

Exercise and Bone Density

Exercise is recognised as an effective lifestyle strategy to build a strong skeleton and maintain bone strength throughout life.

Exercise and Bone Density

Regular physical activity and exercise plays an important role in maintaining healthy bones. Exercise is recognised as an effective lifestyle strategy to build a strong skeleton and maintain bone strength throughout life. Exercise also increases the size, strength and capacity of muscles. It is never too late to start exercising.

Elements of a good exercise program for bone health

You should not be intimidated by exercise if you have osteoporosis or osteopenia. In fact specific types of exercises are important for improving bone strength. Bones become stronger when a certain amount of impact or extra strain is placed on them, however it is recommended that exercise is supervised especially when first beginning an exercise program.

Recommended types of exercise

There are 3 types of exercises recommended in an exercise program to support bone health, including people with low bone density.

1

Weight Bearing Impact Loading

Exercises that work against gravity to stimulate bone. It is through the weight of the body on the bones that the bones become stronger over time.

2

Resistance Training

Moves that emphasis power and balance through the use of added weights to enhance strength and stability.

3

Balance Training

Exercises that strengthen the muscles that keep you upright such as your legs and core which helps to improve stability and assist in preventing falls.

Exercises to avoid

People with diagnosed osteoporosis should avoid exercises that comprise of twisting of the spine and hip motions such as golf, tennis or bowling. Also avoid extreme curving of the spine forward, such as toe touches and sit-ups.

Disclaimer: Exercises shown in this brochure are a general guide only and do not replace medical advice or health professional guidance on individual exercise needs. Exercises represented may be useful for supporting bone health but do not account for personal limitations or other medical conditions. Please consult your GP, physiotherapist or exercise physiologist for individual exercise guidance.

Weight Bearing Impact Loading recommendations

The goal is to jolt your bones rapidly and firmly through weight bearing (meaning your own weight or the use of weighted vest or ankle weights). These exercises are working the bones that are designed to support you such as the spine and lower body. Examples of beneficial impact loading exercises include:

Jumping (vertical and multidirectional) and Hopping

Bounding



Skipping Rope



Bench Stepping (Step Ups)



Drop Jumps



Please Note: A combination of weight bearing exercise and resistance training is the best way to protect your bones. Always land on an even surface to prevent ankle injuries or overbalancing. Individuals with poor muscle strength or coordination should practice impact loading near a stable support rail or bench to steady themselves when they land.

Avoid: Sudden jolts are not recommended for individuals with extremely low bone density due to higher risk of related fracture. Pain associated with advanced arthritis can also make any jumping exercise inappropriate. For people in those situations, stamping the feet may be a manageable alternative. Stop any impact exercise that causes increased joint inflammation and discomfort for longer than two days.



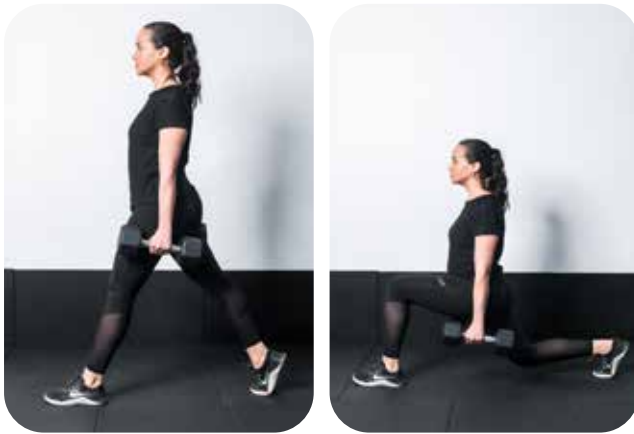
TIP:

Progress the intensity of the exercise. This can be done by raising the heights for activities such as bounding and drop jumping, by adding weighted vests, and changing the directions of your jumps more frequently.

Resistance Training

For best protection of your bones combine weight bearing exercise with resistance training. This is done with free weights, elastic bands or gym equipment. The goal of resistance training is to increase loads on the muscle surrounding the bones that are more prone to fracture such as hip, wrist and spine. Therefore these specific exercises can help improve strength and coordination. Examples of such exercises include:

Lunges



Hip Abduction/Adduction



Squats



Shoulder Extension



Dorsiflexion



Regular workouts for at least 6-12 months assist bone density, and if you stop exercising you will lose any benefits gained.

Give yourself a minimum of one day to recover between resistance training bouts before training again.

Back Extension



Abdominal Exercises – Beginners



Abdominal Exercises – Intermediate



Abdominal Exercises – Advanced



TIP:

It is recommended to select 8 exercises per session and rotate through different ones each training session.



TIP:

You do not need to 'pump heavy iron' to enjoy the benefits of resistance training, select a weight that is challenging but you are able to repeat 8-12 times. When you are ready for more weight only add up to 0.5kg.

