Osteoporosis: A Framework for Freedom

Welcome to our osteoporosis program. Osteoporosis is a condition that occurs when bones lose an excessive amount of calcium, resulting in decreased bone strength. As a result, bones become fragile and may break easily. Other changes can occur, changes in posture, strength, balance and function. This course will provide you with information on proper posture and spinal sparing, safe ways to strengthen your muscles, balance activities, as well as aerobic exercises. Having this knowledge will give you the tools to manage your osteoporosis, to make informed decisions on how to modify your posture and activities to decrease stress on your spine; how to exercise to increase fitness; strategies for better balance and fall prevention. All of this leads to maximizing your independence and health, while decreasing your risk of fracture.

Our program goals include:

- Prevent fractures
- Prevent the loss of strength, balance, and mobility. The weaker we are, the less we are able to do.
- Proper back care, and posture alignment, to decrease stress on the spine
- Decrease the fear of falling. The more we are afraid of falling, the more likely we are to fall. Our fear of falling stops us from going out as often, so we become less active. This leads to weaker muscles and poor balance, which in turn leads to an increase in the chance of falling.
- Provide you with information so you can make informed decisions on exercise, activities, and fall prevention.

How do we do this? Information is provided on:

- What osteoporosis is, and what it looks like
- Posture correction and alignment
- Back care, spinal sparing
- Basic strengthening and flexibility exercises
- Aerobic exercise - how to start a walking program
- Fall prevention
- Nutrition advice (Provided by a Registered Dietician)
- Medication information (Provided by a Pharmacist)

Exercise sessions will consist of the following:

- Posture correction in sitting
- Posture correction in standing
- How to strengthen your posture muscles
- Basic strengthening exercises for the arms and legs
- Flexibility exercises for the arms and chest

Your Bones

Your bone strength depends on a number of factors, such as heredity, your lifetime activity level, medications, hormones, and diet. Your bones are also affected by the stresses put on them. These stresses are internal and external.

Internal stresses are placed on our bones whenever we use our muscles, which are attached to the bones. The muscle pulls on its attachment to the bone and the bone responds by becoming stronger. External forces are placed on our bones by an activity that is considered weight bearing (i.e. walking). The external forces that travel up through our legs when we do activities such as walking help to keep our bones strong.

Osteoporosis occurs when bone becomes weaker and less dense. Normally there is a balance between bone being formed and bone being lost (bone formation versus bone resorption). When more bone is lost than is formed, osteopenia or osteoporosis results.

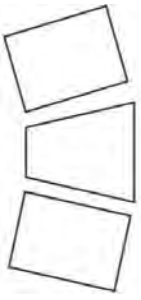
If the bone density is slightly lower than normal bone, it is called osteopenia (or "low bone mass"). If more bone density is lost, it is called osteoporosis.

What Does Osteoporosis Look Like?

Osteoporosis can affect us in various ways:

1. Loss of height: Height changes from osteoporosis are caused mainly from fractures that have occurred in the spine. Height changes do not occur in the arms or legs. A fracture in the spine occurs when the bone cannot handle the load placed on it and it compresses. This is why it is called a compression fracture. The compression often takes place at the front of the spinal vertebrae, which makes the vertebra wedge shaped and cause the back to become more rounded.

Compression or Wedge fracture →



It is a good idea to have your height measured yearly. A half an inch can be lost with each vertebral fracture and several inches can be lost over a life time.

2. Pain: Osteoporosis is rarely painful, unless a fracture has occurred. If there is pain present, but not a fracture, the pain can be the result of changes caused from poor posture or from placing repeated strains on our joints and muscles from using them incorrectly.

   Many people who have a compression fracture in the spine are not aware that the fracture is present. This is because it may have been caused from a relatively minor injury and because the pain that results from a fracture can vary. Most fractures will result in severe pain and muscle spasm in the back, but some result in only mild pain.

   If you do get back pain that is severe and constant, you should see your physician.

3. Shortness of breath: Osteoporosis can be one of the many causes of shortness of breath if there have been changes in the posture of the spine which would lead to less space available for the lungs to expand.

4. Hiatus hernia: Indigestion problems such as hiatus hernia, indigestion, heartburn, or regurgitation can be aggravated when there is less room present in the abdomen. Poor posture and stooping activities can make this worse.

5. Stress incontinence: This is not necessarily associated with osteoporosis, but it is not an uncommon condition and should be addressed if it is present. Loss of spinal height may increase pressure on the pelvic floor.

6. Spinal deformity: The changes that take place in our spinal posture as caused by:

   - Compression fractures
   - Muscle weakness
   - Habitual poor posture
   - Poor self-esteem

7. Protruding stomach: When we have lost height in our spine, there is no longer enough room in abdomen for the organs and so the organs get pushed forward. If the abdominal muscles are also weak, then the stomach can protrude even more. We recommend posture correction and lower abdominal exercise to help reduce this.

Posture

Postural Correction

It is important to reduce the stresses going through our back, through maintaining proper positioning of the spine with sitting and standing postures, as well as during daily activities.

Good posture helps our bodies to function efficiently. Faulty posture not only changes our appearance, but leads to discomfort, pain and disability through altered movement and function.

Proper posture

- Promotes ideal alignment of the spine
- Corrects muscle imbalances
- Improves spinal stabilization
- Protects the spine from increased compressive forces
- Good posture can help reduce pain and allow for increased activity and quality of life

Posture correction exercises are specific for each person, as everyone has different posture patterns. They are necessary to correct muscle imbalances and to restore optimal movement patterns. A muscle imbalance occurs when some muscles are weak and overstretched while other are too tight.

Do not expect sudden improvements. Postural changes develop over a long period of time; regaining good posture and strength can also take a long time.

Awareness of posture and movement:

- Awareness of faulty posture is the first step in posture correction
- When the faulty posture or movement is recognized, it is necessary to learn how to correct it
- Using a mirror or wall can help with awareness and correction

Quality of movement:

- How you do the movements is more important than the number of repetitions; initially only two or three repetitions may be required
- You may need to concentrate on one or two components of an exercise to begin with to ensure the quality is maintained, gradually other components may be added

Exercise and pain

- Posture correction and exercises must not cause you extra pain
- If you experience extra pain, either the exercise is being performed incorrectly or you are not ready to do it
- It may be necessary to modify or temporarily stop the exercise, check with your therapist to see if modifications can be made.
- Changing your position frequently while standing or sitting will help to lessen muscle fatigue and pain

Practice

- Changing how you move can be very difficult and requires much practice
- Correcting your posture can be done throughout the day by thinking of sitting tall, standing tall, and walking tall
- Once you have gained awareness of an incorrect movement, use the new correct movement in your daily activities. This is the BEST way to practice

Posture Correction

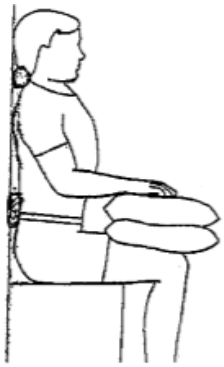
The goals of posture correction are to maintain and strengthen the best posture that you can achieve, prevent ongoing deterioration of posture, and prevent the pain and disability that can result from muscle imbalances due to poor body position.

