

Diabetes & Endocrine
Specialists

Exercises for bone and muscle strength

Exercises to promote bone health

The diagnosis of "osteoporosis" may come as disruptive, and you may feel helpless at first. This is understandable! We hope that this brochure may offer ways to enable you to tackle osteoporosis, and to gain skills that may help improve your bone health and minimize the impact of osteoporosis onto your daily life.

Osteoporosis / Osteopenia: *Osteoporosis (porous bone) and Osteopenia (lack of bone) both describe a loss of structural strength of the bone. This makes the bone weaker and more likely to fracture. In 1994, the World Health Organization defined osteoporosis based on bone density and its relationship to peak bone mass (T-Score).*

Many factors lead to fractures, not just bone density. Age, heredity, body weight, diseases, lifestyle, frailty, and amount of trauma all play important roles. The risk of a fracture due to osteoporosis can be estimated using these factors in addition to bone density.

Exercises and Bone:

Both shape and structure of our bones are determined by forces and "stress" that act upon them. Recently, we finally began to understand, why and, more importantly, how bones can be reshaped and strengthened.

We now know, that the number of bone fractures can be reduced substantially with the use of exercises targeting strength, mobility and dexterity.

The exercises described herein, if done correctly and consistently, may:

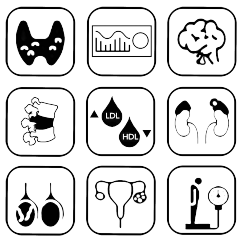
- *increase your muscle strength*
- *improve your balance*
- *improve your bone density and decrease your risk of bone fracture*
- *maintain or improve your posture*
- *relieve or decrease pain*

Osteoporosis is both preventable and reversible!

Osteoporosis is more common than it should be. Although we don't know how to completely stop bone loss, we can take steps to prevent fractures. Shown here are the basic building blocks for stronger bones. Preventive measures should always come first, because we are always trying to prevent a future fracture. Medical treatments are added when appropriate, depending on the fracture risks and the clinical situation. Sometimes doctors and their patients just want to take a medication for osteoporosis, without paying attention to these basic building blocks. The medications will not be as effective if there is inadequate calcium, exercise, or nutrition.



For further reading, please consult our website: www.sdendocrine.com/bone where we have prepared a vast fund of useful informations.



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Exercises to promote bone and muscle strength

Welcome to our exercise section! I hope you find these exercises useful. Please do not hesitate to contact us with any questions or concerns you may have.

These exercises focus on bone and muscle strength in the spine, wrists and hips and are safe to do with osteoporosis.

Why: Bones stay strong if you give them work to do. Keeping physically active and doing exercise will help you maintain bone density and strength as you age. If you are able to do more intense impact and muscle strengthening exercise based on the ones in this routine, research studies show you may improve bone density and this could potentially reduce your risk of broken bones.

What you need: Some hand weights or resistance bands, a chair and an exercise mat if you can get down to the floor to carry out the exercises.

When and how: Do these exercises on two or three days a week (non-consecutive) and workup to carrying out three sets of the routine.

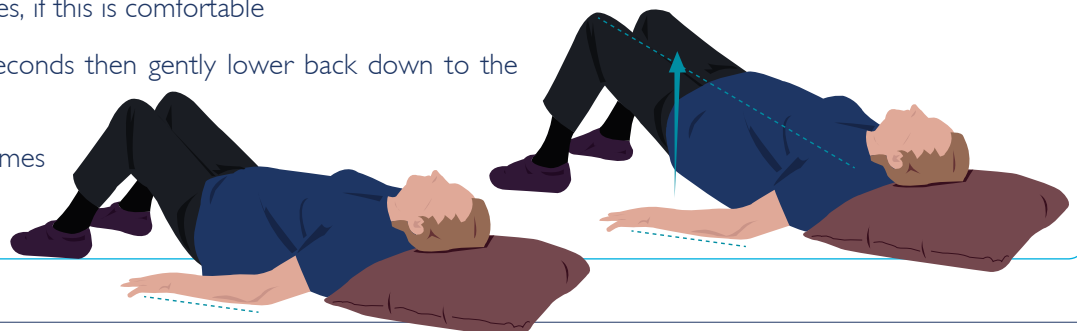
Slowly move into the desired positions, as far as possible without pain. Carry out each exercise for the recommended number of times, using the correct technique. You can adapt these exercises based on your level of wellness and fitness - and choose the modifications if they are better for you. Relax between each move and take your time. Don't forget to breathe!

