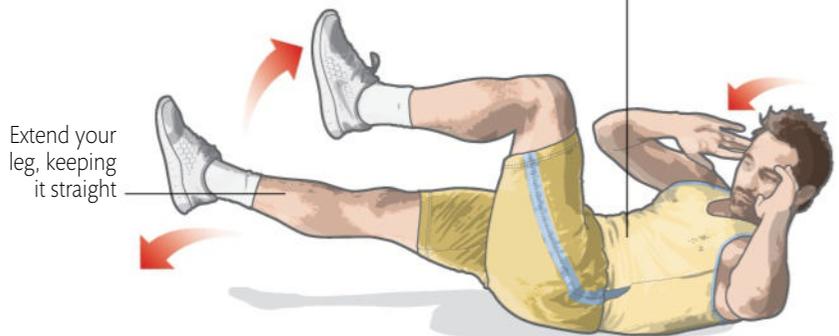
1 Lie on your back with your pelvis in a neutral position, and your knees and hips bent at a right angle. Place your hands on your temples.



2 Using your core to control the movement, slowly bring your left elbow and right knee together, rotating your torso to the right and extending your left leg.



3 Switch sides, bringing your right elbow towards the left knee and extending your right leg. Repeat the sequence for the desired number of repetitions.

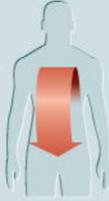


SPRINTER SIT-UP

TARGET MUSCLES

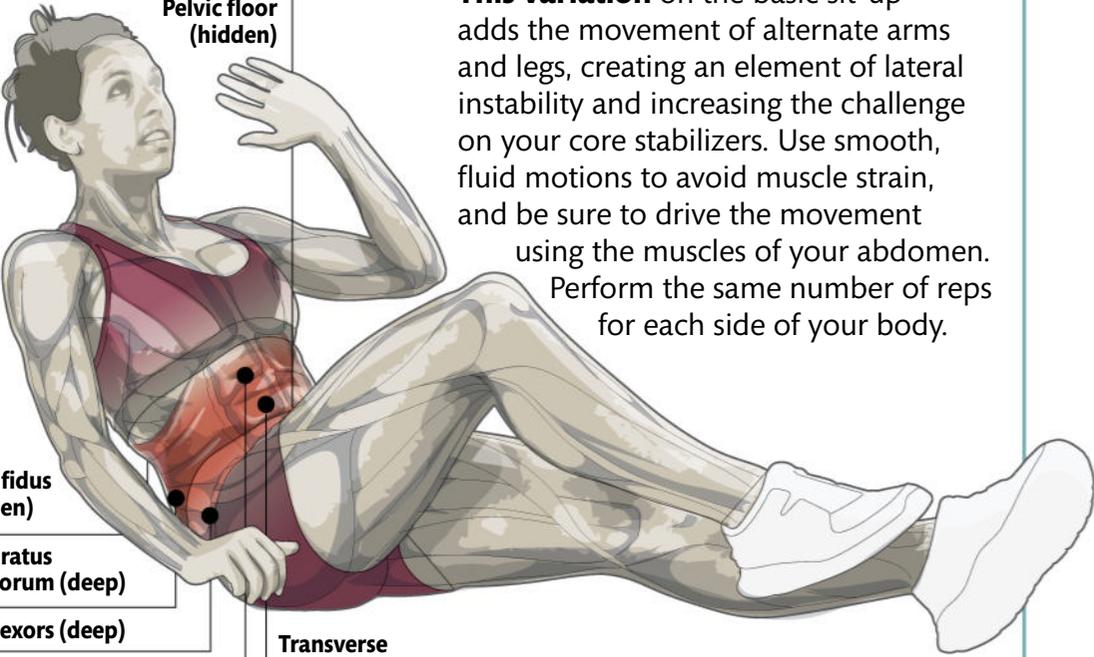
- Rectus abdominis
- Transverse abdominis
- Pelvic floor
- Hip flexors
- Multifidus
- Quadratus lumborum

TARGET MOVEMENT



Flexion

DIFFICULTY LEVEL

Pelvic floor (hidden)

Multifidus (hidden)

Quadratus lumborum (deep)

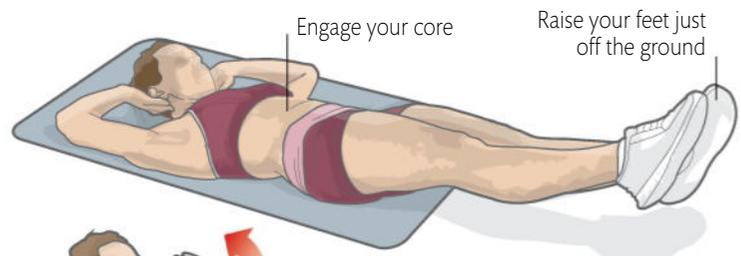
Hip flexors (deep)

Rectus abdominis

Transverse abdominis (deep)

This variation on the basic sit-up adds the movement of alternate arms and legs, creating an element of lateral instability and increasing the challenge on your core stabilizers. Use smooth, fluid motions to avoid muscle strain, and be sure to drive the movement using the muscles of your abdomen. Perform the same number of reps for each side of your body.

1 Lie on your back with your hands touching the sides of the head and your elbows back and aligned. Stretch your legs and raise your head and feet just off the ground.



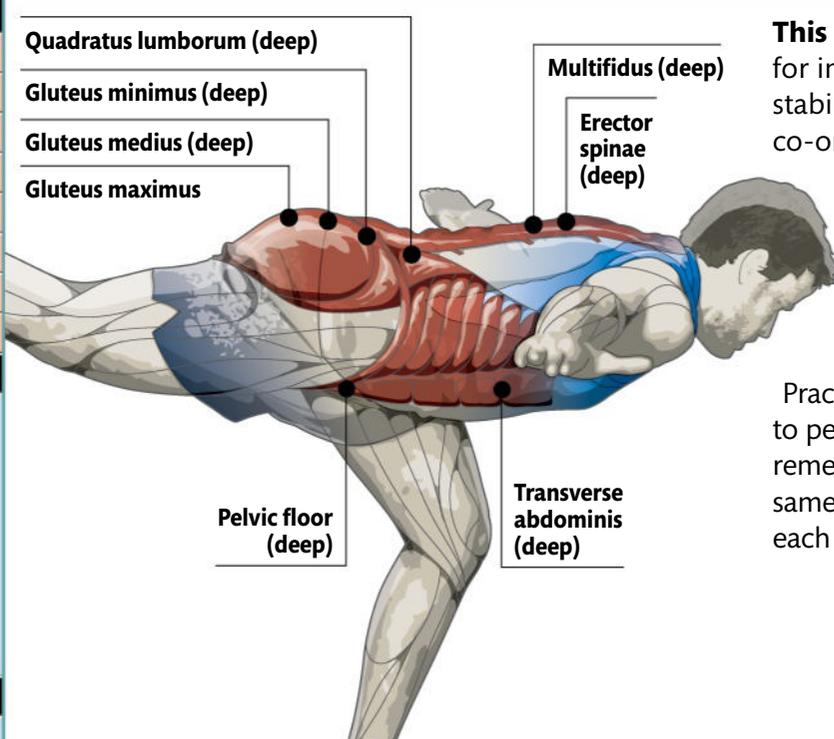
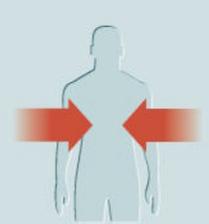
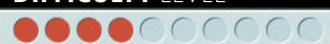
2 Crunch up with your abs and bring your right knee towards your chest. At the same time, extend your left elbow out in front of you and drop your right arm to your side.



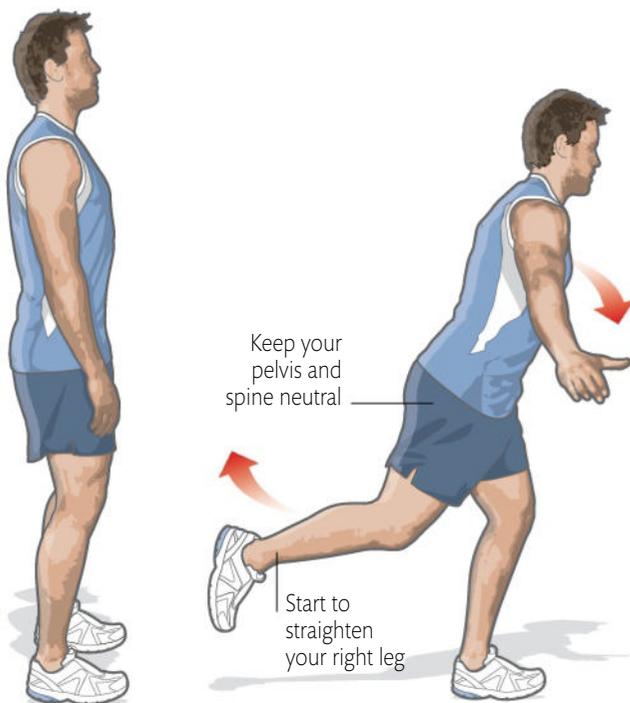
3 Extend the movement further until you assume a similar position to that of a runner, with your right knee and left elbow roughly aligned. Slowly return to the start position and switch sides.



HORIZONTAL BALANCE

TARGET MUSCLES	
■ Transverse abdominis	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
■ Gluteus maximus	
TARGET MOVEMENT	
 <p>Isometric</p>	
DIFFICULTY LEVEL	
	

This exercise is excellent for improving your core stability, balance, and co-ordination, as well as your hamstring flexibility. It is therefore often used to help with the rehabilitation of lower-body injuries. Practise in front of a mirror to perfect your form, and remember to perform the same number of reps for each side of your body.



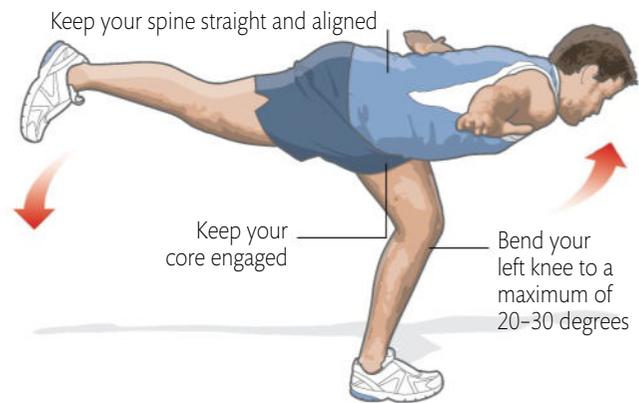
1 Stand upright with your shoulder and hips aligned, and your back in a neutral position, and your feet shoulder-width apart.



2 Bend forwards at your hips, lifting your right leg back and transferring the weight on to your left leg, bending your knee slightly, and lifting your arms as you do so.

PROGRESSION

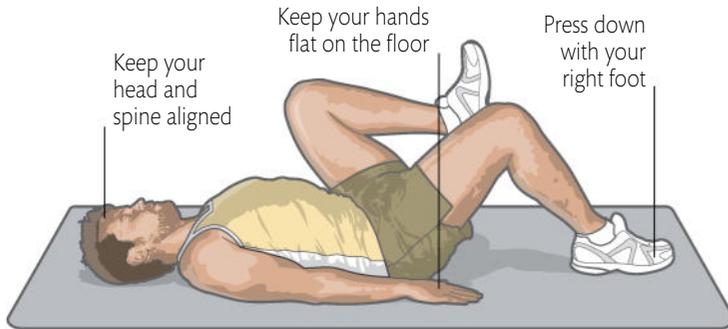
Performing the exercise on a half-exercise ball makes for a much more challenging version of the movement. Maintain good form and perform the same number of repetitions for each side.



3 Continue until your body is as close as you can get to parallel with the floor. Hold, then reverse the movement slowly and with control. Repeat as required and switch sides.

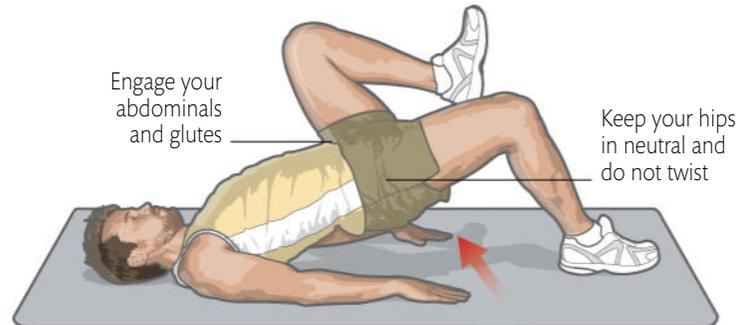
PROGRESSION 1

A development of the basic bridge, this version of the exercise is performed on one leg and so introduces an element of instability, forcing you to control the rotation and tilt of your pelvis.



1 Lie with your knees bent and your legs hip-width apart. Keeping your right foot on the floor, raise your left knee up and hold it above your hip, ensuring you maintain hip alignment before you begin.

This puts more stress on your deep abdominals and lower back muscles. It is important to ensure that you keep your hips level and your spine aligned throughout the movement.



2 Lift your buttocks as high as you can without dropping one side, ensuring you maintain neutral hip position. Hold briefly, then reverse to return to the start position and switch legs.

PROGRESSION 2

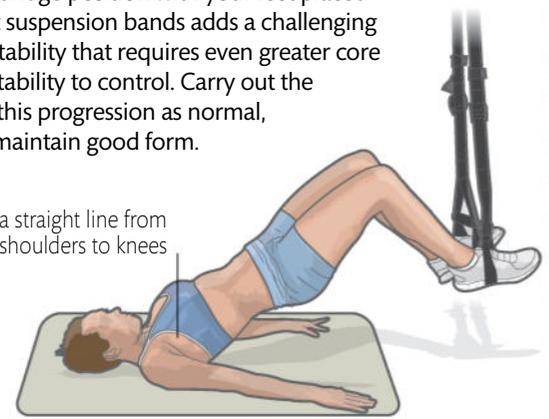
Placing a stability disc beneath your upper back and placing your arms across your chest removes the main support, meaning that your core has to work harder to keep you stable and balanced. Lie on your back with your knees bent at right angles and your feet flat on the floor, hip-width apart. Cross your arms over your chest, and slowly lift your buttocks until your body is in the bridge position. Hold and return to the start position.



PROGRESSION 3

Assuming the bridge position with your feet placed in bodyweight suspension bands adds a challenging element of instability that requires even greater core strength and stability to control. Carry out the movement in this progression as normal, ensuring you maintain good form.

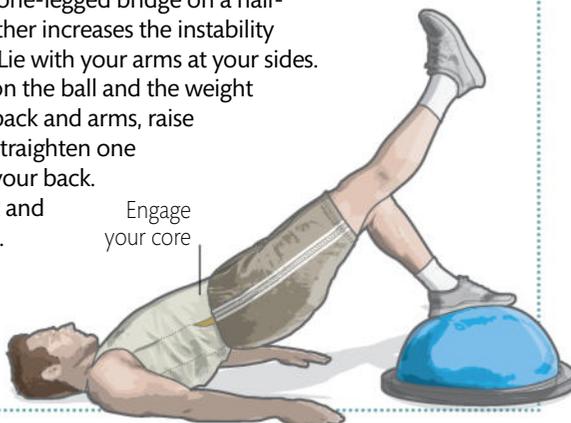
Maintain a straight line from your shoulders to knees



PROGRESSION 4

Performing the one-legged bridge on a half-exercise ball further increases the instability of the position. Lie with your arms at your sides. With your feet on the ball and the weight on your upper back and arms, raise your buttocks. Straighten one leg in line with your back. Hold, then relax and switch your legs.

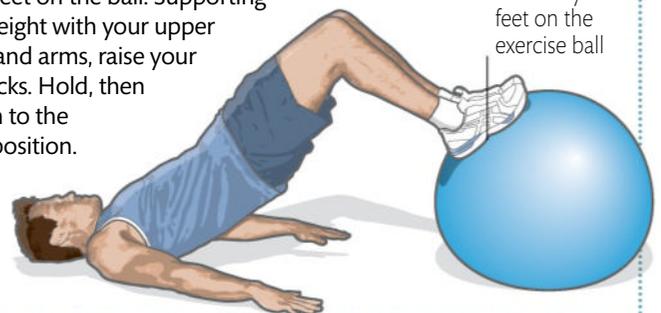
Engage your core



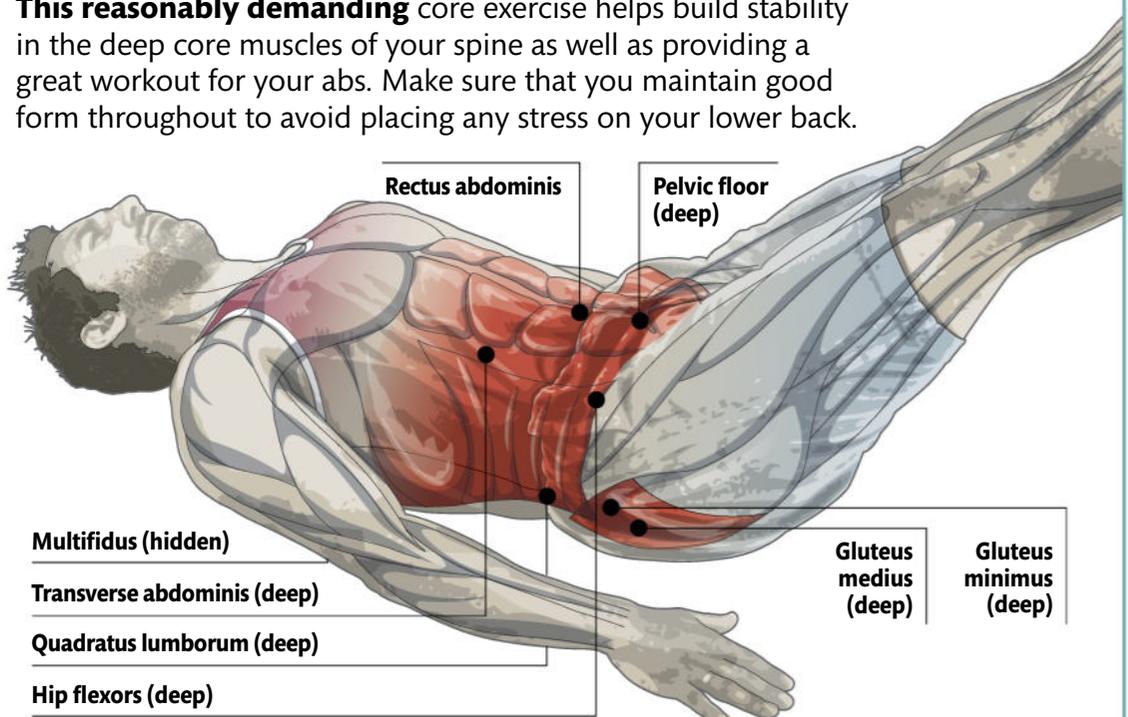
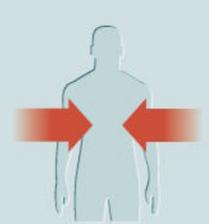
PROGRESSION 5

The multi-directional instability of an exercise ball means this version of the movement requires great core control and balance. Lie on your back and plant your feet on the ball. Supporting the weight with your upper back and arms, raise your buttocks. Hold, then return to the start position.

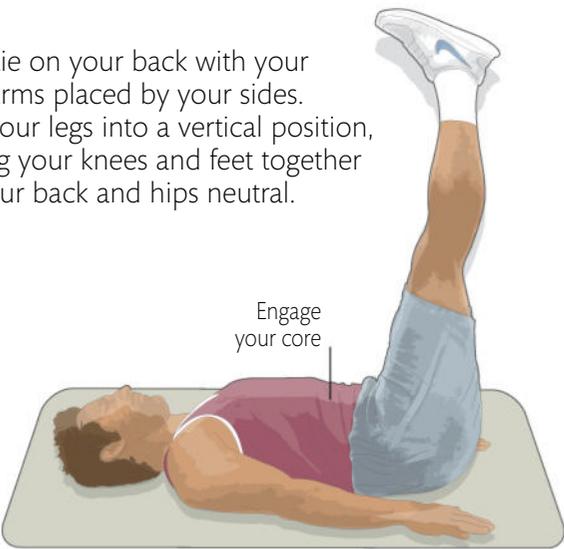
Position your feet on the exercise ball



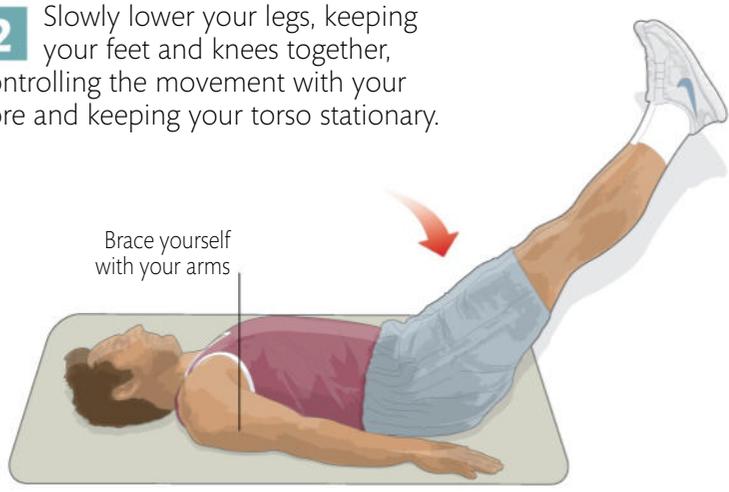
DOUBLE-LEG LOWER AND LIFT

TARGET MUSCLES		
■ Rectus abdominis	<p>This reasonably demanding core exercise helps build stability in the deep core muscles of your spine as well as providing a great workout for your abs. Make sure that you maintain good form throughout to avoid placing any stress on your lower back.</p> 	
■ Transverse abdominis		
■ Pelvic floor		
■ Hip flexors		
■ Multifidus		
■ Quadratus lumborum		
■ Gluteus minimus		
■ Gluteus medius		
TARGET MOVEMENT		
 <p>Isometric</p>		
DIFFICULTY LEVEL		
●●●●●○		

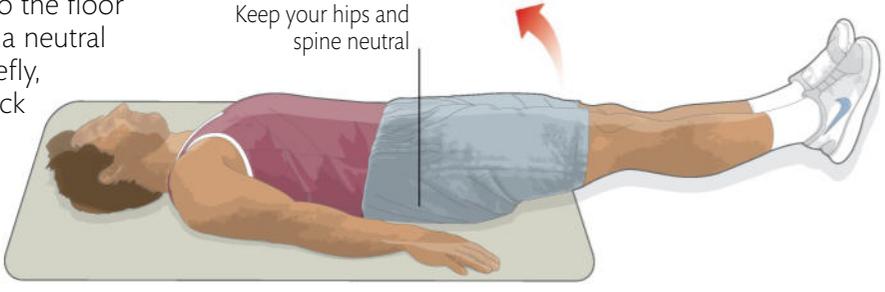
1 Lie on your back with your arms placed by your sides. Raise your legs into a vertical position, keeping your knees and feet together and your back and hips neutral.



2 Slowly lower your legs, keeping your feet and knees together, controlling the movement with your core and keeping your torso stationary.

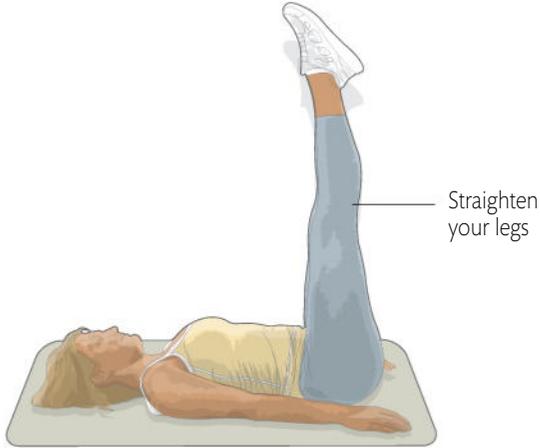


3 Continue the movement until your feet are as near to the floor as you can get, maintaining a neutral back. Hold this position briefly, then slowly lift your legs back to the start position, with a controlled, smooth motion. Avoid lifting your lower back as you repeat.



VARIATION

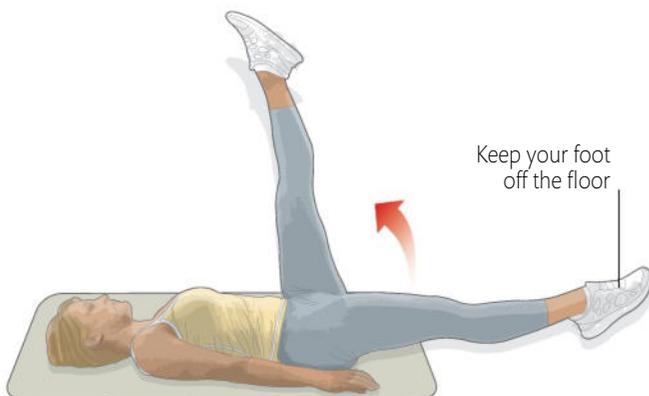
This version of the exercise works each of your legs in turn, introducing an element of lateral instability. Focus on good, even form in your movements.



1 Lie on your back with your palms facing down and your legs raised vertically.



2 Keeping your left leg held upright, lower your right leg slowly and under control.



3 Pause with your right leg as low as you can get, without lifting your back, then return to the start position. Alternate your legs throughout the exercise.

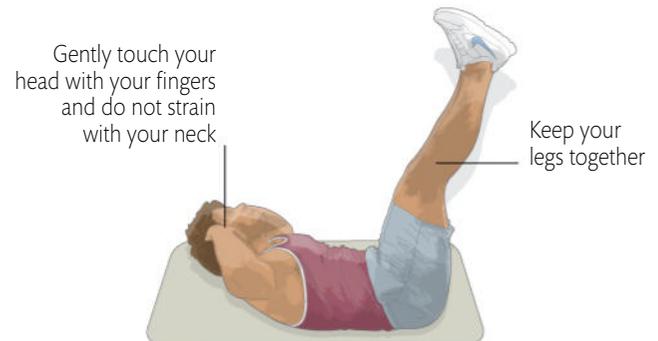
PROGRESSION 1

Holding an exercise ball between your feet as you perform the movement increases its intensity, making your core muscles work harder, while also recruiting additional muscles in your inner thighs. Grasp the exercise ball with the inside of your feet and raise your legs into a vertical position. Lower the ball to a few centimetres above the floor, hold briefly and return to the start position.



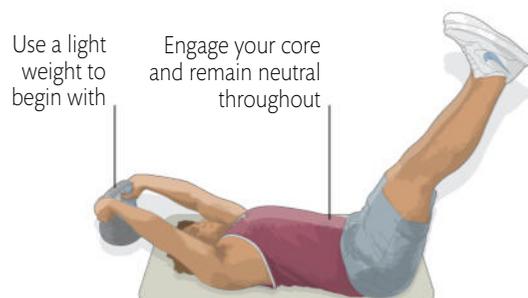
PROGRESSION 2

To increase the intensity of the exercise further, carry it out with your shoulders off the floor in a held crunch position. This will help to further increase your core stamina, while removing the support of your upper back and shoulders. The position makes your core work much harder to keep you stable and balanced.

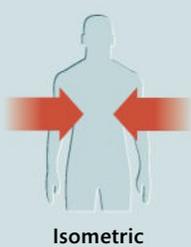


PROGRESSION 3

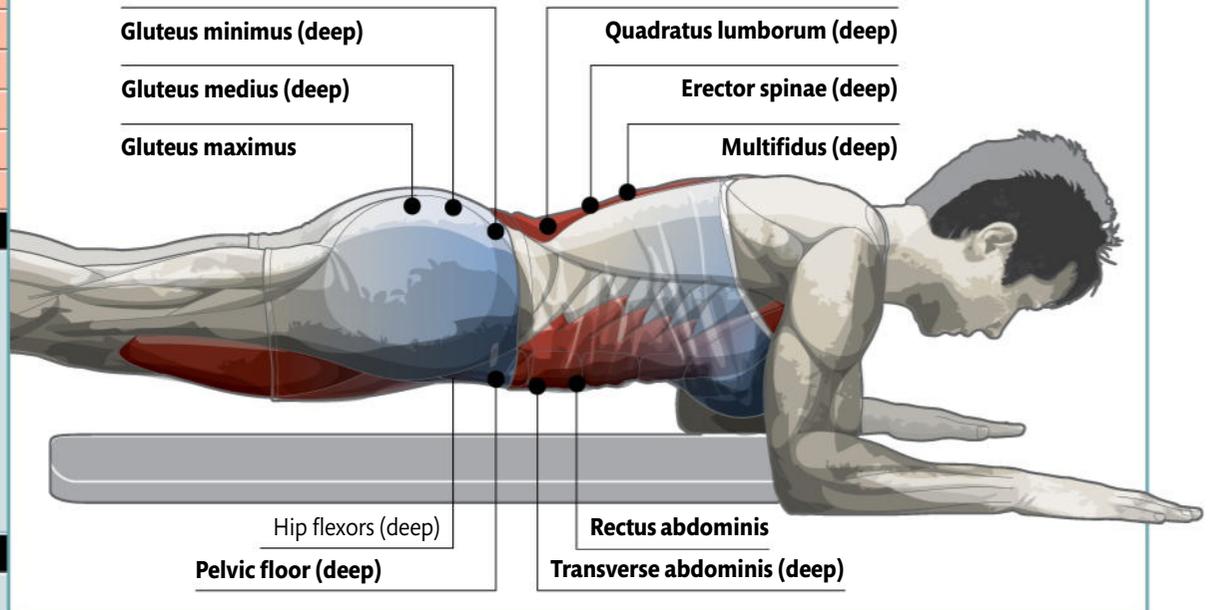
You can use the weight of a kettlebell to increase the load on the core and make the exercise even more challenging. Keeping your arms extended straight behind your head, hold the weight behind your head and a few centimetres off the floor as you lower your legs from a vertical position to a few inches off the floor.



PLANK

TARGET MUSCLES
■ Rectus abdominis
■ Transverse abdominis
■ Pelvic floor
■ Erector spinae
■ Multifidus
■ Quadratus lumborum
■ Gluteus minimus/medius
■ Gluteus maximus
TARGET MOVEMENT
 <p>Isometric</p>
DIFFICULTY LEVEL

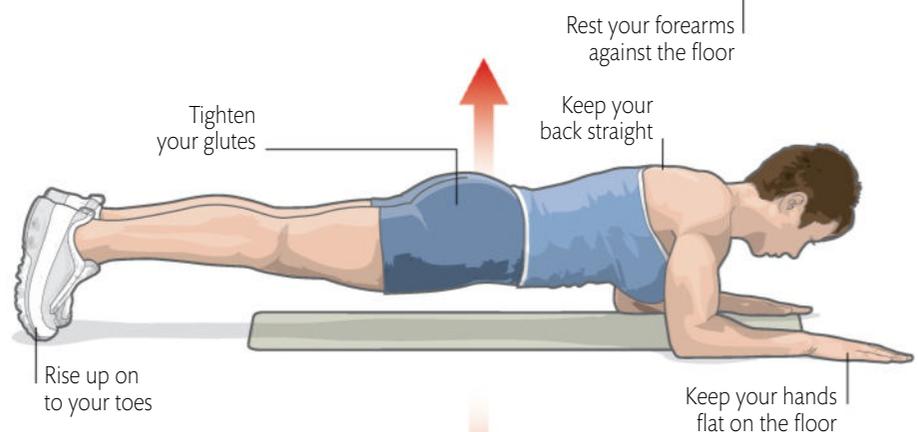

This excellent isometric exercise engages your core and many major muscle groups of the upper and lower body. Good form is key – ensure you maintain a straight line through your body, from shoulders to ankles.



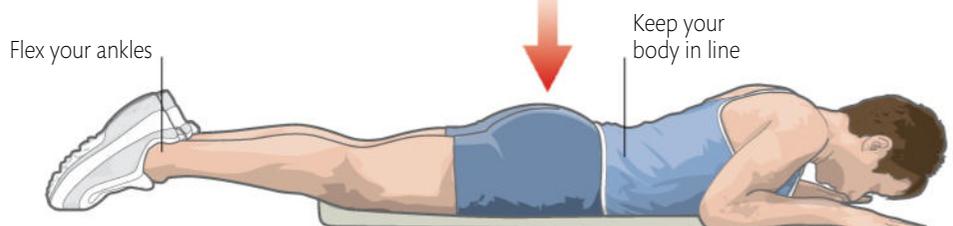
1 Lie face down on an exercise mat with your elbows to your sides, your head facing forward, and palms flat on the floor.



2 Engaging your core and glutes, raise your body from the floor, supporting your weight on your forearms and toes while breathing freely. Concentrate on maintaining a straight line through your core and legs.

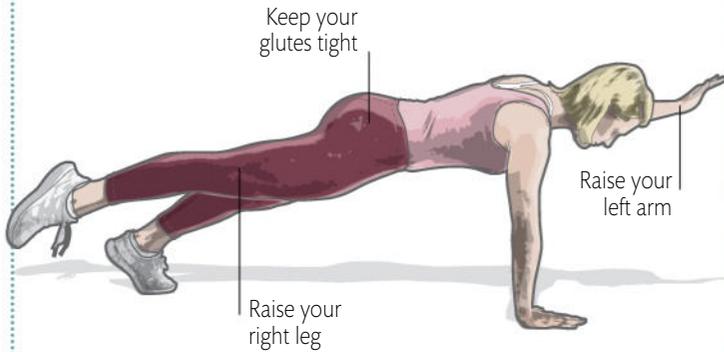


3 Hold the plank position, maintaining good form and keeping your glutes tensed, then return to the start position slowly and with good control.



PROGRESSION 1

Supporting your weight with only one arm and one leg introduces an element of instability, which your body has to brace itself against. Maintain a straight line through your raised arm and your raised leg, and be sure to repeat on both sides.



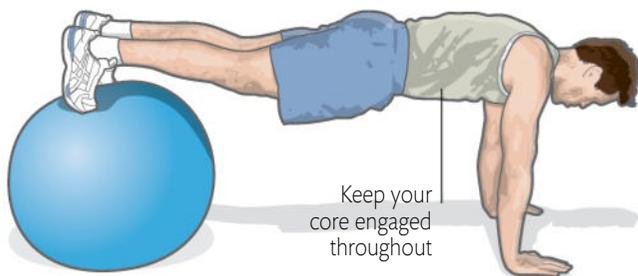
PROGRESSION 2

Placing your feet on a half-exercise ball adds a different kind of instability for your core muscles to work against. Begin by supporting your weight with your elbows on the floor, then raise yourself onto your hands.



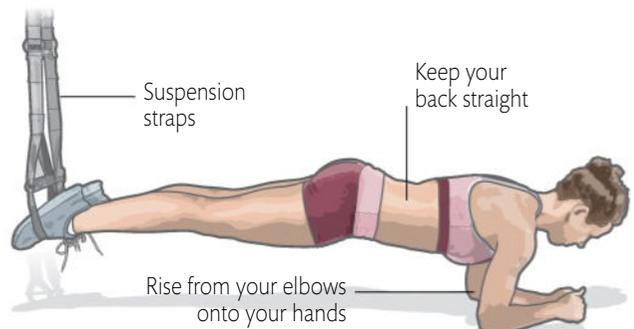
PROGRESSION 3

An exercise ball offers an even greater challenge than a half-exercise ball because it can move in all directions. As a result, this further adaptation of Progression 2 requires an even greater level of core stability to keep your body balanced. Begin by supporting your weight on your elbows, then raise yourself into position.



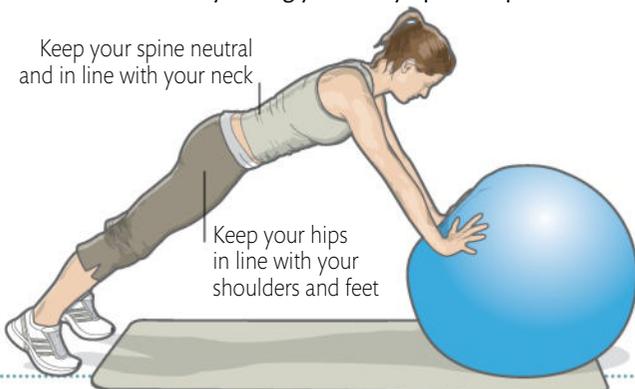
PROGRESSION 4

Once you have mastered the first three progressions you can make the plank even harder by raising your feet in bodyweight suspension straps. The straps make it even harder to stabilize your body, and so require excellent core stability and strength. Carry out the movement as normal with good control.



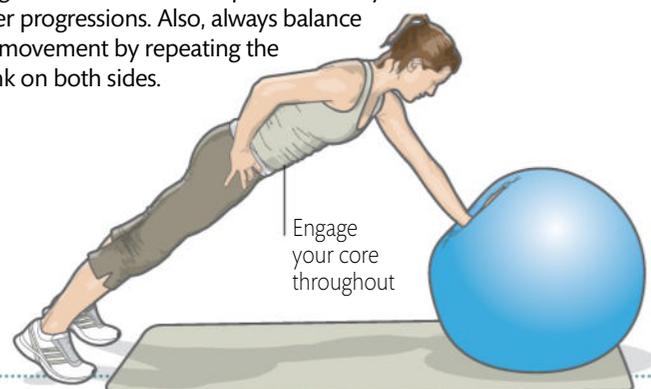
PROGRESSION 5

This progression uses an exercise ball to generate instability in your upper body, which is harder to control with your core. Kneel with your feet slightly apart, and lean forwards to rest both hands on the ball before carefully raising your body up into a plank.