What you will need:

- An 18 inch backless stool
- A flat area of wall space
- 2-4 small towels

Sitting Posture

- Place the stool right against the wall so that the edge touches the wall
- Sit on the stool with your back against the wall
- Your feet should be firmly planted on the floor, 3 inches apart with the knees directly over top of the feet
- Make sure the buttocks and back are against the wall, lifting through your spine so your weight balances through your “SIT bones”.
- Find your “neutral spine” position
    - Rock back on the sitting bones – spine flexes
    - Rock forward on the sitting bones – spine arches
    - Find the “midpoint” of these two movements, so that you have a gentle curve in your back
- Imagine a string pulling up through your spine to lengthen it
- Gently draw your shoulder blades back, opening up through the front of the chest.
- Raise your breastbone
- If your head does not touch the wall, tightly roll some towels and place the firm roll behind your neck.
- Your face should be in a vertical position
- Do not tip your head back to touch the wall, maintain a gentle chin tuck
- The towel roll should feel comfortably supportive and not feel as though it is pushing your head forward
- Check the space between your back and the wall by placing a flat hand behind the lower back. There should be just enough space for your hand.
- If there is no room to slide your hand in, then your back is flattened. Place a small, flatly folded towel behind the lower back to encourage a gentle curve here.
- If there is too much room, place a small, flatly folded towel in your space and gently pull the abdomen up and in to slightly reduce the curve in your lower back.



Standing Posture

- Stand with your buttocks and back against the wall and your feet about 2-3 inches from the base of the wall
- If your head does not touch the wall, place the firm towel roll behind your neck
- The towel roll should again be firm and thick enough to be comfortably supportive without pushing your head forward
- Do not tip your head back to touch the wall – your face should be vertical
- Check the space between your lower back and the wall. There should be just enough space for your hand.
- If there is not room to slide your hand in, your back is flattened. Place a small flatly folded towel in the lower back area to encourage a gentle curve.
- If there is too much room, place a flatly folded towel in the space and gently pull the abdomen up and in to reduce the curve in your lower back
- Sometimes, the space in the lower back area and behind the neck may be slightly different in sitting and standing and you may have to adjust your towels accordingly.

Practice correcting your posture in sitting and in standing against the wall daily and try to regain this corrected position frequently throughout the day when you are not against the wall.

Cues for good alignment:

- Foot press
- Lift the breastbone
- Imaginary string pulling your spine taller
- Alignment cues – keep your shoulders and hips in a rectangle

Posture Review – Practice daily

- Good posture makes you taller, you look better, breathe better, and have less pain and better digestion
- Even weight on heels and balls of feet
- Unlock your knees
- Strong thighs and gently (microscopically) rotate inwards
- Gently pull up on pelvic floor (25% contraction) and navel towards spine (25%)
- Lengthen between your rib cage and pelvis
- Relax your shoulders and shoulder blades down your back and gently ‘open’ your chest
- Gently tuck your chin
- Relax your jaw and face
- Breathe is natural and flowing equal inhales and exhales
- “Toes forward, thumbs forward”
- Practice good posture until it becomes an “automatic habit” in sitting, standing, walking, and lying. Stand and sit against a wall for feedback.
- Poor posture and bad habits/movement patterns overtime cause changes in body alignment so just saying “stand up straight” doesn’t always work
- Therefore you need to do very specific exercises to stretch tight muscles and strengthen weak muscles, which in turn strengthen bones
- Start exercises slowly to allow adaptation
- Exercises need to be pain free

Back Care

Activities that require flexion or “bending” put increased pressure of the front of the vertebra and may increase the risk of a fracture. Other movements such as repetitive actions or forced or rapid motions may also injure the back. It is important to learn strategies to protect the back from the strain.

Back care principles

- Posture:
  - Maintain a balanced spine
  - Neutral spine position
    - Most efficient and least stressful position
- Spinal sparing strategies
  - Posture
  - Work surface height
- Avoid movements that are stressful on the back
- Provide proper support for the back when sitting
- Participate in regular physical exercise

Spinal movements to limit

Avoid compressive forces on the spine, during activities, or prolonged, during sitting and standing postures.

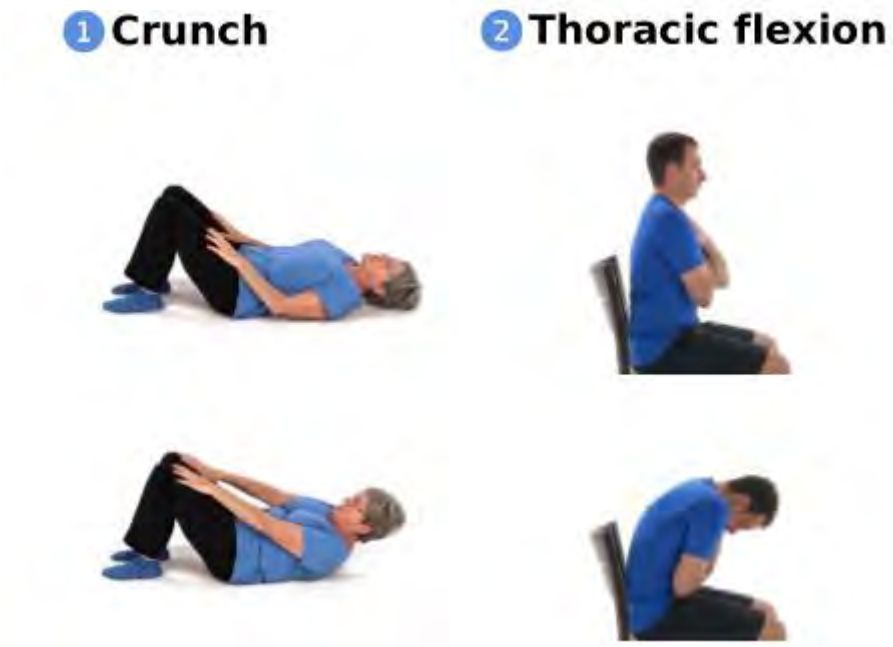
- Limit:
  - Repeated, sustained, weighted, end range, rapid/forceful or combined:
    - Flexion, rotation, side bending
- Reduce:
  - Cumulative effect of flexed/slouched/rotation postures with everyday activities, work
- Care in lowering heavy weights/object from overhead

Remember!

- Prevention of fractures is most important in the management of osteoporosis. Once a compression fracture of the spine occurs, the process is very difficult to control. One fracture is frequently followed by many more.

POSITIONS TO AVOID:

- Avoid prolonged bending activities and habitual bending postures that put stress on the vertebral column and could lead to further wedging and compression fractures
- Avoid excessive bending of the back when either exercising or doing daily activities
- Avoid dynamic abdominal sit-ups
- Avoid sitting in a 'C' shaped posture



Back pain

Back problems are most often the accumulation of months or years of:

- Poor posture – which is not very efficient and can produce secondary aches and pains.
- Faulty body position during activities
- Stressful living/working habits
- Loss of flexibility
- Decreased physical fitness – inactive lifestyles combined with spending much of the day sitting, bending or reaching contributes to poor posture and back pain.

Spinal sparing – use of hip hinge

It is important to learn safe alignment of the spine, and apply that to the various activities and postures we adopt throughout our day.

One important concept is learning to use your legs instead of your back to do the work. Using a “hip hinge” to bend from the hips, and not the back, to take the stresses off your spine.

