

The muscle groups of the lower body are among the largest of all. They are the foundation for most physical activities, from running and marching to jumping, pivoting and kicking. This booklet shows you how to make these muscles stronger, fitter and more fatigue-resistant.

While some strength training exercises home in on just one or two muscles (“isolation” exercises), others challenge multiple muscle groups at once. The squats and lunges in the 16-week basic fitness programme are good examples of these “compound” exercises. You’ll find both compound and isolation moves explained in this booklet.

MAIN LOWER BODY MUSCLES

- Gluteals (“glutes”): the muscles of the bottom and hips work to extend, rotate or “abduct” the hips
- Hip flexors: bend the hip
- Quadriceps (“quads”): covering the front of the thigh, they extend the knee joint
- Hamstrings: work to bend the knees and help extend the hips
- Calf muscles: work to raise the body on to its toes (plantar flexion)

How to lift a heavy weight safely

Some of the exercises in this booklet use dumbbells or Powerbags as resistance, so it’s important that you know how to lift weights safely off the floor (if you don’t have weights, you can improvise with household items).

Whether lifting a heavy box, a dumbbell or even your child, you should always use good form (technique) when you pick up a weight from the floor. Stand close to the object you are about to lift, with your feet hip-distance apart and your knees bent. Take hold of the item and bring it close to your body before pushing up through the feet to standing. *Never* bend forward from the waist to pick up a heavy object from the floor – this can potentially damage your back.

DID YOU KNOW?

Improving your leg strength reduces the time each foot spends on the ground by 0.02 seconds during running, which could take a full minute off your 1.5-mile time.



HOW MANY REPS AND SETS?

As with the upper body routines (see Booklet 3), when you are putting together your lower body workout, aim for 10 repetitions per set of each exercise, using a resistance level that makes the last couple of repetitions difficult to do.

- To focus more on muscular endurance rather than strength, increase your repetitions but use less weight.
- To focus more on strength and size, use fewer reps but an increased weight or challenge.
- To focus on power (a product of strength and speed), perform the exercises at a faster pace.

Rest for between 60 and 120 seconds between each set of reps to allow the muscles to recover.

If strength is your focus rather than endurance, make the rest period between each set longer. As a guide, the Army tends to recommend 3 sets of 10 reps per exercise. Remember to work both right and left legs on single-leg exercises! To get the best results, 2 or 3 lower body training sessions per week is ideal.



Specific warm-ups for the lower body

Follow stages 1 and 2 of the general warm-up outlined in Booklet 1, then use the dynamic exercises shown here to fully prepare your joints and muscles for a lower body workout. Do each move 8 times per leg

CONTROLLED LEG SWINGS ▶

Swing your leg in a controlled manner from the front to the back. Allow your knee to bend a little as the leg comes back through to the front. Next, take your leg out to the side, then back across your body (not shown). Then swap legs and repeat.



HEELS TO BUM ▼

Bring alternate heels up to your bottom, as in the first part of the warm-up, but add a jog between each one so that you are bouncing from foot to foot.



HIP ROTATIONS ▶

Bring your knee up and in to your chest, then rotate your leg out to the side before placing your foot back on the floor. Repeat 8 times before swapping legs.

KNEES TO FRONT ▼

Bring alternate knees up to the front, springing from foot to foot and keeping your torso upright.



WALK ON TOES ▲

Walk forwards, rising up on to your toes from foot to foot as you go, to warm up your calf muscles.

PTI TIP

If you're planning to use weights for some of the upcoming lower body exercises, it's a good idea to perform a few "warm-up" reps without the weights first, to prepare yourself.



Squat variations

STANDARD SQUAT ▶

This compound exercise works your quads, glutes, hamstrings and calves.

Start with your feet hip-distance apart and hands crossed over your chest. Keeping your torso as upright as possible bend your knees, leading with the bottom to lower yourself towards the floor. Do not bend further than a 90-degree angle at the knees. Pause in the lowered position, then raise and repeat.