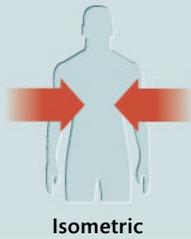


PROGRESSION 6

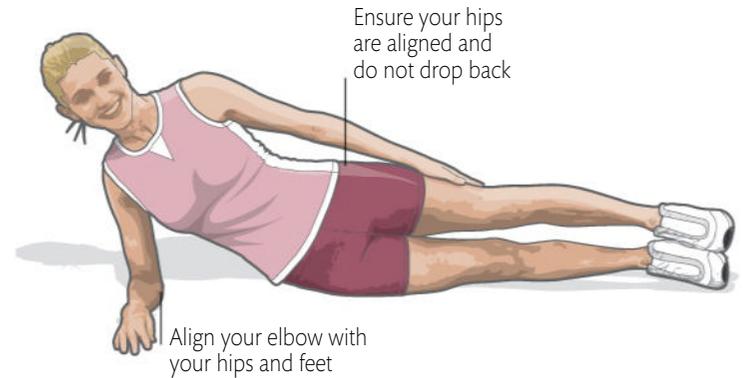
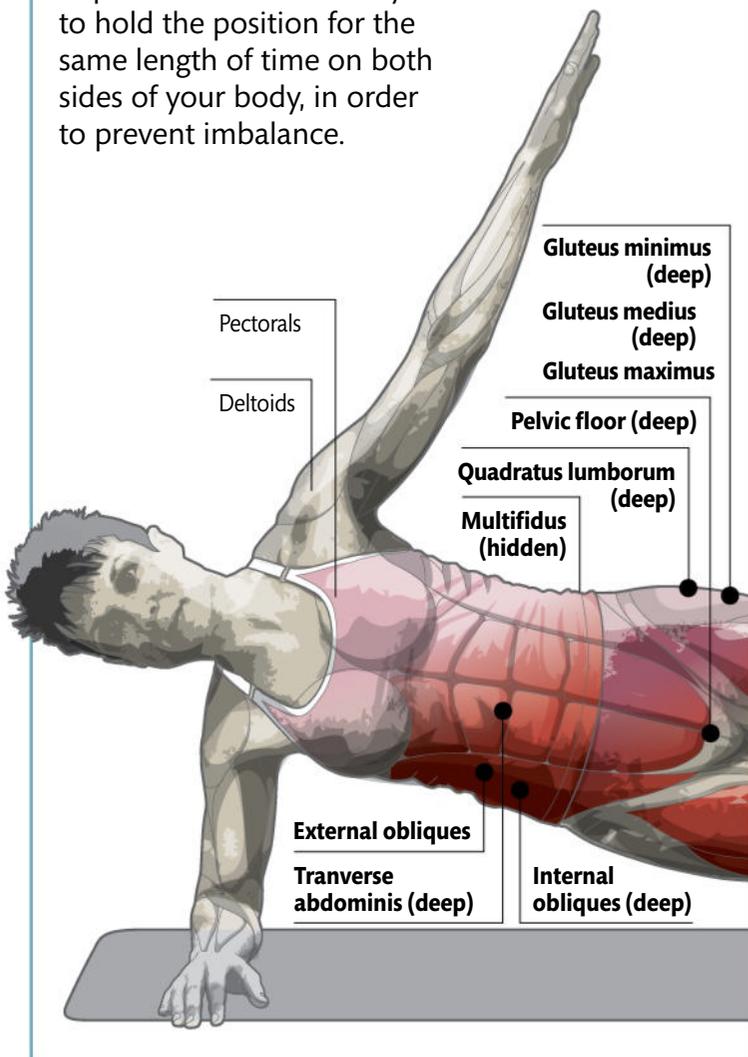
Supporting your weight on the exercise ball with just one hand places a rotational force on your spinal muscles, making your core work even harder to stabilize your body. The position is potentially dangerous so do not attempt this before you have mastered the other progressions. Also, always balance the movement by repeating the plank on both sides.



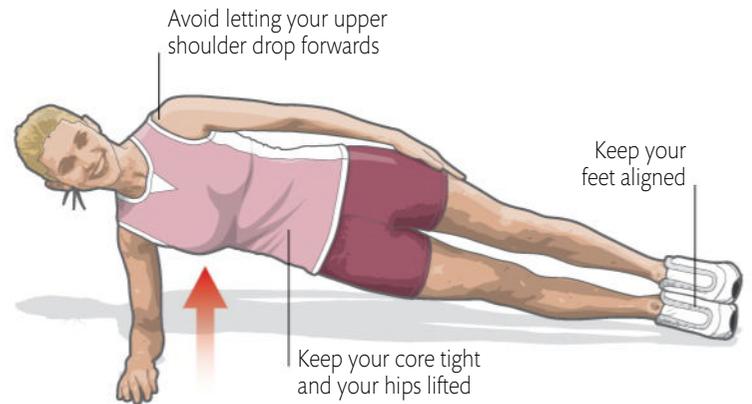
SIDE PLANK

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
■ Gluteus maximus	
	●●●●●○

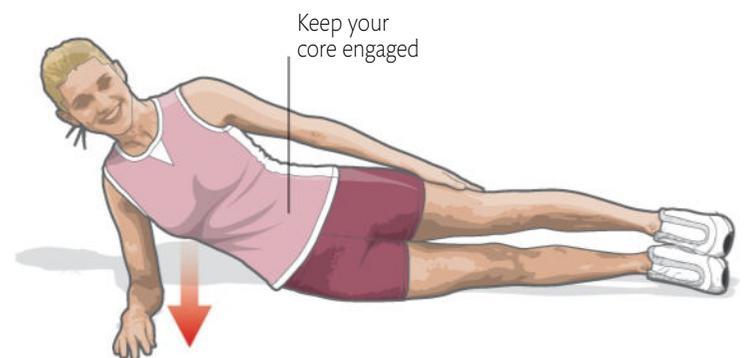
This excellent core exercise strengthens the stabilizing muscles of your spine, lower back, and glutes. While the basic position is relatively simple to achieve, maintaining good form is crucial to working your core in the right way. It is also important to ensure that you aim to hold the position for the same length of time on both sides of your body, in order to prevent imbalance.



1 Lying on your right side, prop yourself up on your right forearm. Extend your legs and keep your feet together. Make sure that your right elbow is directly under your shoulder and in line with your hips. Rest your left arm along your side.



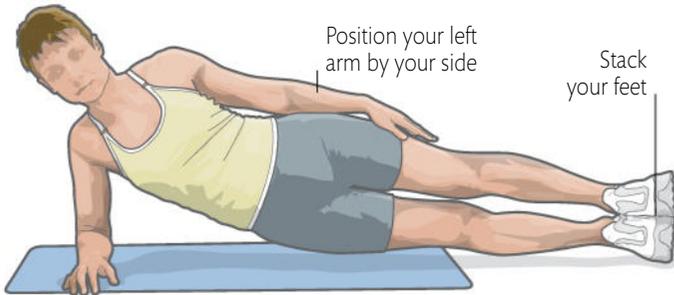
2 Engage the abdominals and push downwards through your right elbow to raise your hips off the ground, making sure that you keep the ribcage elevated and your shoulders in line with each other.



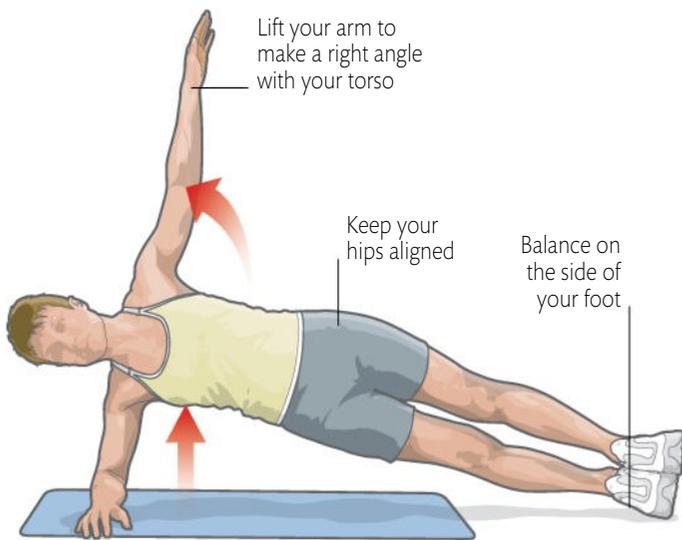
3 Hold the position for eight seconds, then return to the start position for a further two seconds. Repeat as required, then switch sides.

PROGRESSION 1

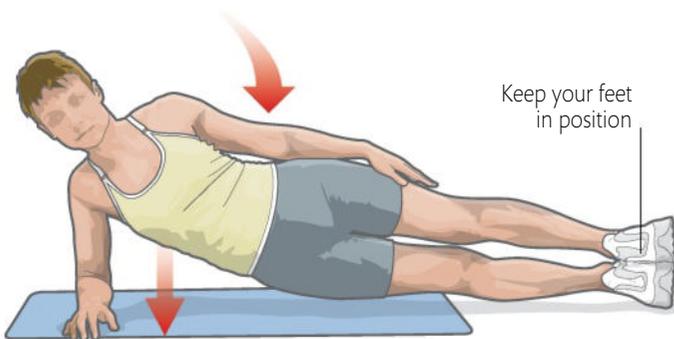
This progression of the basic side plank adds an element of instability because of the raised arm. This makes your core work harder to keep your body stable and balanced.



1 Lie on your right side supported by your forearm, with your right elbow directly under your shoulder and in line with your hips, as in the original movement.



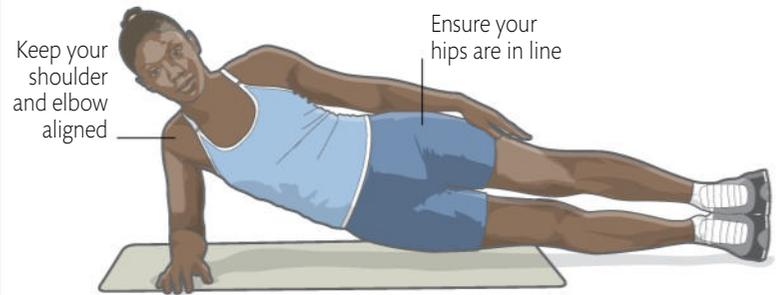
2 Raise your left arm until it is at a 90-degree angle to your torso, keeping your ribcage elevated and your shoulders aligned.



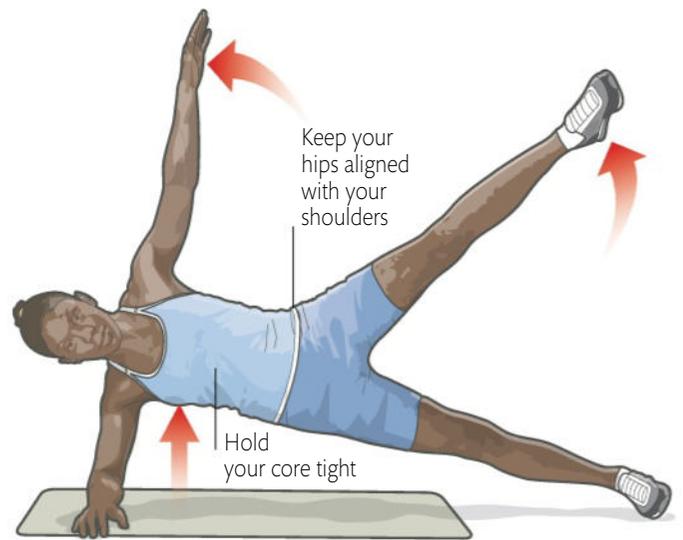
3 Hold for eight seconds, and then return to the start position for two seconds. Repeat as required, before switching sides.

PROGRESSION 2

A development of Progression 1, this position involves raising both your free arm and leg, requiring even greater core stability and control to keep your body balanced.



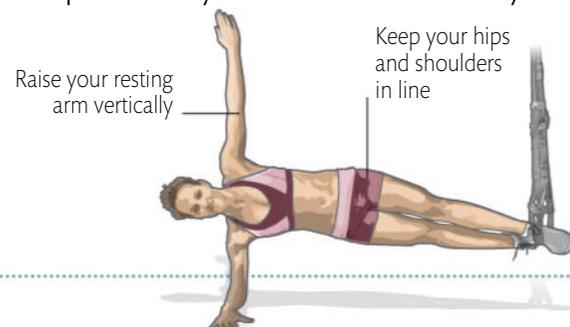
1 Lying on your right side, prop yourself up on your right forearm. Extend your legs and keep your feet together. Position your supporting elbow under your shoulder and aligned with your hips. Rest your left arm on your side.



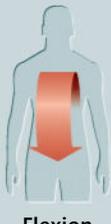
2 As you lift your hips into the plank position, raise your left arm and leg until you make a star shape, keeping your shoulders and hips aligned. Hold, then return to the start position. Repeat as required, then switch sides.

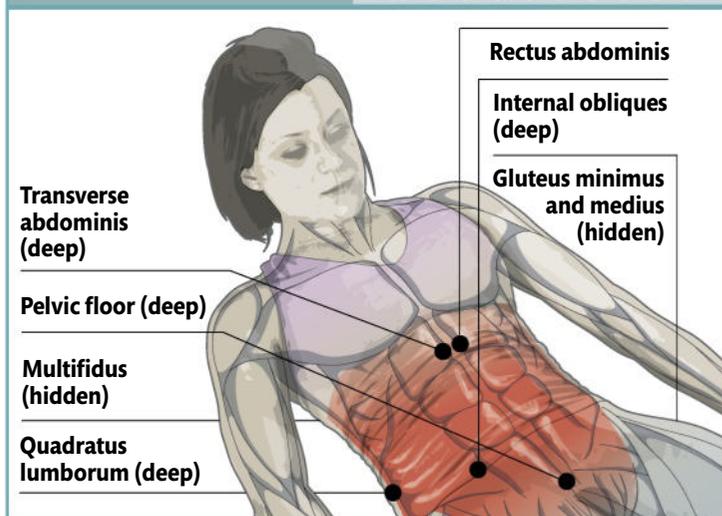
PROGRESSION 3

This further progression involves placing your feet in bodyweight suspension straps to increase the level of instability even further. Do not attempt this unless you have excellent core stability and strength.

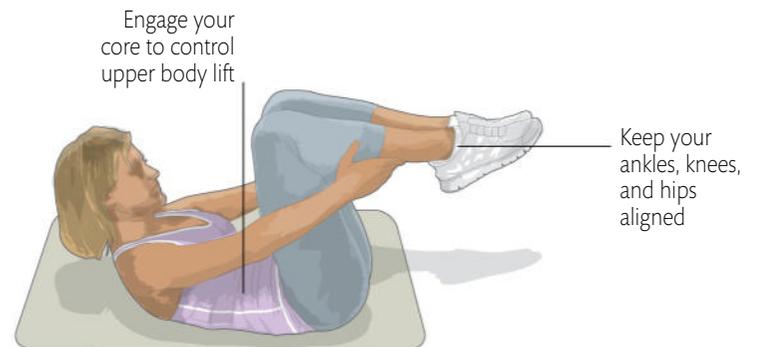


DOUBLE-LEG EXTENSION AND STRETCH

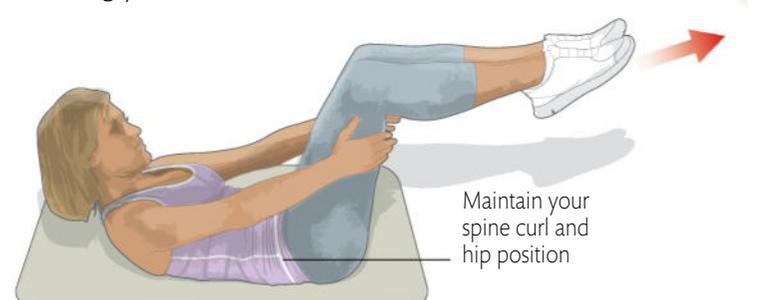
TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
	DIFFICULTY LEVEL
	●●●●○



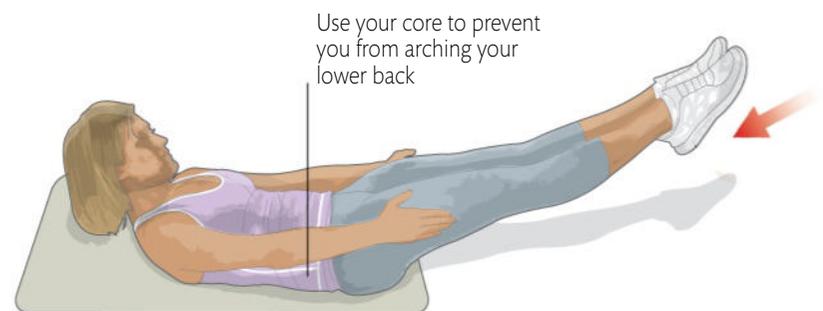
This exercise works in a similar way to the single-leg extension and stretch (opposite), but adds load on your lower abs. Ensure that your neck and shoulders are relaxed throughout to avoid straining.



1 Lying on your back, bring both knees over your hips and reach your hands to your shins. Lift your head and shoulders slightly off the floor, look towards your feet, and use your core to hold the position to avoid straining your neck.



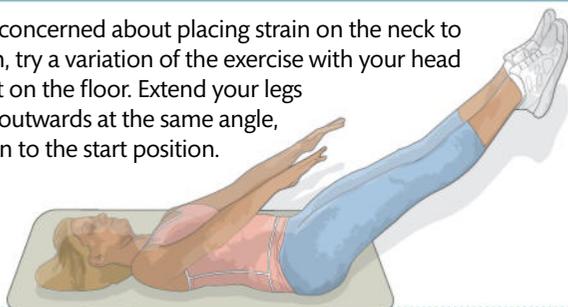
2 Holding your core and glutes tight, extend your legs forwards with control, without tilting your hips. Keep your head and shoulders raised slightly and your neck relaxed.



3 Fully straighten your legs without letting your back arch off the floor, keeping your core engaged and your head raised. Hold briefly, then return to the start.

VARIATION

If you are concerned about placing strain on the neck to begin with, try a variation of the exercise with your head resting flat on the floor. Extend your legs and arms outwards at the same angle, then return to the start position.



PROGRESSION

Once you have mastered the basic exercise, try as before but now extending your arms above your head at the same time as stretching your legs outwards to increase the level of instability. Keep your head off the floor and then return to the start position.



INTERMEDIATE

The exercises in this section build on those in Foundation, with the challenges of added instability, movement, weight, and power to make your core work harder and with greater

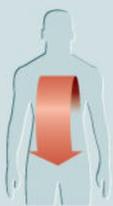
functionality. Concentration and good technique are vital, and it is important that you can perform the less-advanced exercises with confidence before you try any of these.

PARTNER BALL SWAP

TARGET MUSCLES

- Rectus abdominis
- Transverse abdominis
- Internal obliques
- Pelvic floor
- Hip flexors

TARGET MOVEMENT



Flexion

DIFFICULTY LEVEL



A development of the basic sit-up, this exercise introduces a more powerful, dynamic movement with the weight of a medicine ball. It provides an excellent workout for your abdominals with additional benefits to your shoulders, chest, and arms. You will need the help of a willing partner to assist with throwing and catching the ball.

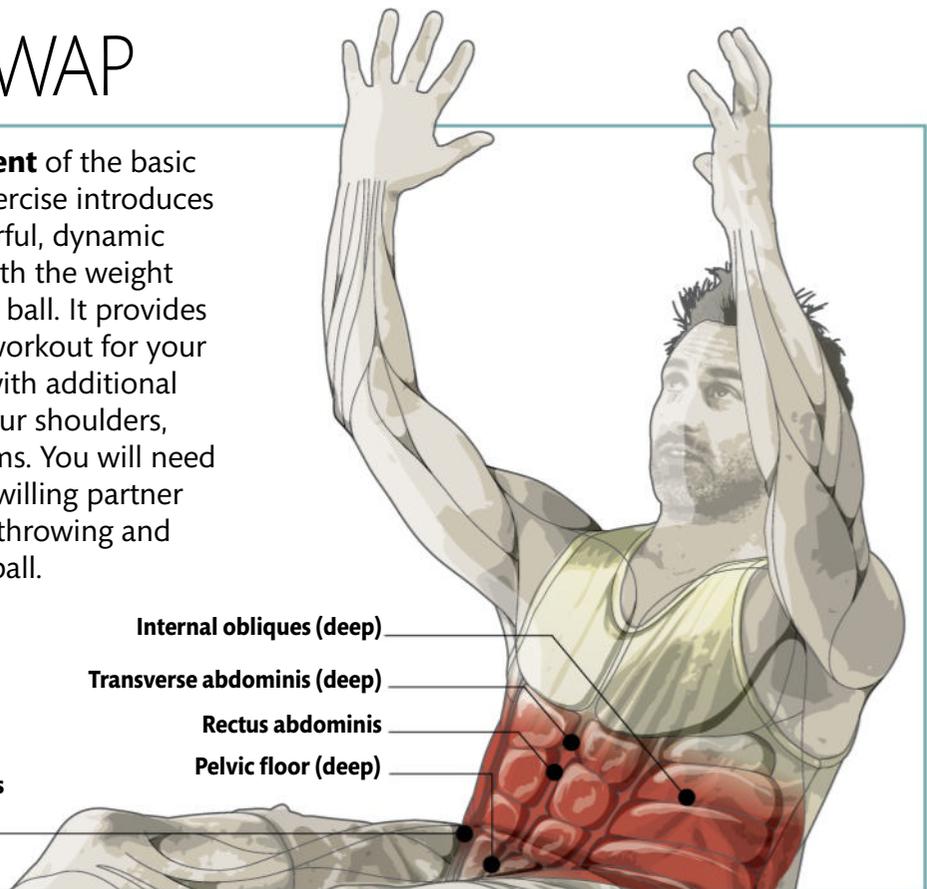
Hip flexors (deep)

Internal obliques (deep)

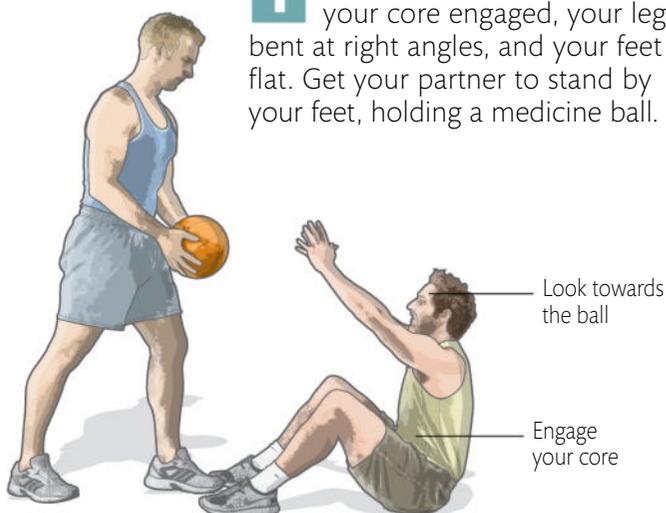
Transverse abdominis (deep)

Rectus abdominis

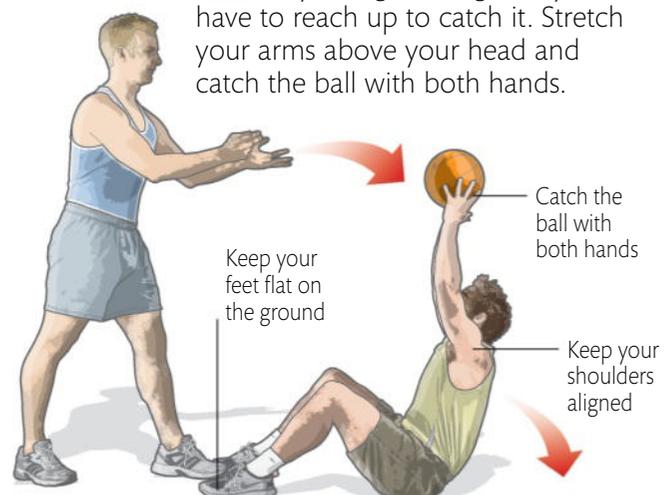
Pelvic floor (deep)

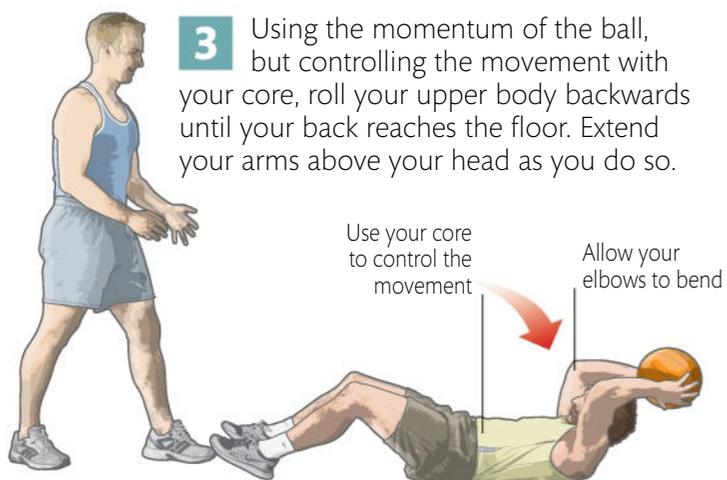


1 Sit up straight on the floor with your core engaged, your legs bent at right angles, and your feet flat. Get your partner to stand by your feet, holding a medicine ball.

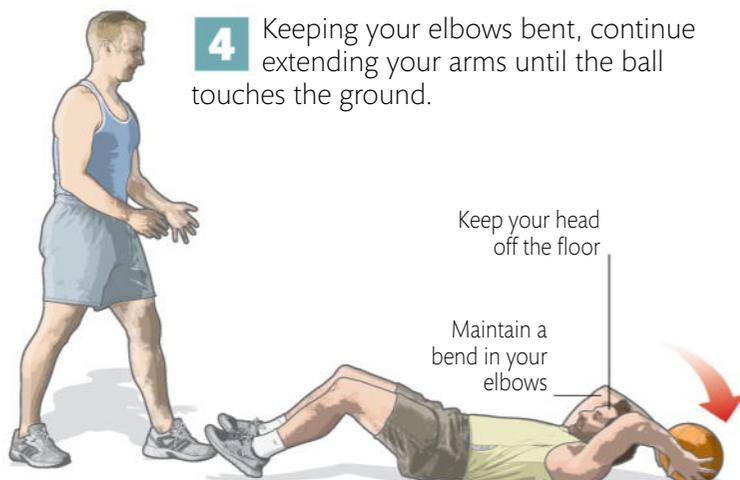


2 Get your partner to pass the ball to you high enough for you to have to reach up to catch it. Stretch your arms above your head and catch the ball with both hands.

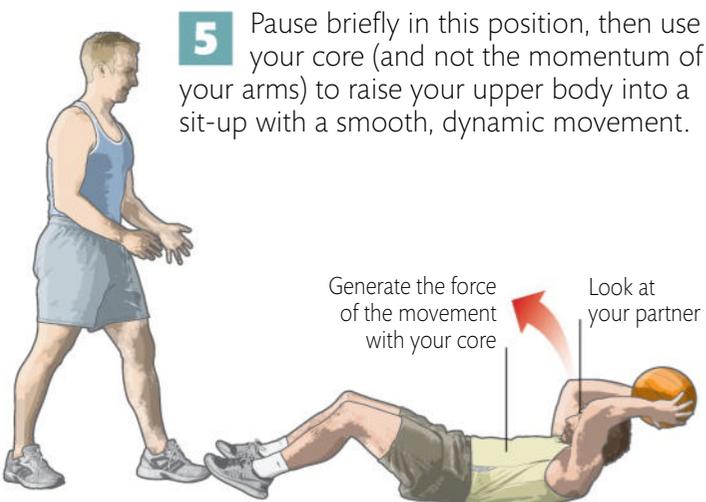




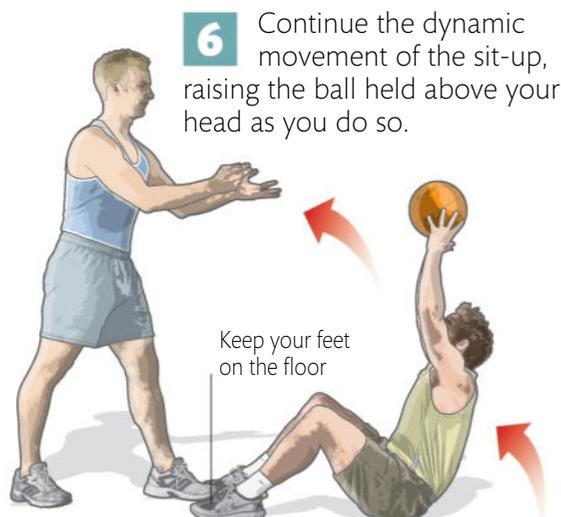
3 Using the momentum of the ball, but controlling the movement with your core, roll your upper body backwards until your back reaches the floor. Extend your arms above your head as you do so.



4 Keeping your elbows bent, continue extending your arms until the ball touches the ground.

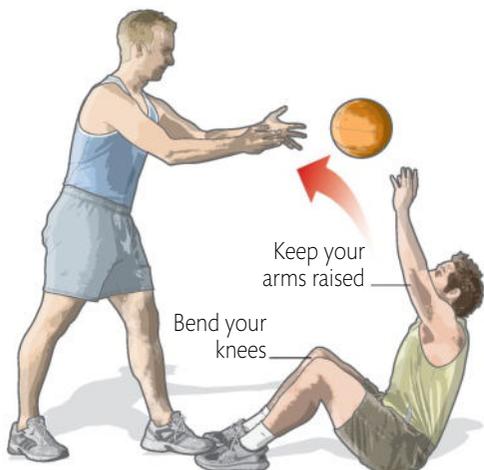


5 Pause briefly in this position, then use your core (and not the momentum of your arms) to raise your upper body into a sit-up with a smooth, dynamic movement.



6 Continue the dynamic movement of the sit-up, raising the ball held above your head as you do so.

7 Release the ball to your partner as you reach an upright position, using only the force generated by the movement from your core. Do not try to throw it.



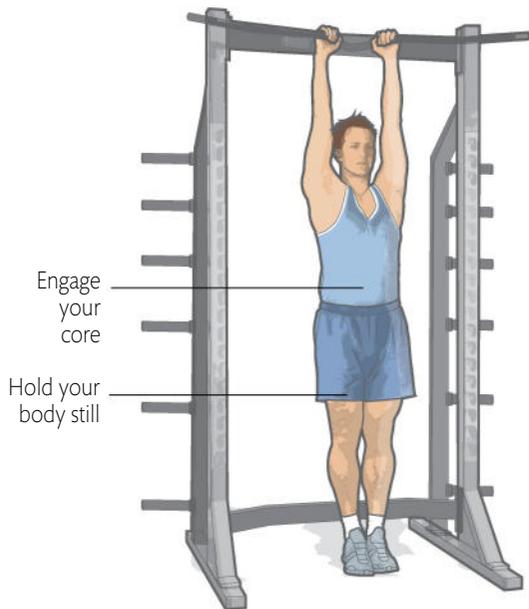
8 Continue the movement to the start position, with your knees bent and arms outstretched as your partner catches the ball.



PROGRESSION

Varying the position in which you catch the ball makes the exercise more challenging and introduces an element of rotational instability that recruits a number of additional core muscles. Repeat the same sequence as the main exercise, asking your partner to vary the position and angle of the throw to balance the workout across your core.





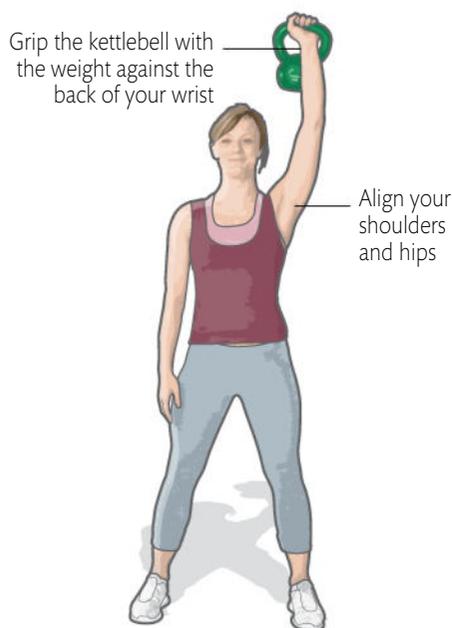
1 Hang from a stable chin-up bar using an overhand grip with your arms straight and shoulder-width apart. Keeping your body as still as possible and your legs together, engage your core.



2 Keeping your body still and your legs together, raise your knees upwards, using your core to control the movement, until your hips and knees are at right angles. Pause, then return to the start position with good control.

PROGRESSION

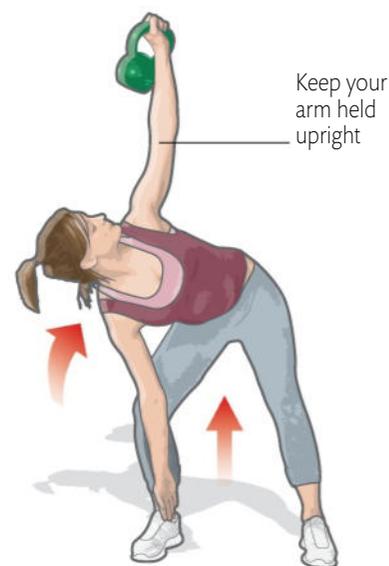
Once you have mastered the basic exercise, you can increase the load on your core by lifting each leg alternately. Assume the same start position and raise your left leg as high as you can, keeping it straight and controlling the movement with your core. Hold briefly, then return to the start position and repeat with your right leg.



1 Stand with your feet slightly more than shoulder-width apart, holding a kettlebell in your left hand. Raise the weight above your left shoulder, allowing your right arm to hang by your side.



2 Keeping the kettlebell aloft and pivoting at your hips, drop your torso to the right, reaching towards the floor with your right arm and bending your right knee. Turn your head in the direction of the kettlebell as you do so.



3 Continue reaching down as far as you can with your right hand, keeping the kettlebell in position and your head turned towards it. Hold briefly, then return to the start position. Complete your reps, then switch sides.

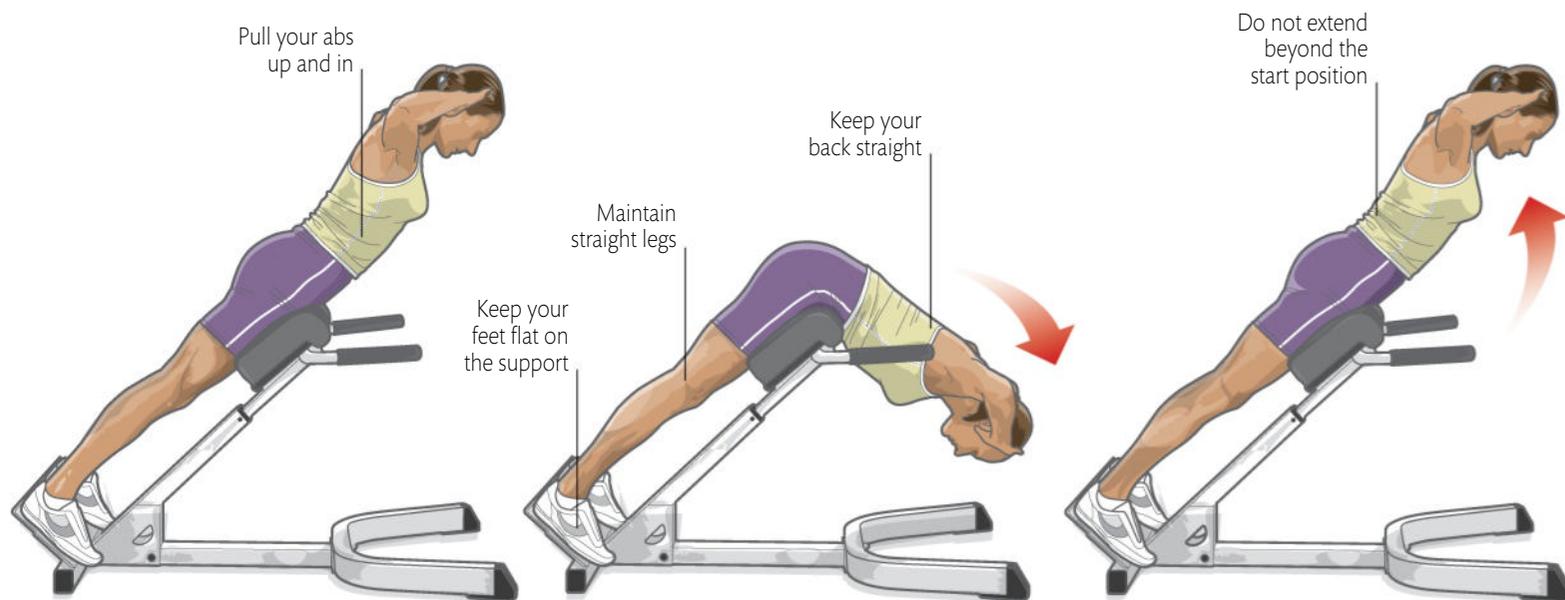


1 Holding your body upright, position a barbell behind your neck and resting on the upper back. Keep your knees slightly bent and your spine neutral.

2 Bending slightly at your knees and hips, start to lean forwards under control. Keep your chin up – it will stop you from rounding your back.

3 Lean forwards by pivoting at your hip. Continue lowering your chest, keeping your back neutral and allowing your knees to bend slightly.

4 Flex as far as you can. With practice, your back may be parallel to the floor. Return to the start position, breathing out as you go.



1 Position your thighs on the pads of the Roman chair so that your hips are free to flex. Your feet should be flat on the foot supports, your spine neutral, and your elbows pointing out.

2 Flex at your hips and drop your upper body towards the floor, keeping your back flat. Stop bending when the flexibility of your hamstrings restricts further movement.

3 Return to the start position, contracting your hamstrings, glutes, and spinal erectors. Do not extend beyond the start position as you may injure your back.



1 Position a heavy weight disc on the floor in front of you, and place one end of an Olympic bar in its centre. Grip the end of the bar with both hands and angle it towards you. Stand with your feet slightly wider than shoulder-width apart.



2 Keeping your feet, knees, and hips aligned, rotate the bar across your body to your right, maintaining straight arms, and controlling the movement by engaging your core and pivoting from your hips.



3 Continuing the movement to your right, rotate the bar all the way around to waist level on your right-hand side, following it with your shoulders and head. Keep your arms straight throughout the movement.



7 Control the motion of the bar all the way to waist level on your left, twisting at your hip at the edge of the movement.

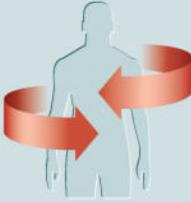


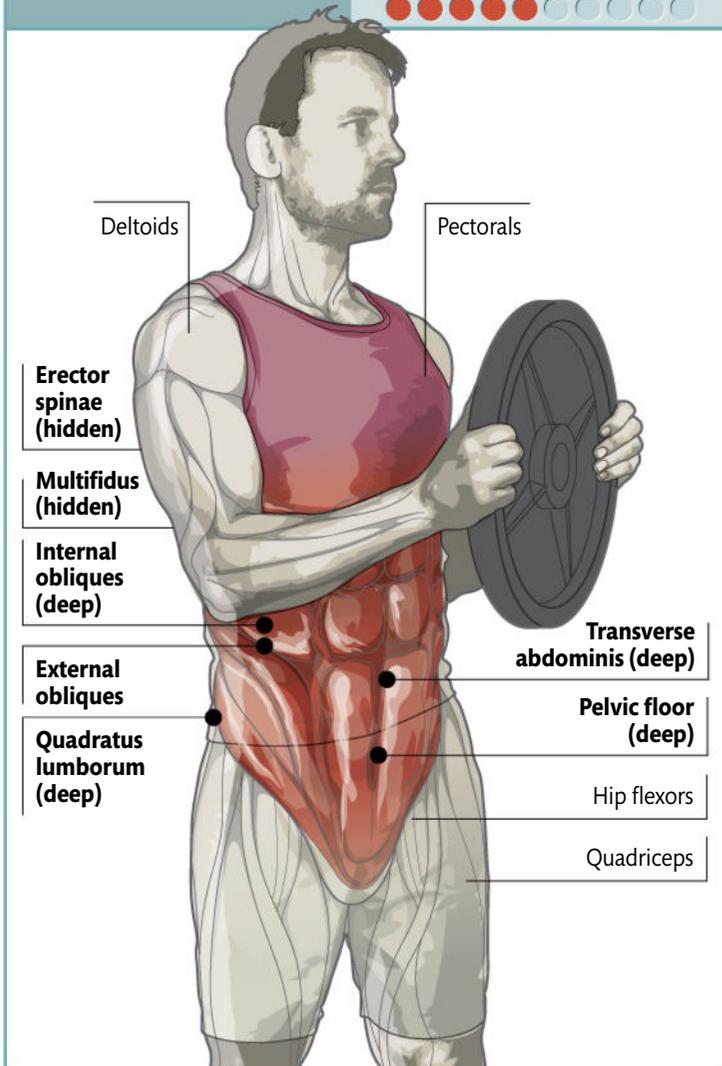
8 Bring the bar back towards the start position in an anti-clockwise arc, straightening your legs and keeping your core engaged.