- In standing, find your hips, and place your hands (palm up) against your hip creases.
- Keeping your back straight, lean forward by hinging forward, at the hips, over your hands.
- Make sure your back is staying straight, in good alignment

Photo credit p. 17 BoneFit Canada, used with permission

Sit from Stand Using Hip Hinge:

1. Start from standing, with good postural alignment.

2. Place hands in the crease of your hips.

3. Bend at the HIPS over your hands, sticking your bottom out slightly & keeping your back in a straight alignment.

4. Lower yourself gently onto the chair, keeping this alignment.

Use this action when moving from sitting to standing, and also when doing daily activities (reaching, lifting, vacuuming, and raking)

Daily Activities:

- Use the principles of:
  - Spinal sparing
  - Proper alignment and posture
  - Hip hinging/using your legs
  - Adjusting your tools and environment

You can apply these principles to a wide variety of activities

1 Reading

In a sitting position to read: Avoid tilting your head forward and a posture in which your body sags into a slouched position.

2 Neutral sitting posture without a backrest

Sit on a chair without your back resting on the backrest.
Your feet should be flat on the ground and your bodyweight spread evenly over each buttock.
Lift up through the breastbone, to straighten the trunk, but do not over arch. Keep the lower ribcage relaxed and down. Gently draw your shoulder blades back, opening up through the front of the shoulders.
Then, draw the head back in line with the shoulders, keeping the chin slightly tucked, elongating the back of the neck. Think of a string lifting up through the top of the head.

3 SItting posture

In a sitting position, avoid a posture in which your body sags into a slouched position and your head is forward (not in alignment).

---

4 Sitting posture

Sitting posture:
Avoid asymmetrical (uneven) and slouched postures that encourage the misalignment of the back and that increase the strain on the structures that support it.

---

5 Workstation

An incorrect adjustment of your workstation promotes the adoption of postures that may eventually cause fatigue, stiffness and pain in the neck, back, shoulders, etc.

6 Reading

To read in a sitting position:
Tilt your book or magazine, keep your head straight, relax your shoulders, and maintain a good sitting position.
You can also use one or two pillows to support your book in a raised position.

7 Coughing / sneezing

When coughing or sneezing:
Keep your back straight by supporting your lower back with one hand.

---

8 Coughing / sneezing

When coughing or sneezing:
Avoid abruptly bending forward.

---

9 Putting on/wearing backpack

Squat or kneel in front of the backpack, or put the backpack on counter or table. .
Grab the backpack with both hands.
Use the strength of your legs to get up while keeping your back straight.
Put on one strap at a time. Don't swing the backpack over the shoulder.
Avoid wearing the backpack over one shoulder.

10 Making the bed

In the morning, straighten the sheets before getting out of bed.
Squat or kneel beside the bed. Make the bed completely on one side before going around to the other.
To make the bed, go around the bed to place the sheets without bending over nor rounding the lower back.
Bend the knees as needed.

11 Making the bed

To make your bed:
Avoid reaching across the bed. Do not twist or round through your back.

12 Tying, putting-on or removing shoes

To put on or tie your shoes in a sitting position:
If it is impossible to sufficiently bend your legs, use a long handled shoe horn to assist you in putting on your shoe;
Rest your foot on a small bench (footrest) and tie your shoe;
Keep your back straight.

13 Tying, putting on or removing shoes

In a sitting position, avoid rounding your back to tie your shoe.

---

14 Dressing

To put on your socks in a sitting position: Bend from the hip and the knee (bring one knee towards yourself) and keep the back straight.

---

15 Dressing

In a sitting position, avoid leaning forward completely (with rounded back) to put on or to remove your socks.

16 Vacuuming

To vacuum:
Keep arms close to body;
Place feet in a stepping/lunge position (feet front-back) and move from front to back by transferring your weight from one leg to another (swaying motion).

This is a heavy activity and ideally should be done by someone else.
Use an upright or self propelled vacuum cleaner.
If a canister vacuum must be used, buy an extra section of metal shaft to lengthen the handle.
Castors on your furniture make it easier to move during vacuuming.

17 Vacuuming

When vacuuming, avoid bending or twisting your back.

---

18 Sweeping (broom)

To sweep:
Make sure your legs are doing the work instead of your back;
Place your legs in a stepping position (forward lunge) and transfer your weight from one leg to another while keeping your back straight;
Keep your feet close to the broom.

---

19 Sweeping (broom)

When sweeping the floor, avoid keeping your feet planted in one spot. Also don't bend or twist your back.

---

20 Collecting dust from floor

To collect the dust after sweeping the floor:
Bend the knees from the hips and assume a kneeling position by resting one knee on the ground. Keep your back straight.
You can also use a dust pan and broom with extended handles, to avoid bending.

---

21 Picking up dust (collecting)

Avoid bending the back when performing tasks at ground level (on the floor), such as picking up the collected dust after sweeping the floor.

22 Washer / Dryer

Do laundry on a regular basis to avoid very heavy loads.
Consider using a table to sort and fold your laundry.
(1) To load the clothes into the washer: put down the laundry basket close to you and stand facing the washer. Make sure you move your feet to go between the laundry basket and the machine, to avoid reaching and twisting with your back.

(2) To empty the washer: use your legs to work instead of using your back. Tilt the trunk forward while simultaneously raising one leg backwards and while moving your legs to put the clothes in the laundry basket. (golfer's lift)

(3) Bend the knees at hip level (squat), then put the clothes in the dryer while keeping your back straight.

Always avoid bending the spine forward from the waist and twisting movements at the back level.
Place the laundry basket close to you.

23 Washer / Dryer

Don't take out the clothes from the washer and put them directly in the dryer without moving your feet (to avoid an unwanted twisting/torsion of your lower back).
First, empty the washer and put the clothes in a laundry basket.
Secondly, take clothes from the basket and place them in the dryer.

24 Emptying dishwasher

When you fill or empty the dishwasher:
You must avoid repetitive torsion (twisting) and flexion (bending the spine forward from the waist) movements at the back level.

25 Shoveling

Place the legs in a stepping position (front/back).
Transfer your weight to the front leg while pushing the shovel.
Bend your knees while keeping your back straight and lift the shovel with the help of your arms and legs.
Keep the shovel close to you and move your feet in the direction of where you want to deposit the content of your shovel.

Shoveling is a high risk activity, consider getting someone else to do your shoveling.

Note: Shoveling is a demanding and strenuous activity; work at a steady pace and take frequent breaks.

26 Shoveling

When shoveling:
Avoid any flexion (bending at the waist) or torsion (twisting of the trunk) at back level;
Never throw the contents of the shovel over your shoulder;
Avoid overloading the shovel.

27 Raking

Get close to the surface to rake.
Use your arms and your legs to do the work.
Keep your back straight.

28 Raking

When raking:
Avoid working with the back bent over (leaning forward).
Avoid keeping your feet planted, and twisting from your back. Make sure you move from foot to foot to use your legs.

29 Lifting technique when gardening

Always bend your knees, hinge backwards at your hips with your back straight when picking up or putting down a load.

30 Avoid trunk flexion when gardening

Kneel or adopt a four-point position when weeding or performing similar tasks.

Proper Lifting Techniques

- Consider the amount of weight being lifted as well as the manner in which it is lifted
- Always test the weight of a load before lifting it
- The back muscles work in combination with your abdominal muscles to help maintain a balanced posture while you lift
- The larger muscles of your legs and buttocks are better designed for lifting than your back muscles

Guidelines

- Tighten your abdominals before lifting – Do not hold your breath
- Keep the load as close to your body as possible
- Use your legs as much as possible
- If you need to turn while lifting, step to turn with your feet instead of twisting with your back

One Knee Lift:

- For heavy or awkward items at floor level
- Easier to get closer to the load
- Needs strong legs and healthy knees
- Kneels on one knee beside the object. Bring the load close to you. Straighten through the knees to stand.

