



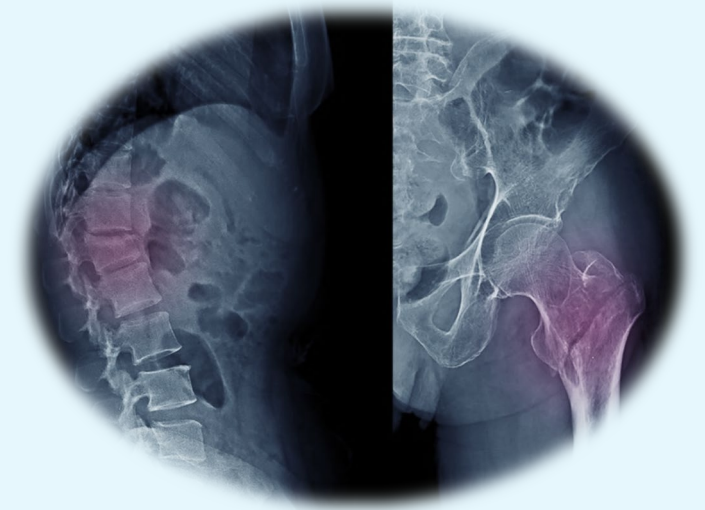
**Telehealth for Falls and Fracture  
Prevention Implementation Trial**

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Educational Module 6



**Exercise for the Management of  
Osteoporosis and Fractures**



# Exercise Recommendation

## People with Osteoporosis

### For all people with osteoporosis

Multicomponent exercise programs that include resistance training, balance challenges, exercises for back extensor muscles and some form of weight-bearing & aerobic exercise are recommended

*In addition:*

**People with osteoporosis who do not have vertebral fractures or multiple low trauma fractures**

*Impact exercise up to moderate level on most days.*

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**For people with osteoporosis who are frail and/or have limited function (ability to exercise)**

*Strength and balance exercises to prevent falls may be needed to develop confidence and mobility prior to targeting bone strength.*

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# Exercise for *High Risk Patients*\*

\* Recommendation for the Management of Vertebral (Spinal) Fractures

## 1. Activities to **minimize spinal loads** after vertebral fracture to reduce pain & facilitate return to normal function

Initially after a spinal fracture aim to be as active as possible and avoid prolonged bed rest and moderate-high impact exercises & heavy lifting.



## 2. **Multi-component exercise program**

Include balance exercises, muscle strengthening exercises (targeting the legs and back extensor muscles) as well as core and shoulder muscle strengthening and range of motion exercises.



## 3. **Instruction on spinal sparing activities**

Focus on good posture when exercise or lifting objects and proper body mechanics during everyday activities of daily living.



Images from  Physitrack

# Shoulder Stabilizers & Back Extensors

Loads on the spine are least in supine, followed by prone, standing then seated

Balance Exercises

+



Supine lying 15-20 min, 2-4x/daily for pain



Head lift, chin tuck



Prone single arm raises  
(place pillow under stomach/towel forehead)



Standing W scapular retraction (use wall)



Supine shoulder blade protraction



Supine bridge



Prone alternate arm/leg raises  
(place pillow under stomach/towel forehead)



Standing arm abduction and reach



Thoracic spine arm opener



Thoracic spine overhead reach



Kneeling alternate arm/leg raises

Progression

May require a pillow to support their head during supine or their abdomen during prone exercises to maintain neural spine alignment



## Exercise

### Recommendation

## History of a Spinal Fracture

### For all people with osteoporosis

Multicomponent exercise programs that include resistance training, balance challenges, exercises for back extensor muscles and some form of weight-bearing & aerobic exercise are recommended.



### For people with vertebral fractures or multiple low trauma fractures

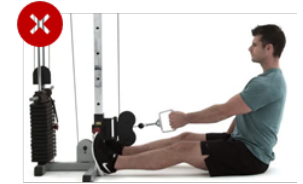
Exercise at a lower impact level (e.g., brisk walk). This is precautionary as potential (but unproven) risks. Individualised advice from a health care professional is advised to ensure correct exercise and lifting technique.

# Safety Tips & Precautions

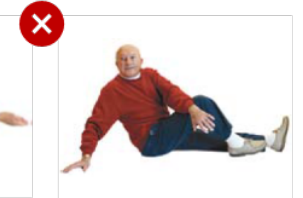
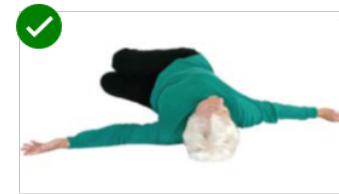
- Minimizing **rapid, repetitive, weighted** and **end-range flexion or twisting** of the spine ► substitute with planks or side planks.
- **Resistance training exercises** that require **forward bending and twisting** should be avoided unless movement can be modified (focus on proper form).
- Clear instructions on **transitions** in and out of exercises without excessive bending & twisting.
- Take care (or avoid) **lifting** weighted objects **from or lowering them to the floor** or **overhead + seated**.