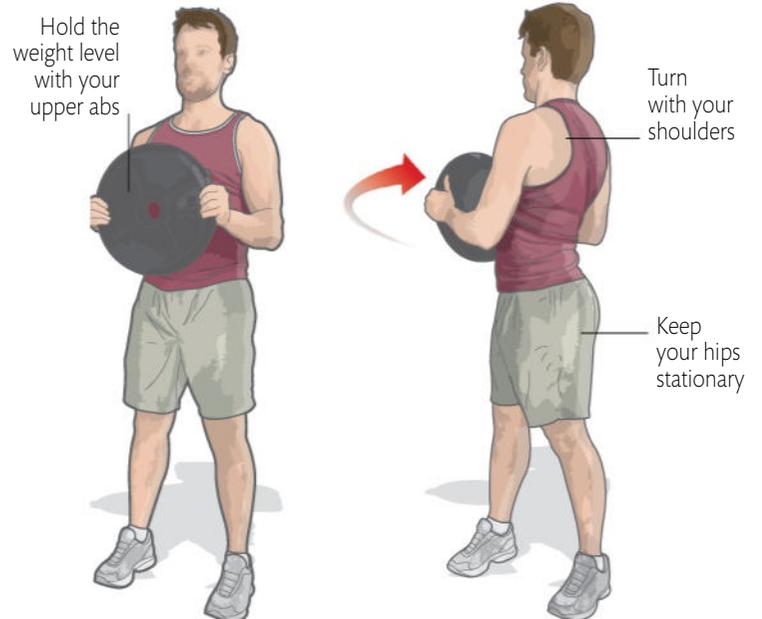
9 Complete the arc of movement to return to the start position, maintaining good form. Repeat the sequence as required and relax.

STANDING PLATE TWIST

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Rotation</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
DIFFICULTY LEVEL	
●●●●●○	

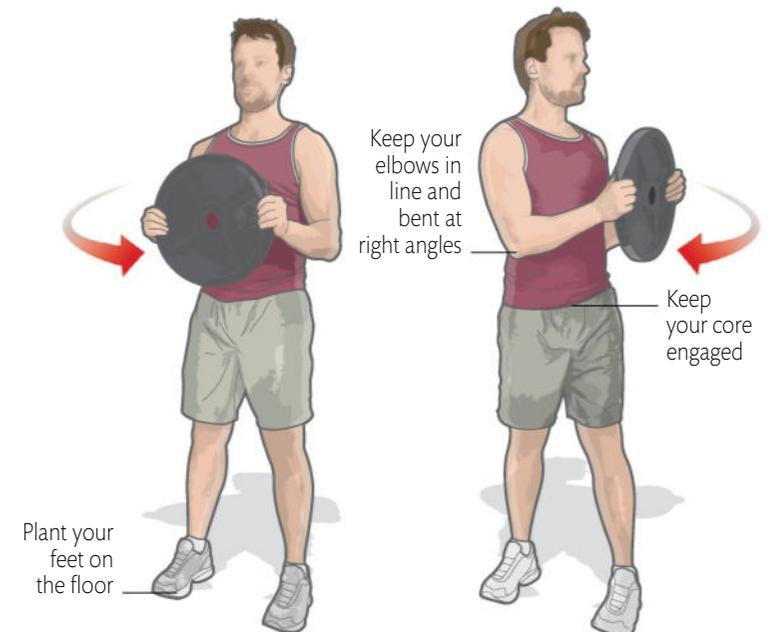


This simple rotational exercise helps you to improve your spinal control, as you have to keep your hips stationary while you twist your upper body.



1 Stand holding a weight plate in front of you with your elbows at your sides, bent at right angles.

2 Slowly rotate your upper body to the right. Hold the position for a few seconds.



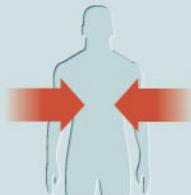
3 Slowly return to the start position, keeping your elbows at your sides and the weight the same distance from your upper abs.

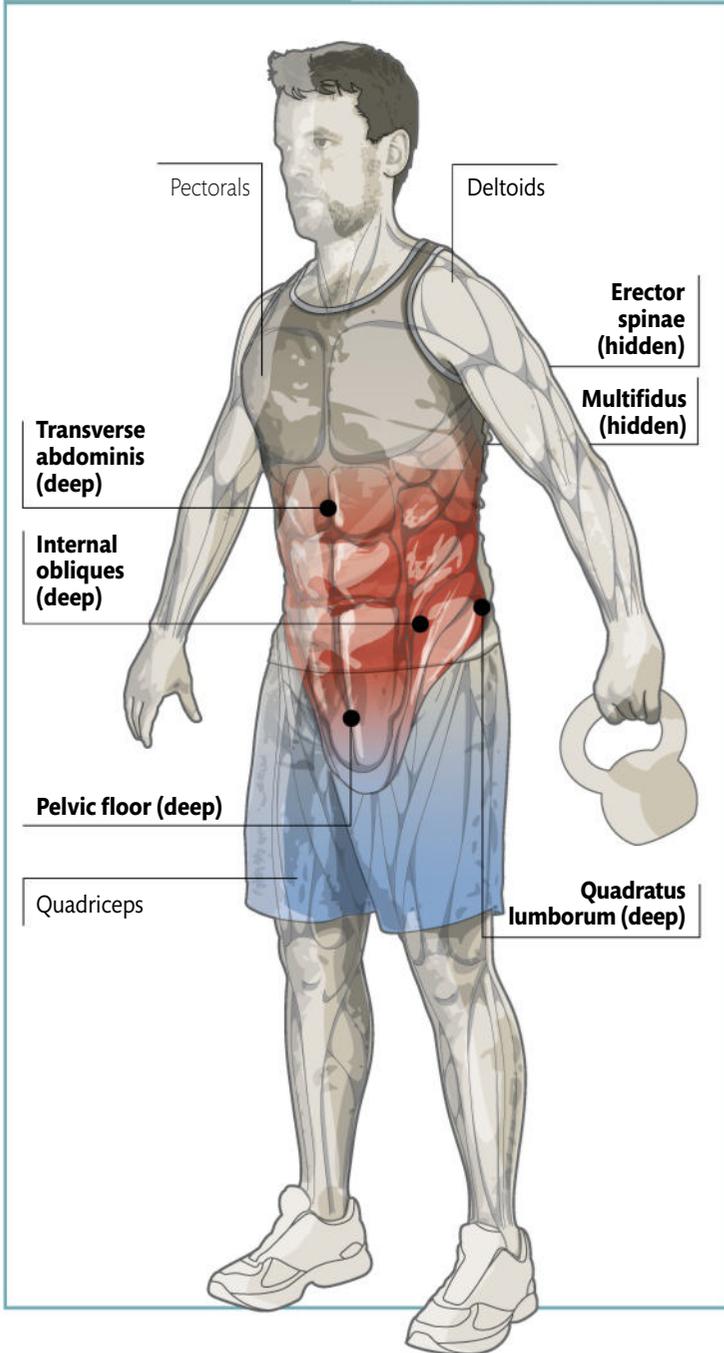
4 Rotate through the start position to your left. Hold briefly, and repeat the exercise as required.

WARNING!

Ensure that you hold the weight plate close to your torso with your elbows at 90 degrees. If the plate is held away from your body this will place unwanted stress on the shoulders and lower back and could lead to potential injury.

KETTLEBELL ROUND-BODY SWING

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
	DIFFICULTY LEVEL
	●●●●●○



This exercise provides a good workout for your core and upper body. Move slowly at first, only increasing speed once you have mastered the technique.



1 Engaging your core, lift the kettlebell with both hands to hip height, keeping your arms straight.

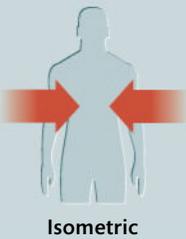
2 Release your left hand, swing the weight to your right, and swing your left arm around to your left.



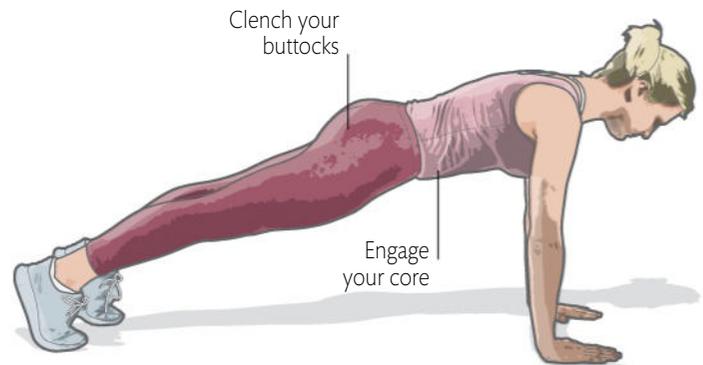
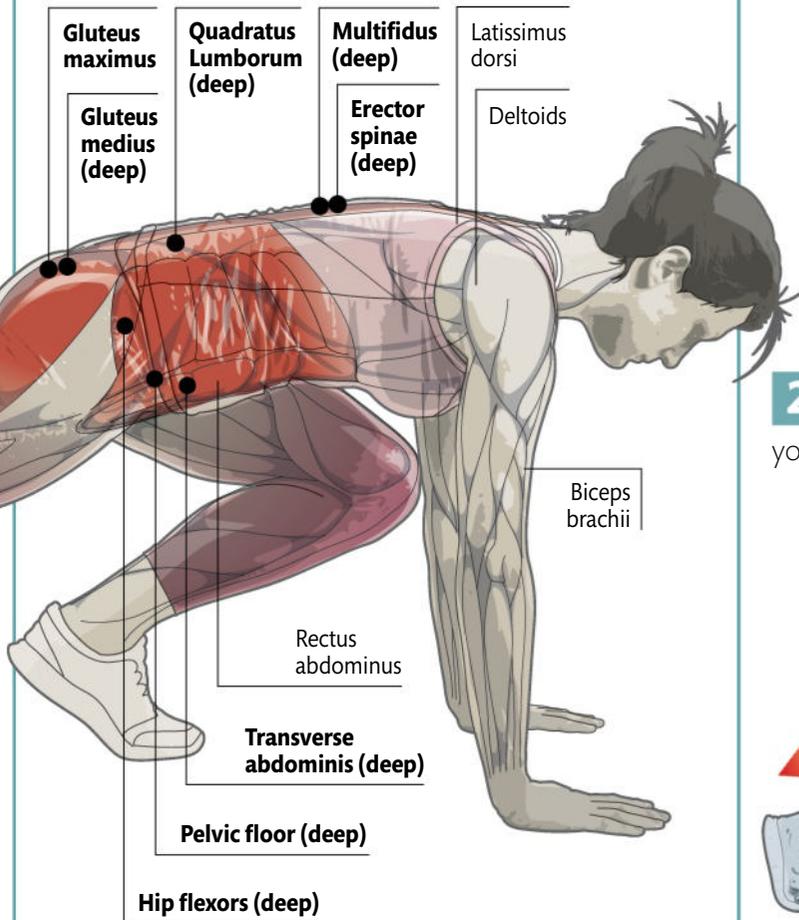
3 In one smooth movement, swing your arms behind your lower back and pass the weight to your left hand.

4 With your left hand, bring the weight round to the start position. Repeat the movement as required, then switch direction.

MOUNTAIN CLIMBER

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Pelvic floor	
■ Hip flexors	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus medius	
■ Gluteus maximus	
DIFFICULTY LEVEL	
●●●●●○	

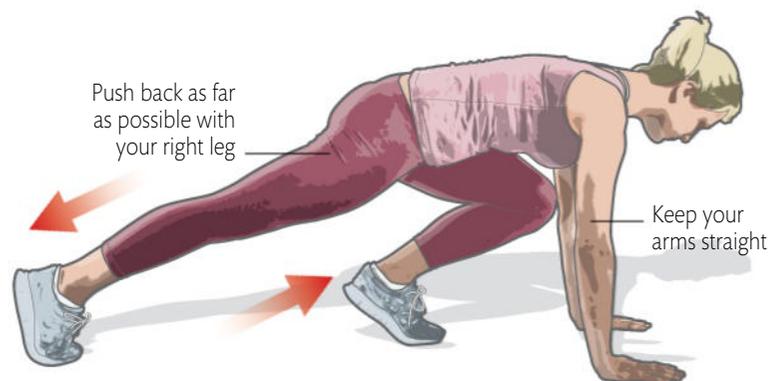
The **mountain climber** is a dynamic movement that is excellent for building core stamina, while also improving your core strength, balance, and agility. It is especially useful if you have little equipment but want a challenging all-body workout.



1 Assume a normal press-up position with your weight on your hands and toes, your back and legs straight, and your hands shoulder-width apart.



2 In one quick but controlled movement, bring your right knee up towards your chest, placing the ball of your right foot on the floor at the edge of the movement.



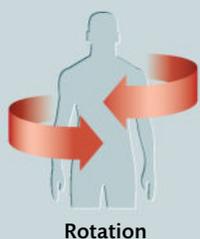
3 Lightly spring up with your legs and switch feet, bringing your left foot up towards your chest as you push back with the right. Continue alternating your feet for the required number of reps, then relax to the start position.

RUSSIAN TWIST

TARGET MUSCLES

- Transverse abdominis
- External obliques
- Internal obliques
- Pelvic floor
- Erector spinae
- Multifidus
- Quadratus lumborum

TARGET MOVEMENT

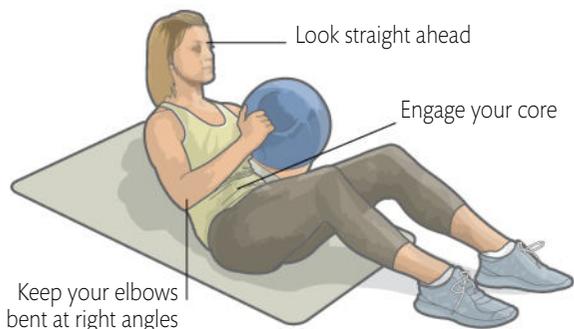
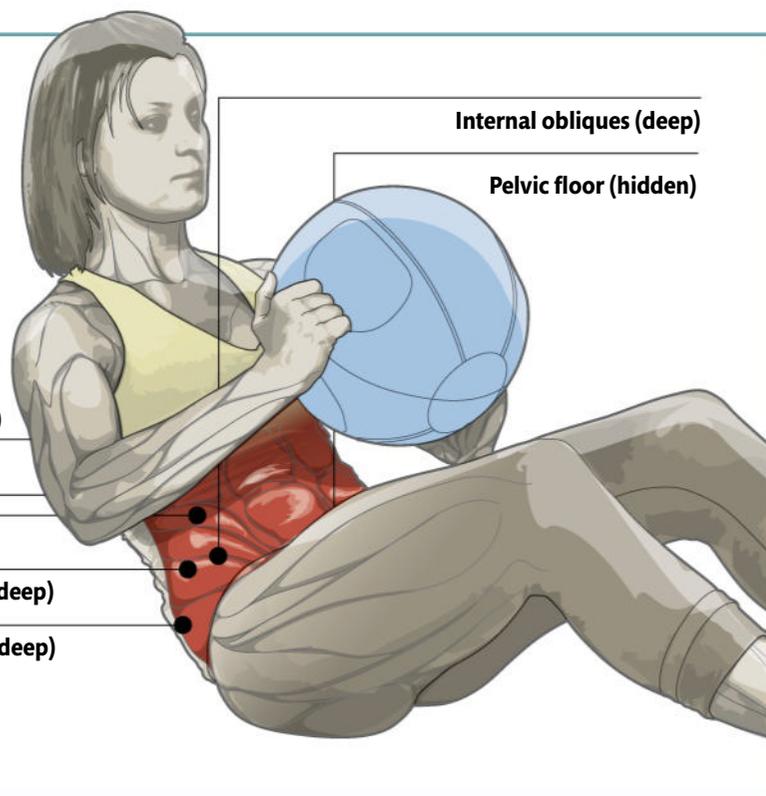


DIFFICULTY LEVEL



This exercise is designed to improve your spinal flexibility, as well as building strength across your core. As with any movement that twists the spine, be sure to carry it out with good form and control.

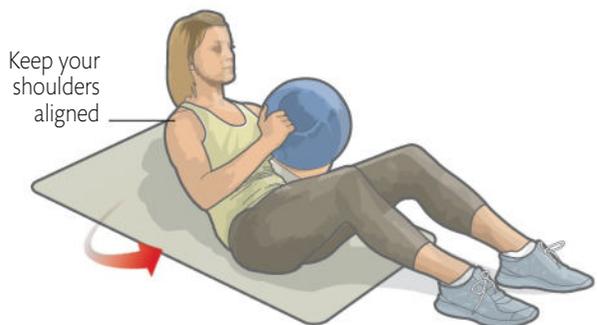
- Erector spinae (hidden)
- Multifidus (hidden)
- External obliques
- Transverse abdominis (deep)
- Quadratus lumborum (deep)



1 Sit with your knees slightly bent and your feet flat. Hold the ball out in front of you and lean back at a 45-degree angle, curving your torso slightly.



2 Keeping your hips still, rotate your torso to your right as far as you can in a smooth motion, controlling the movement with your core, until the ball is close to the floor.



3 Hold briefly, then reverse back through to the start position, again controlling the movement from your core, and keeping your shoulders and hips relaxed.



4 Continue the movement to your left, rotating your torso and lowering the ball towards the floor. Hold for a few seconds, then return to the start position.

MEDICINE BALL SLAM

TARGET MUSCLES	TARGET MOVEMENT
<ul style="list-style-type: none"> ■ Rectus abdominis ■ Transverse abdominis ■ Pelvic floor 	 <p>Flexion</p>
	DIFFICULTY LEVEL 

This powerful, dynamic exercise offers your core a great workout, with added benefits for your shoulders. Focus on keeping your body as balanced as possible throughout, and start with a reasonably light ball, until you can carry out the movement with good form and confidence. You should enlist the help of a partner to retrieve the ball and prevent it from interfering with the activities of other gym users.

- Deltoids
- Pectorals
- Rectus abdominis**
- Transverse abdominis (deep)**
- Internal obliques (deep)
- External obliques
- Pelvic floor (deep)**

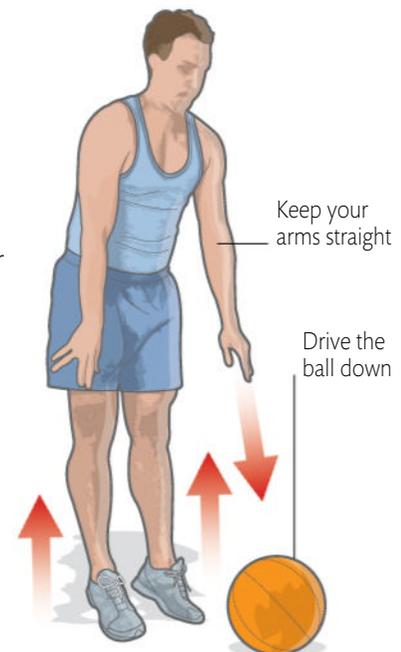


1 Holding a medicine ball in both hands, stand with both your feet shoulder-width apart and your back in a neutral position. Engaging your core, raise the medicine ball above your head, keeping your arms straight and your shoulders aligned with each other.



2 In one powerful movement, drive the medicine ball down towards the floor in front of you, keeping your arms straight, pivoting at your shoulders, and driving the force with your core.

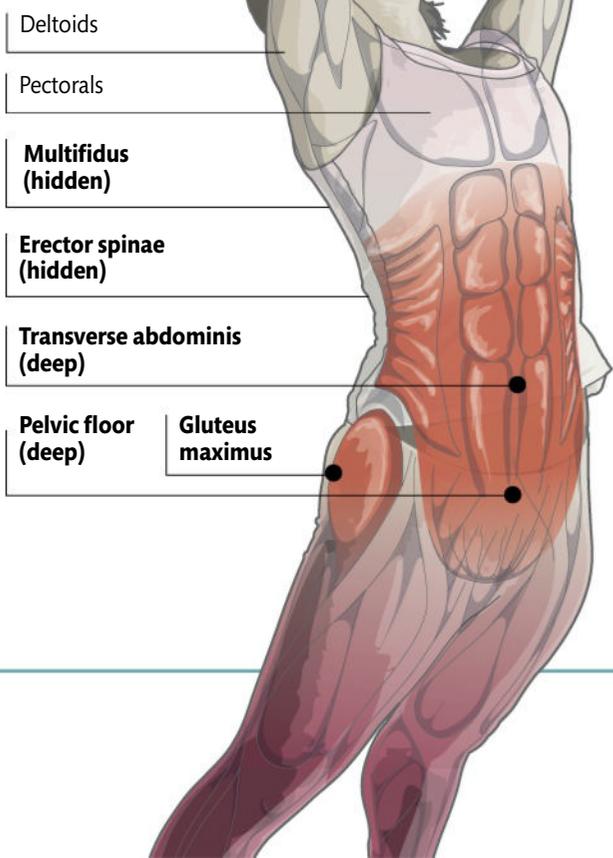
3 Release the ball at the bottom of the downwards movement, keeping your shoulders and hips aligned, and your legs straight. Ideally, you should drive the ball down hard enough to lift your body off the ground with the momentum generated by the movement. Retrieve the ball and repeat as required.



MEDICINE BALL REVERSE THROW

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Extension</p>
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Gluteus maximus	
DIFFICULTY LEVEL 	

This excellent core extension exercise makes a good partner to the medicine ball slam (**opposite**). It is important to perfect your form with a lightweight ball to begin with. Also, you should always perform it with a partner, who can catch the ball for you and stop it interfering with other gym users.



1 Holding a medicine ball, stand with your feet slightly wider than shoulder-width apart. Engaging your core, bend your knees and drop down into a half squat, holding the ball between your legs with your hands on either side of the ball.



2 Driving down with your feet, stand up, raising the ball in a swift movement with both arms, pivoting at your shoulders and driving the force of the motion with your core.

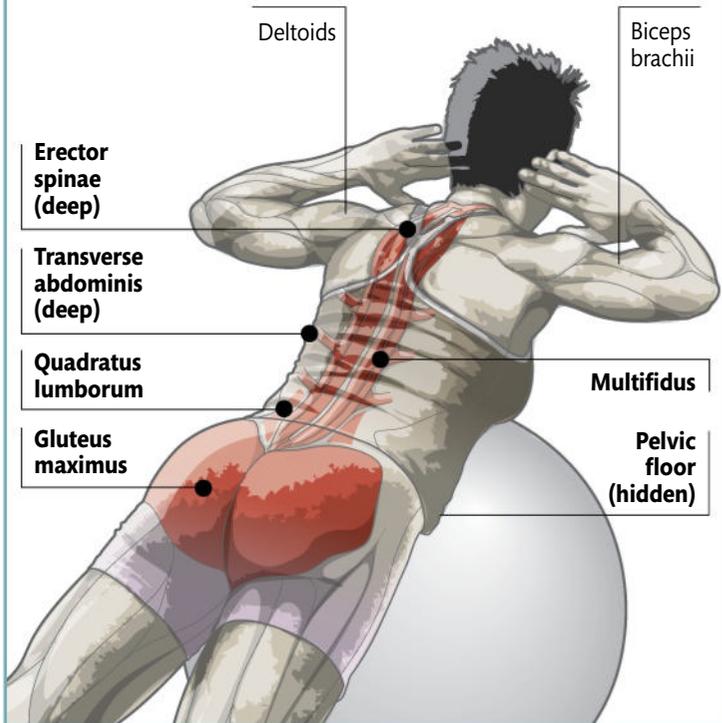


3 Release the ball into the air, keeping your arms and shoulders aligned, and allowing the power of the movement to lift you up on to tiptoes.

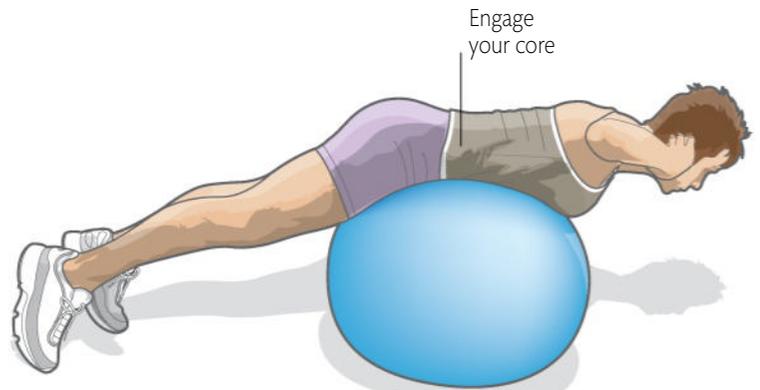
EXERCISE BALL BACK EXTENSION

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Extension</p>
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus maximus	
	DIFFICULTY LEVEL 

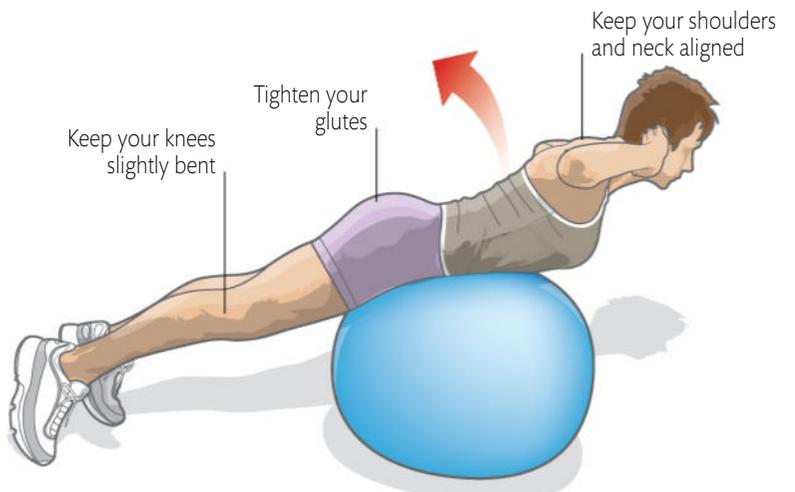
This exercise helps to balance your trunk by conditioning the stabilizing muscles of your lower back, challenging them against the movement of the exercise ball.



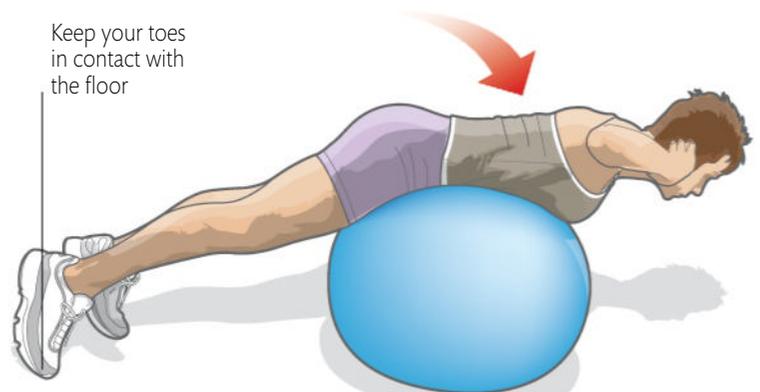
WARNING!
 Before the exercise, check that the ball is the right size for your limb length. You should be able to touch the floor with straight arms when face down on the ball. Keep your movement controlled; if you straighten your torso too fast you risk compressing the vertebrae in your back and damaging your sciatic nerve. Do not pull your torso above the natural line of your spine - hyper-extending your back can be dangerous.



1 Lie on an exercise ball with your abs and upper thighs “wrapped” across it and your toes touching the floor.

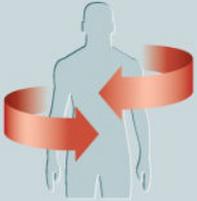


2 With the tips of your fingers touching the sides of your head, slowly straighten your body while breathing out, contracting your abs and glutes to control the movement.

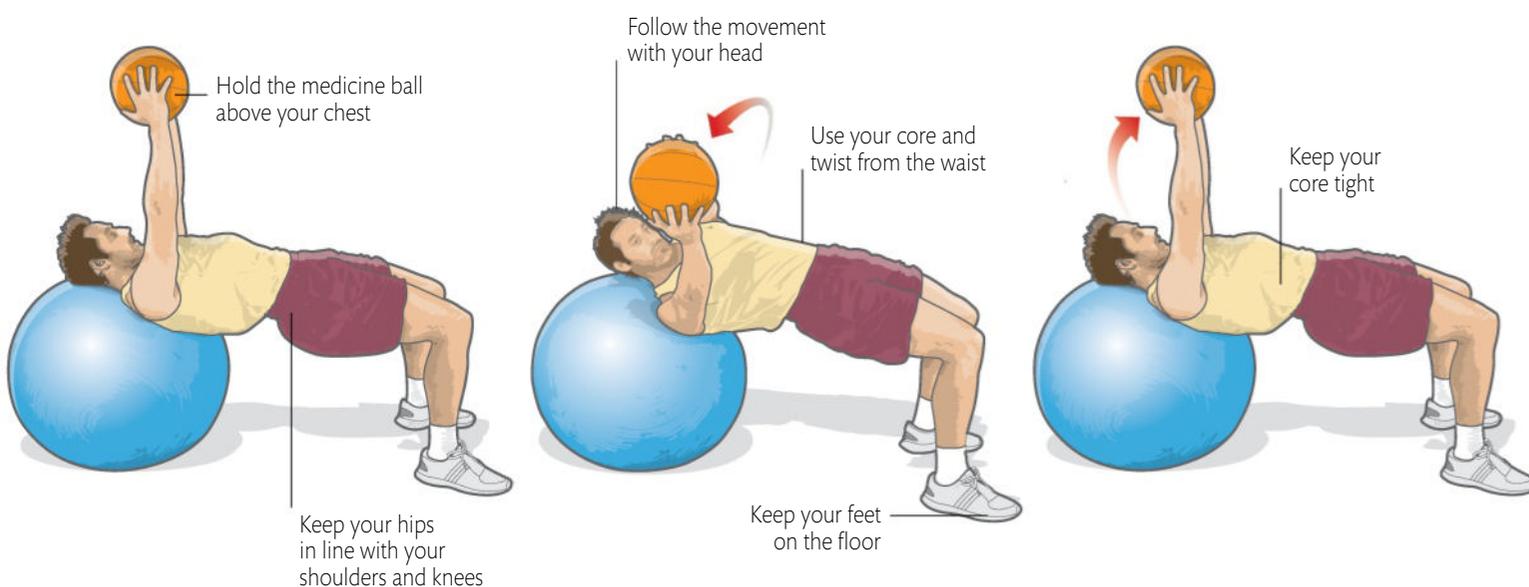
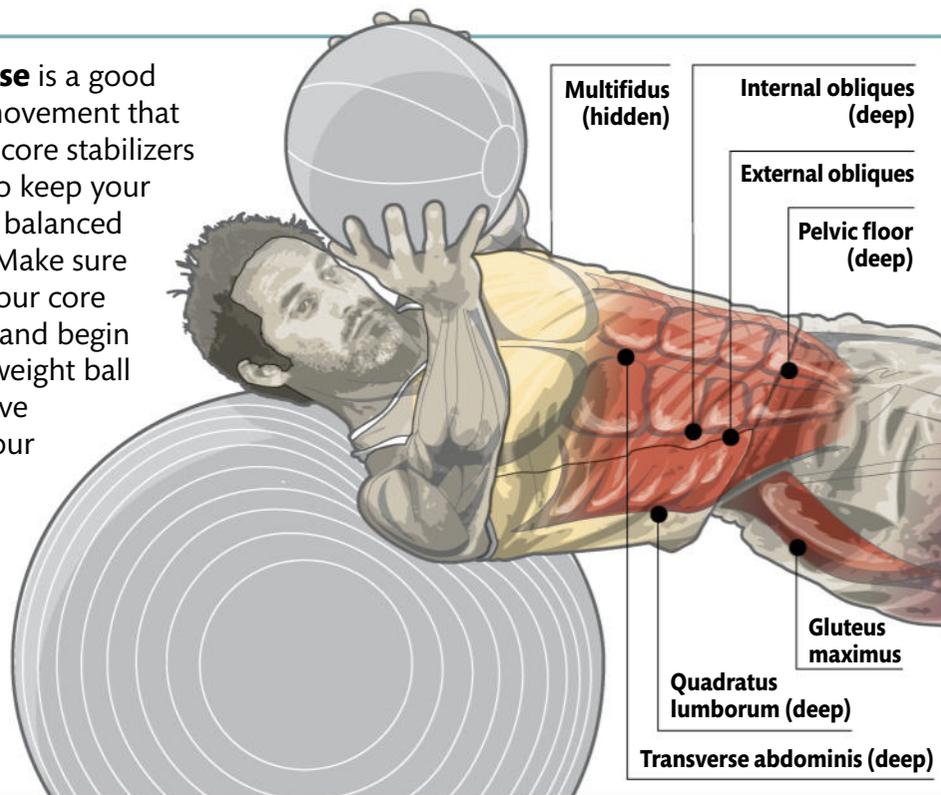


3 Gently and smoothly lower your upper body to the start position while breathing out.

MEDICINE BALL BRIDGE

TARGET MUSCLES
■ Transverse abdominis
■ External obliques
■ Internal obliques
■ Pelvic floor
■ Multifidus
■ Quadratus lumborum
■ Gluteus maximus
TARGET MOVEMENT
 <p>Rotation</p>
DIFFICULTY LEVEL
●●●●●●●●●●●●●●●●

This exercise is a good rotational movement that makes your core stabilizers work hard to keep your upper body balanced and stable. Make sure you brace your core throughout and begin with a lightweight ball until you have perfected your technique.

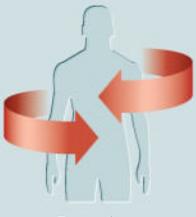


1 Holding a medicine ball, carefully lie back against an exercise ball, with your upper body supported, your knees bent at right angles, and your feet firmly planted on the floor. Hold the ball above you with your arms straight.

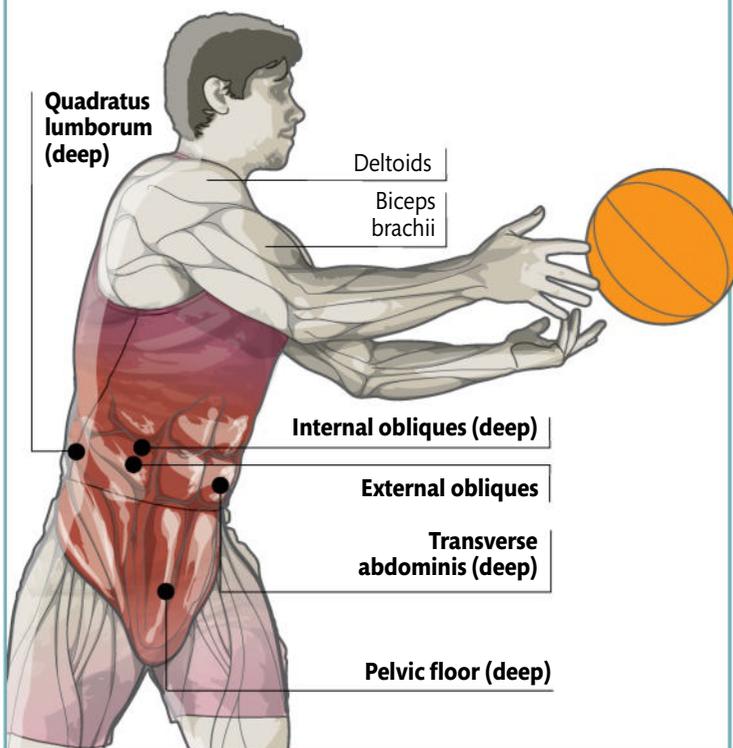
2 Keeping your feet planted, your hips aligned, and your arms straight, rotate your torso to the right as far as possible, controlling the movement with your core and pivoting from your hips.

3 Pause at the edge of the movement, then rotate your torso back to the start position, keeping your core engaged. Repeat the movement to your left, then alternate sides for the required number of repetitions.

WALL SIDE THROW

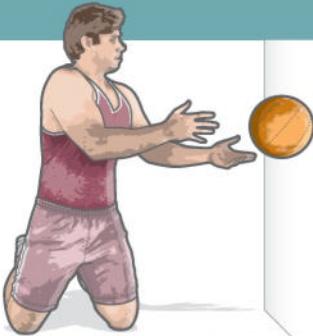
TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Rotation</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Quadratus lumborum	
DIFFICULTY LEVEL 	

This powerful, dynamic exercise helps to build good rotational stability and control in your core, while also giving your upper body a good workout.

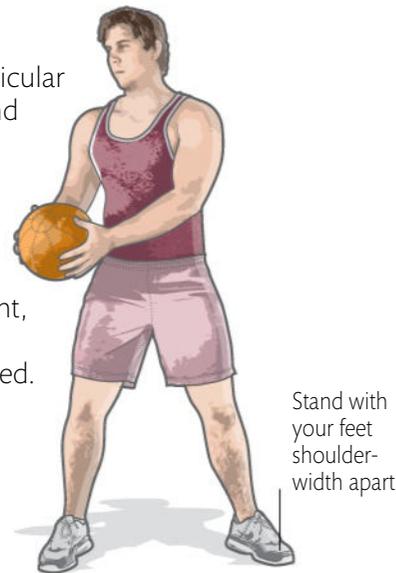


PROGRESSION 1

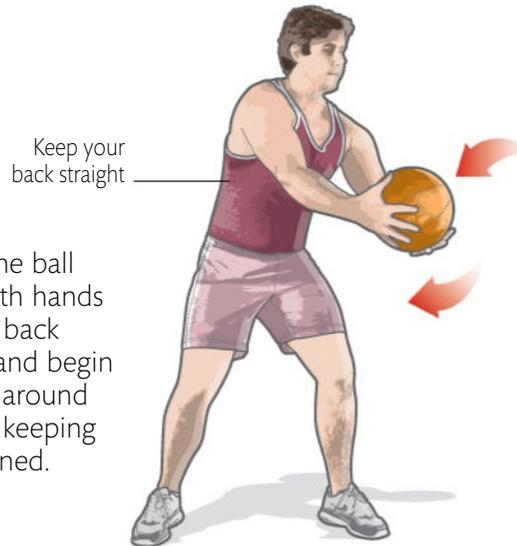
Removing the support of your feet focuses the movement on your hips, and makes the muscles work harder to stabilize your spine. Assume an upright kneeling position, and carry out the movement as in the main sequence, matching the number of repetitions for each side of your body.



1 Stand perpendicular to a wall around 1–1.5m (3–5ft) away, with your left foot closest to it. Grip the medicine ball at waist level and turn your torso to the right, keeping your hips, knees, and feet aligned.