(Photo credit advancedhealth.ca)

Squat Lift

- Stand in front of the load with your feet slightly apart, and spread wider than the item to be lifted
- Squat by hinging at the hips and bending at the knees, keeping your back straight
- Hold the object as close to your body as possible
- Contract your abdominals, use the muscles of your hips and legs to lift up

Partial Squat

- Similar to squat but reduces stress on the knees
- Back remains in neutral, lengthened position
- Bend knees slightly, perform hip hinge
- Good for objects at knee height, or items with handle
- One foot in front if required for a stiff knee

Golfer's lift

- For picking up objects with one hand
- Good if legs are weak or knees painful
- Use solid object for support
- Bend at the hip, extending one leg behind
- To return to stand, lower extended leg as you raise the body

Straight Leg Lift:

- Not ideal
- Use in tight, awkward spaces such as lifting objects out of the trunk of a car
- Helpful if hip and knee bending is limited
- Bend at the hips, not at the waist
- Do not allow the back to become rounded
- The legs remain straight or slightly bent at the knees. The legs can be together or one slightly in front of the other. Get as close to the load as possible. Forward bending must take place at the hips. Keep the back straight and the head up.

33 Lifting a load

To lift a load (or even a lightweight object):
Never lean over while bending your back (rounding back) and keeping your legs straight (knees locked).
This method considerably increases the stress on the structures of your spine.

34 Carrying/handling load (transp

When carrying a load: always hold the load as close as possible to your body (shorten lever arm), tighten the abdominal muscles and straighten the spine.
Keeping the load close to your body greatly reduces the forces going through your spine.

35 Carrying/handling load

When you carry a load at arm's length, you are increasing the length of the lever arm. Holding the load away from your body makes it increasingly more difficult on your back.

36 Movement of a load / front-back

To move away or bring closer a load to your working surface:
Use your legs to do the work and slide the load rather than lifting it;

Place your feet in a front-back lunge position and move the load forward or towards you as needed-when doing so transfer your weight from one leg to another.

37 Movement of a load / Front-back

To move a load away from you, along your work surface, or to bring it closer, avoid moving the load at arm's length (arms outstretched) and avoid bending the trunk forward.

38 Movement of a load

To move a load:
Place yourself in front of the load;
Lift the load by using your legs while keeping your back straight;

Keep the load that you want to move close to your body and transfer the load by moving your feet.

39 Movement of a load

When moving a load: avoid any twisting movements at back level.

Fall Prevention

Along with exercise, back care, management of osteoporosis with diet and medication, fall prevention is another key component of maintaining health and avoiding fracture.

Lifestyle Measures to Decrease Risk of Falling

When do falls occur?
Risk Times

- When changing positions (standing up, turning corners)
- When you are tired or ill
- In a hurry, distracted

Places and Activities

- While attempting strenuous activity
- While reaching for high shelves
- On stairs, curbs and where different floor surfaces meet
- On ice and snow
- In the kitchen and bathroom

Safety Measures

- Plan your actions:
    - Do not rush, try to avoid quick or jerky motions
    - Avoid getting up too quickly after eating, lying down, or resting

- Reduce hazards to yourself
    - Consider using a “Home Emergency Alert” system, to summon help if you fall and can’t get up
    - Use cane or walker if needed
    - Have your vision and hearing tested regularly and properly corrected
    - Some medications may increase your risk of falling. Check the labels and apply extra caution as required.
    - Don’t stop medications without telling your doctor. If you think your medication is affecting your balance or causing dizziness, see your doctor.
    - Limit alcohol intake

- Dressing safety
    - Sit while putting on clothes and shoes
    - Keep clothing short enough to avoid tripping over hems
    - Use good footwear
    - Avoid walking in stocking feet

- Organize your space
  - Place frequently used items within easy reach and use reach extenders for infrequently used items
  - Keep phones in as many rooms as possibly in case of emergency (cordless or cell phone nearby)
  - Maintain a household temperature of at least 65 degrees. Prolonged exposure to cool temperatures may cause a drop in body temperature and lead to dizziness and falling

- Be aware of your environment
  - Use extra caution when walking on wet or ice pavement
    - Wear proper foot wear, ice grips, or use a walking aid
    - “Walk like a penguin” on ice during the winter
  - Wear supportive footwear with a minimal heel

Creating a Fall-Proof Home

All Rooms

- Place electrical cords and telephone wires away from walking paths
- Ensure furniture is at a proper height for you, allowing your feet to remain flat on the floor while sitting
- Furniture should not create obstacles
- Slippery floor surfaces should be covered with carpet or an area rug (backed with nonskid rubber)
- All surfaces should be in good repair and should be free of clutter
- All areas well lit

Bathrooms

- Use nonskid mats, abrasive strips or carpet on all surfaces that may get wet
- Install grab bars
- Night lights add to your safety in dim lighting

Kitchens

- Items used every day should be placed within easy reach
- Avoid unnecessary bending and stooping

Bedrooms

- Place night light switches within reach of the bed
- Have a telephone in the bedroom

Outside the House

- Cover porch steps with gritty, weatherproof paint
- Ensure your steps and walks are shoveled and salted in the winter
- Floors in public buildings may be slippery or have visually confusing patterns, use caution

Stairs

- Use handrails
- Keep free of clutter
- Ensure they are well lit

Dressing

- Keep the length of dresses and nightgowns short enough to avoid tripping on stairs
- Sit while putting on socks, shoes, and trousers
- Avoid high heels, loose-fitting slippers, and shoes with worn out soles

If A Fall Occurs

- Drop whatever you are carrying. Free your hands so that you can break your fall. It is better to risk fracturing a wrist rather than a shoulder or hip
- If you think something is broken, do not move or allow others to move you until medical assistance arrives
- If you think you are only bruised try to get up onto a chair (rather than standing up from the floor) Avoid putting weight on the injured area
- Make telephones accessible to most rooms in the house so you can quickly get help (cordless or cell phone nearby)
- If you have suffered minor bruises apply ice to the area
- Arrange a signal or use a professional alert system if you are at a high risk for falling
- Analyze what happened and identify what you can do to avoid a similar fall in the future

HOW TO GET UP FROM THE FLOOR
BY YOURSELF AFTER A FALL

- Calm down.
- Check your body.
- If you are injured, call for help. Stay warm.
- If you are not injured, look for a sturdy piece of furniture.

Stay Independent.
Prevent Falls.

1

Roll onto your side.

2

Crawl over to a chair
or sturdy piece of furniture.

3

From a kneeling position, put your
arms up onto the seat of the chair.

4

Bring one knee forward.
Place that foot on the floor.

5

Push up with your arms and legs.
Pivot your bottom around.

6

Sit down. Rest before
trying to move.

INJURY PREVENTION CENTRE
KNOWLEDGE. LEADERSHIP. ACTION.

MCHB
Multicultural Health Brokers Cooperative

findingbalancealberta.ca

Tell your doctor or healthcare provider if you have had a fall.

Based on "Don't fall for it. Falls can be prevented!" State Government of Australia, 2004.
Copyright Commonwealth of Australia. Reproduced by permission. Translation provided by the Multicultural Health Brokers Cooperative.