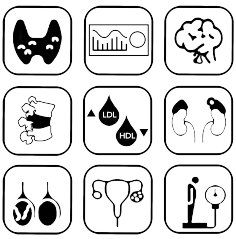
Remember to warm up properly before exercising to get your joints and muscles ready and to prevent injury.

1

Bridge

- Lie down on your back, knees bent, hip distance apart and feet flat on the floor - use a pillow under your head for comfort if needed
- Keep arms relaxed by your side with your palms down and tighten your tummy muscles
- Lift your bottom up from the floor, towards the ceiling, pushing through your feet and squeeze your bottom
- Keep your shoulders on the floor and your knees close together, and aim for a straight line between your shoulders and knees, if this is comfortable
- Hold for 3 – 5 seconds then gently lower back down to the floor
- Repeat up to 10 times





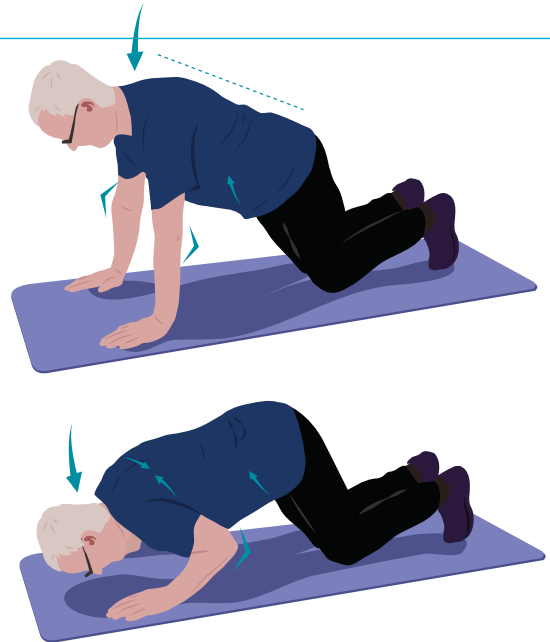
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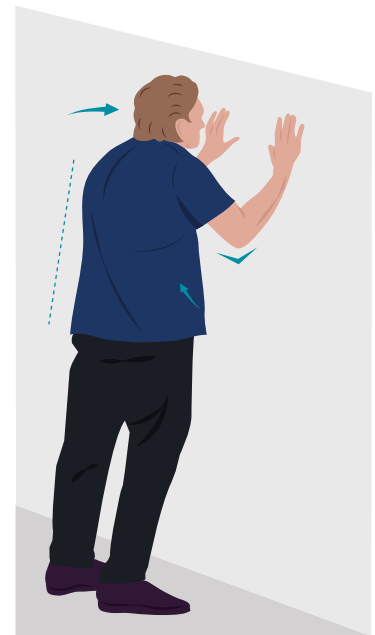
Press up

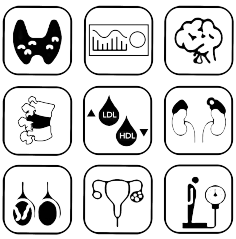
- Position yourself on all fours with your knees comfortably apart under your hips. Place your palms flat on the floor under your shoulders, pointing your fingers forwards, and look at the floor. Keep your tummy muscles tight and your back straight
- Slowly bend your elbows and lower your chest until your chin reaches, or is close to the floor, squeezing your shoulder blades back and down
- Slowly return to starting position, keeping your movements slow and controlled
- Repeat 8 – 12 times and up to three sets