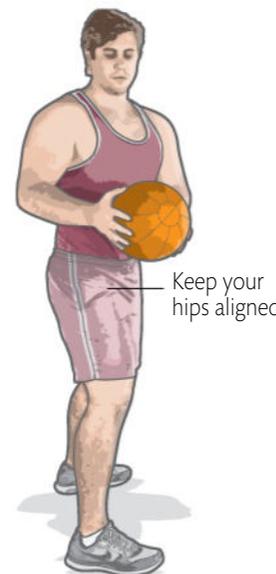
4 Catch the ball with both hands as it bounces back towards you and begin rotating back around to your right, keeping your hips aligned.



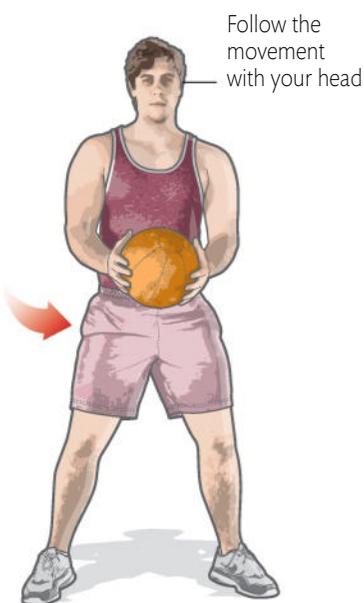
PROGRESSION 2

This further progression introduces more of a lateral movement to the arc of the ball, increasing the rotational stress on your body to make your core work even harder.

1 Stand facing a wall, around 1–1.5m (3–5ft) away. Hold the medicine ball at waist level and turn your torso to your right, pivoting from your hips.



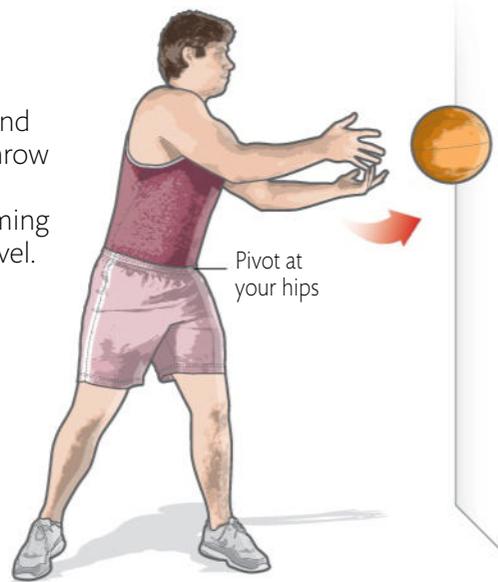
2 In one quick but controlled motion, rotate your torso to your left, controlling the movement with your hips, and holding the ball in front of you with your elbows aligned.



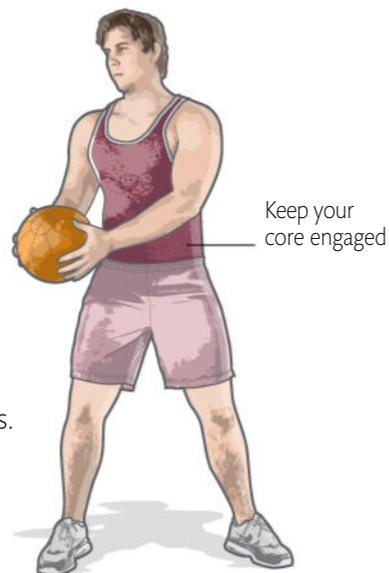
5 Move the ball back around to the right in an arc, pivoting your torso from your hips.



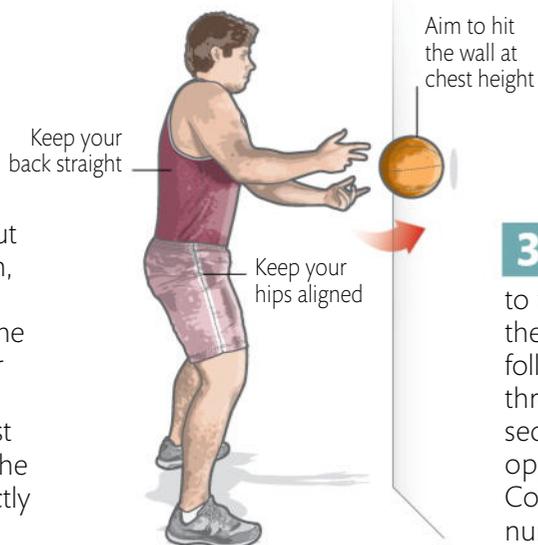
3 Continue the rotation around to your left, then throw the ball underarm against the wall, aiming for around chest level.



6 Return to the start position. Pause briefly, then repeat as required before switching sides.



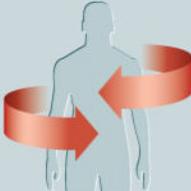
2 In one quick but smooth motion, rotate your torso to the left, controlling the movement with your hips, and throw the ball underarm against the wall, aiming for the area of the wall directly in front of you.



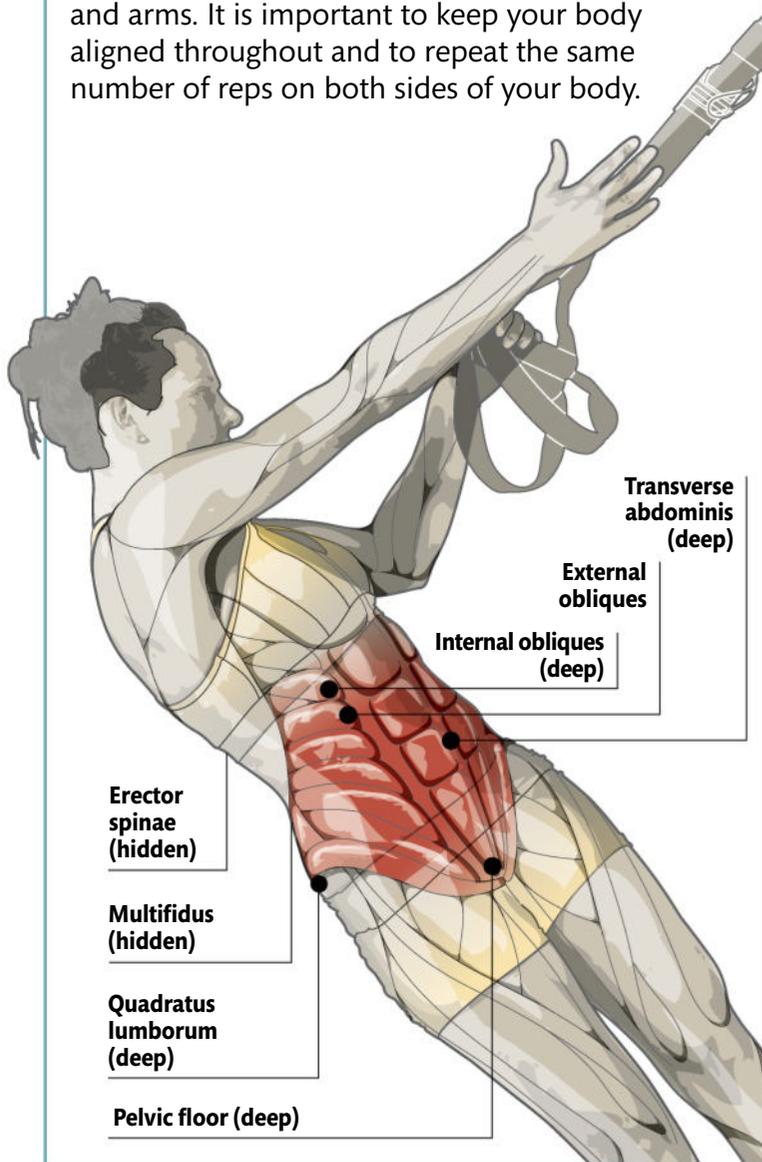
3 Continue rotating your torso around to the left, and catch the ball as you turn, following the movement through. Repeat the sequence in the opposite direction. Complete the desired number of repetitions and relax.



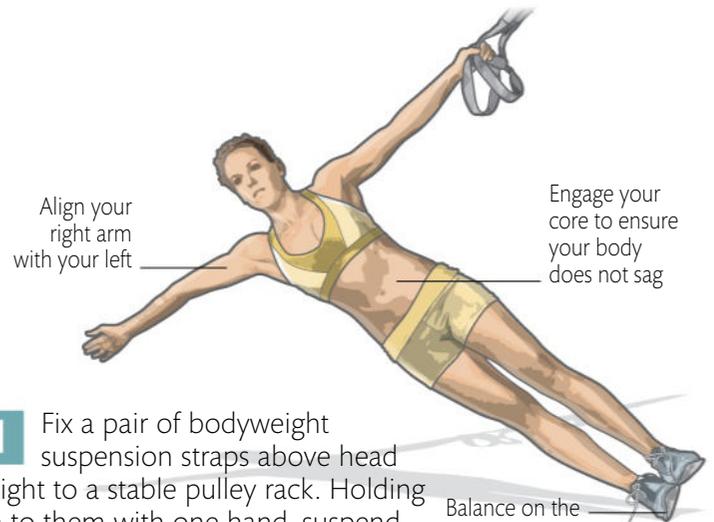
SUSPENDED SINGLE-ARM CORE ROTATION

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Rotation</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
	DIFFICULTY LEVEL
	●●●●●○

This rotational movement works the muscles of your obliques, abdominals, and back, while offering additional benefits to your shoulders and arms. It is important to keep your body aligned throughout and to repeat the same number of reps on both sides of your body.

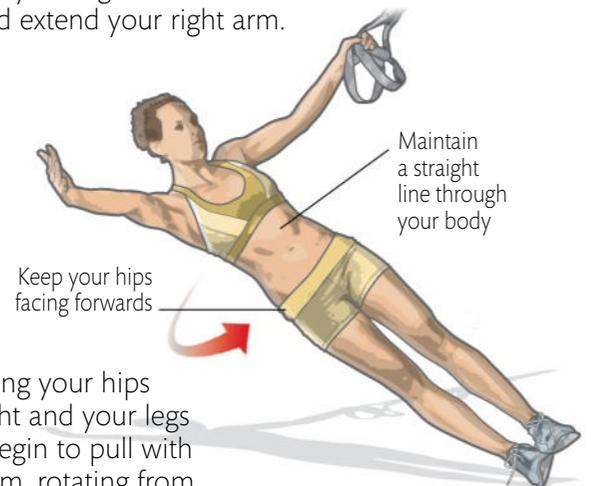


1 Fix a pair of bodyweight suspension straps above head height to a stable pulley rack. Holding on to them with one hand, suspend your body at a 45-degree angle, with your weight supported by the straps. Keep your legs and torso straight, and extend your right arm.



Balance on the outside edge of your right foot

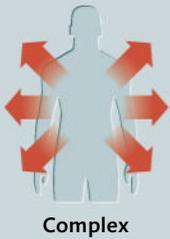
2 Keeping your hips straight and your legs together, begin to pull with your left arm, rotating from the core, and bringing your arm around in front of you in an arc. Maintain the same length in your spine throughout.



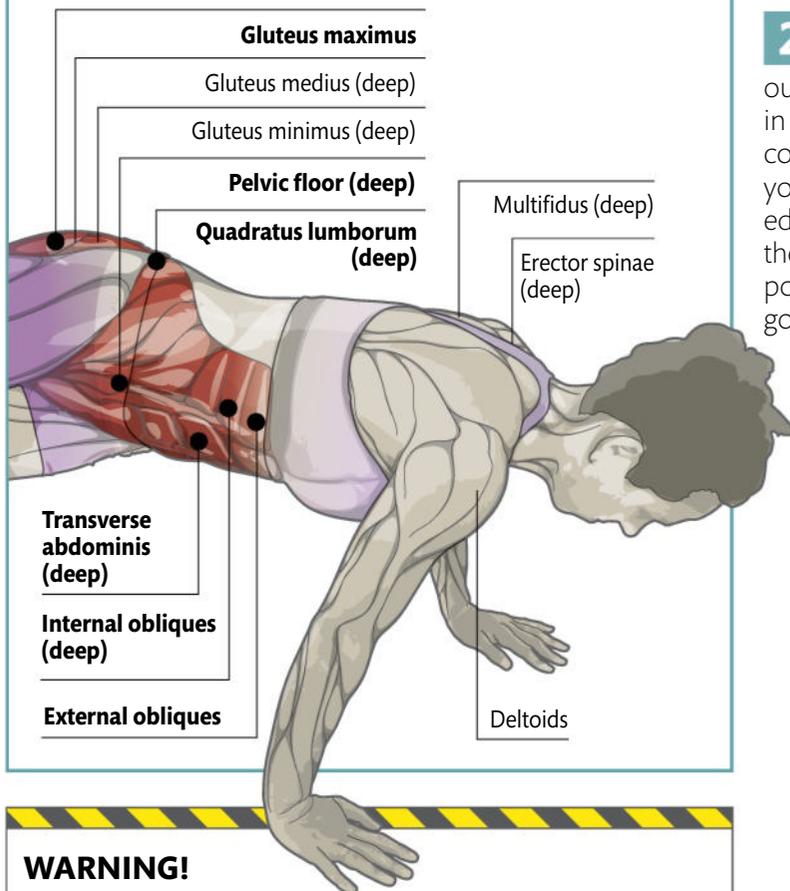
3 Maintaining the position of your hips, continue the movement around until you can touch the strap above your left hand with your right. Hold briefly, then return to the start position slowly and with control. Repeat as required, then switch sides.



SUSPENDED PENDULUM

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Complex</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Quadratus lumborum	
■ Gluteus maximus	
DIFFICULTY LEVEL 	

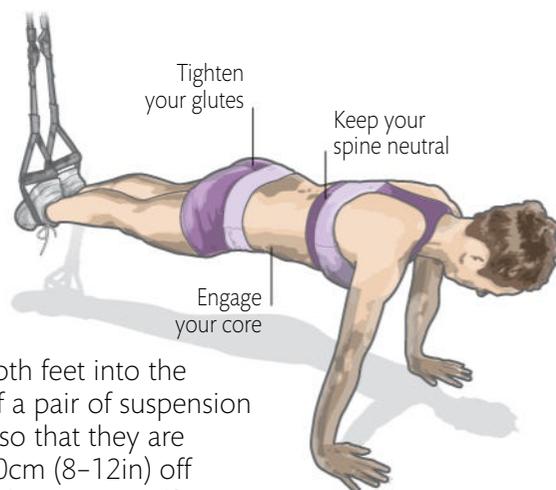
This challenging core exercise employs the resistance and instability of bodyweight suspension straps to rotate your core from a plank position (»pp.96–97). Good form is key, as is ensuring that you balance your movements on both sides.



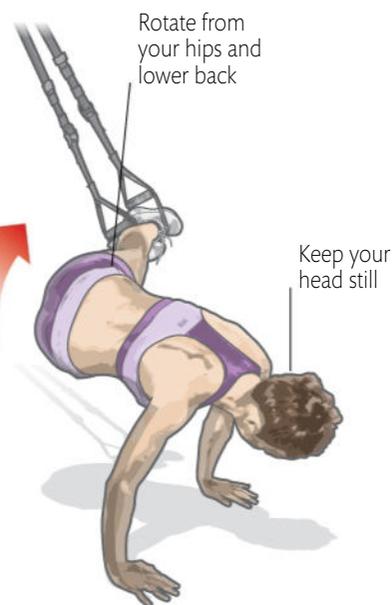
WARNING!

Suspension-strap-based exercises can be potentially dangerous if performed without sufficient core control, so do not attempt them until you are competent.

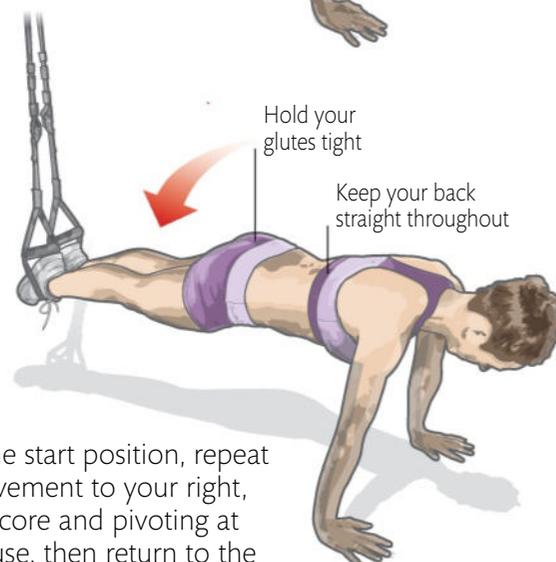
Before you perform any suspension-strap exercises, you must always make sure that they are fixed properly to a frame that is stable enough to take your bodyweight.



1 Place both feet into the loops of a pair of suspension straps – fixed so that they are roughly 20–30cm (8–12in) off the floor – and raise yourself into a basic plank position, keeping your hips and spine neutral.

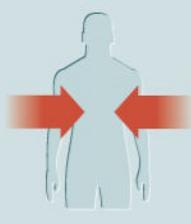


2 Pivot your hips to the left, swinging your feet outwards. Keep your shoulders in the same position and control the rotation with your core. Pause at the edge of the movement, then reverse to the start position, maintaining good form throughout.

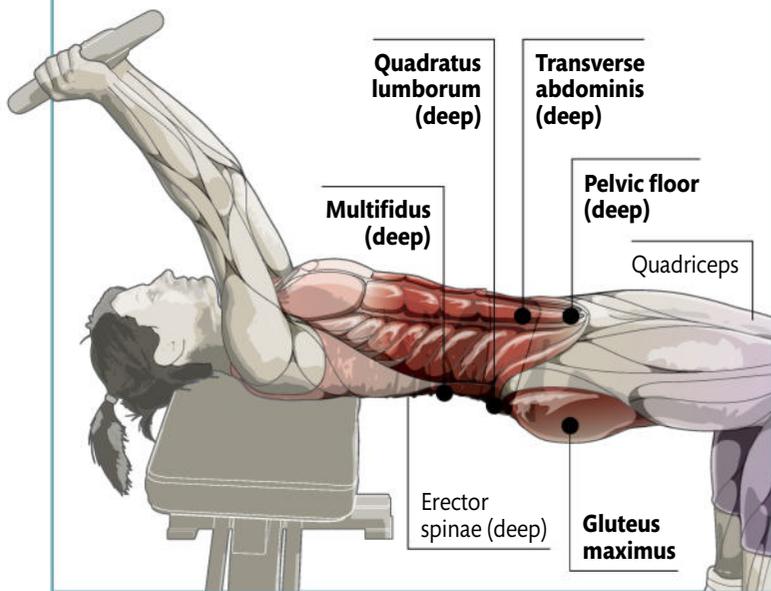


3 From the start position, repeat the movement to your right, rotating your core and pivoting at your hips. Pause, then return to the start position and repeat as required.

LONG-ARM BRIDGE PULL-OVER

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus maximus	
DIFFICULTY LEVEL 	

This is an effective, though underused, core exercise. Good form is crucial to avoid straining the muscles of your shoulders and neck, so ensure you start with a weight you are comfortable with and focus on controlling the movement with your core.



PROGRESSION



For a more challenging version of this movement, replace the bench with an exercise ball. This forces your core to work harder to compensate for the lack of stability. Holding the weight disc in front of you, carefully lie back against the exercise ball, keeping your knees bent and your feet flat. Perform the same movement as in the main sequence with good control.

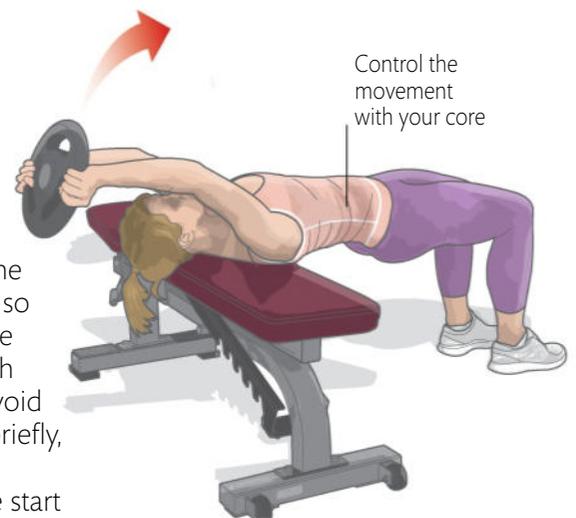
1 Lie back against a weights bench so that it supports your shoulders. Position your feet flat on the floor and hip-width apart, and bend your knees at 90 degrees. Keep your hips up and aligned with the spine. Grip a weight disc and raise your arms above your chest.



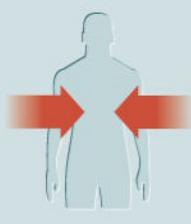
2 Holding your core tight and keeping your arms straight and elbows aligned, lift the weight disc over your head with a slow and controlled movement.



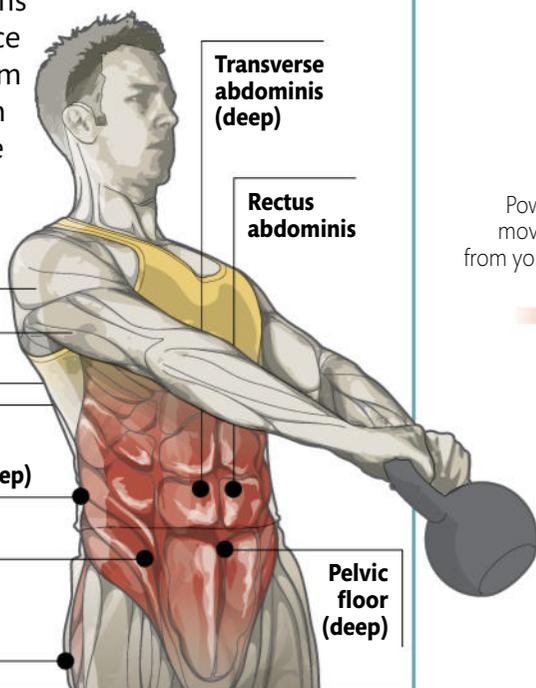
3 Continue the movement so that your arms are almost in line with your body, but avoid straining. Pause briefly, then reverse the movement to the start position with a slow, controlled motion.



KETTLEBELL SWING

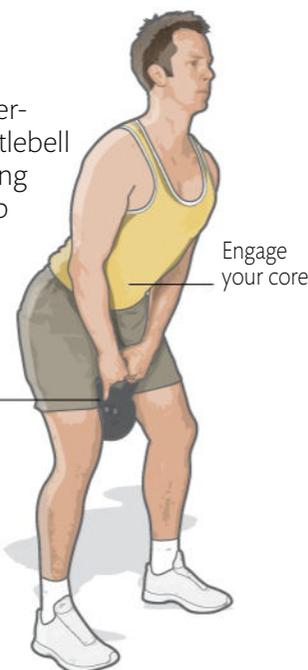
TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Isometric</p>
■ Transverse abdominis	
■ Pelvic floor	
■ Hip flexors	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus/medius	DIFFICULTY LEVEL
■ Gluteus maximus	●●●●●●●●●●●●●●●●

This whole-body exercise works the muscles of your glutes, lower back, and hips. Allow the kettlebell to hang loosely from your arms and generate the force of the movement from your hips, rather than trying to “muscle” the weight up with your upper body.

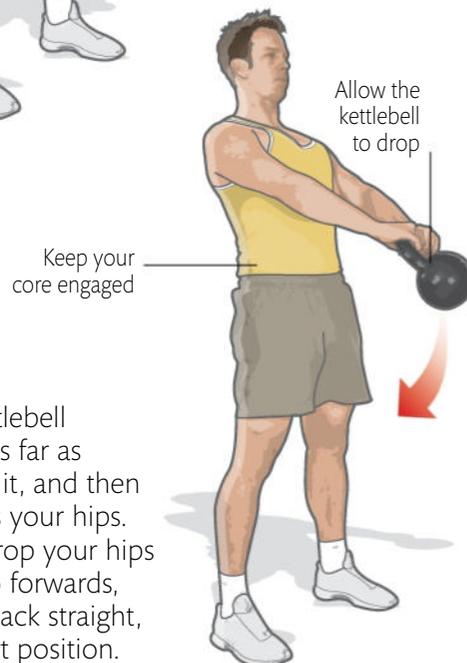


- Deltoids
- Triceps
- Erector spinae (hidden)**
- Multifidus (hidden)**
- Quadratus lumborum (deep)**
- Hip flexors (deep)**
- Gluteus minimus (deep)**
- Gluteus medius (deep)**
- Gluteus maximus**

1 Stand with your feet shoulder-width apart and grip the kettlebell with both hands, allowing it to hang loosely. Bend your knees and drop your buttocks backwards slightly, leaning your torso forwards from the hip and keeping your back straight.



2 Keeping your arms straight but relaxed, drive forwards with your hips to stand tall, so that the kettlebell swings forwards and up.



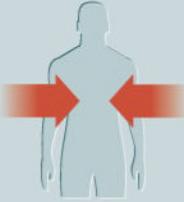
3 Allow the kettlebell to swing up as far as momentum carries it, and then back down towards your hips. As it approaches, drop your hips and lean your torso forwards, and keeping your back straight, to return to the start position.

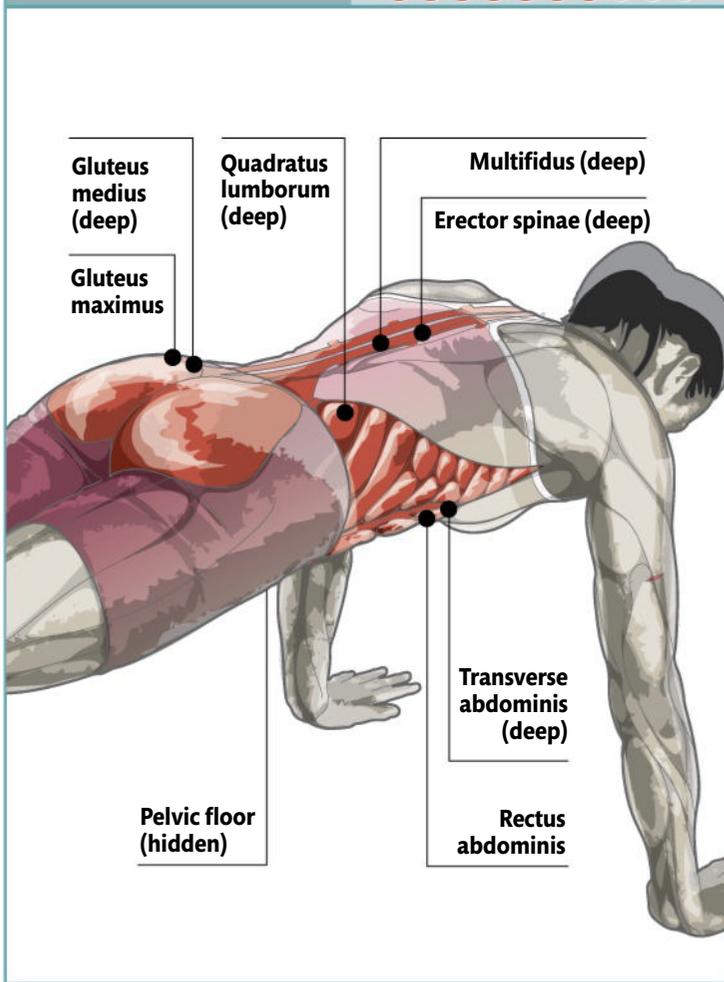
VARIATION

Once you have mastered the basic exercise, you can increase the weight of the kettlebell or introduce a further element of instability by performing the movement holding the weight with one hand. Repeat the sequence as per the main exercise, carry out the desired number of reps, then switch hands.

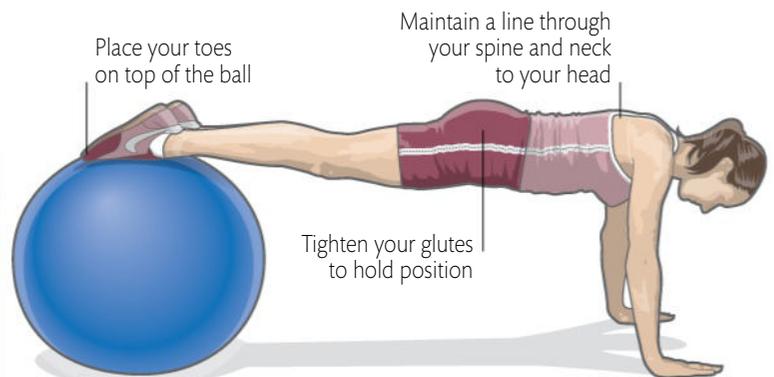


EXERCISE BALL KNEE TUCK

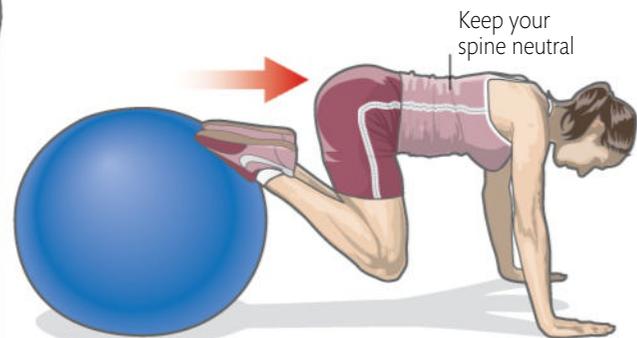
TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Isometric</p>
■ Transverse abdominis	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus medius	
■ Gluteus maximus	
DIFFICULTY LEVEL	
●●●●●●●●●●●●●●●●●●●●	



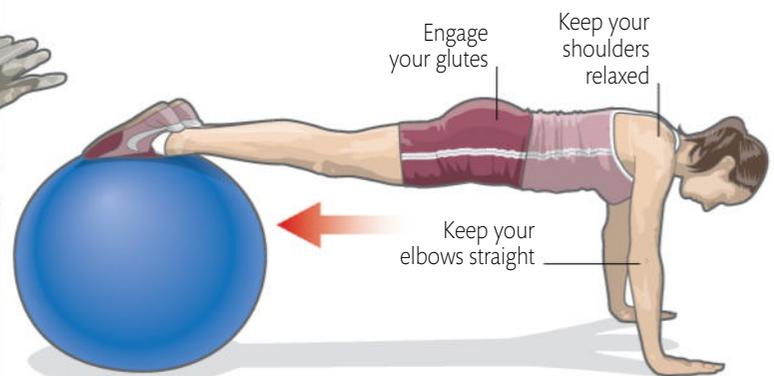
This relatively advanced exercise demands great balance and control. It works the core muscles that flex your hips and also stresses your abdominals, spinal stabilizers, and glutes.



1 Position the tops of your feet on an exercise ball and assume a press-up position, keeping your hands flat on the floor and your feet elevated on the ball. Align your head with your spine.



2 Draw your knees towards your chest, keeping your shoulders stable and your back straight as the ball rolls forwards.

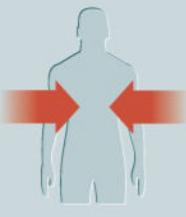


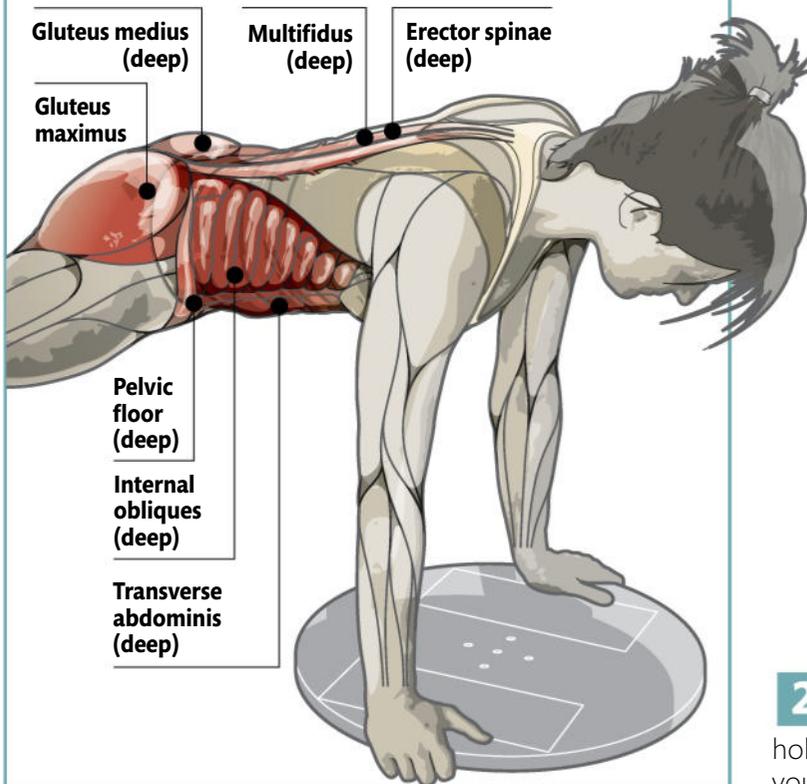
3 Reverse the movement to return to the start position, controlling the motion with your core and keeping your back and neck in a neutral position.

WARNING!

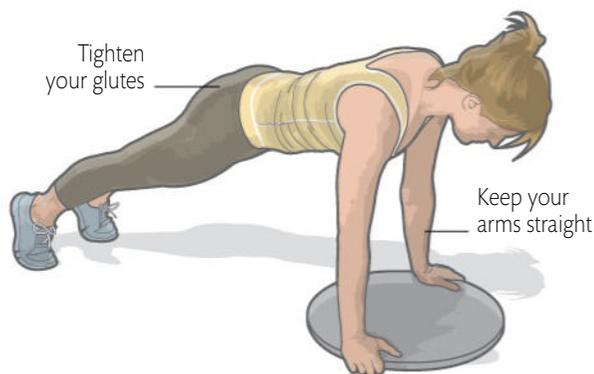
Performing this exercise with good technique is important to avoid injury. Never allow your hips or lower back to sag, as this will place stress on your back – keeping your glutes tight will help to keep your back straight. Choose a ball that has a diameter about the same as the length of your arm. This should help to ensure your back is parallel to the floor when you assume the press-up position.

CORE BOARD ROTATION

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Gluteus medius	
■ Gluteus maximus	
DIFFICULTY LEVEL	
●●●●●●●●●●●●●●●●	



This challenging exercise is essentially a variation on the plank, with the added difficulties of instability and small rotational movements to make your core work even harder. To begin with, you may find it easier to get into position with your knees on the ground.



1 Carefully gripping either side of a core board, engage your core and assume a normal plank position.



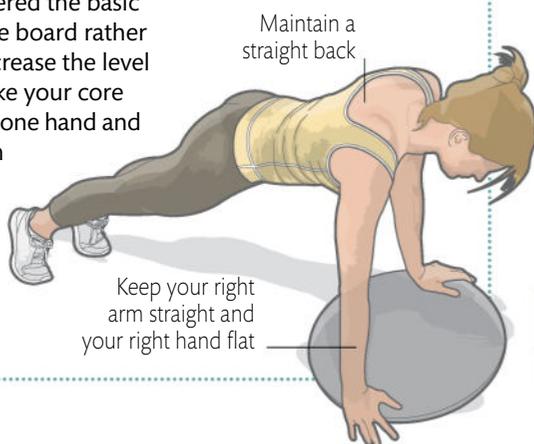
2 Rotate the core board 90 degrees to the right, keeping your shoulders aligned, and holding your body in the plank position with your core braced and your glutes tight.



3 Pause, then rotate the board back to the start position with a slow, controlled movement. Repeat the sequence in the opposite direction.

PROGRESSION

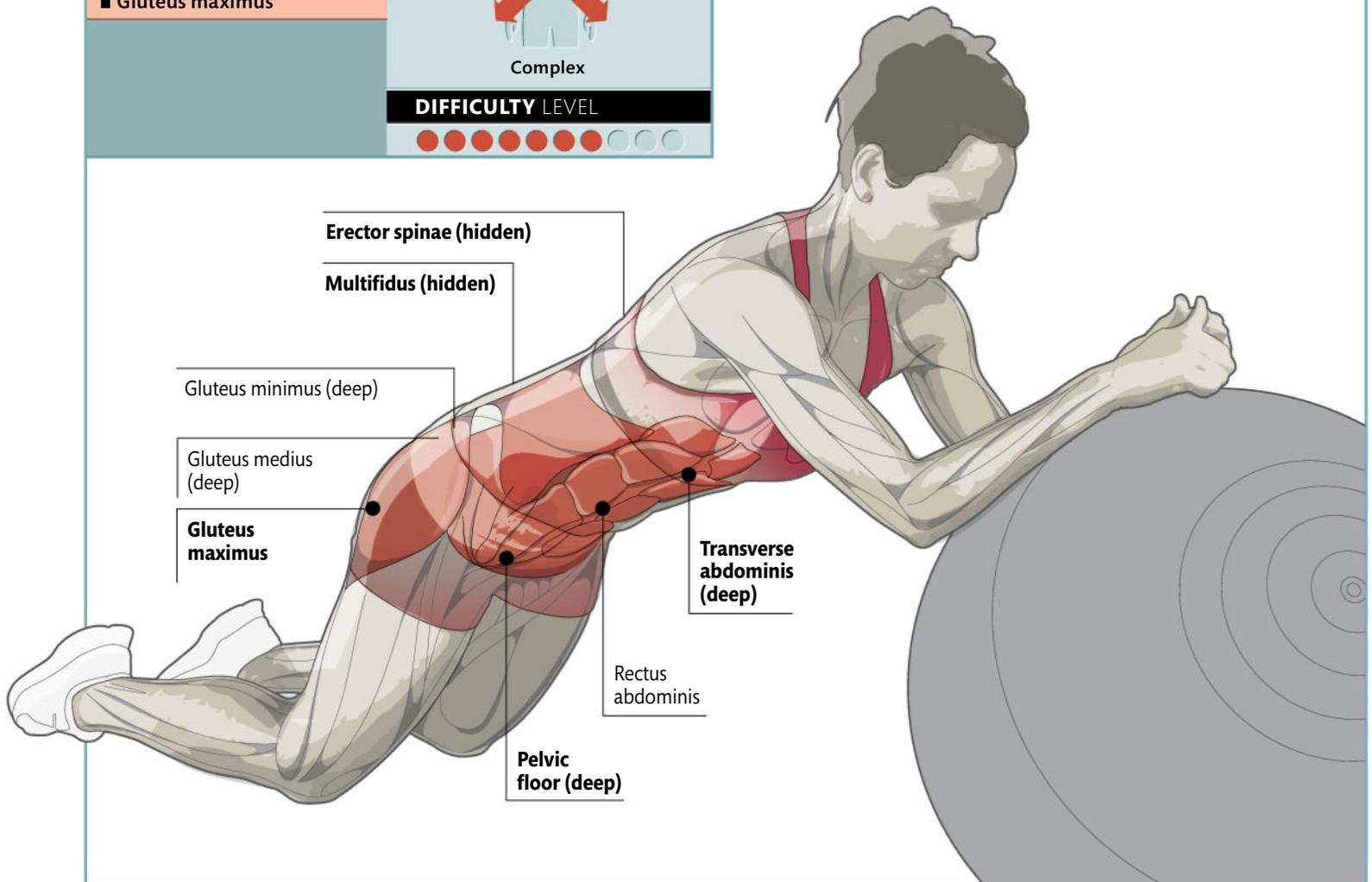
Once you have mastered the basic exercise, try tilting the board rather than rotating it to increase the level of instability and make your core work harder. Lift with one hand and place the other flat on the upper surface of the board, rather than gripping it, to avoid crushing your fingers.