Finding Balance

Exercise

Exercise is a vital component of osteoporosis management. The following types of exercises should be included in a comprehensive exercise program:
(Guidelines as suggested by Osteoporosis Canada)

- **Strength training**
  - 2-3 X/week
    - Allow 48 hours between exercises to allow the muscle to recover
  - Exercises for legs, arms, chest, shoulder, back
    - Strength gains are location specific – only strengthen the muscles that you exercise
  - Resisted – body weight, bands, weights
  - Gradual progression of exercises to avoid injury, while continuing to challenge the muscles
    - Start with a light weight to avoid injury
  - 8-12 repetitions per exercise
    - Low repetitions with a weight that challenges the muscle is better than high repetitions with no weights

- **Balance training**
  - Daily for 15 – 20 minutes
  - Static, dynamic balance activities
    - static – progress standing with narrower base, unstable surface
  - Dynamic
    - Walking activities and patterns
    - Tai Chi, dancing, walking on heels or toes

- **Posture awareness**
  - Daily
    - Be aware of posture frequently, do regular self-checks
  - Head, chest, spine, feet cues
    - Increased trunk stability
    - Decreases tendency for posture to become more stooped (flexed)

- **Endurance training for back extensor muscles**
  - Improves your ability to maintain good posture
  - Supine, prone (antigravity) exercises
  - 5-10 minutes per day, attention to posture during daily exercises
  - Perform “holds” 3-5 seconds
  - With history of spine fracture
    - Use of pillow with supine exercises if spine curved
    - Unload the spine during the day with supine lying
    - Attention to alignment more important than intensity

- **Spine sparing**
  - Alignment during daily activities is key
  - Modify activities that flex or twist the spine
  - Limit rapid, repetitive, weighted bending forward, or twisting to the side

- **Aerobic exercise**
  - 150 minutes/week
  - At least 5 days per week
  - 30 minutes per day, in >10 min bouts
  - Weight bearing activity most often
    - Eg. Walking, stairs, cross country skiing, dancing
    - Uses the positive effects of gravity
  - Moderate to vigorous intensity
    - With spine fracture – moderate intensity, emphasis on good alignment rather than intensity
  - Use “talk test”

Walking is NOT enough, you need all the components listed above. Walking mainly works on cardiovascular/endurance.

How does exercise affect bone strength?

- Bones react to stresses placed on them
- Muscles attach to the bones and apply stresses that help to build bone
- If the muscles are not used there is no pull on the bone; the result is a weaker bone

Precautions

- Osteoporosis with spine fracture
    - Choose positions with least spine load
        - Lying on back, then standing, more so than sitting exercises
        - Attention to alignment more important than intensity
- Limit:
    - Repeated, sustained, weighted, end range:
        - Flexion, rotation, side bending
- Reduce:
    - Cumulative effect of flexed/slouched/rotation postures with everyday activities and work
- Care in lowering heavy weights/object from overhead
- Consider your BMD test results and your risk of fracture when choosing activities:
    - Low risk
        - Can consider higher impact, higher intensity exercises
        - Build up slowly, rest day in between
    - Moderate risk
        - Less “impact” activities
    - High risk
        - No high risk activities
            - No risk of falls
            - No high impact
            - No rapid forced movement or twisting
- Do not add high impact exercises to your routine if you haven’t already been doing them
- Consider seeing a professional (Bone Fit Physiotherapist, trainer with knowledge of safe exercising with osteoporosis) before going to the gym or doing weight exercises

Goals:

- Fall prevention
    - Balance, mobility, muscle strength, posture
- Safe movement or spine sparing strategies
    - Posture during movement
    - Strengthening of back extensor muscles
    - Stretch muscles restriction optimal posture
    - Prevention of further bone loss
        - Muscle strengthening and weight bearing dynamic exercise

Exercise tips

- Motion is lotion!!
- Be active daily; “Surprise the bones” with a variety of light safe activity
- Do “hip hinge” with lifting, and bending, butt out and bend knees
- Keep your core strong with planks, bridges and exercises on your hands and knees
- Engage your pelvic floor
- Breathe rhythmically – breathe in before you move, and then exhale with the movement
- Never hold your breath
- If sitting, stand up every 30 minutes
- Proper lifting and bending
- Move your feet when you turn

Positioning for Exercises

How to safely get down to the floor

Getting down to the floor for exercising is important. It allows you to work on strengthening and stretching the muscles that will help you improve your posture. If you are unable to safely get down to the floor, you can also lie on a firm bed.

- Use a carpeted surface or yoga mat
- Face a stable chair, putting your hands on the arm rests
- Come down onto your knees, one knee at a time
- Back your knees up, placing your hands on the floor
- Guide yourself down onto your stomach, then your side
- Bend your knees and roll “like a log” onto your back

Positioning

You want to have the proper support for your head and neck

- Your chin needs to be in a neutral position
    - If your head tilts back, use a pillow or layers of towels as needed in order to have your chin parallel to the floor
    - Avoid using a thicker pillow than necessary
- Place your arms comfortably by your sides, palms up
- Knees are bent, soles of feet on floor
    - Relax so that your knees fall inwards and touch

HEP2GO View videos at www.HEP.video

ADL - LOG ROLL

GETTING IN BED:
Start by sitting on the edge of the bed. Next, lower yourself down lying on your side using your arms. Once fully on your side, roll onto your back. When rolling be sure your knees stay bent and that you roll your whole body together as one unit. Your shoulders, pelvis and knees all roll as one.

GETTING OUT OF BED:
Start by bending your knees and then roll onto your side. Reach your arm across your body to initiate the rolling. When rolling, be sure that you roll your whole body together as one unit. Your shoulders, pelvis and knees should all roll together. Once on your side, tip yourself up to sitting using your arms.
Video # VVLNX765R

Breathing Exercises

Lie on your back as in Decompression Exercise. Place your hands lightly on your belly. Make a “V” with your hands and place your thumbs just above your navel and point your fingertips towards the pubic bone. Feel your body movement as you breathe. Close your eyes so that you can feel the movement better.

Pretend that you have a balloon in your belly. As you breathe IN, blow UP the balloon. As you breathe OUT, DEFLATE the balloon. Press out against your hands as you breathe in and then press in gently with your hands to assist the breath out.

Practice this technique 5-10 minutes (or more) before and after your exercise session.

Low Rib Cage Breath

Place your hands lightly on the sides of your rib cage, fingertips pointed up. As you breathe IN, expand the lower ribs against your hands. As you breathe OUT, press gently with your hands to assist the breath out.

Upper Rib Cage Breath

Place your hands high up on your chest, just below the notch between the collar bones. As you breathe IN, expand the upper ribs against your hands. As you breathe OUT, press gently with your hands to assist the breath out.

Three Part Breath

Place one hand on your belly (lower abdomen) and the other hand on your upper rib cage. As you breathe IN, breathe in by expanding the belly first, then the lower rib cage, then the upper rib cage. Reverse the movement on the breath out

Posture Exercises

Notes :

1 Decompression position, pectoral stretch

Sets: 1 Reps: 4 Freq: daily Duration: 8 - 10 seconds

This is a decompression exercise
Decompression position:
Lie on your back, knees bent up, hands palms up at your side
Assume this as a "rest/compression position" throughout the day, to unload the spine

This exercise helps to reduce pain by relieving compression on the spine. It also helps to align your spinal curves and relaxes the back.

Pectoralis stretch:
Lie on your back with your head on a pillow.
Bring your arms out to your side so they are 90 degrees from the body. If uncomfortable at this angle, change arms to a lower angle, closer to sides of body.
Hold the position for the prescribed time.