Please Note: If you have never lifted weights before, always consult an exercise professional before you begin, to ensure you learn correct technique and prevent injury. Although lifting quickly (power lifting) can be effective muscle training for healthy people, it may increase the risk of spinal fracture for people with low bone density therefore a measured lifting tempo is recommended instead.

Avoid: Always avoid lifting in deep spine flexion (touching toes position). Avoid exercises with extreme curving of the spine forward, such as toe touches and sit-ups.

General Balance Training

The goal of balance training is to improve balance and prevent falls. Balance can be challenged by exercises while standing still (static balance), when moving (dynamic balance) and when dual tasking (doing something else while you're trying to balance).

Static Balance Exercise

Reducing your base of support

Standing only on one foot, standing with your feet closer together, one foot in front of the other



Raising your centre of gravity

Standing as tall as possible, raising your arms above your head



Moving your centre of gravity away from your base of support

Leaning forward, reaching, bending, then regaining your balance without using your arms



Dynamic Balance Exercise (done while moving)

Walking in small circles and changes in direction



Stepping over obstacles



Walking on uneven or soft surfaces like foam mats



Walking on your heels or toes



Walking backwards, sideways or arms above head



Walking on a beam



You can progress the difficulty of your balance training by increasing walking speed or stride length.

Dual Tasking Exercise

Standing in tandem stance and doing a task that requires you to think, such as counting backwards

Standing on one leg while throwing and catching a ball



TIP:

Balance training is recommended for 2 hours a week to be effective. It can easily be incorporated into normal daily activities (e.g. static exercise while doing household chores).



TIP:

The exercises should challenge you and once you achieve a milestone, try something harder. Structured activities can also help for example Tai Chi provides excellent static balance training or line dancing can be a fun form of dynamic balance training.

Exercise Recommendations

Staying active helps support your bone health and is important throughout life. The benefits of exercise far outweigh any risk and a supervised exercise program can help you gain confidence. People with osteoporosis should remain active and not avoid exercise. Please note exercise is not a replacement for osteoporosis treatment.

Below is a summary of the 3 types of exercise recommendations. It explains recommended exertion level, repetitions and frequency per week based on your level of ability. This information can be shared with a trainer. For high risk individuals supervision by an exercise physiologist is recommended.

A trainer can assist with determining your 1RM and RPE.

Mode	Components	Low-risk individuals ¹	Moderate-risk ² individuals	High-risk individuals ³
1 Weight Bearing Impact Loading	Vertical and multi-directional jumping, bounding, hopping, skipping rope, drop jumps and bench stepping with progressively increasing height	High impact activities 4-7 days per week 50 jumps per session	Moderate-High impact activities 4-7 days per week 50 jumps per session	Moderate impact activities 4-7 days per week Work up to 50 repetitions per session
2 Resistance Training (Progressive)	8 exercises per session targeting major muscle groups attached to the hip and spine. These include weighted lunges, hip abduction/adduction, knee extension/flexion, back extension, reverse chest fly's, and abdominal exercises, or smaller number of compound movements such as squats and deadlifts	2 days per week 2-3 sets of 8 repetitions Select 8 exercises per session and rotate through different ones each training session Technical Guide 80-85% 1RM* ≥ 8 on RPE scale**	2 days per week 2-3 sets of 8 repetitions Select 8 exercises per session and rotate through different ones each training session Technical Guide 80-85% 1RM* ≥ 8 on RPE scale**	2 days per week 2-3 sets of 8 repetitions Select 8 exercises per session and rotate through different ones each training session Technical Guide 80-85% 1RM* ≥ 8 on RPE scale**
3 Balance Training	Standing and moving exercises with a gradual reduction in base of support to standing on one foot, perturbing the centre of mass with leaning and reaching then regaining balance with minimal use of the upper limbs, e.g. Tai Chi, and walking on uneven surfaces	Challenging tasks incorporating balance activities into strength and impact elements where possible	Challenging tasks 4 sessions per week 30 minutes of a variety of balance exercises; at least 10 per steps forward and back for mobility exercises	Challenging tasks 4 sessions per week 30 minutes of a variety of balance exercises; at least 10 per steps forward and back for mobility exercises

¹ Low risk – normal bone health

² Moderate Risk – low bone density (osteopenia)

³ High-risk – diagnosed osteoporosis (includes individuals who have previously fractured)

*1RM is the maximum weight you can lift with correct technique for certain exercise (training is then done at 80-85% of this weight)

** Rate of Perceived Exertion (RPE) on a scale 1-10, 1 being easy and 10 taking all your effort to complete 1 repetition

For more information



Call our national toll-free number
1800 242 141



Visit our website
healthybonesaustralia.org.au



Talk to your doctor