EXERCISE BALL ROLL-OUT

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Complex</p>
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Gluteus maximus	
	DIFFICULTY LEVEL 

In a similar way to the plank, this excellent core exercise builds stability and strength in the muscles of your abdomen and lower back, with the added challenge of forward movement, working your upper back and shoulder stability.



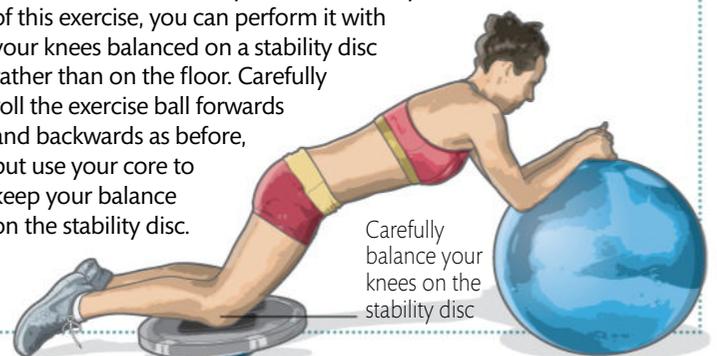
WARNING!

While this is a great exercise for building your core, it requires a good level of existing core strength and stability to perform. It is important to keep your back straight throughout, with your shoulders and hips aligned. To begin with, only roll the ball out as far as you can comfortably maintain good form, and never allow your lower back to sag,

as this can potentially cause back strain or similar injuries. Engaging your gluteal muscles will help you hold your pelvis in position, and you can also place a towel beneath your knees if you find they become painful during the roll-out. You should practise and perfect the basic movement before you try the variation or progression.

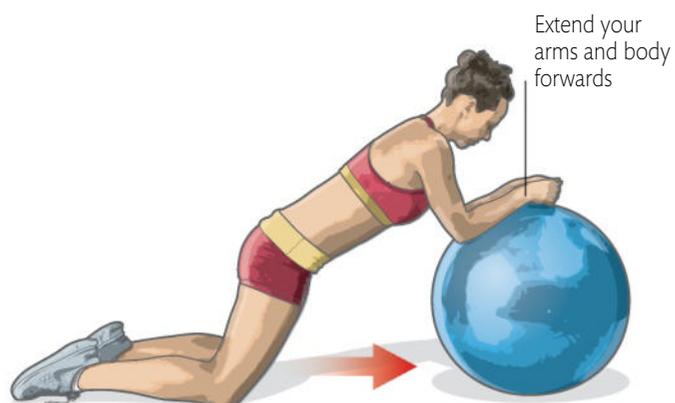
PROGRESSION

To increase the instability and the intensity of this exercise, you can perform it with your knees balanced on a stability disc rather than on the floor. Carefully roll the exercise ball forwards and backwards as before, but use your core to keep your balance on the stability disc.





1 Kneel down with an exercise ball positioned in front of you. Engaging your core and straightening your back, rest your hands and lower arms on the top of the ball.



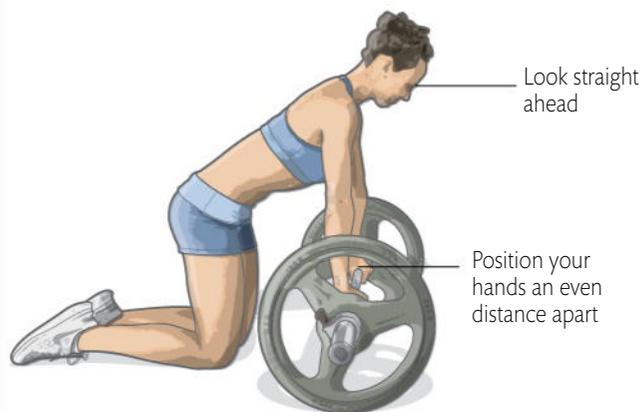
2 Roll the ball forwards by extending your arms, and follow it with your upper body as far as you can, keeping your core tight, your back straight, and shoulders stable.



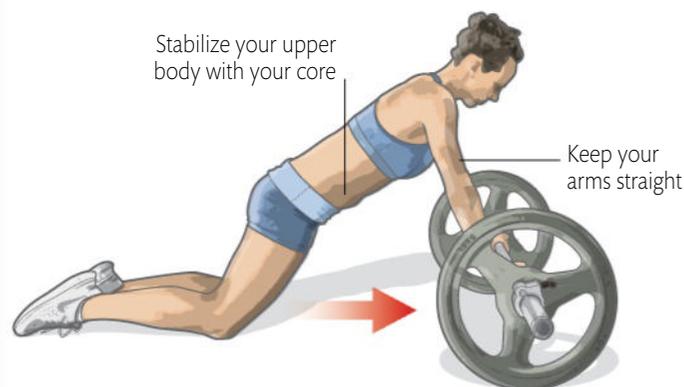
3 Extend the movement, hold for a few seconds, and then reverse to the start position, controlling the movement of the ball with your core.

VARIATION

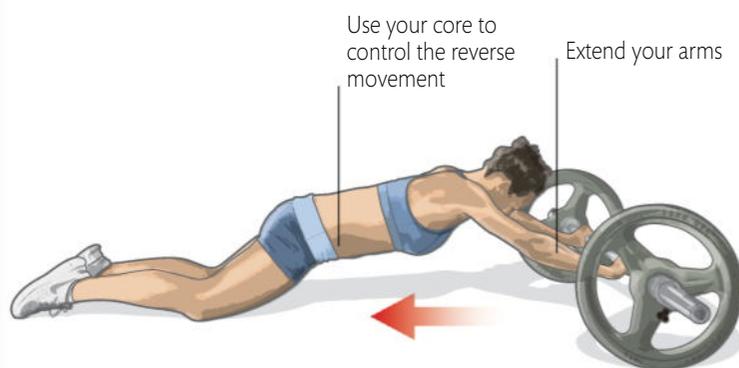
Using a barbell instead of an exercise ball places slightly different demands on your core, due to the lowered body position and the increased range of movement it allows.



1 Kneel with a barbell in front of you. Using an overhand grip, place both of your hands on the bar, shoulder-width apart.

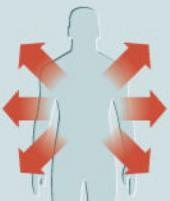


2 Engaging your core and keeping your back straight, begin to roll the bar forwards, keeping your shoulders stable.

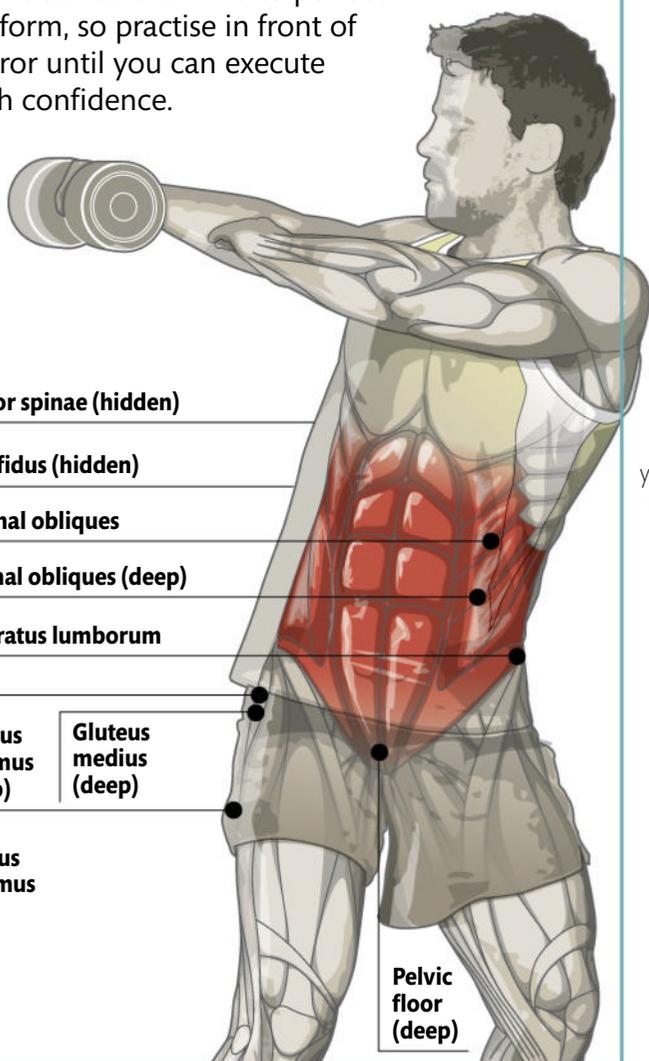


3 Extend the movement until your back is almost parallel to the floor, pause, then reverse the movement slowly and under control to return to the start position.

LAWNMOWER

TARGET MUSCLES	TARGET MOVEMENT
■ External obliques	 <p>Complex</p>
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
■ Gluteus maximus	

An excellent core rotation exercise, the lawnmower uses a similar movement to the medicine ball chop (opposite) but with a greater range and the additional challenge of holding the weight in one hand. It can take a while to perfect your form, so practise in front of a mirror until you can execute it with confidence.



Plant your heels on the floor

Hold your left arm straight out behind you

1 Stand with your feet slightly more than shoulder-width apart, with a dumbbell in your right hand.

2 Drop into a half-squat and, leaning forwards from your waist, lower the dumbbell across your legs in front of your left ankle.

3 Pulling the dumbbell up and across your torso, straighten your legs, rotate the upper body, and swing your left arm forwards.

4 Pull the weight up to shoulder level, bringing your left arm across your body as you do so. Pause, then return to the start. Switch arms.

Raise the dumbbell to shoulder height

Twist at your hips

Keep your core engaged

Keep your knees soft

ADVANCED

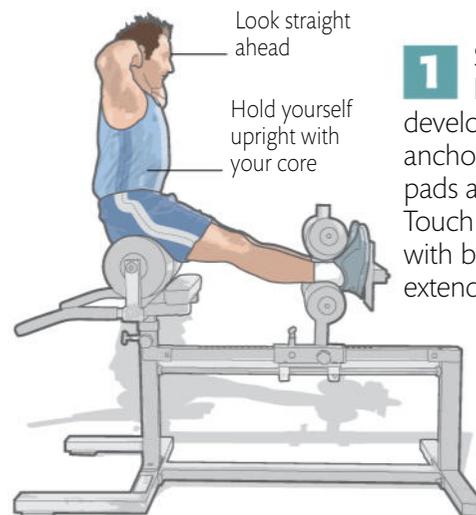
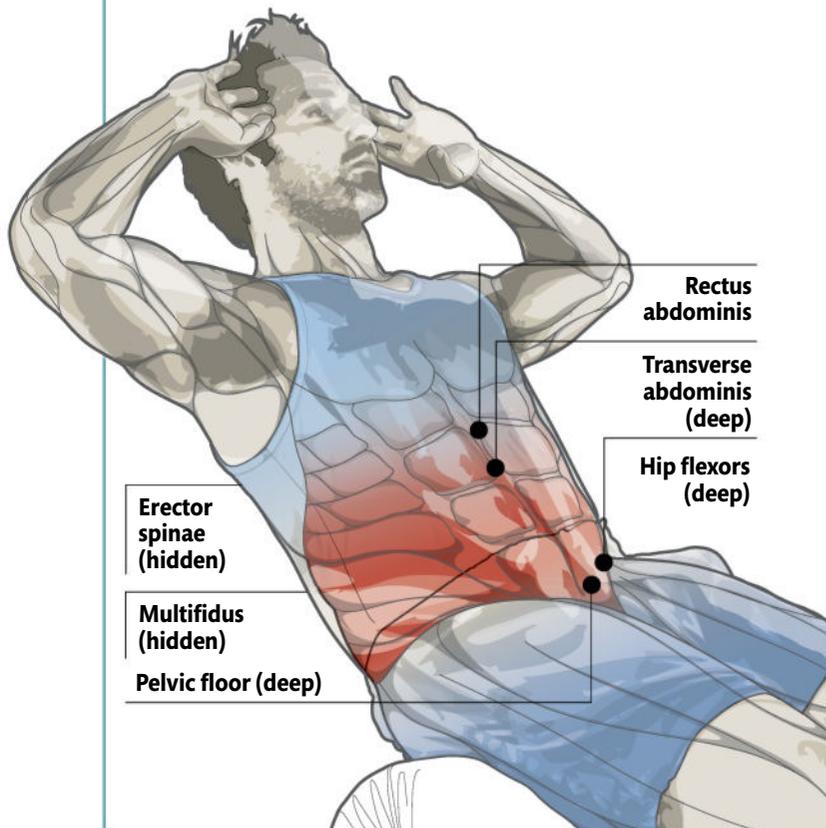
The exercises in this section involve challenging and complex movements that require excellent all-round core strength, stability, and mobility to perform correctly. It is therefore important

that you do not attempt any of them until you have mastered the exercises in the previous sections and can perform them confidently with optimum form and technique.

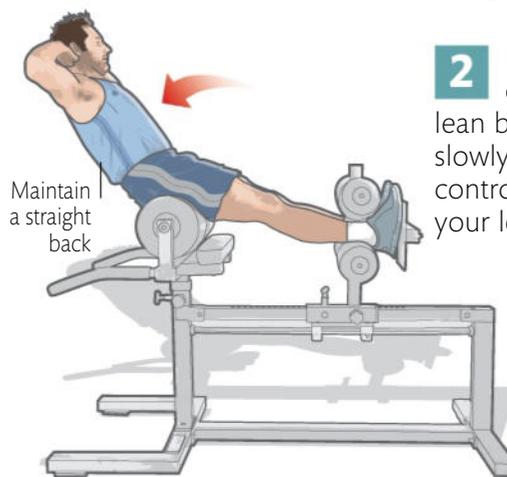
GHD SIT-UP

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Pelvic floor	
■ Hip flexors	
■ Erector spinae	
■ Multifidus	
DIFFICULTY LEVEL	
	

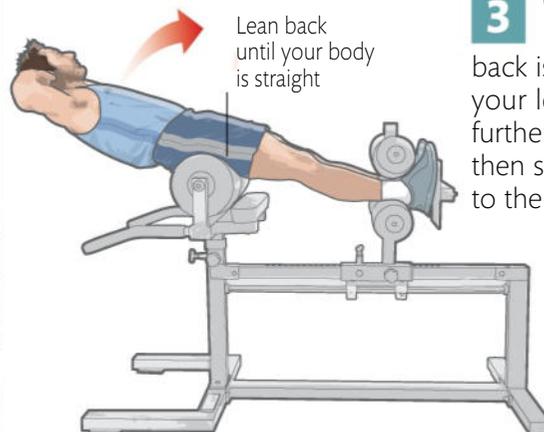
This advanced version of a basic sit-up offers a greater challenge to your abs and lower back, and requires good flexibility in your hips.



1 Sit on a glute-hamstring developer (GHD); anchor your feet in the pads and sit up straight. Touch your temples with both hands and extend your elbows.

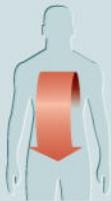


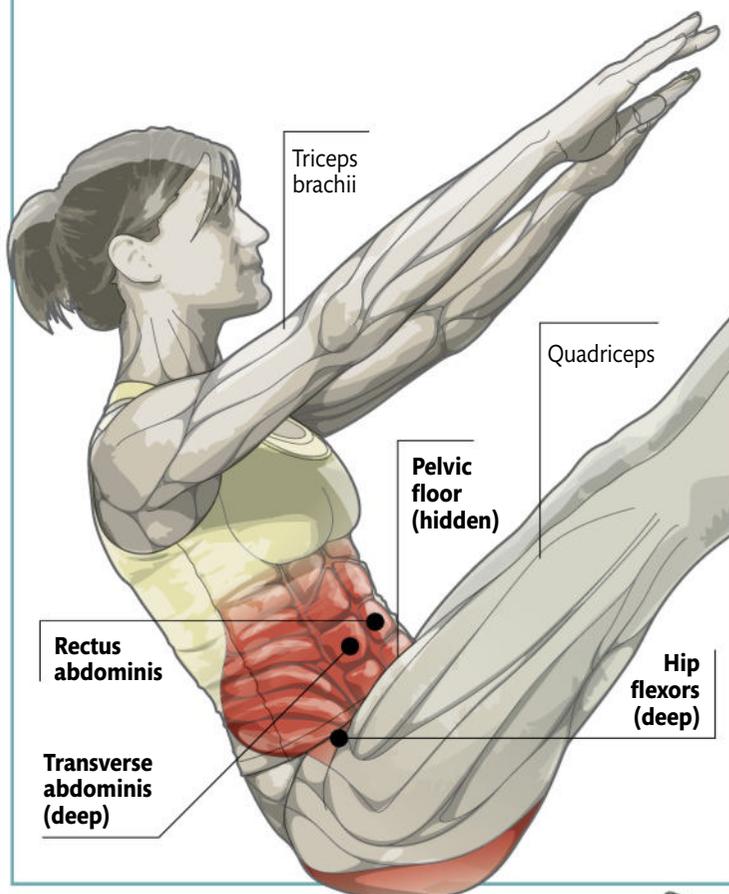
2 Holding your core tight, lean backwards slowly and under control, keeping your legs straight.



3 Continue leaning back until your back is aligned with your legs, but no further. Pause briefly, then slowly crunch up to the start position.

PIKE

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Pelvic floor	
■ Hip flexors	
DIFFICULTY LEVEL 	

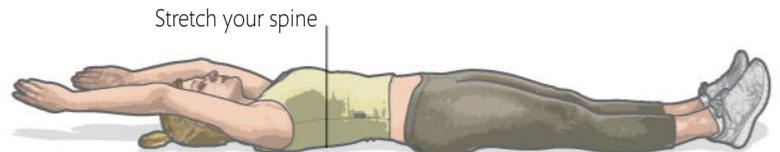


PROGRESSION

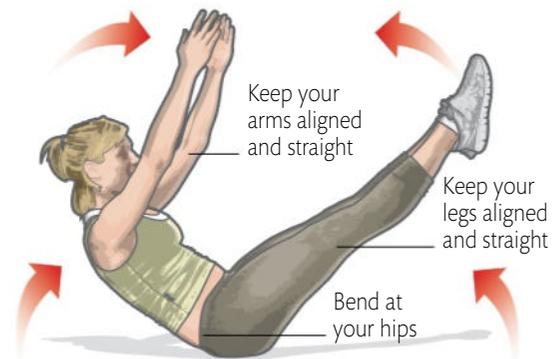
Once you have mastered the basic movement, you can try the exercise while holding a small weight, such as a kettlebell, to make the exercise harder. As you improve you can increase the amount of weight in increments.



This exercise demands excellent core control and flexibility, and takes practice to perfect. It is important to focus on good form and control the upwards and downwards phases with your core, rather than straining with your legs or back, which can cause injury.



1 Lie flat on the floor with your legs together and your arms stretched above your head, shoulder-width apart, palms facing inwards.



2 Using your core to drive the movement, raise your legs and upper body off the floor at the same time, keeping them straight, and bring your arms over in an arc towards your feet.



3 Continue the movement to form a "V" shape, with your back and legs straight, and stretch your arms towards your toes. Hold briefly, then reverse the movement to the start position, controlling it with your core.

STICK CRUNCH

TARGET MUSCLES

- Rectus abdominis
- Transverse abdominis
- Pelvic floor
- Hip flexors
- Erector spinae
- Gluteus maximus

TARGET MOVEMENT

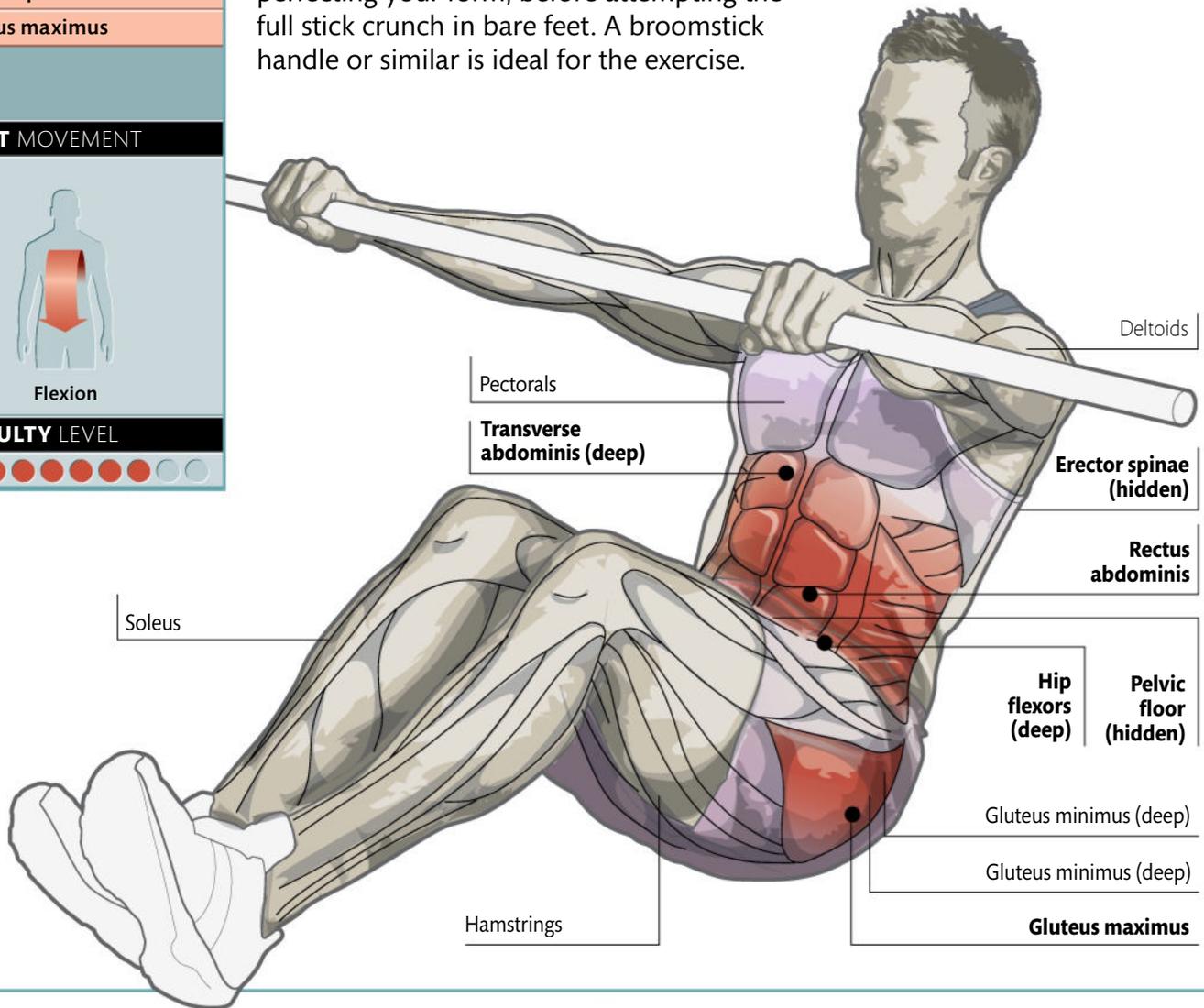


Flexion

DIFFICULTY LEVEL



This challenging exercise is a development of the V sit-up (»p.87), and requires excellent core stability to master. To begin with, practise using the variation below, taking the stick as far towards your toes as you can, focusing on perfecting your form, before attempting the full stick crunch in bare feet. A broomstick handle or similar is ideal for the exercise.



WARNING!

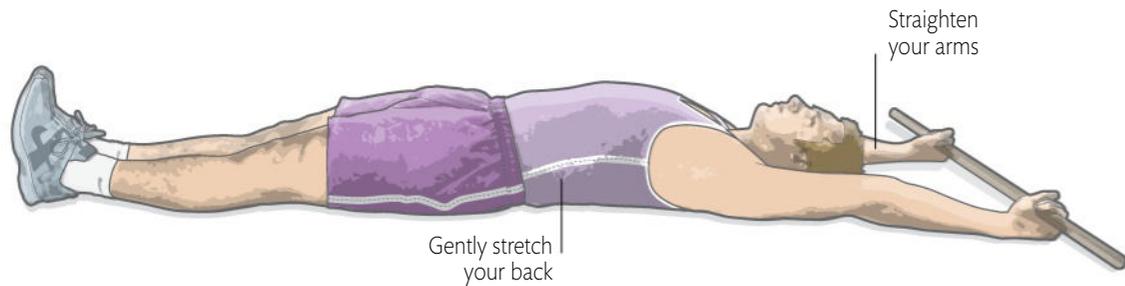
This is an advanced exercise that requires a high level of core stability, strength, and mobility to perform correctly. So, you should not attempt it without first mastering exercises in the earlier sections of the book – particularly those involving similar movements such as the V leg-raise and V sit-up (»pp.86–87). Good form is key, because poor technique can result in back strain or related injuries, so focus on perfecting your technique to begin with, moving the stick only as far as it is comfortable to do so.

VARIATION

If you find the main exercise too hard, practise the first phase of the movement only – that is bringing the stick as far as you can down your shins towards your toes. Focus on developing good form and movement. You can attempt the full movement without shoes on. This reduces the clearance over your feet by 1–2cm ($\frac{1}{2}$ – $\frac{1}{4}$ in), making it slightly easier.

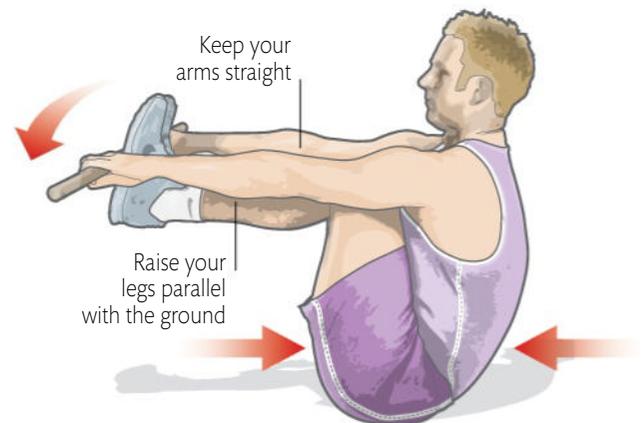


1 Grasping the stick with an overhand grip, your hands slightly wider than shoulder-width apart, lie on your back. Engaging your core, lift the stick.



2 Keeping your core tight, and your feet together, raise your knees towards your chest and crunch up with the upper body. Bring the stick over your head towards your knees as you do so.

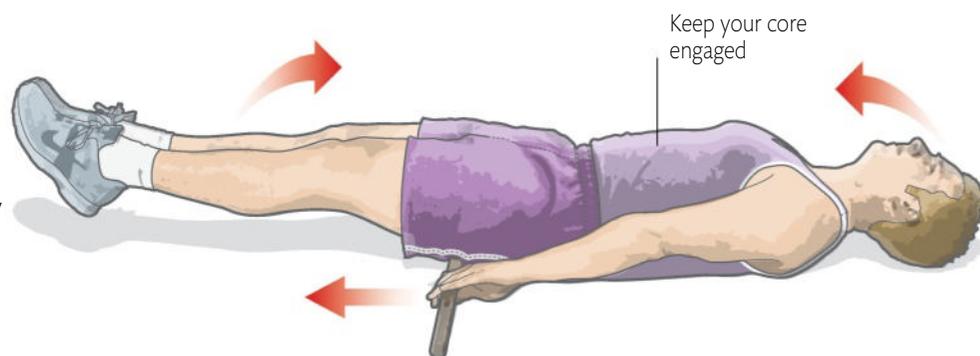
3 Continue the crunch with a smooth, controlled movement, pulling your knees into your chest, and bring the stick down and around the soles of your feet without touching them.



4 Still bracing your core, bring the stick back under your legs, straightening your knees and leaning back with your torso, with a smooth, controlled movement, keeping your back straight.



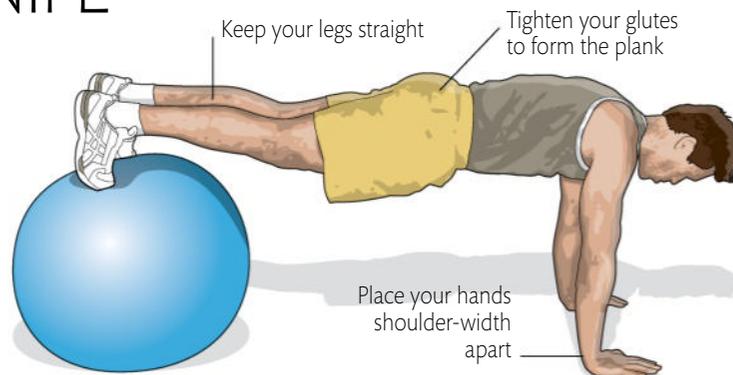
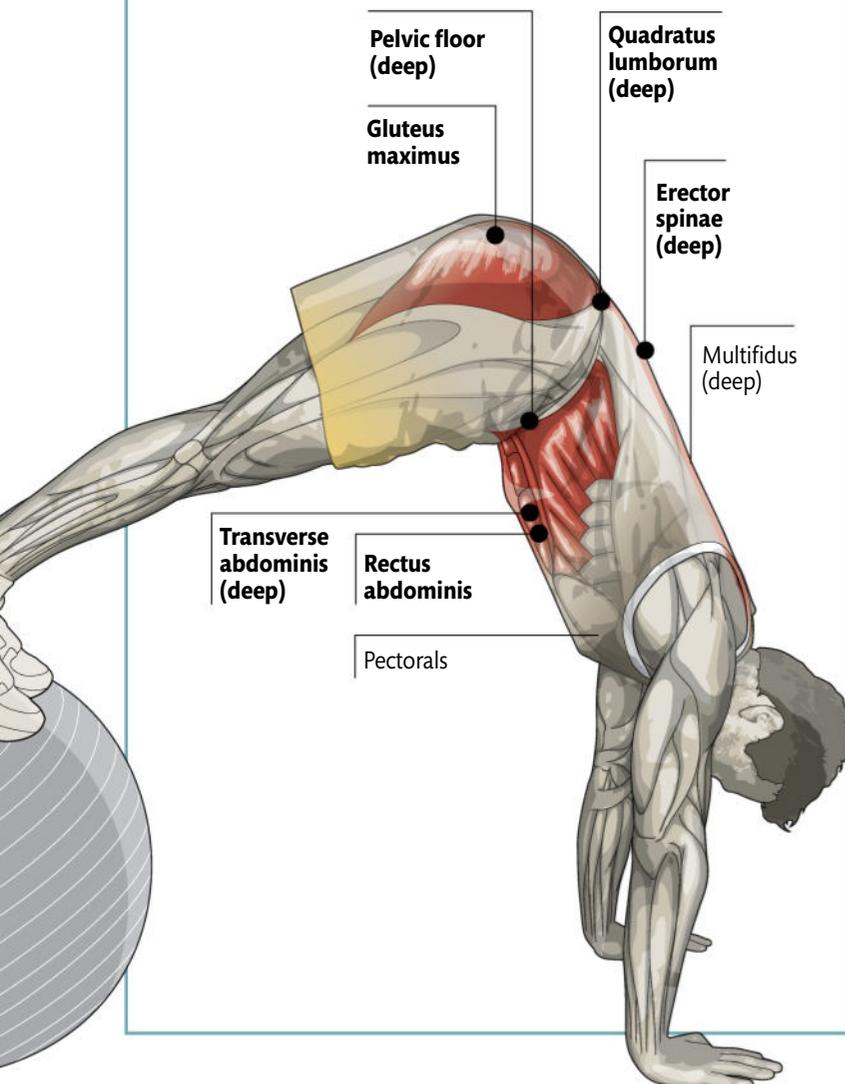
5 Continue the movement until your upper body is on the floor, and the stick is beneath your lower buttocks. Keep your legs straight and your feet slightly off the ground. Hold briefly, then reverse the sequence to the start position.



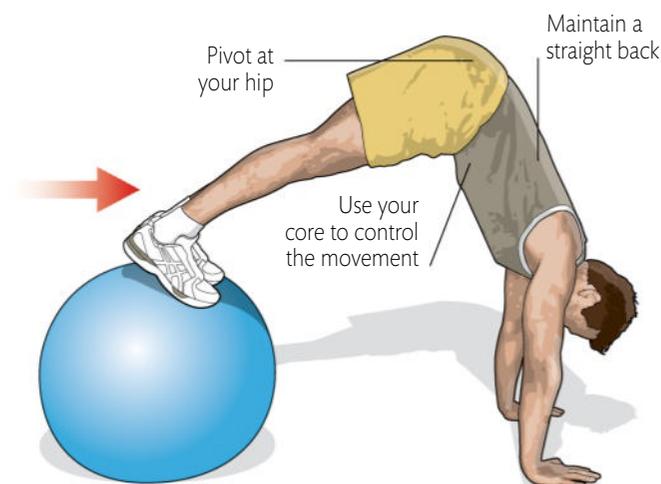
EXERCISE BALL JACK-KNIFE

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Flexion</p>
■ Transverse abdominis	
■ Pelvic floor	
■ Erector spinae	
■ Quadratus lumborum	
■ Gluteus maximus	
DIFFICULTY LEVEL 	

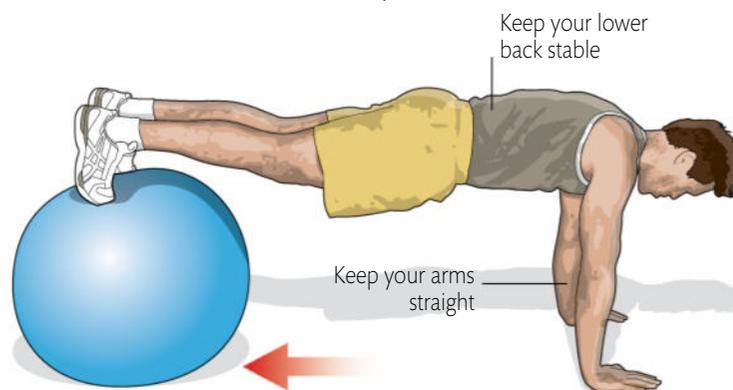
This difficult core flexion exercise demands excellent core stability, balance, and control to perform correctly. Because the movement can potentially cause injury when performed with poor form, you should only attempt it once you have mastered a good range of basic core exercises.



1 Assume a plank (»pp.96-97), with your hands on the floor below your shoulders and your feet on an exercise ball. Keep your elbows straight, but not locked, your shoulders relaxed, and the head supported by neck muscles. Hold your back straight and ensure your pelvis is not tipping downwards.



2 Keeping your body straight and your hands fixed in position, slowly lift from your lower abdominals, bending at the hip. Push as far as you can, keeping control of the movement with your core.

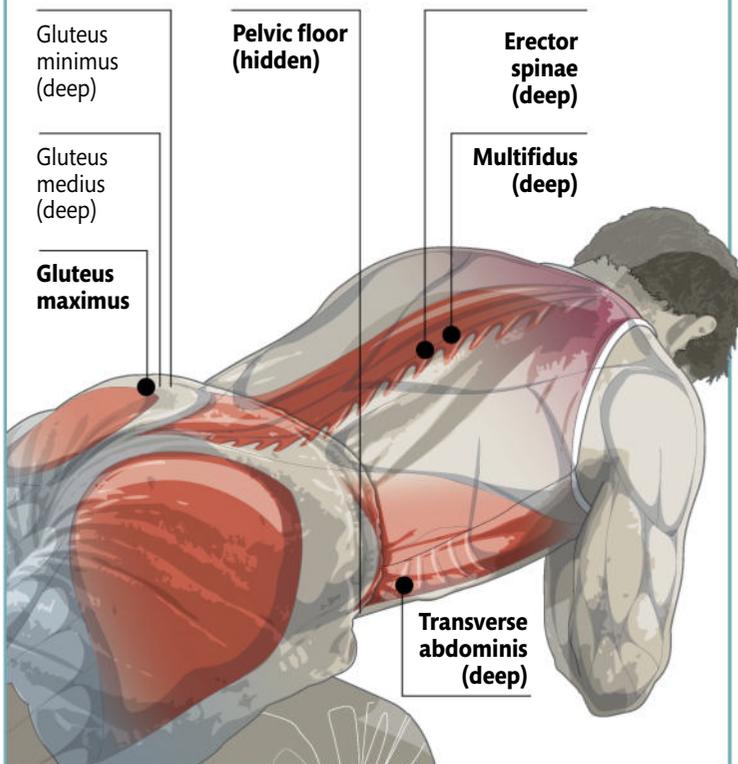


3 Hold the position for a few seconds, then return to the start position with a slow, controlled movement.

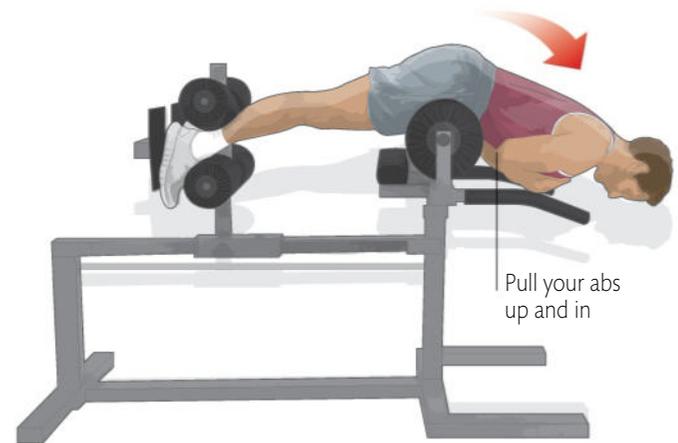
GHD BACK EXTENSION

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Extension</p>
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Gluteus maximus	
DIFFICULTY LEVEL 	

Essentially an advanced version of the basic dorsal raise (»pp. 70–71), this exercise is harder than it looks. Using a glute-hamstring developer (GHD) machine, the movement targets the muscles of your spine, lower back, and glutes in the same way, but demands a much greater level of flexibility in your hips and hamstrings.



1 Position yourself on the GHD machine, with your feet anchored in the foot supports. With your spine in a neutral position, cross your hands over your chest.