Arm supported



Images from +Physitrack

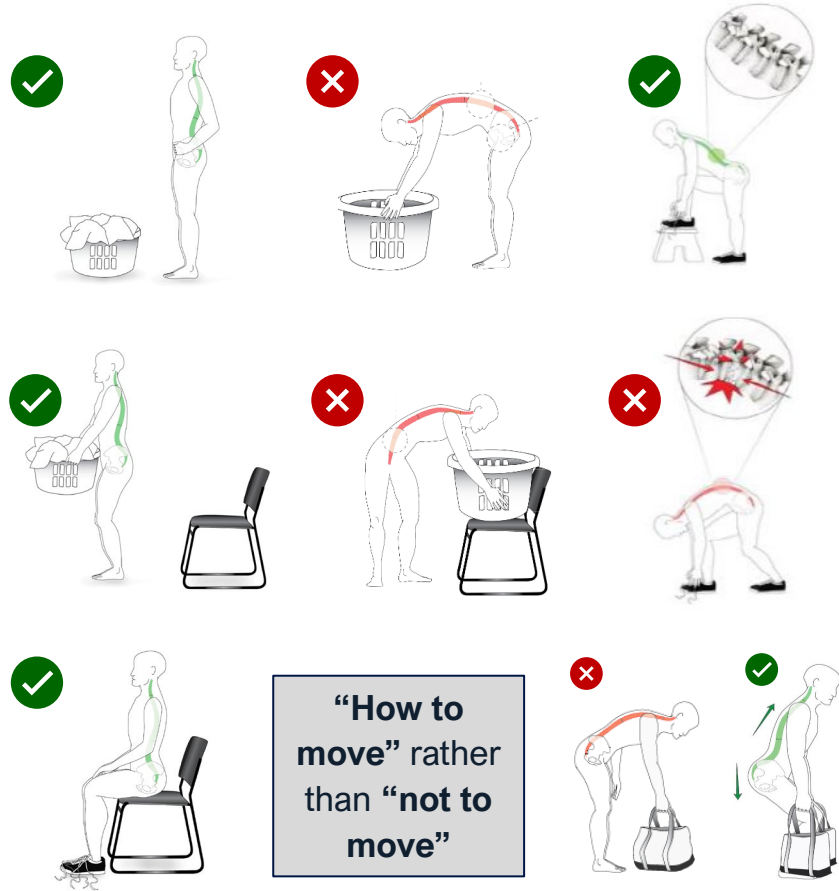


# “Spine-Sparing” Approach to Lifting

Learn **safe** lifting and moving techniques;  
**‘think straight’** when bending and lifting.

Learn the **‘hip hinge’** technique for safe  
bending and all day-to-day movements.

- *Hip hinge*
- *Step-to-turn*
- *Hold weight close to body*
- *Avoid lifting from/lower to floor*
- *Slow, controlled twist, not to end of ROM*
- *Balance loads on either side of body*
- *Support trunk when flexing*





Hip hinge for safe bending



## “Spine-caring” Approach

- ✓ Learn the **‘hip hinge’** technique for safe bending and all day-to-day movements.
- ✓ Focus on **bending at the hips** and keeping the **spine aligned**.
- ✓ Learn **safe** lifting and moving techniques; **‘think straight’** when bending and lifting.
- ✓ Move in a **smooth, controlled** way within a comfortable range (especially rotation/ twisting movements).

## Exercise to Care for Your Back

### Pilates Exercise – Modifications with Osteoporosis

<https://theros.org.uk/information-and-support/osteoporosis/living-with-osteoporosis/exercise-and-physical-activity-for-osteoporosis/caring-for-your-back/pilates-with-osteoporosis/>


**1 Roll Down**

- The Roll Down improves the flexibility of your spine. However, the concern with this exercise is that your back is in a flexed position. The load of your unsupported upper body puts pressure on your spine which could potentially increase the risk of a spinal fracture.
- If you have osteoporosis or an increased fracture risk, the recommendation is to modify your flexion to a restricted range, supporting yourself against a wall - or use an alternative exercise to stretch your back muscles.
- To modify the Roll Down, stand with your back against a wall, your feet slightly away from the wall and your hands resting on your thighs. As you bend forward (and as you return to upright), keep your hands on your thighs to support your upper body as you move. Move forward only as far as remains comfortable with your lower body still resting against the wall.
- The Cat (see no7) is a great alternative as it has the same purpose as a roll down.