SQUAT WITH POWERBAG ◀

Start in the same stance as above but, this time, instead of having your arms crossed over your chest, cradle a Powerbag, medicine ball or weight in front of you – close to your torso to avoid putting excessive strain on your back. Now perform the squat as above.

PTI TIP

Squats are a stock Army exercise for building leg strength – essential for marching and crossing obstacles, such as jumping to clear a ditch.



ONE-LEGGED SQUAT ▼

This exercise works the quads, glutes and hamstrings as well as challenging the stabilisers in the lower leg.

Stand side-on to a support that you can hold on to for balance. Take the foot furthest from the support off the floor and slightly bend the knee. Now bend your supporting leg, allowing your torso to tip forward as you sink down, while ensuring that the knee stays in line with your foot rather than rolling in or out. Lower yourself as far as you can comfortably, then straighten and repeat. Swap sides between sets.



SQUAT JUMP ▶

This advanced version of the squat adds speed and explosiveness, building power in the quads, glutes and hamstrings.

Stand with feet hip-distance apart and bend your knees until your hands touch the back of your calves. From this position, leap up into the air, landing back down into the squat position and then touching your calves between each rep.



Learning to lunge

STATIONARY LUNGE ▶

This exercise works the quads, glutes and hamstrings.

Take a large step forward, allowing your back heel to come off the floor. Keep the torso upright and don't arch your back. From here, bend both knees so that your back knee travels towards the floor and your front thigh lowers until it is parallel to the floor. Do not extend the front knee further forward than your ankle. Pause, then straighten back up and repeat. Swap sides between sets.



FORWARD LUNGE ◀

As with the stationary lunge, this works the quads, glutes and hamstrings – while the inner thighs and hips (adductors and abductors) also work to balance and stabilise you.

Start with your feet together and lunge forward, allowing the back knee to travel towards the floor and the front knee to bend, so that this knee is aligned above your ankle. Push back up through the front heel to the start position and repeat with the opposite leg. Holding dumbbells (pictured) makes the exercise harder.

LUNGE JUMP ◀

This challenging exercise brings in speed, coordination and explosiveness. Start in a lunge position as in the stationary lunge, far left. From here, leap up into the air, swapping feet midway, so that you land back in a lunge position on the other leg. Alternate from leg to leg to complete the set.

BACKWARD LUNGE ▼

This version of the lunge puts less stress on your knees. From a feet-together position, lunge backwards with the right leg, allowing your right knee to travel towards the floor and your left knee to bend, so it is above the left ankle. Push back up through the front heel to return to standing, then lunge back with your opposite leg.



PTI TIP

When you are performing lunges, visualise “pushing up” through the heel of your front foot as you return to the start position from the lunge.



Squat thrusts and burpees

These exercises are the ultimate in compound training, using a range of muscles not just in the legs but in your trunk and upper body, too

SQUAT THRUST ►

Begin with your body in a press-up position (for a detailed explanation, see Booklet 3) with arms straight and under your shoulders, and legs extended, the weight on your toes. Now jump to bring your feet in towards your chest, then extend them out straight again. Keep your back straight and abs contracted throughout these reps.



SQUAT THRUST WITH SINGLE LEGS ►

If you find the “pure” squat thrust too difficult, this single-leg version is an easier alternative. Start in the same position as above, but this time bring only one leg into your chest at a time – so that while you are springing forward on one leg, you are extending the other one out to the back, and vice versa.



PTI TIP

To make squat thrusts a little easier, you could try doing them with your hands on a raised surface rather than on the floor.