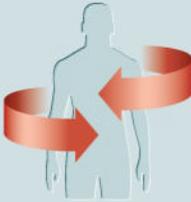


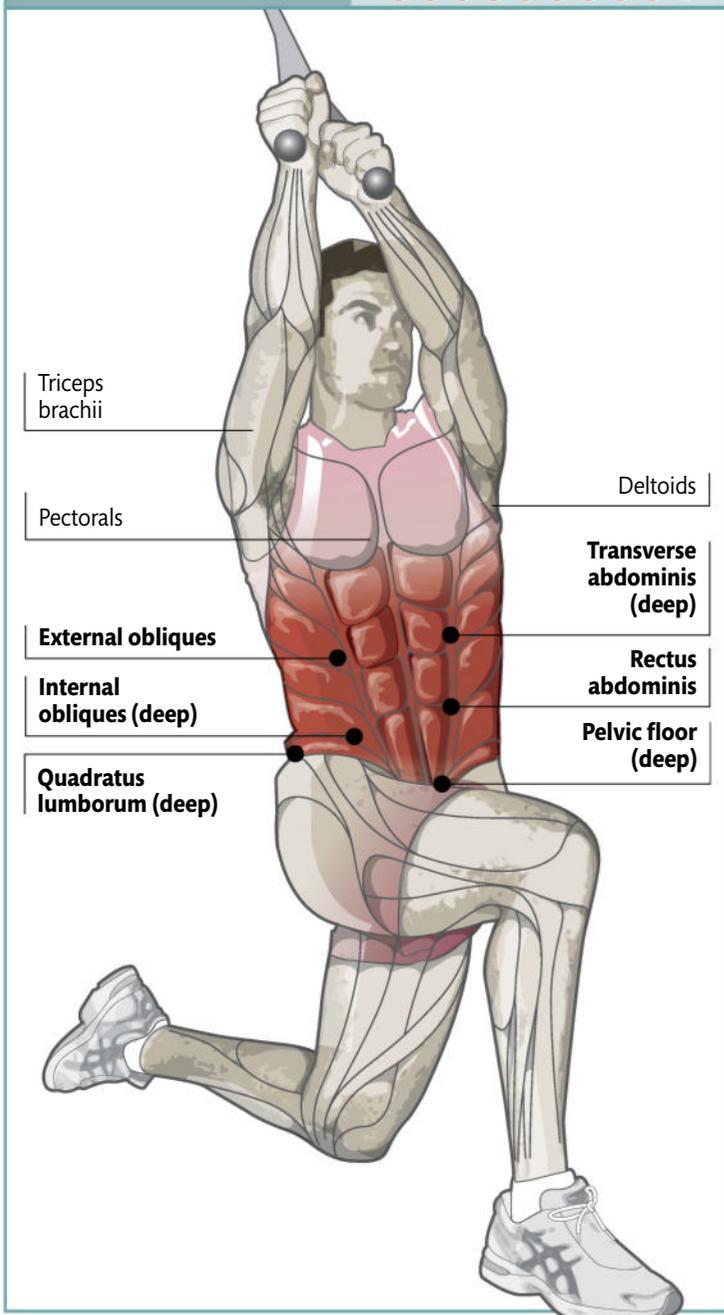
2 Flexing at your hips, drop your upper body slowly towards the floor, using your core to control the movement. Keep your arms tucked in and your legs straight.



3 Bend downwards until the flexibility of your hamstrings restricts further movement. Maintaining good form, return to the start position, being careful not to extend beyond that point.

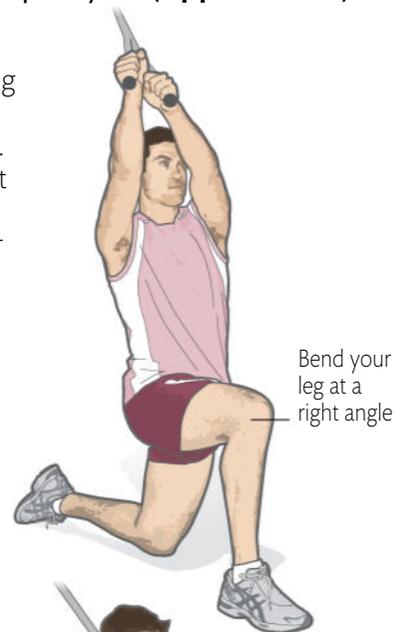
PULLEY CHOP

TARGET MUSCLES	TARGET MOVEMENT
■ Rectus abdominis	 <p>Rotation</p>
■ Transverse abdominis	
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Quadratus lumborum	
	DIFFICULTY LEVEL 



The pulley chop is a powerful core-rotational exercise that is excellent for improving spinal control and stability, and building rotational strength. It can be partnered with the pulley lift (»pp.140–141).

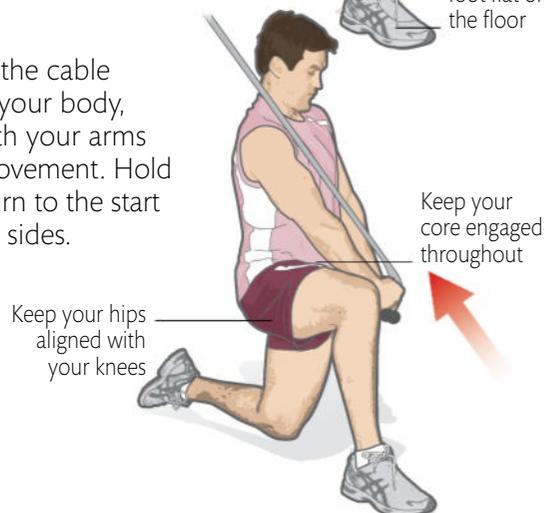
1 Assume a split kneeling position with a pulley cable machine to your right. Extend your right leg in front of you so that your knee is bent at 90 degrees and your foot is flat on the floor. Keeping your back straight, align your back, shoulders, hips, and knees. Grasp the handles of the cable with your arms straight.



2 Engaging your core, pull the cable down and across your body in a smooth, controlled movement, bending your elbows as you reach the mid-point of your chest.



3 Keeping the cable close to your body, push down with your arms to finish the movement. Hold briefly and return to the start position. Swap sides.



PROGRESSION 1

Performing the chop while standing makes your core muscles work harder to generate rotational power.

Keep your back straight, and avoid trying to “muscle” the movement down with your arm or shoulders.



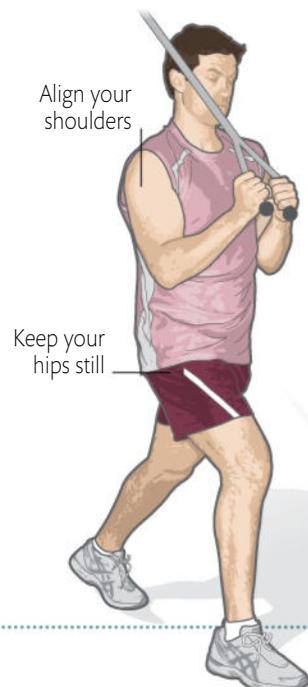
1 Stand with the pulley to your right, keeping your back and legs straight, and your shoulders and hips aligned. Keeping your arms extended, grasp the cable handles.

2 Engaging your core, pull the cable down and across your body, bending your elbows as you reach the mid-point of your chest. Keep your shoulders straight.

3 Keeping the cable close to your body, push down with your arms to finish the movement. Hold briefly and return to the start position. Switch sides.

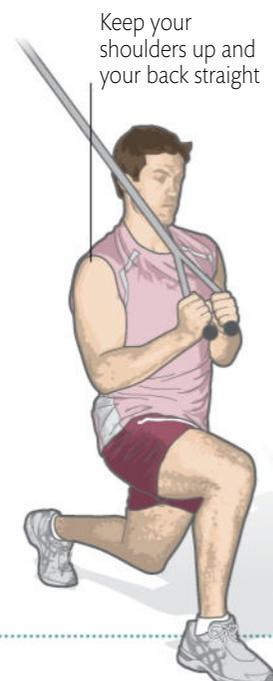
PROGRESSION 2

Performing the pulley chop movement in a scissors stance (a half-lunge position) adds an element of rotational instability, which increases the stresses on your core muscles, challenging them to work harder to keep you balanced. With the pulley machine to your right, take hold of the cable handles and assume a scissors stance. Follow the sequence as above, keeping your back straight and your core engaged, for the desired number of repetitions. Relax then switch sides, making sure you perform the same number of repetitions.

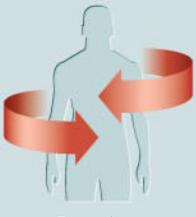


PROGRESSION 3

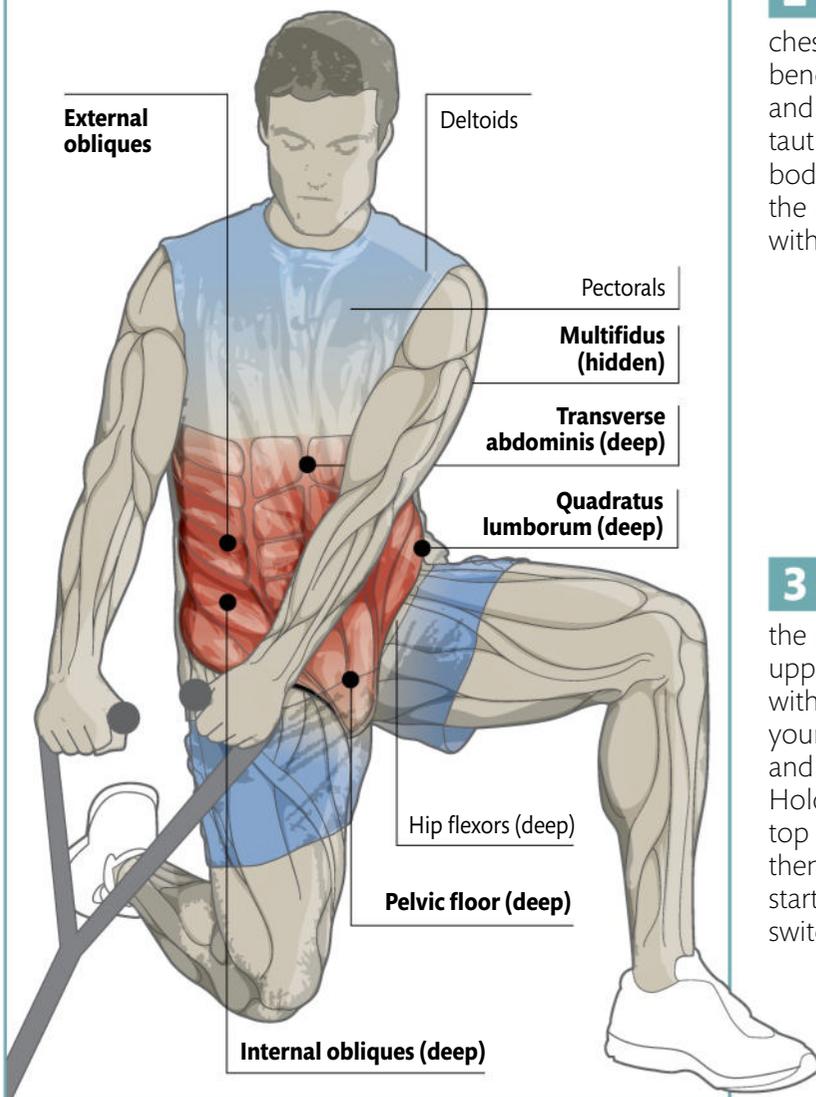
Adopting a full-lunge position to perform the pulley chop creates an even greater level of instability, and places additional rotational stress on the deep muscles of your spine and abdomen. Standing with the pulley machine to your right, grasp the pulley handles and drop into the lunge position, keeping your back straight and your core engaged. Follow the sequence as above for the desired number of repetitions, then swap sides, being sure to carry out the same number of movements.



PULLEY LIFT

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Rotation</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
DIFFICULTY LEVEL 	

The pulley lift is an excellent partner exercise to the pulley chop (»pp.138–139). A powerful and versatile movement, it improves rotational strength and spinal control and stability.



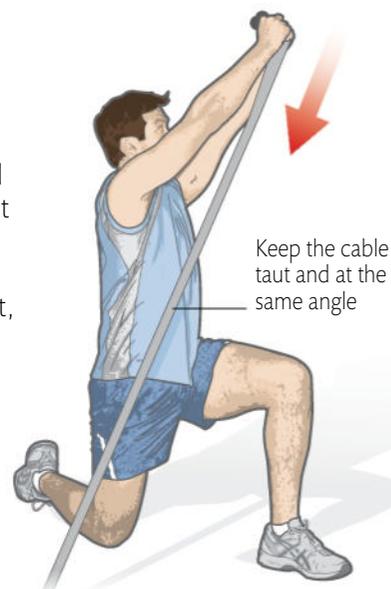
1 Kneel down with a pulley to your right. Position yourself with your left knee bent at 90 degrees and your right knee on the floor. Keep your back straight with both shoulders and hips in line. Take hold of the pulley handle with both hands, keeping your arms straight.



2 Pull the cable up and into your chest with both hands, bending at your elbows and keeping the cable taut and close to your body, controlling the movement with your core.



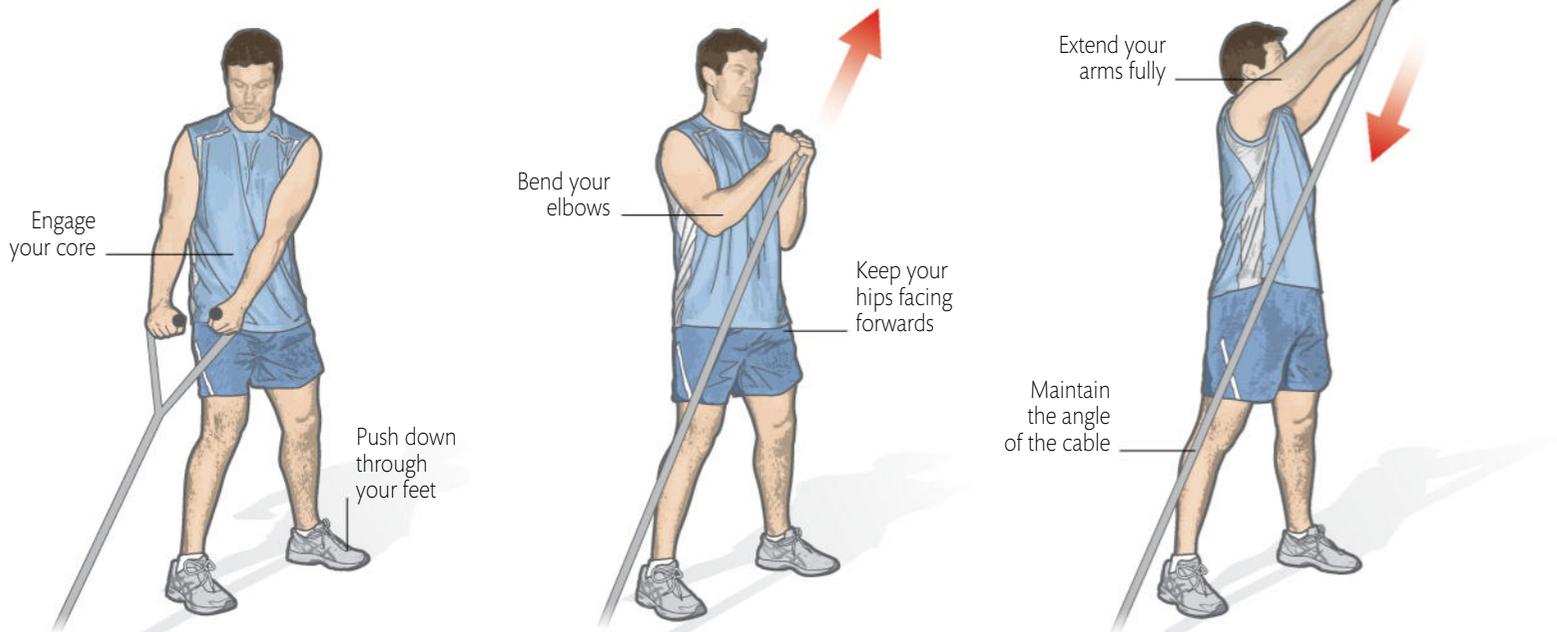
3 Following the direction of the pull across your upper body, push up with your hands until your arms are straight and fully extended. Hold briefly at the top of the movement, then return to the start position, and switch sides.



PROGRESSION 1

Performing the lift in a standing position makes the muscles of your core work harder to generate

rotational power. Be careful to carry out the movement in a smooth, controlled action.



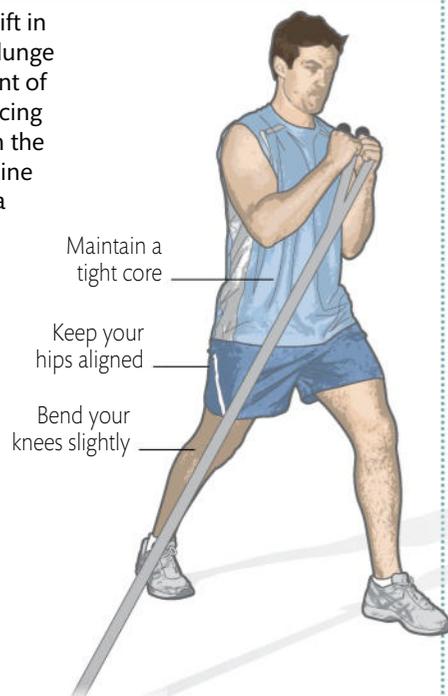
1 Stand with the pulley to your right and your feet shoulder-width apart. With your back straight and your shoulders, hips, knees, and ankles aligned, grasp the pulley handle with both hands, on straight arms.

2 Pull the cable up and into your chest with both of your hands bending at the elbows. Remember to control the movement with your core, keeping the cable taut and close to your body.

3 Following the direction of the pull across your upper body, push up with your hands until your arms are straight and fully extended. Hold briefly at the top, then return to the start position and switch sides.

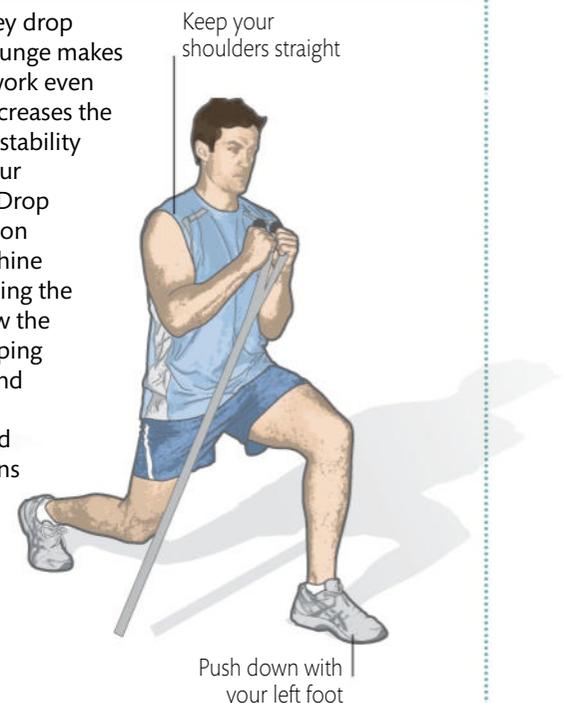
PROGRESSION 2

Carrying out the pulley lift in a scissors stance (a half-lunge position) adds an element of rotational instability, placing extra rotational stress on the deep muscles of your spine and abdomen. Assume a scissors stance with the pulley machine to your right and take hold of the cable handles. Keeping your back straight and your core engaged, follow the sequence as above for the desired number of repetitions, then swap sides, being sure to carry out the same number of movements.



PROGRESSION 3

Performing the pulley drop movement in a full lunge makes your core muscles work even harder because it increases the level of rotational instability and the stress on your stabilizing muscles. Drop into the lunge position with the pulley machine on your right. Grasping the cable handles, follow the main sequence, keeping your back straight and the core engaged. Carry out the desired number of repetitions on both sides of your body.

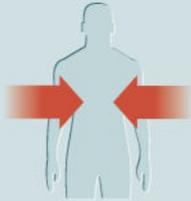


SINGLE-LEG, SINGLE-ARM CABLE PRESS

TARGET MUSCLES

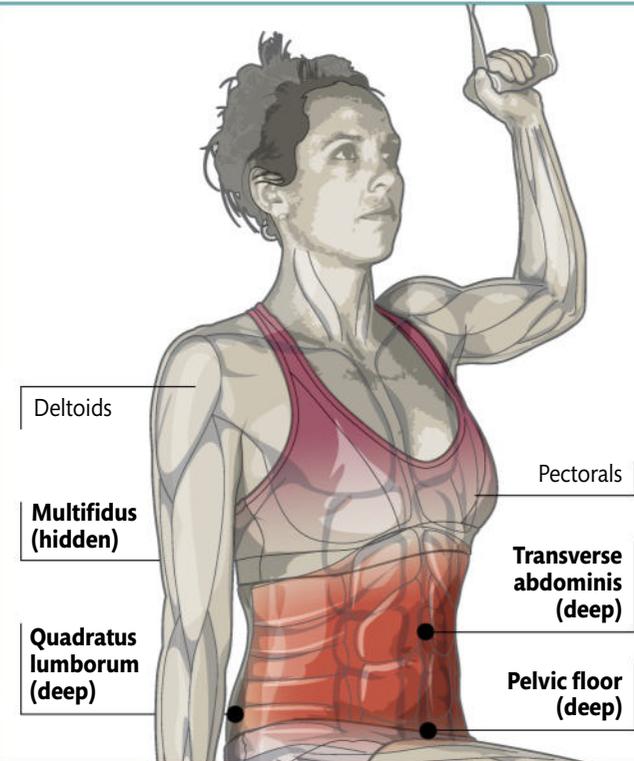
- Transverse abdominis
- Pelvic floor
- Multifidus
- Quadratus lumborum

TARGET MOVEMENT

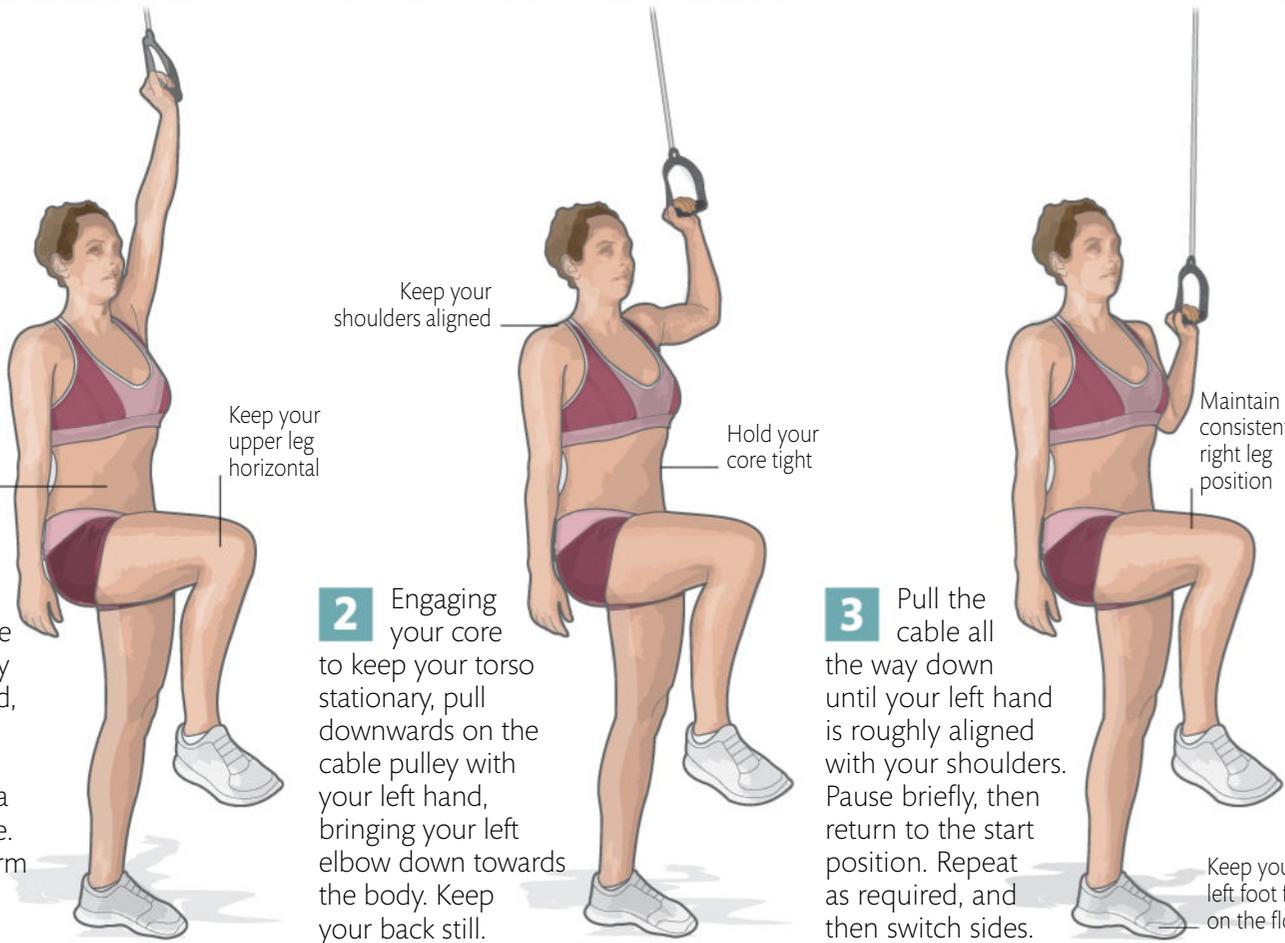


Isometric

DIFFICULTY LEVEL

This movement is harder than it may first appear. An excellent way of improving your core stability, balancing on one leg while controlling the cable pulley creates an element of lateral and rotational instability which your core has to work against. There are numerous variations – six of which are featured opposite – that you can use, each of which works the muscles of your core in a slightly different way, due to the varying angle and height of the pulley cable.



1 Holding the handle of a cable pulley in your left hand, lift the right leg until your right knee is bent at a 90-degree angle. Let your right arm hang down by your side.

Engage your core

Keep your upper leg horizontal

Keep your shoulders aligned

2 Engaging your core to keep your torso stationary, pull downwards on the cable pulley with your left hand, bringing your left elbow down towards the body. Keep your back still.

Hold your core tight

3 Pull the cable all the way down until your left hand is roughly aligned with your shoulders. Pause briefly, then return to the start position. Repeat as required, and then switch sides.

Maintain a consistent right leg position

Keep your left foot flat on the floor

VARIATION 1

In this variation of the cable press, carry out the movement in the same position as the basic exercise, but this time place the cable pulley directly in front of you at elbow height. Your left arm should be bent at a 90-degree angle with your upper arm vertical. With your left hand, pull the cable towards you in a horizontal movement. Repeat as required, then switch sides, pulling the cable with your right hand.

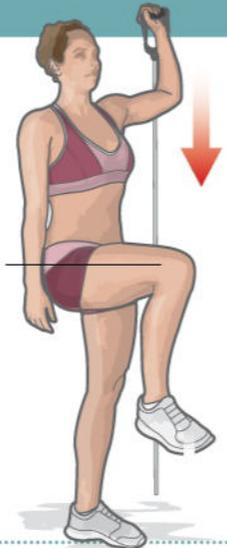
Keep your right foot off the ground



VARIATION 2

This variation is known as a cable row. Begin as normal, but with your left arm lowered and the cable extending upwards from the floor, and not horizontally. Holding the cable pulley in your left hand, carry out the basic movement in reverse, raising your left arm to lift the cable pulley until it is level with your head, with your elbow bent. Lower your arm back down and repeat the exercise as required, before switching sides.

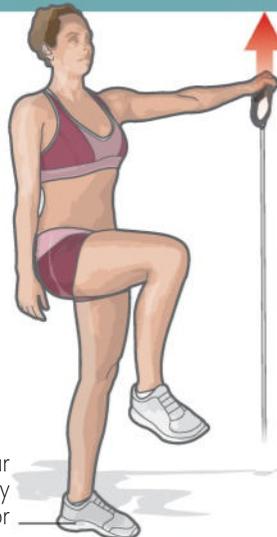
Bend your right knee 90 degrees



VARIATION 3

For this more challenging option, known as the chest fly, run the cable up from the floor as in Variation 2, but this time raise and then lower the cable with your left arm fully extended out sideways from your body, keeping your elbow straight. Keep your right leg lifted, with the knee bent at 90 degrees. Repeat the movement as required, and then switch sides.

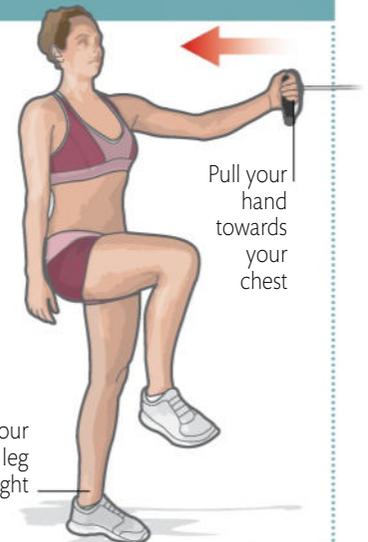
Plant your left foot firmly on the floor



VARIATION 4

In the lateral raise, run the cable horizontally towards you from the left, at shoulder height. Assume the normal start position. With your right knee raised, carry out the movement by pulling the cable pulley across towards your chest until it is level with your left shoulder, and back again. Repeat as required, then switch sides, holding the cable with your right hand and lifting your left knee.

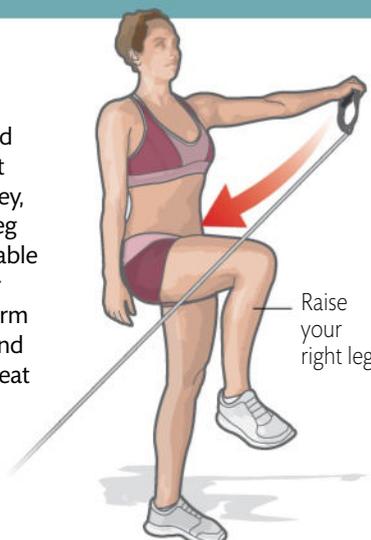
Keep your left leg straight



VARIATION 5

To perform the reverse chop variation of the basic exercise, run the cable pulley towards you from your right side, at head height. Extend your left arm out sideways holding the cable pulley, and raise and bend your right leg to a 90-degree angle. Pull the cable diagonally upwards across your body to the left, keeping your arm straight, then slowly release it and return to the start position. Repeat as required, then switch sides.

Raise your right leg



VARIATION 6

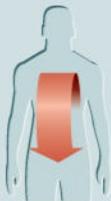
In this variation, begin with the cable pulley in your right hand. Place the cable in front of you at head height, and to the right. Note that your right leg should be raised at a right angle, as with the left-arm exercises. Extend your right arm sideways, with the elbow slightly bent. Pull the cable straight backwards in a horizontal line, then return to the start position. Repeat as required, then switch sides.

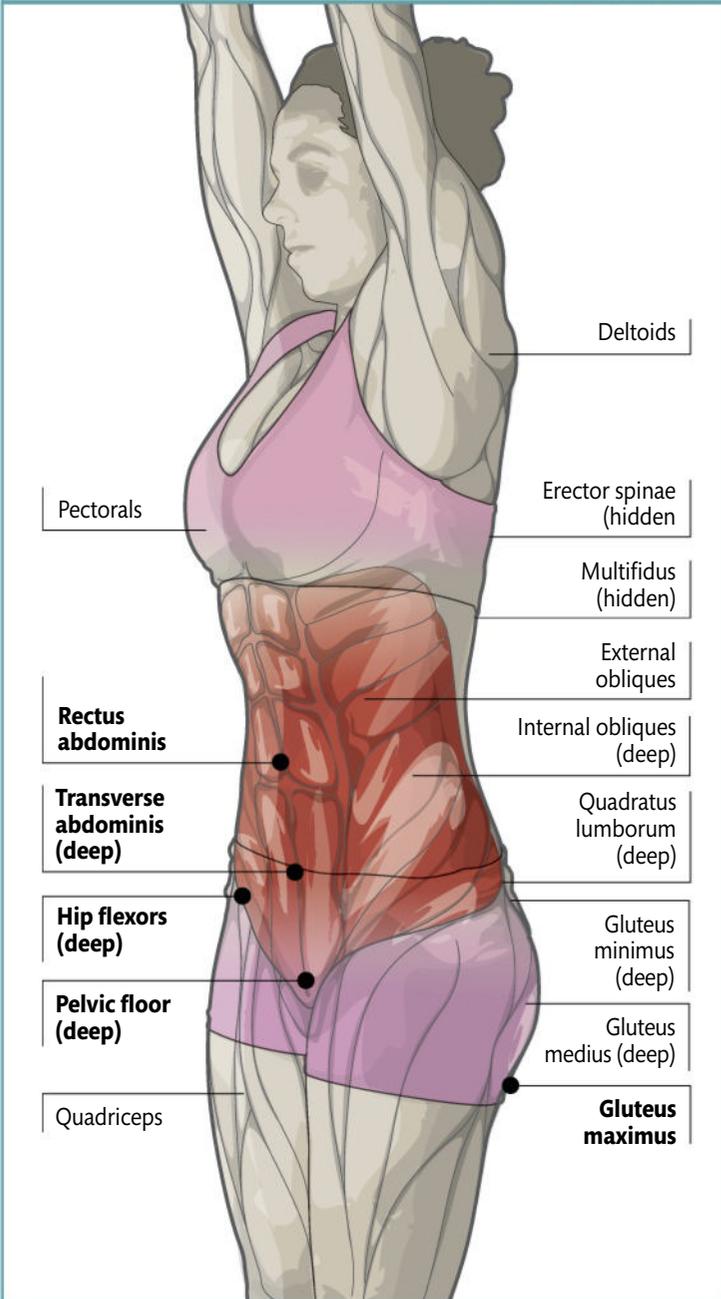
Lift your right arm

Keep your right leg raised

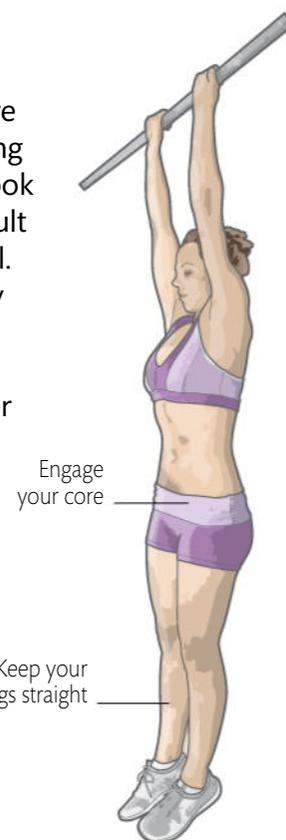


HANGING TOE TUCK

TARGET MUSCLES	TARGET MOVEMENT
<ul style="list-style-type: none"> ■ Rectus abdominis ■ Transverse abdominis ■ Pelvic floor ■ Hip flexors ■ Gluteus maximus 	 <p>Flexion</p>
DIFFICULTY LEVEL 	

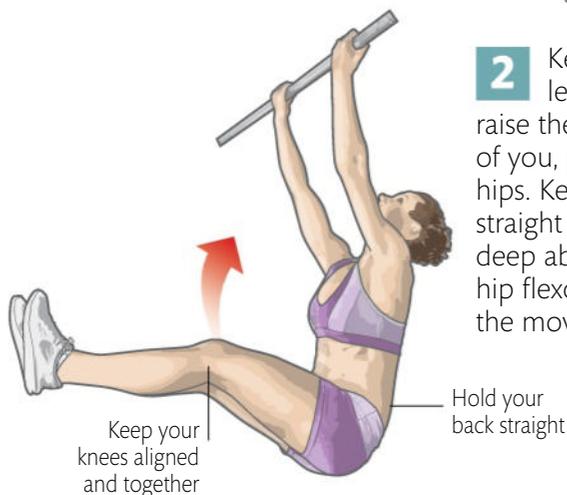


This exercise – effectively a more demanding version of the hanging knee-up (»pp.104–105) – may look simple but it is deceptively difficult to perform. Good form is crucial. You must keep your upper body as still and as stable as possible, controlling the movement with your hip flexors and glutes, rather than trying to use momentum.



1 Suspend yourself from a chin-up bar with your arms shoulder-width apart, using an underhand grip. Ensure that your legs are straight and stationary, and there is a straight line from your shoulders to your ankle.

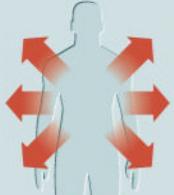
2 Keeping your legs together, raise them up in front of you, pivoting at your hips. Keep your back straight and use your deep abdominals and hip flexors to control the movement.

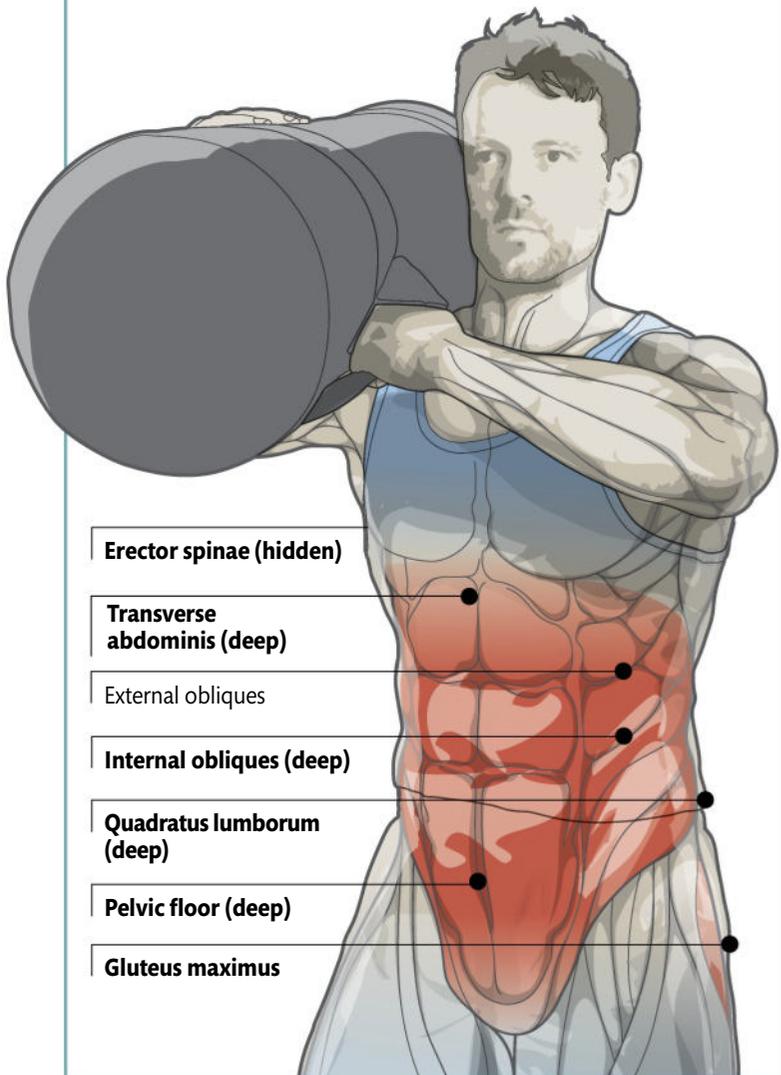


3 Raise your feet as high as you can manage without straining or compromising your form. Hold briefly, then return to the start position, using your glutes to control the downward movement.