Modify the exercise

- Face a wall and place your hands on the wall at the level of your shoulders, slightly greater than shoulder width apart, keep your tummy muscles tight and back straight
- Slowly bend your elbows and move your chest towards the wall until your chin reaches the wall, or you are as close as comfortable
- Slowly return to starting position, keeping your movements slow and controlled
- Repeat 8 – 12 times and up to three sets





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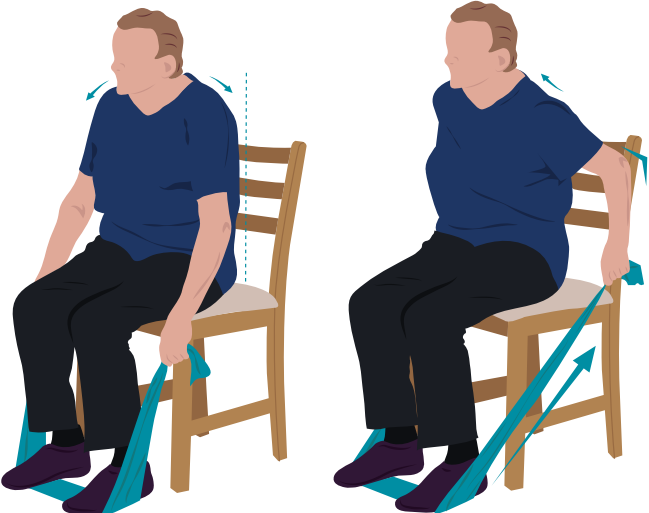
Upper back row

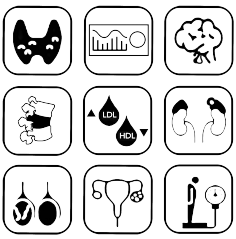
- Stand in a lunge position, with your foot forward, and use your left arm to hold a support if needed
- Hold a weight in your right arm with your palm facing in, your arm extended down by your side and keep your back straight and your neck in line with the rest of your spine
- Pull your shoulder blades together then pull the weight up to chest height, concentrating on lifting it with your back and shoulder muscles rather than your arms, and keep your elbow close to the side of your body
- Keep your chest still as you lift the weight parallel to the ceiling and keep looking forward
- Lower the weight slowly back down again
- Repeat 8 – 12 times then swap arms and legs and repeat
- Do up to three sets



Modify the exercise

- Sit on an armless chair with your feet flat on the floor and place the centre of a resistance band under both feet, putting your weight through your feet to secure the band
- Hold each end of the band with your hands, palms facing inwards
- Relax your shoulders and extend your arms beside your legs
- Sitting in a tall position, pulling your shoulder blades together, pull both elbows back until your hands are at your hips. Hold for one second
- Slowly return your hands to the starting position
- Repeat 8 – 12 times and up to three sets