2 TA activation, pull-in

Sets: 1 Reps: 5-10 Freq: daily Hold: 5 sec

Lie on your back with your knees bent and your lower back in neutral position (slightly arched).
Exhale slowly, then pull in your stomach, as if you were trying to touch your backbone with your stomach.
Maintain the position while you take 3 long breaths

---

3 Head Press

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 sec

Lie on your back without a pillow under your head, but use a pillow if necessary
Tuck your chin in so as to gently press the back of your head into the bed and pull yourself taller as if there is a rope pulling the back of your head.
Return to the initial position and repeat.

---

4 Shoulder Press

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 sec

Shoulder press exercise
Lay on your back with your knees bent up and your arms in a comfortable 30 degrees position from your side.
Then, pull the shoulder blades towards the spine and gently away from your ears.
Holding this position, push the back of both shoulders and arms into the floor and hold the position for a few seconds. Do not allow the rib to elevate.

---

5 Elbow Press

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 sec

Lie on your back, with your head on a pillow if required.
Bring your hands behind your head, then let the elbows fall toward the ground on each side.
Press the upper arm and elbows downwards into the supporting surface

6 Leg Press

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 seconds

Lie on your back, one leg bent, the other extended.
On the straight leg, pull your toes towards your shin.
Tighten your buttock on the side of the straight leg, pushing the whole leg into the bed/floor.
Try to sink your outstretched leg (over its full length) into the ground, but without raising your pelvis.

7 Leg Lengthener

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 seconds

Lie on your back, knees bent, arms at your sides.
Straighten one leg. On the straight leg, pull your toes up towards your shin.

Lengthen your straight leg by pushing your heel along the floor. Gently lengthen the space between your pelvis and ribs
Keep your low back a hand's width from the floor
Hold for the prescribed duration then relax.

8 Arm, Leg Lengthener

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 sec

Lie on your back with your knees bent and your back in neutral position (slightly arched).
a) Keeping your knees bent, stretch one arm overhead. Lengthen your arm along the floor as if trying to grasp an object just out of reach. You can progress to doing both arms at the same time.
b) Straighten the leg on the same side as the stretched arm to increase the stretch

Maintain the stretch and return to the initial position.

---

9 Morning Stretch

Sets: 1 Reps: 3-5 Freq: daily Hold: 5 sec

Lie on your back.
Stretch your arms up and your legs down as far as you can.
Gently engage your abdominals to keep your spine in a neutral position, don't arch your back

---

10 Head Lift

Sets: 1 Reps: 5-10 Freq: daily Hold: 5 sec

Lay prone with your forehead resting on your palms
Lift your forehead away from your hands, but keep the nose pointing at the same spot on the ground the whole time, maintaining a chin tuck
Hold the position as directed, while breathing from your stomach.

11 Chest Lift

Sets: 1 Reps: 5-10 Freq: daily

Lie on your belly with your arms at your side, palms down.Engage your abdominals and glutes as you lift your upper body off the ground. Focus on lengthening more than lifting.Become longer with every breathe. Reach forward through the crown of your head, while keeping your chin tucked.

Strengthening Exercises

Strengthening exercises – Upper Body

Notes :

1 Chest press with band

Sets: 1 Reps: 5 Freq: 3 X week

Anchor a band behind you and hold the two extremities at shoulder height while standing up and pulling your navel slightly in.
Push the hands forward together with an upright trunk posture. Make sure your spine doesn't curl forwards.
Slowly return the arms back to the start position, don't let the elastic pull you back

2 Band rowing

Sets: 1 Reps: 5 Freq: 3 X week

Stand and tie an elastic in front of you at waist level and hold each ends with your hands.
With your shoulders down and back, pull your arms back by bending the elbows and retracting your scapulas.
Slowly return to the initial position and repeat.

3 Wall push-ups

Sets: 1 Reps: 5 Freq: 3 X week

Stand about 12 to 18 inches away from a wall while facing it and place your hands on the wall at shoulder level.Keeping your shoulders down and back, gradually bend your elbows to bring your face and forearms to the wall.

Progressions:
Inclined push ups off counter or step
Prone push ups from knees
Prone push ups from toes

---

4 Horizontal abduction to forehead

Sets: 1 Reps: 5 Freq: 3 X week

Lay down on your back with your knees bent and your feet flat, holding a band in both hands over your chest.
Keeping your elbows straight, pull the band to your forehead by bringing your arms down to the sides-toward the floor.
Come back to the starting position and repeat the exercise.

Alternate:
Do one arm at a time, keep the anchor arm straight and pointing up to the ceiling

---

5 Sash exercise

Sets: 1 Reps: 5 Freq: 3 X week

Lie down on your back with your knees bent and feet flat.
Hold a resistance band on your opposite hip and grab it with the working hand, palm down.
Pull the band overhead across your body as if you were pulling out a sword.
Rotate the arm as you lift to externally rotate the shoulder so your thumb will be facing the floor in the end position.
Return slowly to the starting position and repeat.

Progressions:
Do the exercise in standing, stand against a wall to give yourself feedback to keep your spine straight
Increase the resistance of the band

6 Shoulder flexion, band

Sets: 1 Reps: 5 Freq: 3 X week

Lie on your back with the sore arm straight up.
Holding the band in the other hand on your chest, pull the band overhead while keeping the arm pivoting in the socket (thumb toward the bed).
Only go as far as you can where it is comfortable without arching your lower back.

Progressions:
Do the exercise in standing, stand against a wall to give yourself feedback to keep your spine straight
Increase the resistance of the band

7 Arm rotation

Sets: 1 Reps: 5 Freq: 3 X week

Lie on your back with your arms bent at 90 ° and hold both ends of a band in your hands. Pull the band's end of the affected side sideways, without moving the elbow. Then, come back to the center slowly making sure the movement on the return is controlled.

8 Elbow flexion with DB

Sets: 1 Reps: 5 Freq: 3 X week

Standing with your arm against your side and the palm facing inward, bend your elbow upward turning the palm up as you progress.
Lower slowly to the starting position and repeat.

9 Elbow extension with weight

Sets: 2 Reps: 10 Weight: 1 lb Freq: 3 X week

Lie on your back with a weight in your hand.
Raise and extend your arm over your shoulder, holding the elbow with the other hand.
Slowly lower your hand towards your head by bending the elbow.
Make sure to keep the upper arm perpendicular to the floor.
Extend the elbow and repeat.

---

10 Wrist extension

Sets: 1 Reps: 5-8 Freq: 3 X week

Place your forearm along an armrest or table with your wrist hanging over the edge and palm facing down.
With a weight in your hand, lift the hand towards the ceiling.
Lower slowly and repeat.

11 Wrist flexion

Sets: 1 Reps: 5-8 Freq: 3 X week

Place your forearm along an armrest or table with wrist hanging over the edge and palm facing up.
With a weight in your hand, lift the hand towards the ceiling.
Lower slowly and repeat.

Strengthening Exercises – Lower Body

Notes :
Ensure you maintain proper spine alignment in all exercises.

1 Bodyweight squat

Sets: 1 Reps: 5-10 Freq: 3X/week

Stand tall and place your hands on your hips and your feet hip width.
Initiate the squat by pushing your hips back, as if you were sitting on a chair.
Continue the movement by bending the knees, keeping them directly over the feet.
Lower yourself to the point where you begin to lose the neutral spine by rounding your lower back.
Lift back up and repeat.
Make sure to keep the spine neutral and knees aligned with the feet at all times.