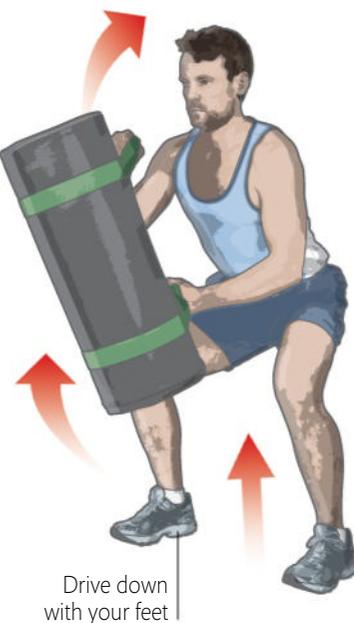
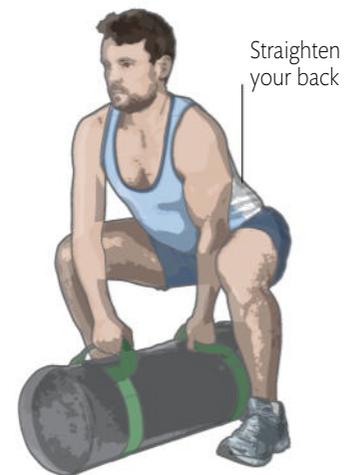
SANDBAG SHOULDERING

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Complex</p>
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Quadratus lumborum	
■ Gluteus maximus	
	DIFFICULTY LEVEL
	●●●●●●●●●●



Requiring a combination of core strength and stability, this exercise offers an intensive workout. Good form is key, so focus on perfecting your technique and keeping a straight back throughout before you increase the weight of the sandbag. You should aim to perform the action with a smooth, controlled movement.

1 Stand with the bag positioned lengthways between your legs. Engage your core, and drop your buttocks backwards into a squat. Grip the handles of the bag, with your right hand to the front.

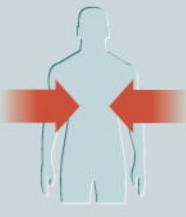


2 Driving down with your feet and straightening your legs to stand, lift up the bag vertically in front of you, with your right arm above your left.

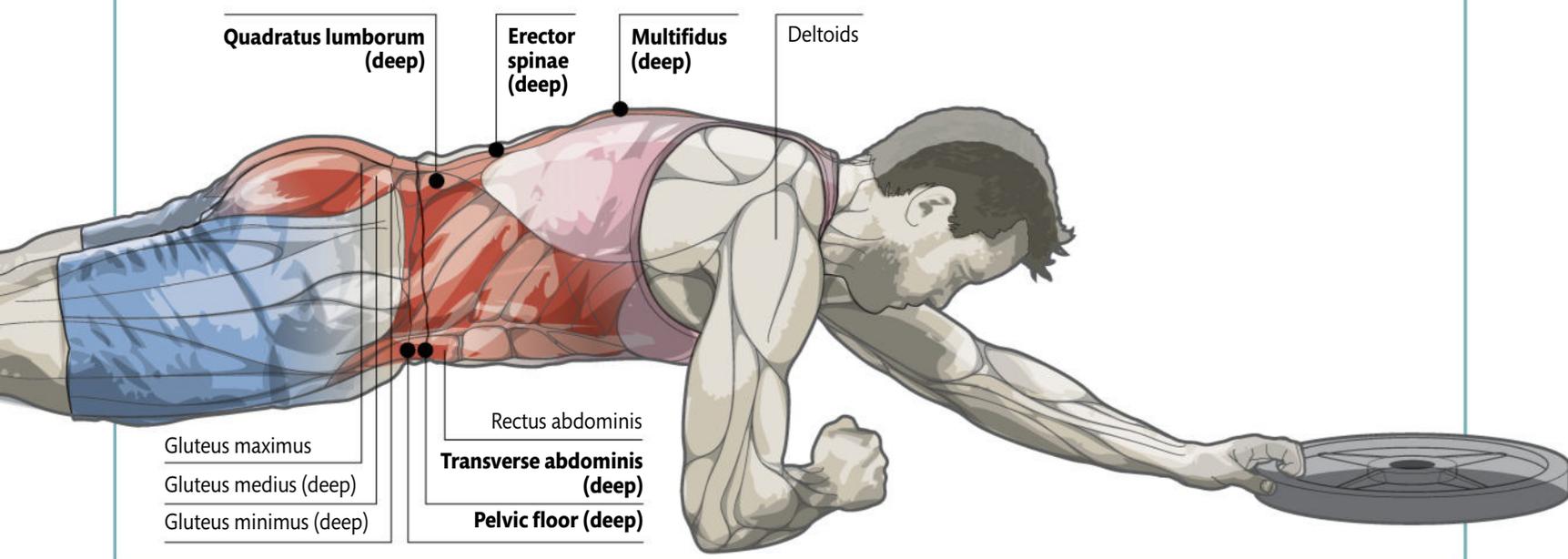


3 Continue the movement, lifting the bag on to your right shoulder, letting go of the handle and steadying the bag in the crook of your right arm as you do so. Pause briefly with the bag on your shoulder, then reverse the movement to return to the start position. Repeat as required then switch sides.

PLANK PLATE PUSH

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
	DIFFICULTY LEVEL
	●●●●●●●●●●

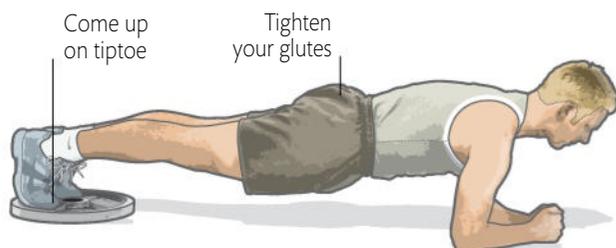
This demanding floor exercise combines the basic plank position (»pp.96–97) with the dual challenge of moving forwards on your forearms and toes while pushing a weight disc. It offers a superb workout for your core, along with many of the major muscle groups of your upper and lower body. You will need good core strength and a lot of determination to complete the exercise successfully. Because the exercise is tiring, it is very important for you to focus on maintaining good form throughout.



PROGRESSION

This version of the exercise involves dragging the disc with your feet rather than pushing it in front of you. This makes the movement more challenging because you have to work harder against the force of resistance.

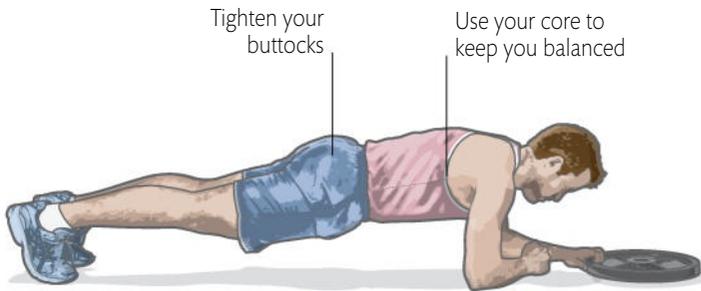
Get yourself into a plank position as before, only this time with the weight disc under your toes. Edge forwards in a regular, crawling movement alternating between each forearm until your feet are extended.



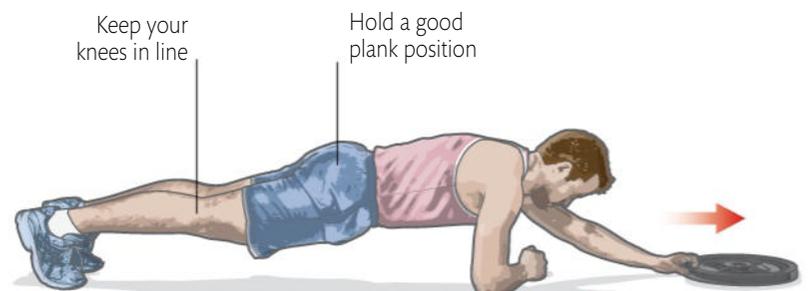
1 Place a disc on the floor by your feet, and assume a plank position with your toes on the back half of the disc. Use your toes and forearms to support your weight.



2 Supporting your weight with your left forearm, drag your body forwards without moving your toes.



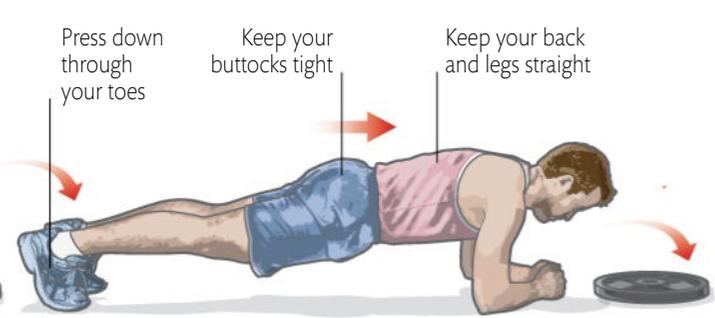
1 Place a weight disc on the floor in front of you and assume a plank position, with your weight supported on your toes and forearms. Shift your weight to your right forearm and push the disc forwards with your left hand.



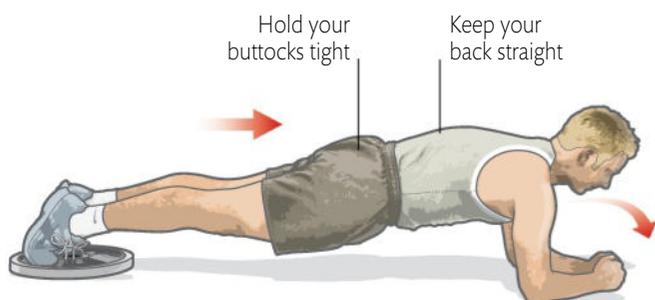
2 Keep pushing the disc until your left arm is fully extended, maintaining the same body position and being careful to keep your core engaged and your glutes tight.



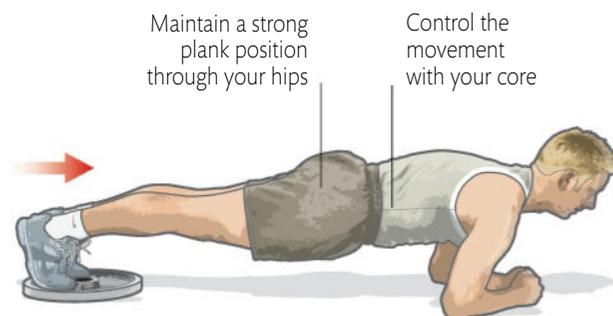
3 Withdraw your left hand from the disc. Supporting your weight with your left forearm and the toes of your left foot, move your right arm and right leg forwards, maintaining the plank position, and ensuring you keep your back straight.



4 Plant your right arm beside your left, and your right foot slightly in front of your left foot, still on your toes. Shifting your weight onto both forearms, bring your left foot forwards and plant it next to your right foot, toes down, as in the start position. Repeat the sequence as required.

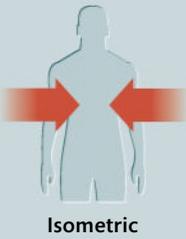


3 With your weight on your left forearm, bring your right arm forwards to plant it beside your left, keeping your feet still. Your toes should now be extended.

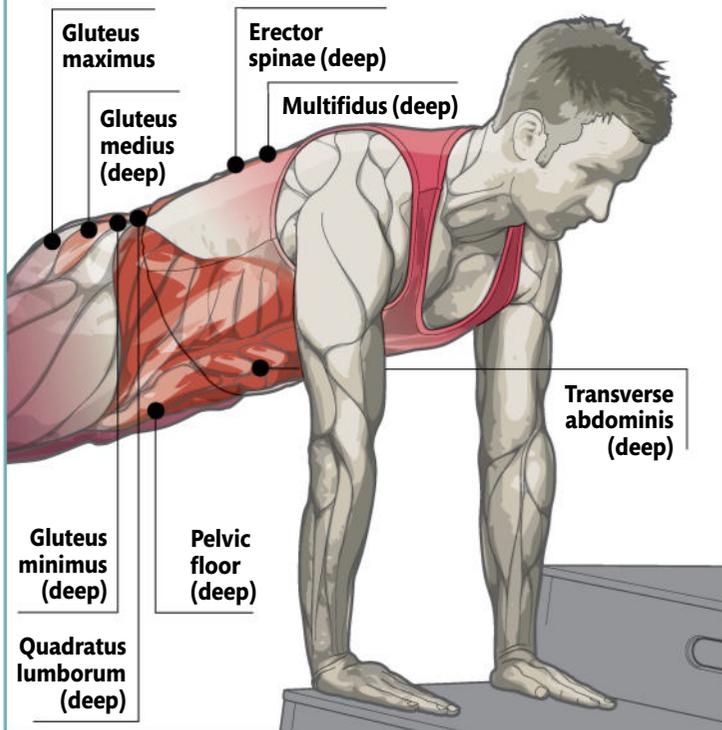


4 Using your core, slide the disc forwards with your toes until you are back in the start position. Repeat the sequence the required number of times.

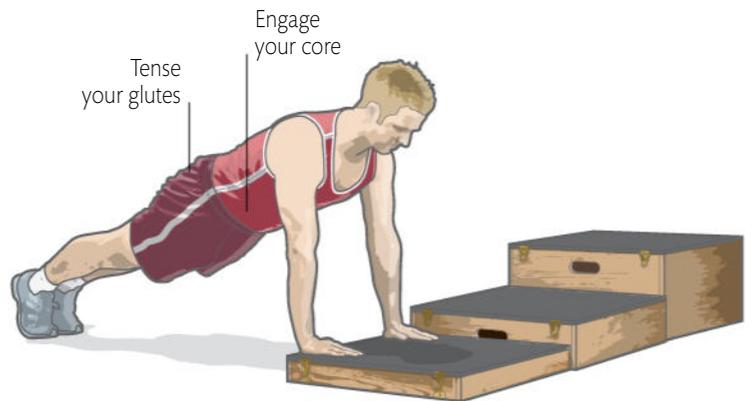
STEPPED PLANK WALK

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Isometric</p>
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
■ Gluteus maximus	
DIFFICULTY LEVEL	
●●●●●●●●●●	

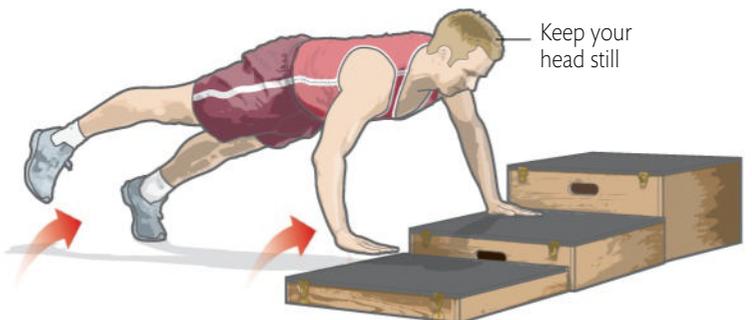
This difficult exercise offers a hard full-body workout that requires a lot of practice to perfect. You will need three blocks arranged in shallow steps. Perform the movement in one controlled, fluid motion, and carry out the same number of repetitions for both sides of your body.



WARNING!
 This exercise requires excellent core stability and is potentially dangerous if performed incorrectly, so only attempt it once you have mastered movements in the earlier sections of the book. Practise without the boxes to begin with, until you are confident in your technique. Always check that the boxes are stable before you begin, and take care when “landing” on the blocks with your hands.



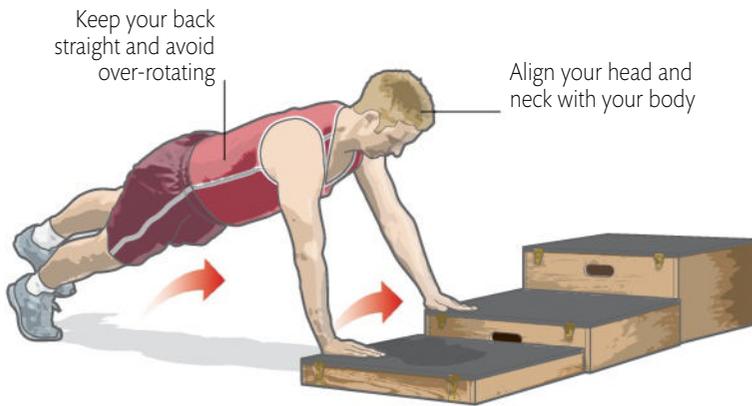
1 Begin in the plank position (»pp.96–97), with your arms below your shoulders, your hands planted palm-down on the lowest step, your feet together, and your body perpendicular to the blocks.



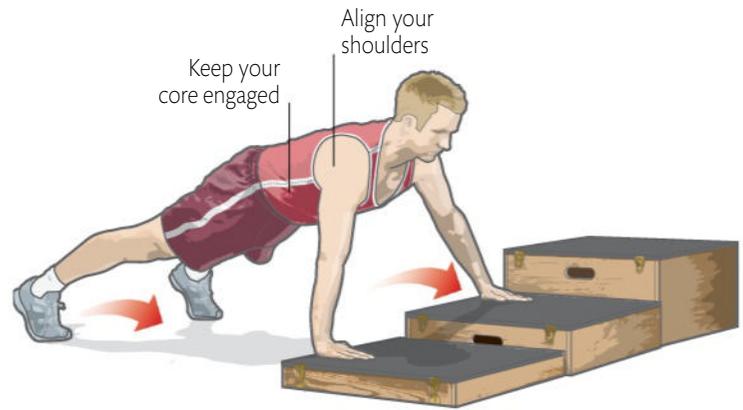
4 Shifting your weight to your left arm and leg, lift your right hand and leg and move them sideways towards the second step.



7 Plant your left hand on the third step, and your left foot on the ground, with your right hand still on the second step, and your right foot stationary. Support your weight evenly on both hands and feet.



2 Transferring your weight to your right arm and leg, simultaneously lift your left hand and leg and move them sideways towards the second step.



3 Plant your left hand on the second step and your left foot on the floor, so that your limbs make a star shape. Support your weight evenly on both sides.



5 Plant your right hand on the second step beside your left, and your right foot beside your left, so that you are in a plank position again.



6 As before, transfer the weight to your right arm and leg, and raise your left hand and leg towards the third step, being careful not to over-rotate your body.



8 Shifting your weight to your left arm and leg, as before, raise your right arm and leg and move sideways towards the third step with a smooth, controlled movement.



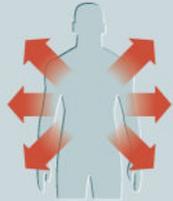
9 Plant your right hand on the third step beside your left, and your feet together, so that you are back in a plank position. Pause, then reverse the sequence to return to the start. Repeat as required, then switch sides.

TURKISH GET-UP WITH KETTLEBELL

TARGET MUSCLES

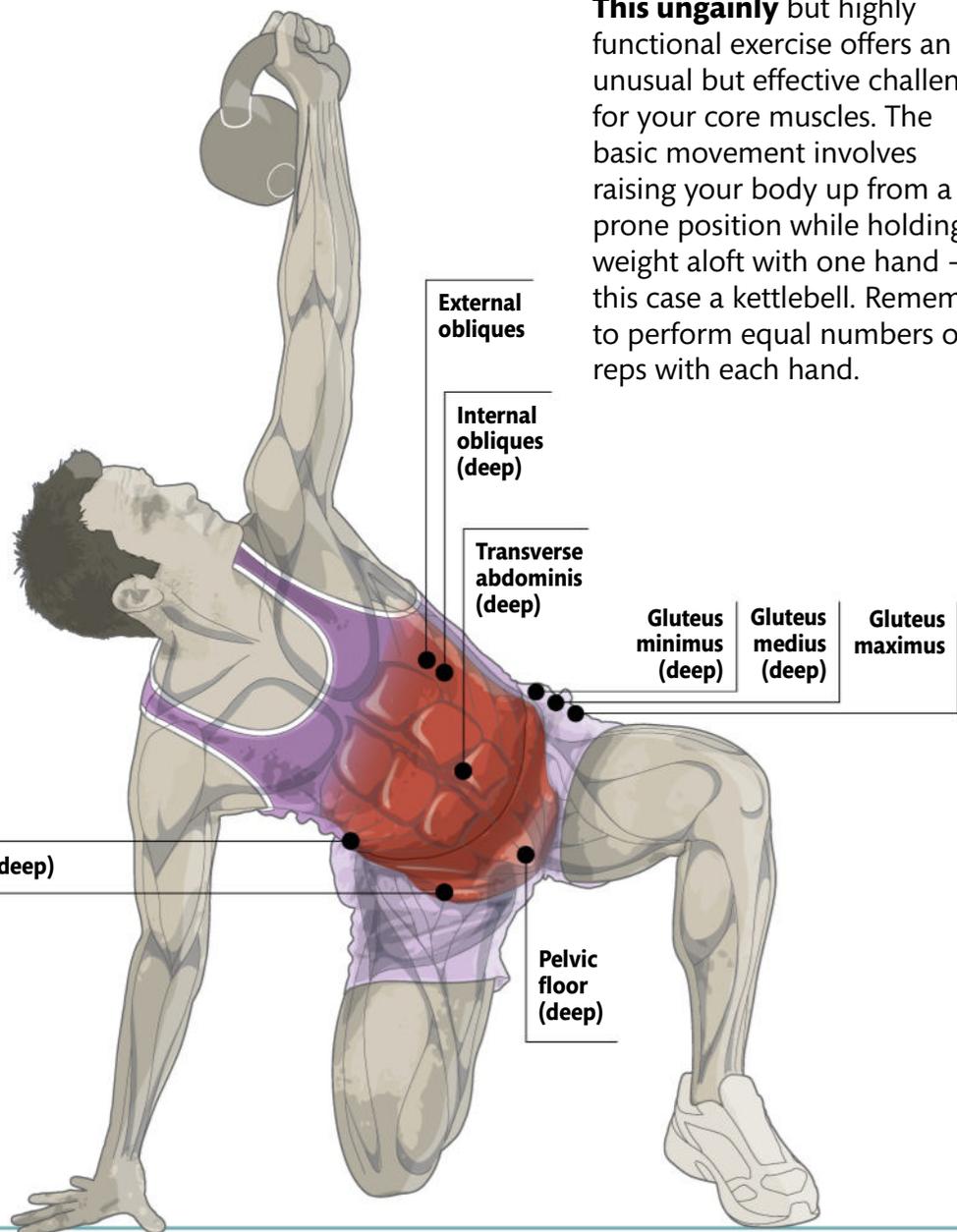
- Transverse abdominis
- External obliques
- Internal obliques
- Pelvic floor
- Hip flexors
- Quadratus lumborum
- Gluteus minimus/medius
- Gluteus maximus

TARGET MOVEMENT



Complex

DIFFICULTY LEVEL

This ungainly but highly functional exercise offers an unusual but effective challenge for your core muscles. The basic movement involves raising your body up from a prone position while holding a weight aloft with one hand – in this case a kettlebell. Remember to perform equal numbers of reps with each hand.

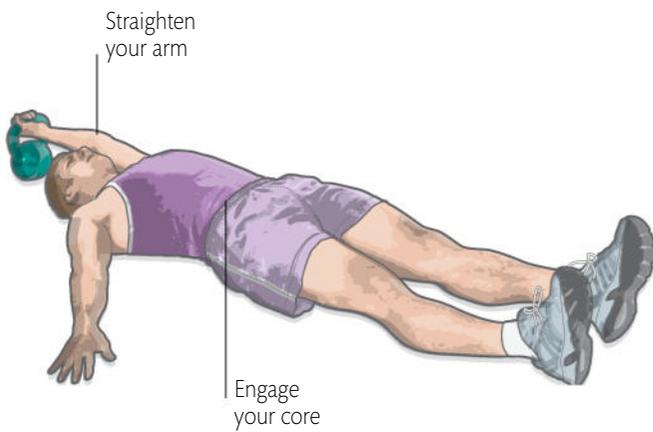
WARNING!

The Turkish get-up can take a little practice to get right and requires a combination of good core strength and mobility, and flexibility in your joints to perform correctly. With this in mind, it is a good idea to practise and perfect the main part of the movement using the variation (right) to begin with, which will help to reduce the chance of muscle strain or injury as a result of poor form. Because you are holding a weight above your head, make sure you use a light kettlebell to begin with, and always keep a firm grip on the handle.

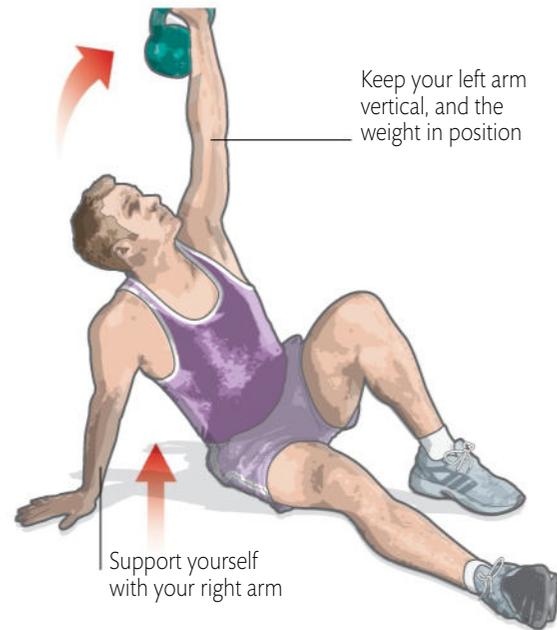
VARIATION

For a less challenging variation of the Turkish get-up, perform the first three steps of the main exercise (rising to one knee) before returning to the start position, ensuring you carry out the same number of repetitions for both sides. It is also useful for perfecting the key part of the movement.

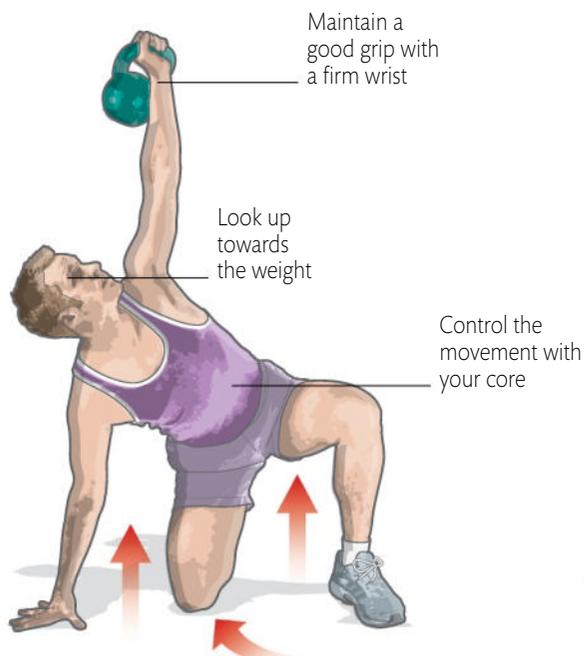




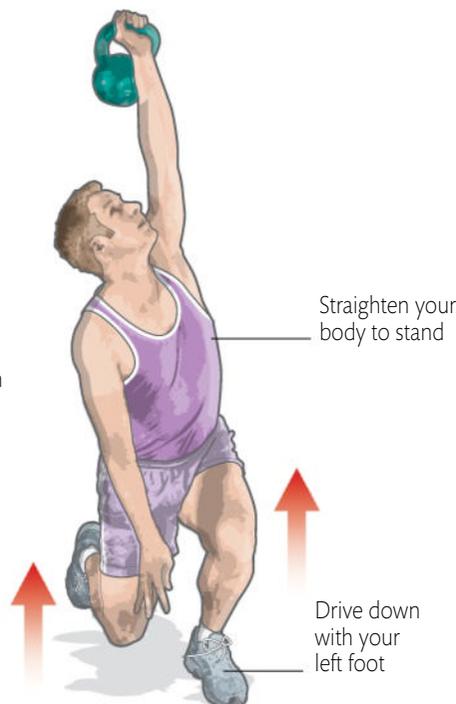
1 Lie on your back and extend your left arm over your head. Grasp a kettlebell with your left hand using an overhand grip and the weight resting against the back of your wrist. Place your right arm at around a 45-degree angle from your body, palm down.



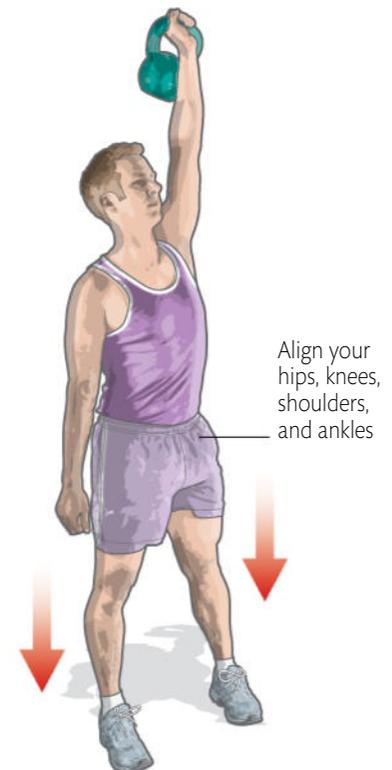
2 Holding your core tight, raise the weight aloft with your left hand and push down with your right hand to lift your upper body off the floor. As you do so, bend your left knee so that you are ready to rise into a kneeling position.



3 Keeping your core engaged, and the weight held high, push down on your right arm and your left foot, then swing the right leg back and underneath your body.



4 Driving down with your left foot, bring your right arm off the ground and come up on to the toes of your right foot, with your right knee still on the floor.



5 Driving down with both feet, raise yourself to stand, the kettlebell still above your head. Pause, then reverse the movement to return to the start. Repeat as required before switching sides.

EXERCISE BALL HIP ROTATION KICK

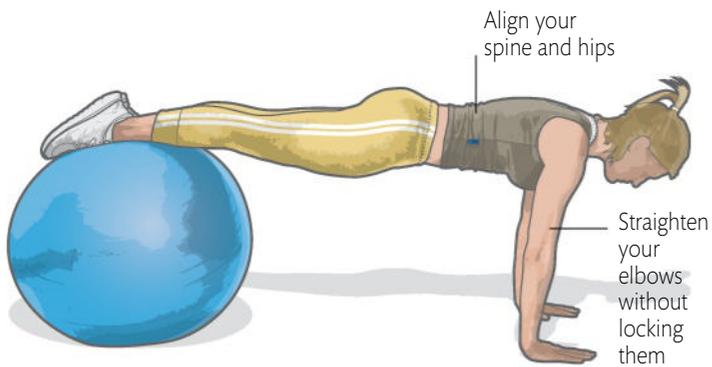
TARGET MUSCLES	<p>This advanced exercise requires great control, stability, and rotational strength, and offers a challenging workout for all of your core muscles. Do not attempt it unless you have excellent core stability.</p>
■ Transverse abdominis	
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus/medius	
■ Gluteus maximus	
TARGET MOVEMENT	
<p>Complex</p>	
DIFFICULTY LEVEL	

PROGRESSION 1

Performing the exercise with your elbows on an exercise ball increases the instability of the exercise, forcing your core and other muscle groups to work harder. Do not attempt this progression until you have mastered the main exercise.

PROGRESSION 2

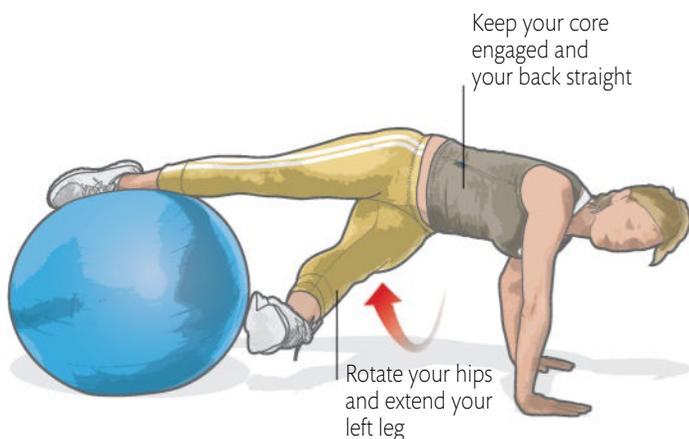
Carrying out this exercise with your feet on an exercise ball and your hands on a half-exercise ball requires an even greater level of core stability, strength, and flexibility. Do not attempt it until you can perform the less advanced versions with good technique.



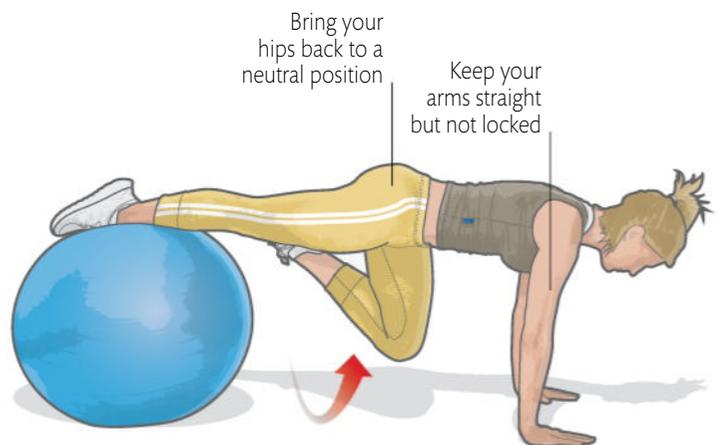
1 Kneel on the floor with an exercise ball behind you. Place the tops of your feet onto it and, using your core, carefully raise yourself into a press-up position, with your palms flat on the floor.



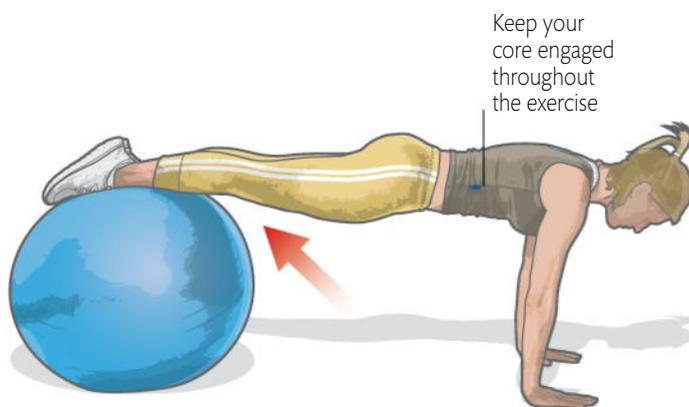
2 Maintaining a good body position, and with your core engaged, slowly draw your left knee towards your chest until your thigh is at a right angle to your hips.



3 Pivot your hips to your left and straighten your right knee as you do so, extending your left leg out to your right, bracing yourself with your core.



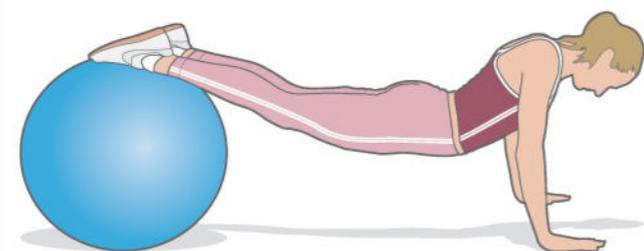
4 Hold briefly, then with control bring your left leg back in and realign your hips, returning to the position shown in Step 2.



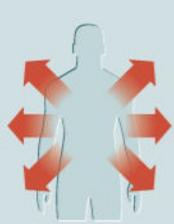
5 Return to the start position, placing your left foot back on the ball with your knees straight. Repeat the exercise as required, then switch sides.

WARNING!

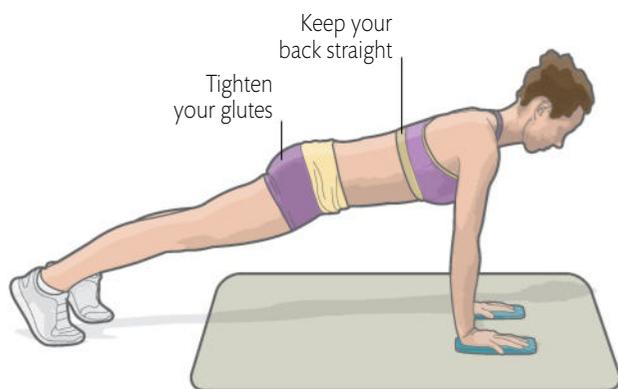
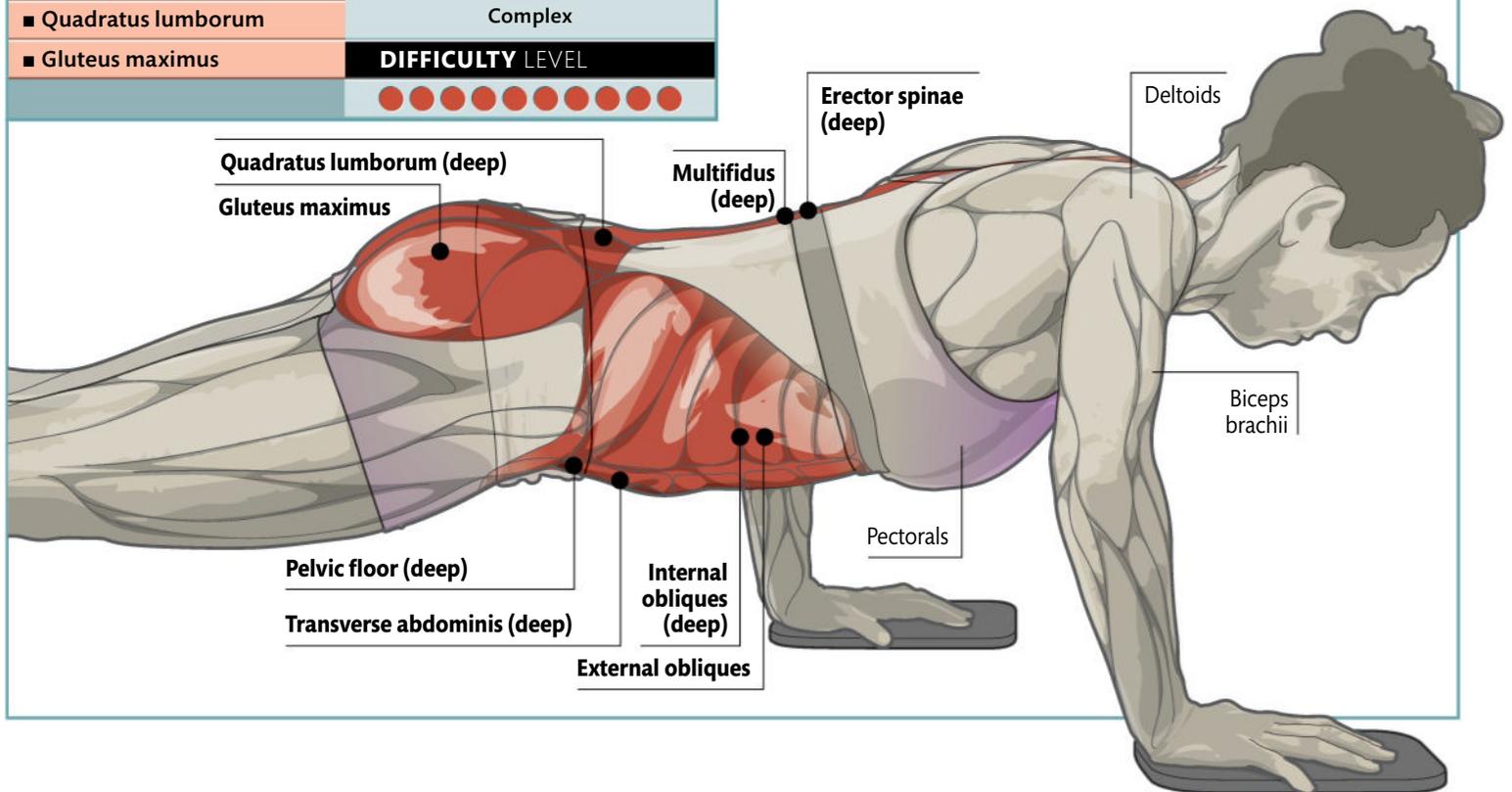
This exercise requires excellent balance, core control, stability, and mobility to perform. It is important for you to maintain good form throughout the movement. Do not allow your hips or lower back to sag, as this can injure your spine. Use a ball with a diameter that is approximately the length of your arm. This will help you to achieve the correct body position.