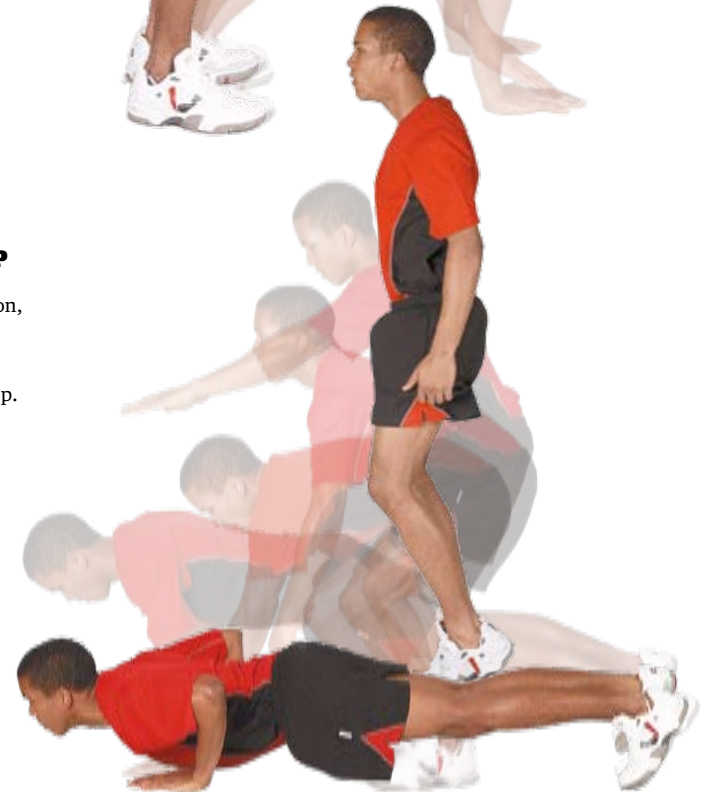
BASIC BURPEE ►

Stand with your feet shoulder-width apart. Now bend your knees and your lower body towards the floor. Once your hands touch the floor, thrust your legs to the rear into a press-up position, keeping the back straight and tummy pulled in. Then bring your knees back in, take the weight off your hands and stand up. Repeat.



BURPEE WITH PRESS-UP AND JUMP ►

In this more challenging version, perform the burpee as above, but when you are in the press-up position, bend your elbows and actually perform a press-up. Then bring your knees back in and from this squat position, explode upwards into a jump to standing.



Step up to the mark

Step-ups are another Army staple, using the quads, glutes, hip flexors, hamstrings and calves – a true compound exercise. In training, these might be performed quickly with no weight to improve speed, or in a more controlled manner with heavy weights to build pure strength



STEP-UP WITH WEIGHTS

Stand in front of a step with a dumbbell (or jerrycan) in each hand – or a Powerbag cradled close to your body in an underarm grasp. Step up with your right leg, bring your left foot up, then step down with your right leg, following with the left. Continue for the set, then swap sides. Keep your body upright – don't tilt from the waist.

STEP-UP WITH KNEE RAISE

Stand in front of a step with your feet together. Step up with your right foot and drive through with your left leg, bringing this left knee up to your chest before placing first the left and then the right foot back down on to the floor. Complete a set leading with your right foot before swapping to lead with the left.

PTI TIP

Ensure that the step is not so high that your knee joint goes beyond 90 degrees when you step up. And remember: the lower the step, the easier the exercise.



Calf and hamstring exercises

The isolation exercises that follow on the next three pages are good options to combine with your basic 16-week fitness programme, or with the compound moves outlined over previous pages

CALF RAISE FROM FLOOR ▼

This exercise hones in on the calf muscles on the back of your lower legs.

Holding a weight either on your back, such as a rucksack, or in your hands (dumbbells), rise up as far as you can on to your toes, pause, then lower and repeat.



CALF RAISE FROM STEP ◀

In this version of the calf raise, your foot actually goes below the horizontal (off the back of the step), thus working your muscles through a greater range of motion. This is a great exercise for people who have suffered from Achilles tendon problems – focus on the lowering phase rather than the rising phase.