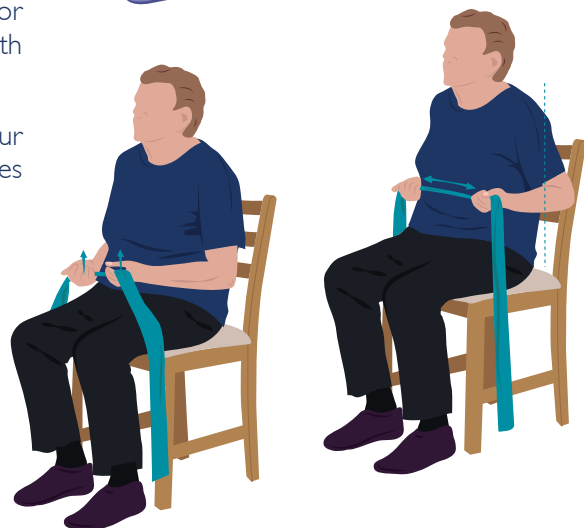
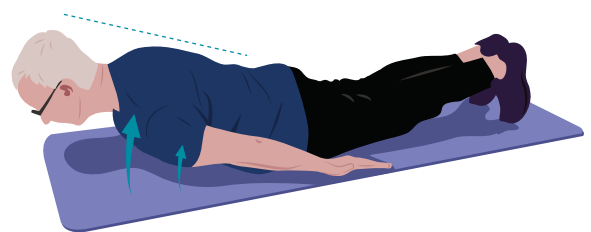
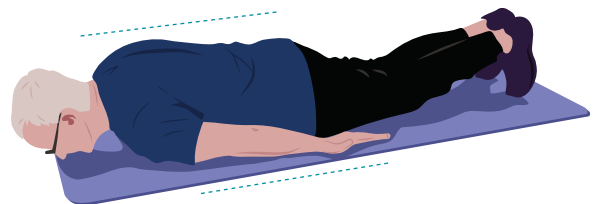
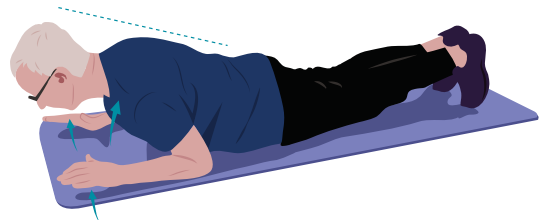
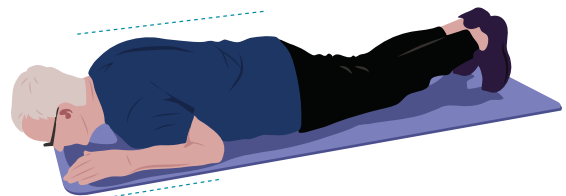
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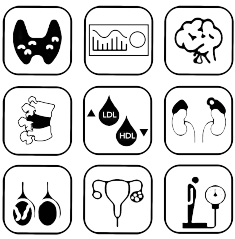
Trunk extension (Back lift)

- Lie down on your front, legs together, with your hands the same level as your head, keeping your pelvic bones, knees and feet in contact with the floor
- Use your hands and arms to push gently into the floor, raising your head and neck slightly to get the feel of the movement
- Keep your head in line with your body taking care not to pull your neck back and slowly lift your shoulders, back, head and hands off the floor keeping eyes down to the floor
- If you can't manage to lift your hands up, keep your forearms on the floor as you lift your head and shoulders. If you find the move easy, you can progress it by placing your arms at your side with your palms down.
- Hold for one to three seconds then gently lower back down
- Repeat 8 – 12 times and up to three sets

Modify the exercise

- Sit on an armless chair with your feet flat on the floor and hold a resistance band in the middle with both hands, little fingers touching, palms facing up
- Sitting tall, pull the band out to the sides and taking your elbows back behind you, squeeze your shoulder blades together at the back
- Hold for one second then gently return to starting position
- Repeat 8 – 12 times and up to three sets





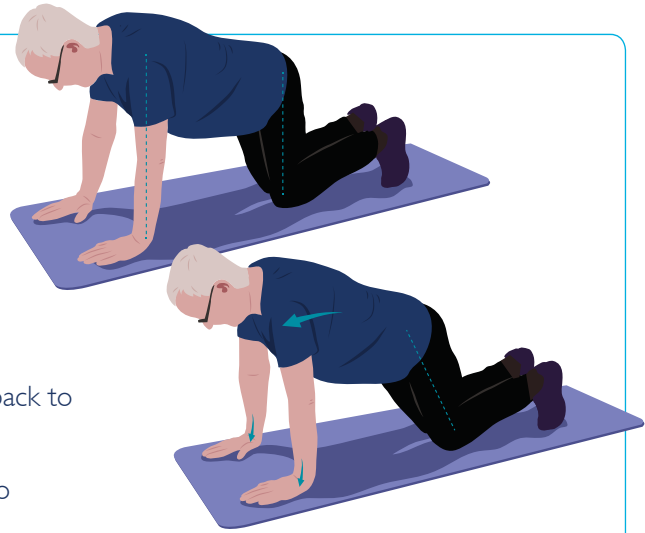
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5