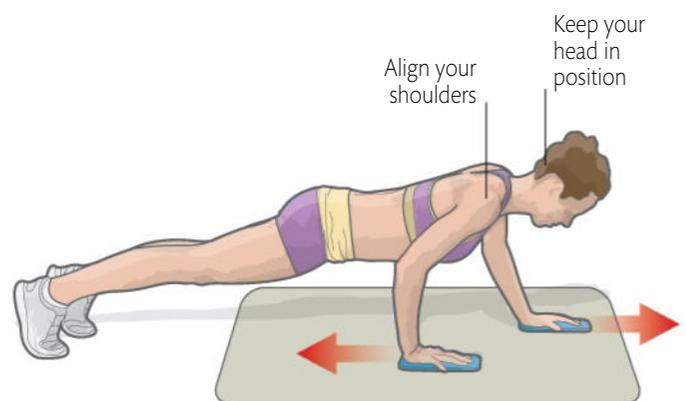
SLIDE BOARD WIPER

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Complex</p>
■ External obliques	
■ Internal obliques	
■ Pelvic floor	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus maximus	
	DIFFICULTY LEVEL
	●●●●●●●●●●

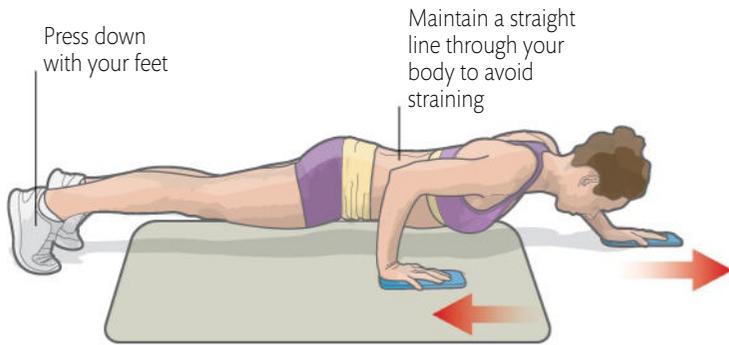
This core exercise works in a similar way to the plank plate push (»pp.146-147) but with a greater level of lateral and rotational instability. It also works your shoulder and chest muscles, so is a superb full-body movement. Excellent core strength and control are vital.



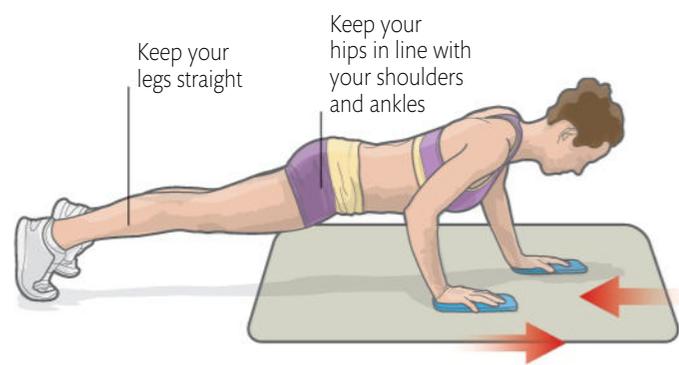
1 Position a slide board under each of your hands and begin in the basic plank position. Ensure that you engage your core and hold your glutes tight.



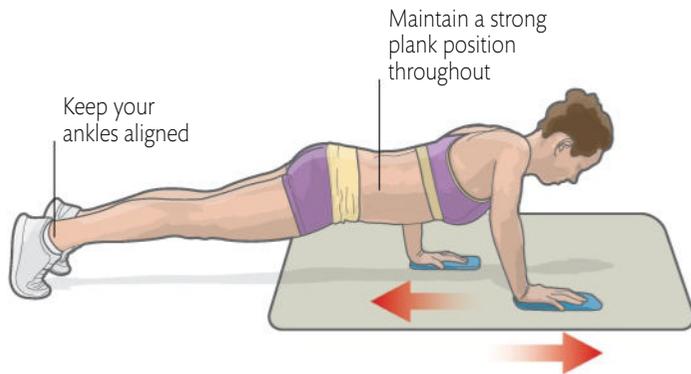
2 Holding your body in position, simultaneously slide your left hand forwards and your right hand backwards along the floor, bending your elbows slightly as you do so, using your core to balance your weight evenly.



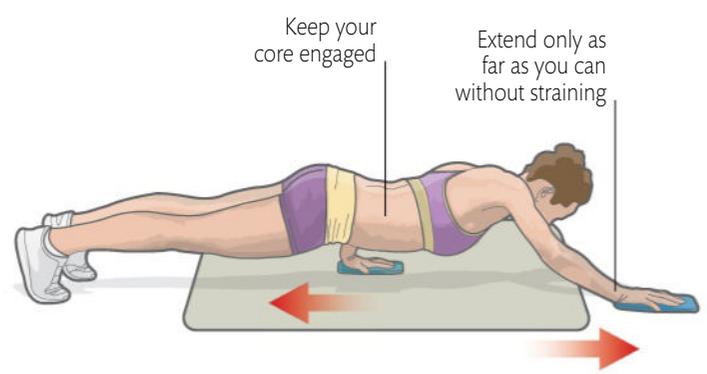
3 Continue sliding both hands along the floor, bending your elbows with the movement, until your body is roughly parallel with the floor. Hold briefly at the edge of the movement.



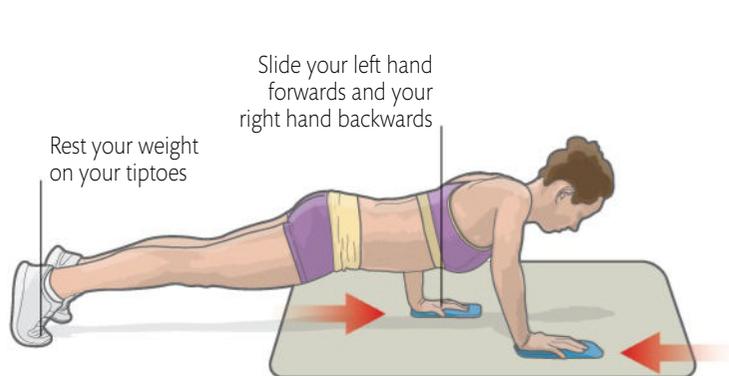
4 Reverse the movement towards the start position, controlling the movement with your core, and allowing your body to rise.



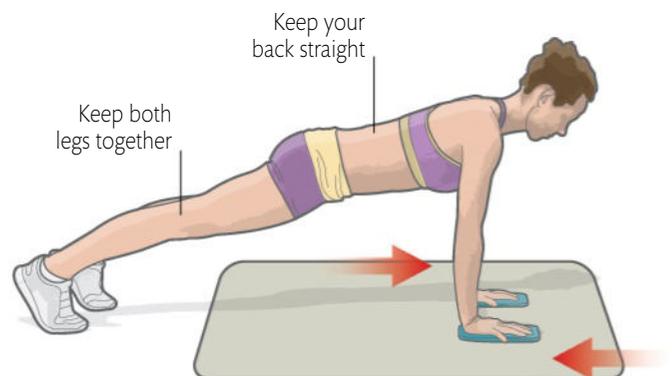
5 Continue the movement through the start position, sliding forwards with your right hand and backwards with your left hand, controlling the movement with your core and keeping your glutes tight to hold yourself in the plank position.



6 Extend the movement as before, until your body is roughly parallel with the floor, then reverse to begin a return back to the start position, slowly and with good control.



7 Continue the reverse movement, sliding backwards on the slide boards with your right hand and forwards with your left hand. Begin to raise your body up as you bring your hands closer together.



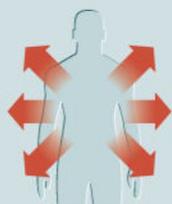
8 Bring both hands level with your shoulders and return to the start position, raising your body to the press-up position with your core still engaged and your glutes held tight.

RAISED PIKE DUMBBELL HAND-WALK

TARGET MUSCLES

- Transverse abdominis
- Rectus abdominis
- Internal obliques
- Pelvic floor
- Hip flexors
- Erector spinae
- Multifidus
- Gluteals

TARGET MOVEMENT



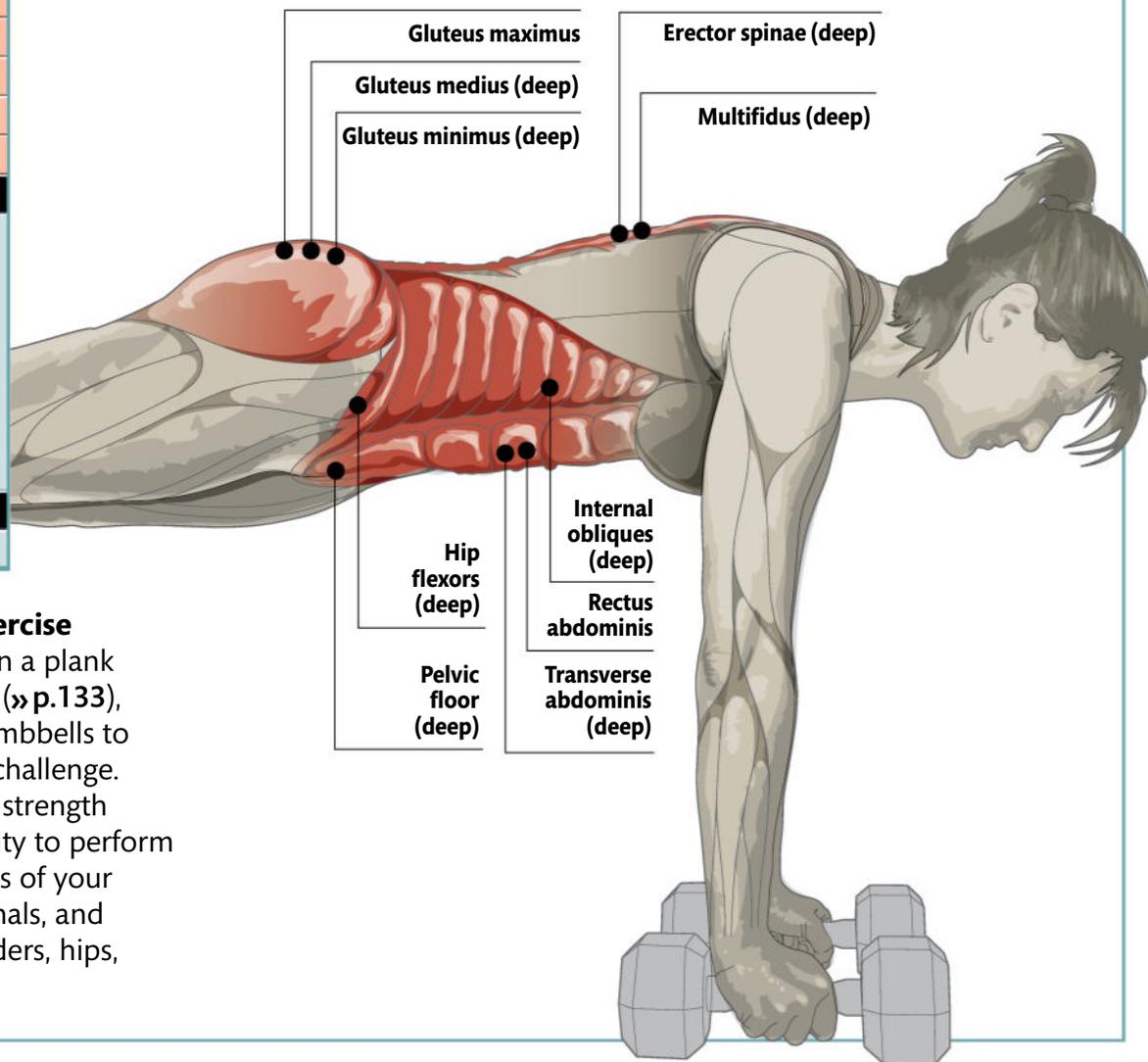
Complex

DIFFICULTY LEVEL



This advanced core exercise

involves moving between a plank (»pp.96–97) and a pike (»p.133), adding the weight of dumbbells to make it even more of a challenge. Requiring excellent core strength, hip mobility, and flexibility to perform well, it works the muscles of your lower back and abdominals, and also benefits your shoulders, hips, and hamstrings.

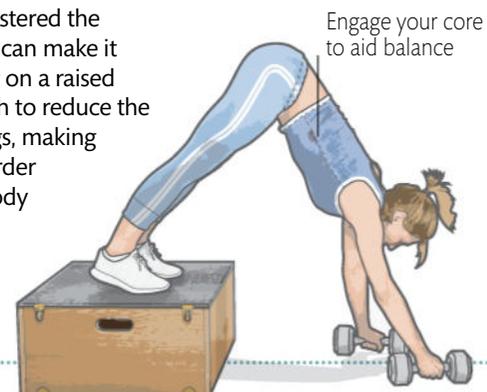


WARNING!

You will need a combination of superb flexibility, core strength, and hip mobility to perform this exercise properly. Good technique is crucial because sagging or rounding your back can lead to muscle strain or a more serious back injury, so you should practise and perfect the two basic movements first (»pp.96–97; 133). When assuming the plank position at the start, use your glutes and your core to keep your back straight and avoid your hips or lower back dropping. When moving into the pike position, go only as far as you are able to maintain good form, to avoid the possibility of bending in your lower or mid-back.

PROGRESSION 1

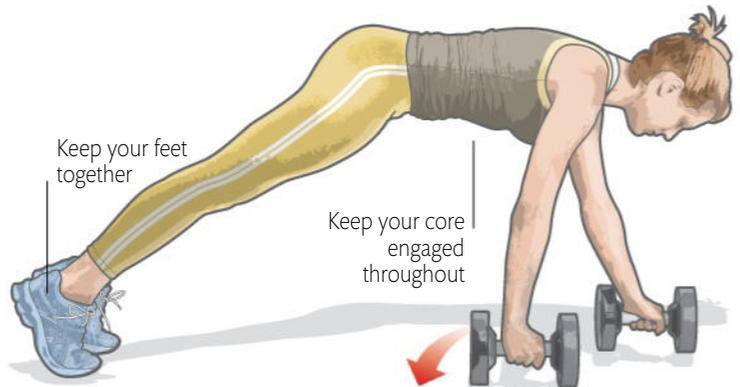
Once you have mastered the basic exercise, you can make it harder by standing on a raised box or stable bench to reduce the support of your legs, making your core work harder to stabilize your body and achieve the pike position.



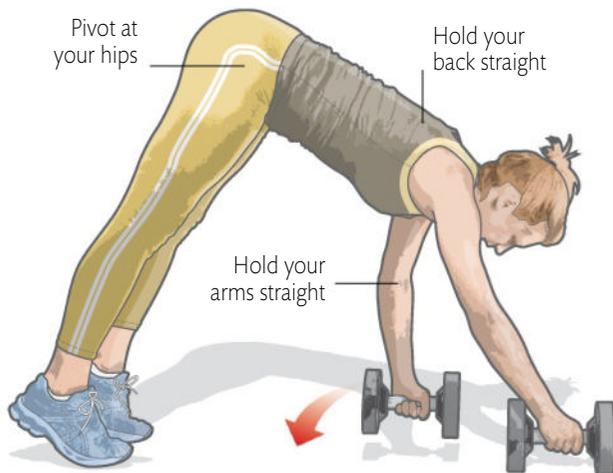
1 Place two dumbbells on the floor in front of you. Grasping a dumbbell in each hand, raise yourself up into a plank position (»pp.96-97), holding your core muscles tight and engaging your glutes.



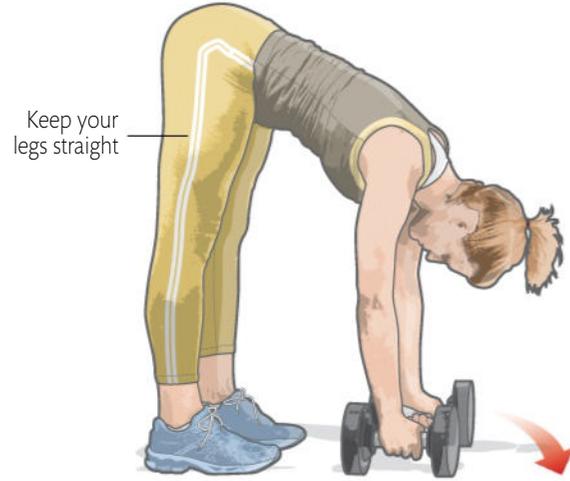
2 With a small, smooth movement, “walk” your right hand back towards your feet, shifting the bodyweight on to your left hand as you do so. Keep your legs and back straight, and pivot at your hips.



3 Plant the dumbbell in your right hand on the floor, then walk your left hand back towards your feet, shifting your bodyweight on to your right hand as you do so, and keeping your legs and back straight. Maintain good form throughout, bending at your hip.

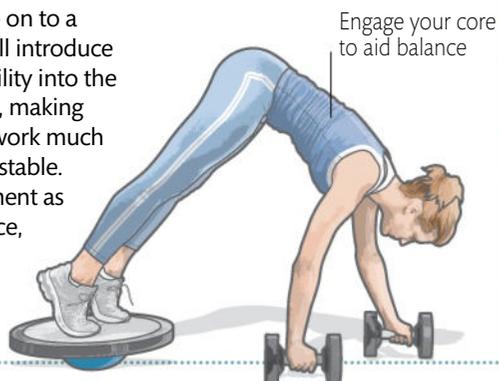


4 Plant the dumbbell in your left hand then walk back with your right. Repeat the movement until your back is as close to vertical as you can manage without straining. Hold briefly, then reverse to the start position, slowly and with good form.



PROGRESSION 2

Raising your feet up on to a half-exercise ball will introduce considerable instability into the basic body position, making your core muscles work much harder to keep you stable. Perform the movement as in the main sequence, focusing on good, controlled form and movement.

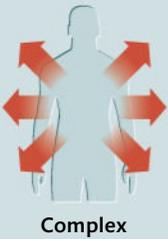


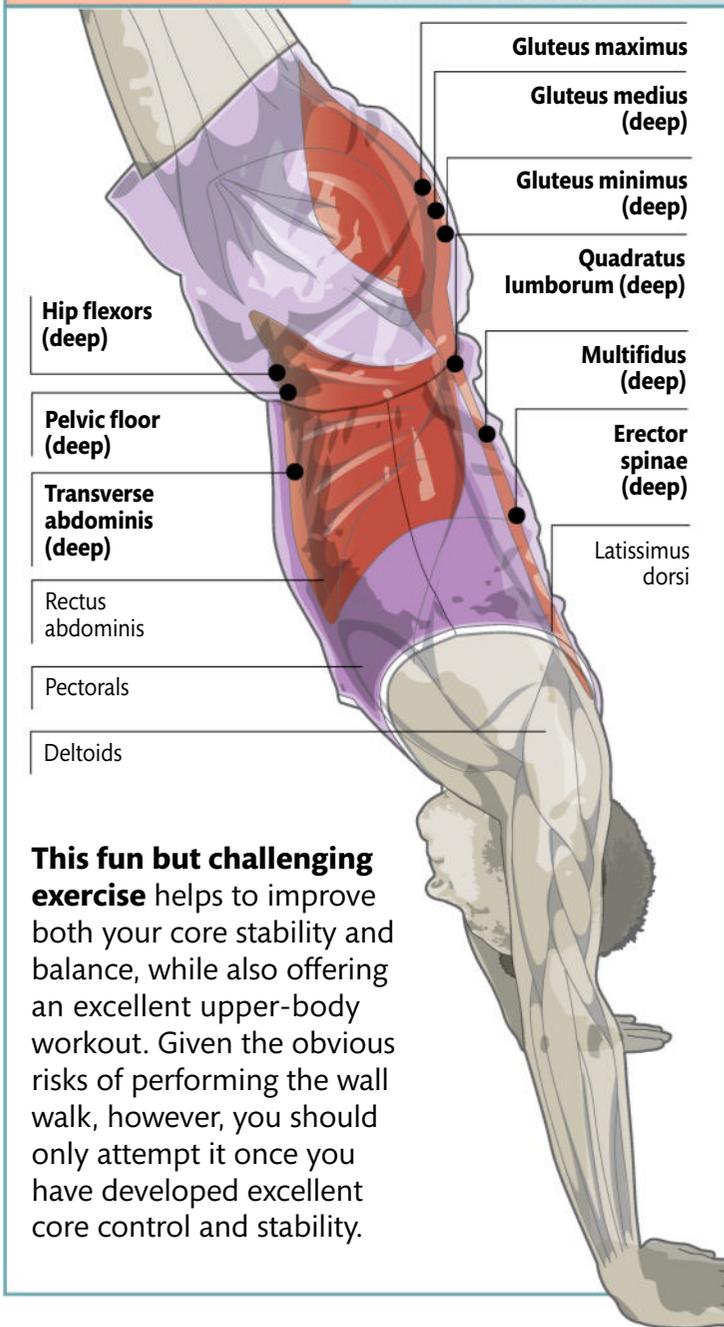
PROGRESSION 3

Performing the movement while extending one leg behind you, requires even greater core stability and hip mobility, as it places additional rotational stress on the muscles of your core. You must have excellent strength and flexibility, so do not attempt it unless you have first mastered the main sequence and the other progressions.



WALL WALK

TARGET MUSCLES	TARGET MOVEMENT
■ Transverse abdominis	 <p>Complex</p>
■ Pelvic floor	
■ Hip flexors	
■ Erector spinae	
■ Multifidus	
■ Quadratus lumborum	
■ Gluteus minimus	
■ Gluteus medius	
■ Gluteus maximus	



This fun but challenging exercise helps to improve both your core stability and balance, while also offering an excellent upper-body workout. Given the obvious risks of performing the wall walk, however, you should only attempt it once you have developed excellent core control and stability.

1 Press your feet against the base of a wall, and raise yourself up into a plank position (»pp.96–97), engaging your core as you do so.



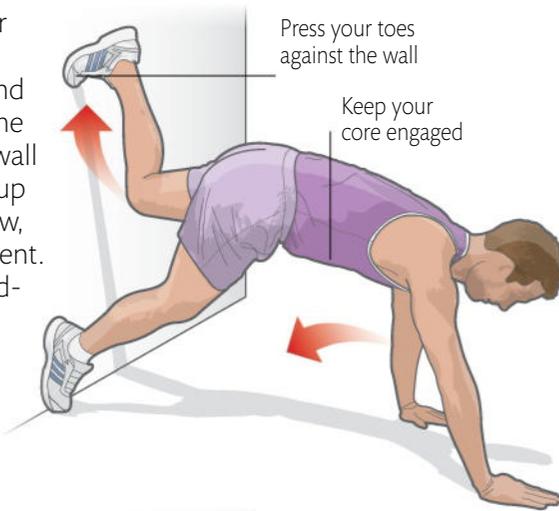
4 Planting the toes of your right foot against the wall, and supporting your weight evenly on both hands, walk your left foot up the wall, controlling the movement with your glutes and your core.



7 Press back against the wall with the toes of your left foot and press downwards with both hands. Keeping your core engaged, slowly walk down the wall with your right foot in a smooth, controlled movement.



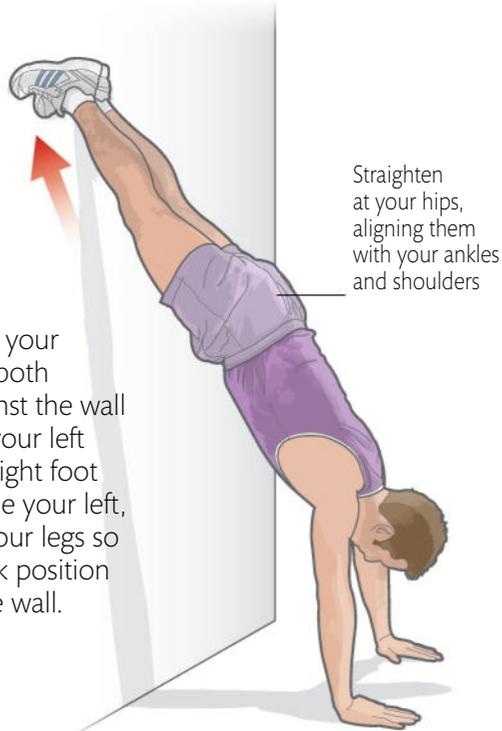
2 Keeping your core tight, “walk” your left hand backwards along the floor towards the wall and your left foot up the wall, with a slow, controlled movement. Plant your foot mid-way up the wall.



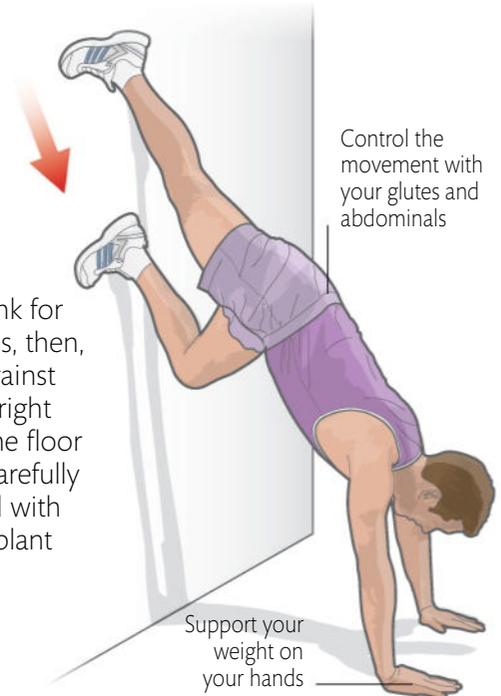
3 Bracing yourself against the wall with your left foot, and against the floor with your left hand, carefully walk your right foot up the wall, moving your right hand back along the floor at the same time.



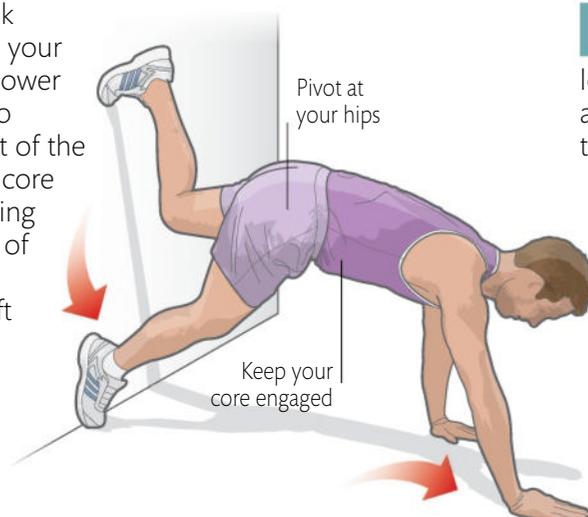
5 Supporting your weight on both hands, push against the wall with the toes of your left foot. Raise your right foot and plant it beside your left, then straighten your legs so you are in a plank position at an angle to the wall.



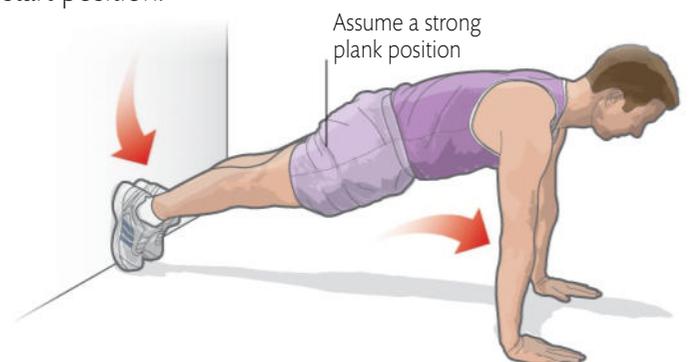
6 Hold the plank for a few seconds, then, bracing yourself against the wall with your right foot, and against the floor with both hands, carefully walk down the wall with your left foot, and plant it against the wall.



8 Carefully walk forward with your right hand as you lower your right foot into position at the foot of the wall, keeping your core engaged and pushing back with the toes of your left foot and down with your left arm for support.



9 Bracing yourself with your right foot against the wall and your right hand on the floor, lower your left foot into position beside your right and walk forwards with your left hand to return to the start position.



ACKNOWLEDGMENTS

About the authors

Glen Thurgood MSc is Head of Athletic Performance at The Rugby Football Club and the owner of GTSportsPerformance (www.gtsportsperformance.com). With over 12 years' combined experience as an elite athlete and coach, he has worked with rugby union, football, and baseball teams at university, professional, and national levels.

Mary Paternoster is an established Pilates teacher and has trained with some of the world's leading professionals. She is the owner of Infinite Conditioning (www.infiniteconditioning.com) a Pilates personal training company based in London. With over 12 years' professional dance, personal training and Pilates coaching experience, she also runs educational workshops for independent wellness companies and advises corporate coaching companies in the UK and Europe.

Author and publisher acknowledgments

The authors and publishers would like to thank the following people and organizations for their generous help in producing this book.

For modelling:

Mary Paternoster; Glen Thurgood; Ben Gollings; Lauren Gollings; Gareth Saptead; Gareth Jones; Scott Tindall; Chris Chea; Michelle Grey; Anouska Hipperson; Megan Lols; Juan King; Albert Raper; Rufus Shosman.

For use of facilities:

Tom Haynes, Becky Littlewood and Sian Bates at The Training Shed (www.trainingshed.com), Daventry for use of their fantastic facilities and patience during the photoshoot; Phil Littlewood at indigo23 (www.indigo23.co.uk) for use of their superb training equipment.

For reference photography:

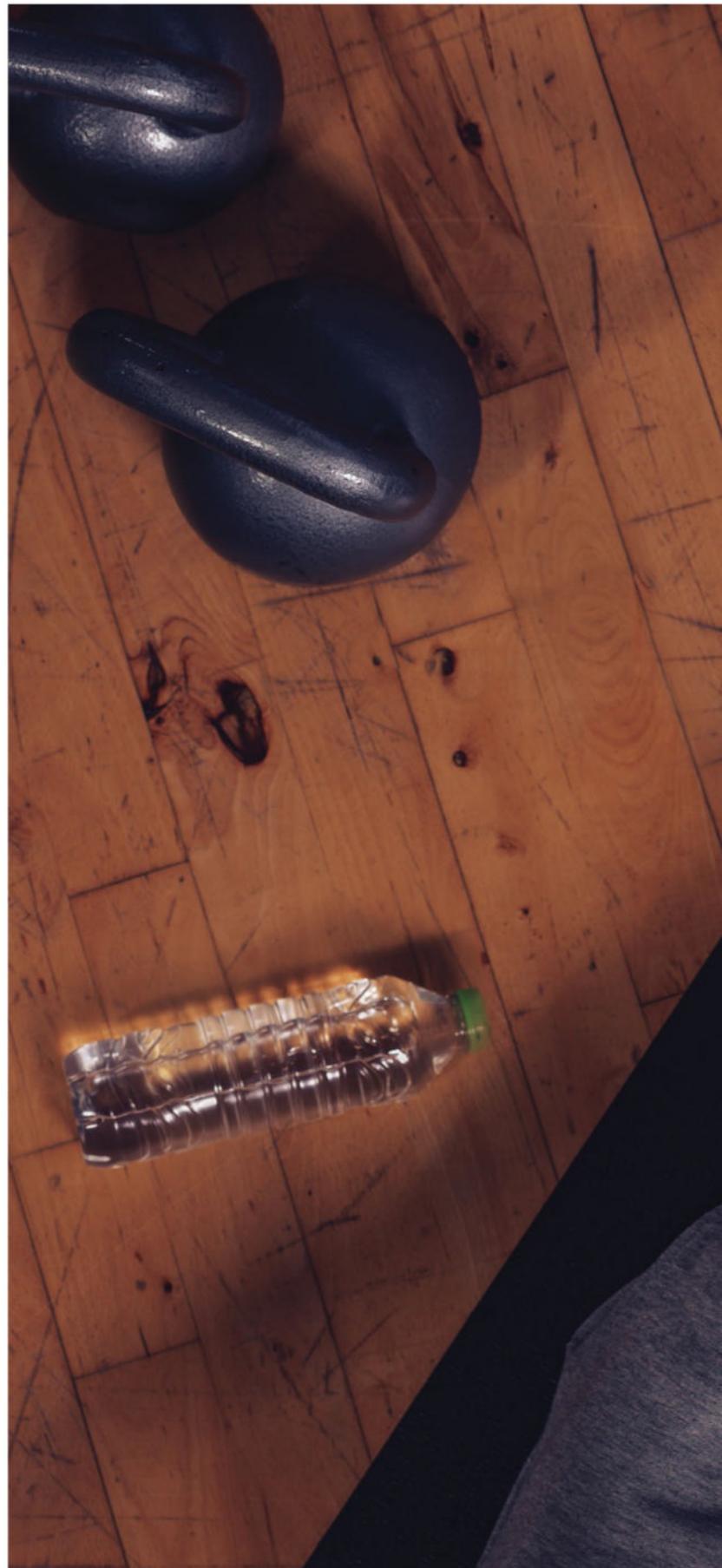
Cobalt ID; Phil Gamble.

For illustrations:

Philip Wilson; Debbie Maizels; Phil Gamble; Mark Walker; Debajyoti Dutta; Mike Garland; Darren R. Awuah; Jon Rogers.

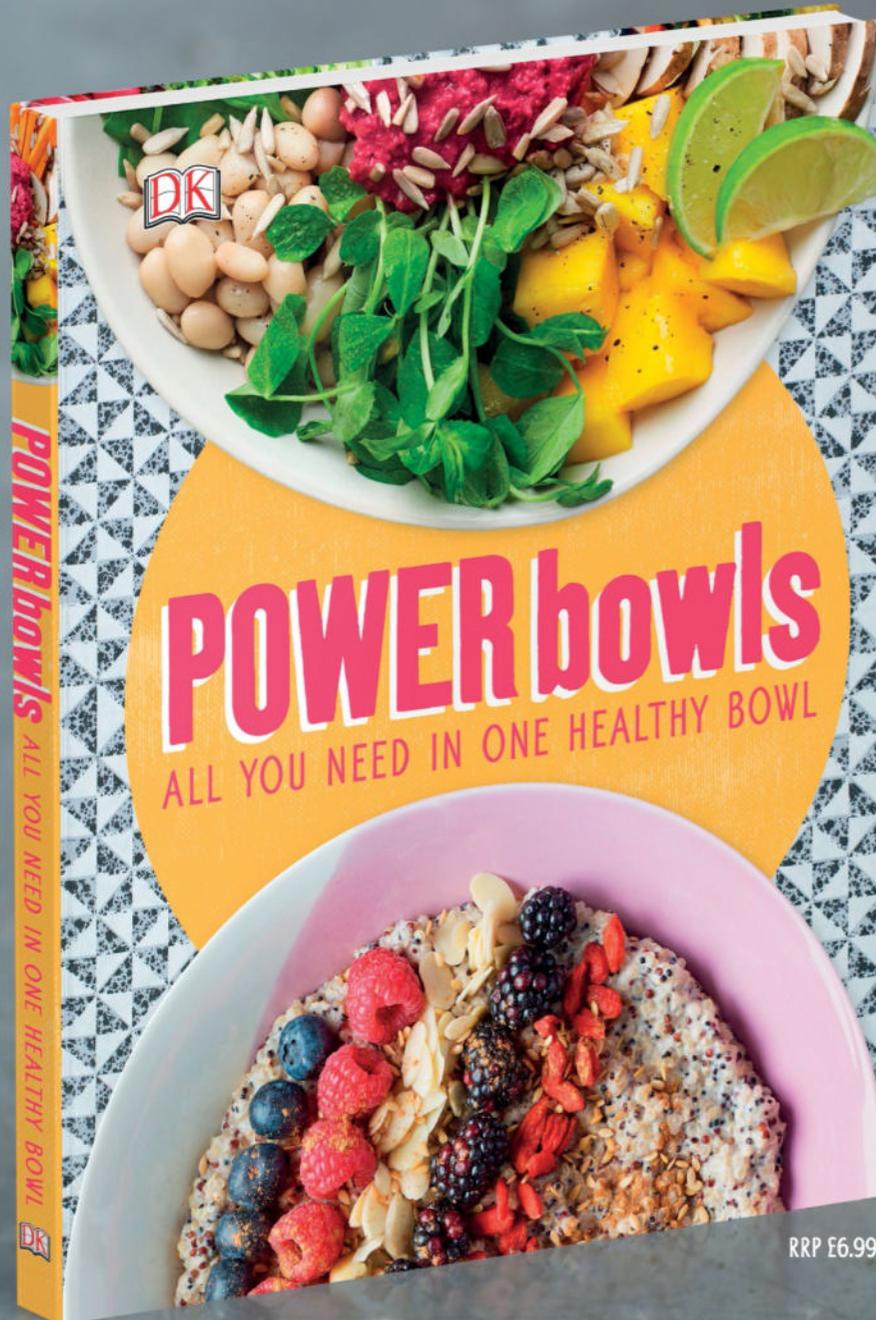
For additional material and assistance:

Phil Gamble (additional work on illustrations); Margaret McCormack (Indexing); Priyanka Singh, Vidit Vashisht (Design); Suparna Sengupta, Pallavi Singh (Editorial).





Your bite-sized guide to **superfood bowls**



25 HEALTHY RECIPES • MEAL PREP IDEAS



A WORLD OF IDEAS:
SEE ALL THERE IS TO KNOW

www.dk.com



MORE THAN
150
BODY-SCULPTING
EXERCISES

CORE STRENGTH TRAINING BOOK

Learn the key muscles involved in core training ✓

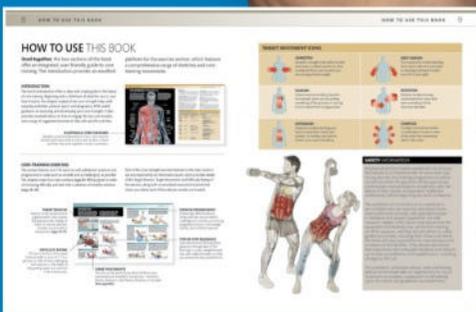
Explore a comprehensive range of stretches ✓

Train your core with everyday activities ✓

Progress to the most advanced exercises ✓



Improve your overall strength, posture and fitness with this essential core training handbook



UNDERSTANDING YOUR CORE

Discover the benefits of core training and learn why it's so important



MOBILITY STRETCHES

Get the best results and reduce the risk of injury by engaging in mobilization



CORE-TRAINING EXERCISES

Follow the detailed step-by-step instructions and master the exercises