2 Sit to stand

Sets: 1 Reps: 5-10 Freq: 3X/week

Sit on a chair that has been placed against the wall to prevent slipping. Place your feet wide, keeping your heels in contact with the floor.
Lean forward from the hips while keeping your chest raised. As you continue to lean forward, press through your heels until you start to rise to a standing position.
Reach backwards with your hips and slowly lower yourself back to a sitting position on the chair. Your weight should remain over your heels for both feet.

Progressions:
Level 1 - help yourself get up using the arms of the chair
Level 2 - cross your arms over your chest
Level 3 - raise your arms out in front to shoulder height

Other ideas: don't sit in the chair, hover over it and then return to standing

3 Glutes activation mini squat

Sets: 1 Reps: 5- Freq: 3X/week

Split squat lunge exercise
Stand in a functional walking stance: your front foot flat on the floor and your rear foot on the toes.
Squeeze through the buttock and come into a short squat and rise to return.
Make sure you have a counter or railing close by, to hold onto for safety

4 Plantar flexion on two legs

Sets: 1 Reps: 5-10 Freq: 3X/week

Stand on both feet with your hands on a chair or table for balance.
Raise on your tiptoes without bending the knees.
Lower under control to come back to the starting position and repeat.

Can also add a "heel drop" to stimulate bone response. DO NOT do a heel drop if you have a high risk of fracture.

5 Glute bridge

Sets: 1 Reps: 5-10 Freq: 3X/week

Lie on your back with your knees bent.
Do head and shoulder press, lift the sternum slightly. Hold this position.
Contract your buttocks to lift your hips off the ground until your trunk is aligned with your legs. Push through your feet, lift your back as one unit.
Slowly return to the initial position and repeat. Do not curl your spine as you lower back to the floor. Try to maintain a long, neutral spine

6 Prone hip extension

Sets: 1 Reps: 5 Freq: 3 X week

Lie on your stomach on the floor and place your hands underneath your forehead.
Place a pillow under your abdomen to support your back. Press your pelvis into the pillow to stabilize your spine.
Keeping your knee straight, raise the leg off the floor and hold for the recommended time.
Slowly lower and repeat.

7 Contralateral extension

Sets: 1 Reps: 5 Freq: 3 X week

Lie on your stomach with your chin tucked in. Place a pillow under your abdomen to support your back. Press your pelvis into the pillow to stabilize your spine. Stretch out your arms and legs, making your body as long as possible.

Activate your lower abdominals (transversus abdominus) by bringing your belly button inward and by activating your pelvic floor muscles (inner thigh) 20 to 30% of a maximal contraction.
Maintain a steady abdominal breathing while you lift one arm and opposite leg up towards the ceiling keeping your chin tucked in.
Return and repeat with the other arm and opposite leg.

Aerobic Exercise

Walking with Osteoporosis

Aerobic exercise

- Cardiovascular conditioning, uses both arms, both legs,or all four limbs for at least 20 – 30 minutes in a continuous manner.
- 150 minutes/week
- At least 5 days per week
- 30 minutes per day, in >10 min bouts
    - Can do shorter sessions throughout the day (ten minute bursts)
- Moderate to vigorous intensity
    - Work at a level where you feel your heart is beating faster, and you are breathing harder. You should still be able to talk.
- Choose a weight bearing activity as often as you can, for better bone health
    - Eg. Walking, stairs, cross country skiing, dancing
    - Uses the positive effects of gravity

Consult Your Doctor If You:

- Have a heart condition
- Are 45 years of age or older
- Are between 35-45 year of age and have risk factors such as smoking, low back, or other chronic joint pain, elevated cholesterol, obesity, diabetes, or a family history of heart disease

Aerobic exercise can be any activity that meets the above criteria: dancing, walking, cross country skiing, Zumba. It is preferable to pick a weight bearing activity.

Walking programs

One of the easiest aerobic activities is to do a walking program. Your walking program should include a warm up period, a middle portion of the walk where the intensity is harder, then a cool down period. Your times should progress as you improve.

Sample:

Week 1	Warm up – 5 minutes Mid portion 5 – 10 minutes Cool down – 5 minutes
Week 2	Continue as above, but add 5 minutes to the mid portion of your walk. Your eventual goal is to be walking 30 minutes, 5 days a week

The middle portion of your walk should be when you area monitoring the intensity of your work. You can use the “talk test” or the “rate of perceived exertion scale” to decide if you are working at a level that is producing benefits for your heart and lungs. For the Rate of Perceived exertion scale, you should be working at a 4-6 level. For the “talk test”, you should be able to carry on a conversation during your walk. Your sentences may be shorter, but you shouldn’t be so short of breath that you can’t talk.

Rate of Perceived Exertion (1-10 Scale)

- 1 Resting/very light activity e.g.: strolling slow walk
- 2-3 Light activity/very easy e.g.: slow walk
- 4-6 Moderate – breathing heavily, but can hold short conversation eg: walking like you are late for an appointment.
- 7-8 Vigorous – very short of breath.
- 9 Very hard – difficult to maintain.
- 10 Maximal activity – very out of breath.

Tips

- Begin slowly and build gradually in duration and intensity as tolerated
- Keep a diary to track your progress
- Schedule walks on a calendar
- Set goals and reward yourself
- Get a good, well-fitting pair of shoes
- Join a walking club, or walk with a friend
- Drink plenty of water before and after you walk

Walking Away From a Sedentary Life with Proper Posture

Arm Swing

- Keep elbows at 90 degree angle
- Make short fast swings with your arms
- Keep fists loosely curled and arms close to body

Posture

- Hold head erect, not tilted
- Do not slump, look straight ahead
- Focus on a distance about 30 feet ahead
- Keep stomach muscles tight

Stride

- Take straight leg strides with legs fully extended
- Keep knees relaxed, not locked
- Do not take longer steps, just faster ones
- Think smooth

Feet

- Push off from the ball of your foot
- Land on your heel
- Roll through your foot

Effective Ways to Avoid Injuries

- Build up your level of activity **GRADUALLY** over the weeks to come
- Listen to your body for early warning pains
- Dress appropriately for the weather – wear light, loose fitting clothing
- Avoid walking immediately after meals
- Warm up properly
- Wear proper footwear
    - Firm heel that doesn't allow the back of the foot to lift out of the shoe when you walk
    - Flexible center so the sole bends easily from heel to toe
    - Roomy toe area
    - Low heel, less than one inch
    - Adequate cushioning in the heel and sole

FOOTWEAR & FOOTCARE TIPS FOR SENIORS

Stay Independent.
Prevent Falls.

Every year, 1 in 3 Alberta seniors will fall. The good news is that there are actions you can take to prevent falls.

As you age, taking care of your feet and wearing proper footwear are important to help prevent falls. Feet that are healthy and pain-free can help you keep your balance.

PROPER FOOT CARE

- Wash your feet in warm water.
- Dry your feet completely after washing, especially between your toes.
- Trim your toenails straight across and not too short.
- When sitting, put your feet up on a stool to decrease swelling.
- Check your feet often for corns, open sores, redness, dry skin, and thickened nails. Ask for help or use a mirror to see your feet.