All fours

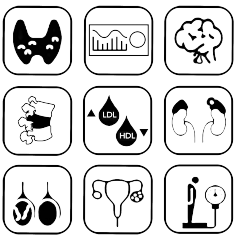
- Position yourself on all fours with your knees comfortably apart under your hips, and your palms flat on the floor under your shoulders, with your fingers pointed forwards
- Take your weight forward over your hands then bring back to starting position
- Take your weight over to one side then bring your body back to starting position
- Take your weight over to the other side then bring back to starting position
- Repeat 8 – 12 times and up to three sets



Modify the exercise

- Fold a resistance band into a thick tube and hold between your hands, with one hand above the other
- Twist band by twisting your wrists in towards each other. Hold the position and then pull your hands apart to stretch the band by pulling your top hand towards the ceiling and your bottom hand towards the floor
- Hold for one second and return to starting position
- Repeat 8 – 12 times and up to three sets

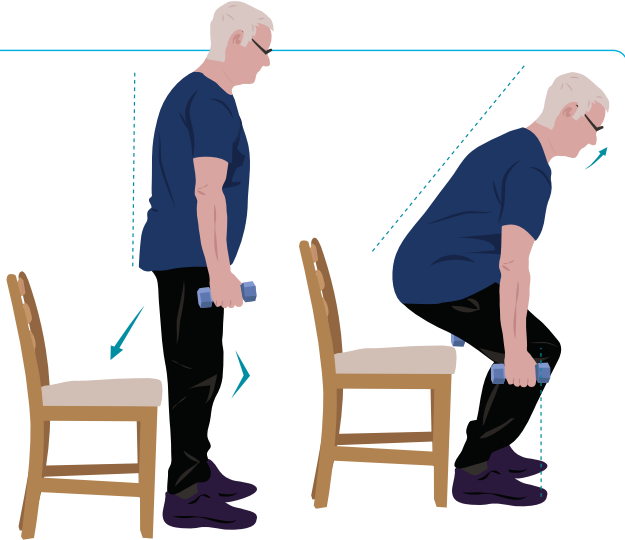




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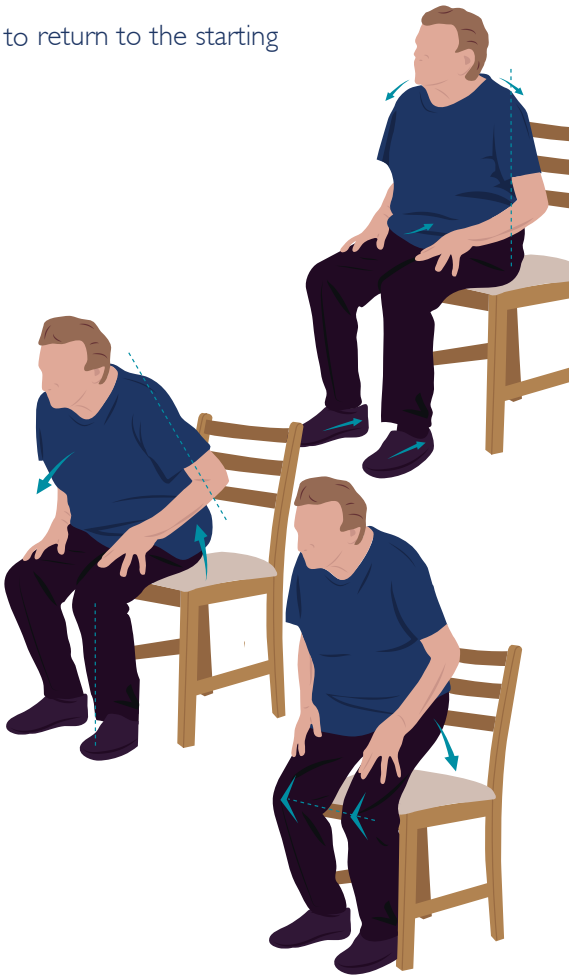
Squat