Stand on the edge of a step or stair, with your heels off the end (you may need to hold on to a support). Raise up on to your toes, as high as you can, then lower your heels down below the level of the step. Raise up from here and repeat.

SUPINE HAMSTRING CURL ON SWISS BALL

This exercise strengthens your hamstrings, as well as improving muscular endurance in the lower back. Lie face up with your feet on a Swiss ball and your arms beside you on the floor. Lift your hips up so that your body forms a straight line from feet to head. Now, bending your knees, draw the ball in towards your bottom using your feet. Keep your hips raised, and then extend your legs out again.



PRONE HAMSTRING CURL WITH MEDICINE BALL

Another great exercise for honing in on the hamstrings. Place a medicine ball or substitute between your feet and lie prone on the floor. Pick the ball up between your feet and bend your knees, drawing it in to your bottom. Pause, then straighten your legs to lower the ball, and repeat.

Note You can also do this exercise with a resistance band – tie both ends of the band securely to a stable surface a metre or so away from your feet, then loop it around your ankles so that, when you bend your legs, you are working against the elastic resistance.



LOWER BODY SPORTS

In the Army, a wide range of lower-limb exercises are used within training to help increase the distance and speed that soldiers can march carrying their equipment. But everyone benefits from increased leg strength, whether it's to make your daily walk to work easier,

or to enhance your sporting performance.

Most sports – from tennis to football, kickboxing to basketball, jumping and running – call upon the lower body muscles. Training these muscles outside of sport, using the exercises outlined in this booklet, can help boost performance and reduce the risk of injuries.

LOWER BODY TRAINING WITH RESISTANCE BANDS

Elasticated resistance bands, introduced in Booklet 3, can also be a handy tool for lower body training – particularly if you don't possess any weights. For example, stand on the band, taking an end in each hand and placing these on your shoulders, then perform squats – working against the resistance of the band as you straighten your legs (not shown). You can do the same with stationary lunges, securing the

band underneath your front foot.

You can also use resistance bands to target the muscles of the inner thighs and hips, by tying one end to a secure item (eg. a table leg or radiator pipe) and the other end around the ankle furthest from it. Raise this leg out to the side, working against the resistance to do so, and you'll strengthen your hip. Then turn around and bring this leg in front of your supporting leg, to work the inner thigh.

Tie the band around the other leg and repeat.

Cool-down stretches

When you've finished training, remember to stretch out the muscles you've worked. Perform the following lower body stretches from Booklet 1 – remembering to work both left and right sides. Hold each stretch for 10-15 seconds.

CALF STRETCHES

Take a big step (about 1m) forward with your left leg while keeping the right leg straight. Bend your left knee and press your hips forward, keeping the right heel pressed into the floor. Ensure your right toes are pointing directly forwards. Now bring your back leg closer to the front and bend both knees to stretch the lower part of your back calf.

QUADRICEPS STRETCH

Standing tall, grab your right foot with your right hand, bending the leg and taking the foot behind you to your bottom. Keep your legs aligned and don't arch the back or tip the pelvis forward as you press the foot to your bottom.

HAMSTRINGS

Stand tall and extend one leg out in front of you, its foot on the floor, keeping the other knee bent and resting your hands on the bent leg's thigh. Keep your back straight and abdominals gently contracted.

HIP FLEXORS

From a lunge position take your back knee to the floor, laces facing down. Keep your torso upright and lean into the front leg until you feel a stretch along the front of your hip. Make sure the front knee does not extend beyond the ankle, as this puts excessive stress on the joint.

GROIN STRETCHES

Sit on the floor and bring the soles of your feet together. Gently press down on the inner thighs with your elbows. Then extend your legs out to the sides as far as is comfortable while keeping your back straight.

GLUTEAL/HIP STRETCH

Lie on your back with your knees bent and feet raised. Put your right foot over your left thigh, then link your hands behind the left thigh to gently pull the legs towards your torso and stretch out the right hip.