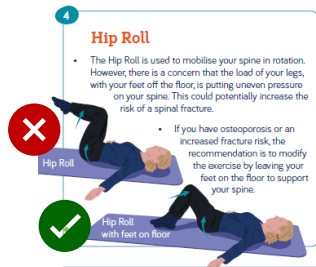
**2 Rolling like a ball**

- Rolling like a ball helps to mobilise, massage and stretch your spine. There is concern that you may over flex your spine in this position because you have to curl yourself up. In addition to that, you have the pressure of your spine on a firm surface, which could potentially increase the risk of a spinal fracture.
- This exercise is not recommended if you have osteoporosis or an increased fracture risk.
- There isn't an alternative Pilates exercise to massage the spine, but you can use The Cat (see no7) as an alternative exercise to stretch the spine.



**4 Hip Roll**

- The Hip Roll is used to mobilise your spine in rotation. However, there is a concern that the load of your legs, with your feet off the floor, is putting uneven pressure on your spine. This could potentially increase the risk of a spinal fracture.
- If you have osteoporosis or an increased fracture risk, the recommendation is to modify the exercise by leaving your feet on the floor to support your spine.



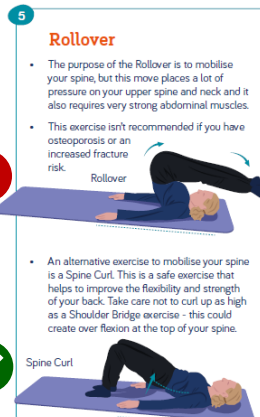
**3 Roll Up**

- The Roll Up and other similar exercises, like the Single or Double Leg Stretch, Hundreds, Scissors or Criss Cross, are used to strengthen your abdominal muscles and mobilise your spine and hips. However, your back is in a flexed position, pulling the load of your upper body and moving limbs against gravity. This puts uneven pressure on your spine which could potentially increase the risk of a fracture.
- If you have osteoporosis or an increased fracture risk but have very strong abdominal and back muscles because you have been doing this exercise regularly with ease and without pain or problems, you may decide to continue. If you are at all unsure or have had spinal fractures, the recommendation is that, for appropriate exercises, you use a wedge to support your spine or use alternative exercises to be on the safe side.
- An alternative exercise for working your abdominal muscles is the Knee Fold perhaps adding a leg extension and/or arm circles.



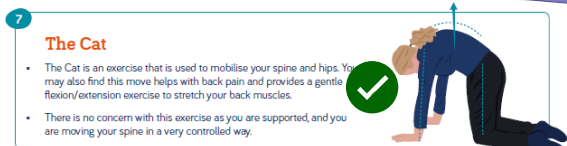
**5 Rollover**

- The purpose of the Rollover is to mobilise your spine, but this move places a lot of pressure on your upper spine and neck and it also requires very strong abdominal muscles.
- This exercise isn't recommended if you have osteoporosis or an increased fracture risk.
- An alternative exercise to mobilise your spine is a Spine Curl. This is a safe exercise that helps to improve the flexibility and strength of your back. Take care not to curl up as high as a Shoulder Bridge exercise - this could create over flexion at the top of your spine.



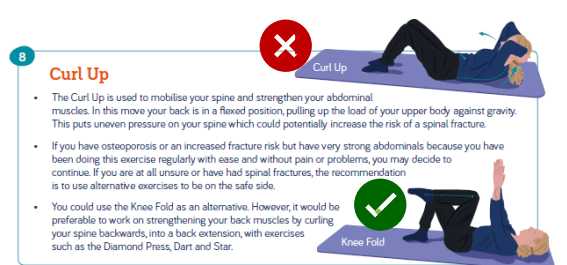
**7 The Cat**

- The Cat is an exercise that is used to mobilise your spine and hips. You may also find this move helps with back pain and provides a gentle flexion/extension exercise to stretch your back muscles.
- There is no concern with this exercise as you are supported, and you are moving your spine in a very controlled way.



**8 Curl Up**

- The Curl Up is used to mobilise your spine and strengthen your abdominal muscles. In this move your back is in a flexed position, pulling up the load of your upper body against gravity. This puts uneven pressure on your spine which could potentially increase the risk of a spinal fracture.
- If you have osteoporosis or an increased fracture risk but have very strong abdominals because you have been doing this exercise regularly with ease and without pain or problems, you may decide to continue. If you are at all unsure or have had spinal fractures, the recommendation is to use alternative exercises to be on the safe side.
- You could use the Knee Fold as an alternative. However, it would be preferable to work on strengthening your back muscles by curling your spine backwards, into a back extension, with exercises such as the Diamond Press, Dart and Star.



**6 Spine Stretch Forward**

- The Spine Stretch Forward and seated exercises like The Saw are used to mobilise your spine in flexion and flexion and rotation. There is potential to over flex your spine with these moves, especially while rotating. This puts too much pressure on your upper spine which could potentially increase the risk of a spinal fracture.
- If you have osteoporosis or an increased fracture risk, the recommendation is to modify these exercises by bending your knees and bending forward from the hips (hip hinge). Keep your back straight instead of curving your spine, reaching as far as is comfortable.