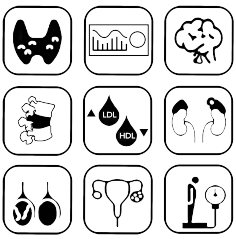
- Stand in front of a chair with your feet slightly wider than hip width apart, toes pointing forward
- Keep your back in a neutral position, keep your knees centred over your feet and look straight ahead
- Keeping your weight on your heels and balls of your feet (not your toes), slowly push your hips and bottom back as though you are preparing to sit on the chair
- Lower gently, bending your knees, but not actually completing the sit down – just hover above the chair
- Keep looking forward, not down, and drive through your heels to return to the starting position
- Repeat 8 – 12 times and up to three sets
- Hold weights in both arms, by your sides, for more of a challenge



Modify the exercise

- Sit on the front of an armless chair with your spine tall, your lower tummy muscles pulled in and your shoulders and down relaxed
- Keep your heels on the floor and slide your feet back, knees width apart so your toes are underneath your knees
- Lean forward a little from your hips, keep your spine long and push up in to standing, trying not to use your hands (use your hands for support if needed)
- To sit down, feel the chair against the back of your legs, bend at the knees and lower slowly down with control, taking care not to bump down
- Repeat 8 – 12 times and up to three sets





7

Lunge

- Stand with feet hip-width apart, knees soft
- Keep your upper body straight, your shoulders back and relaxed and look directly ahead
- Step forward with one leg, placing your leading foot flat on the floor. Lower your hips until both knees are bent towards a 90-degree angle – your back heel will come off the floor
- Make sure your front knee is directly above your ankle, not pushed out too far and make sure the other knee doesn't touch the floor
- Keep the weight in your front heel as you push back up to the starting position
- Repeat 8 – 12 times on each leg and complete up to three sets



Modify the exercise

- Stand near to a stable surface with one hand on the support if required and take smaller steps or lunges

8

March

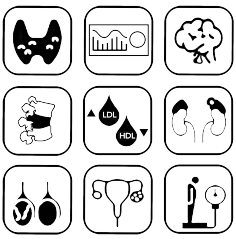
- Stand on the spot, feet hip width apart
- Standing tall, raise one knee as high as comfortable, but no higher than hip level, and swing your opposite arm toward the ceiling
- Lower your foot back to the ground and repeat on your other leg
- Continue to march, stamping your feet as they land on the floor
- Aim to continue for two minutes – reducing the height of your knees if necessary



Modify the exercise

- Stand near to a stable surface with one hand on the support if required and take gentler steps ensuring your toes land on the floor first





9

Jump

- If you have had spinal fractures, a good place to start is with the modification of this move. If this feels comfortable, and you feel steady and pain free, progress to try a small jump.
- Stand on the spot, feet hip width apart
- Standing tall, with your knees soft, swing your arms back
- Next, swing your arms forward and take a small jump into the air, lifting both feet off the floor, landing with soft knees
- Repeat 5 – 10 times and complete up to three sets

Modify the exercise

- Stand near to a stable surface with one hand on the support if required and keep your toes on the floor, raising your heels dropping them back down to the floor
- **Tip:** For both of the above exercise variations, end with a march, and then walk on the spot to cool down



Tip: Gradually increase the weight or strength of resistance bands, as it becomes easier to use during the exercises. You should be using a weight or band that you can lift or stretch 8-12 times, up to 3 sets, but not much more.

If you find you can easily do more, increase the weight or band strength you are using as this is how to best promote your bone strength.

If you find that you are unsteady at times during these exercises, it's important that you work on improving your balance to reduce the risk of falling.

Well done in completing your exercises to help strengthen your bones and muscles. As you get used to these exercises aim to carry out more sets of the routine, up to three sets at any one time. You'll be amazed at how quickly you find the moves more comfortable and how quickly you progress! Progression is important for your bone health.