TAKE ACTION TO MAINTAIN FOOT HEALTH

- ☑ Wear supportive footwear inside and outside your home.
- ☑ Avoid walking in bare feet, stockings, or floppy slippers with an open heel.
- ☑ Wear shoes that allow room for your feet to swell.
- ☑ Buy shoes with laces or Velcro® closures to ensure a proper fit.
- ☑ Wear shoes with a non-slip tread.
- ☑ Add ice grips to your footwear in the winter, and wear winter boots that will grip snow and ice.

Talk to your healthcare provider or doctor if you feel pain or notice any changes in your feet.

LOCAL CONTACT INFORMATION

INJURY PREVENTION CENTRE
KNOWLEDGE. LEADERSHIP. ACTION.

Alberta Health Services

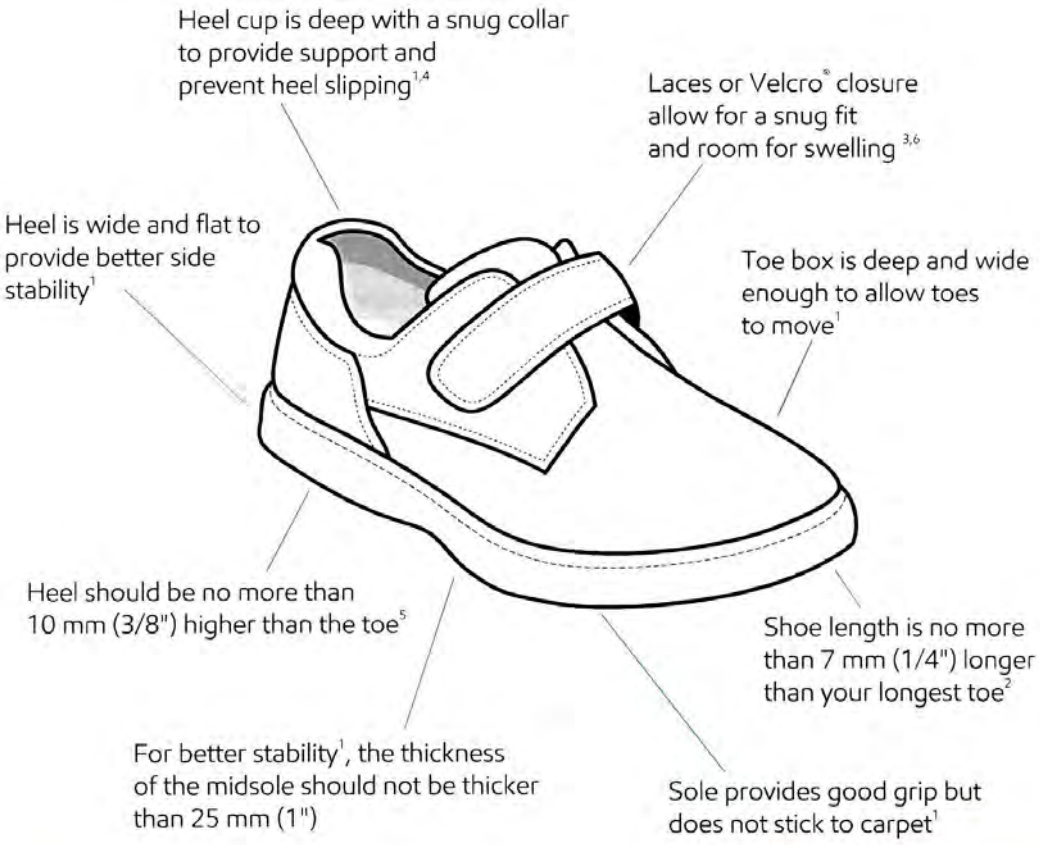
findingbalancealberta.ca

Sources available upon request.

Finding Balance

THE IDEAL SHOE
FOR SENIORS' FALLS PREVENTION

findingbalancealberta.ca



INJURY PREVENTION CENTRE

Stay Independent.
Prevent Falls.

1. Ippersiel, P.C., Dixon, A. & Fidler, Jr. Evaluating Problems With Footwear in the Geriatric Population. Geriatric Orthopaedic Surgery & Rehabilitation. 2015; 6(4) 336-340.
2. Burns, S.E., Lane, G.P. & McMurdo, M.E.T. Older people and ill-fitting shoes. Postgrad Med J. 2017; 93:334-336.
3. Menz, H.B., Auhl, M., Reiseck, S., Frescos, N. & Munteanu, S.E. Evaluation of the accuracy of shoe fitting in older people using three-dimensional foot scanning. J Foot and Ankle Research. 2014; 7:31.
4. Lord, S.R., Bashford, G.M., Howard, A. & Munroe, B. Effects of shoe collar height and sole hardness on balance in older women. J Am Geriatrics Society. 1995; 43:681-684.
5. Corrigan, J.P., Moore, D.P. & Stephens, M.M. Effect of heel height on forces during walking. Foot & Ankle. 1993; 14(2): 148-152.
6. Menz, H.B., Auhl, M. & Munteanu, S.E. Footwear comfort and stability—Predictive value for falls in older people? Maturitas. 2017; 96:64-68.

Finding Balance

Tips for Buying Shoes

- Try on shoes in the afternoon or evening: your feet may have a tendency to swell later on in the day and your shoes must fit when your feet are at their largest size
- If one foot is bigger than the other is, always buy your shoes in a larger size so that they fit the bigger foot
- If you wear orthotics or any other kind of shoe insert, be sure to take these with you, as half or full size larger shoes are necessary to accommodate them
- Discuss the store's return/refund policy before buying. Shoes that feel great in the store for a few minutes on carpeting are often not as comfortable when you get them home and have a chance to really try them
- Buy shoes to suit the occasion. A dressy sandal with a slim heel may be fine for a dinner party where you will spend your time sitting down. For everyday wear, when you are on your feet at work, shopping, travelling, or at home, sensible shoes will allow you to walk and stand comfortably for longer periods and reduce the likelihood of further joint damage occurring
- Once you have your shoes, take care of them to make them last. Have the soles and heels repaired early when signs of excessive wear are noticed. Protect the leather from the elements, and remember….no shoes will last forever! Replace them before they completely wear out
- Try to wear tube socks or hosiery that have a square end rather than circular end. This will ensure that the socks are large enough in width and long enough in length so that they are not compressing the toes.

Balance Activities

It is suggested that balance activities be carried out daily. Balance includes both static and dynamic components.

Always do balance exercises with a sturdy support nearby, a chair, counter or wall. Always have supervision when beginning a new level of activity, especially with foam rollers or unsteady surfaces.

Static balance

- Reduce your base of support
  - Start with feet shoulder width apart
  - Move your feet together so the arches are touching
  - Stand with one foot in front of the other, heel to toe. Switch the other way around
  - Stand on one foot
  - Balance on toes or heels only
- Stand on an unsteady surface
  - Stand on a foam pad, BOSU ball or ½ roller
  - Change your base of support as noted above
- Decrease the feedback
  - Close your eyes
  - Change base of support as noted above

Dynamic Balance

- Body sway
  - Forward, backward
  - Side to side
  - Alter base width as able
- Single leg stance
- "Clock" activity
- Activities – Tai Chi, Yoga, line dancing, balloon badminton

Walking Patterns

- Simple walking
  - Stride length
    - Walk a certain distance, count the number of steps
    - Walk the distance in 2-4 fewer steps
  - Walk as lightly as possible (stay tall)
  - Walk as slowly as possible (balance)
  - Walk with high knees

- Pattern walking
  - Sideways, grape vine
  - Heel to toe
  - Figure 8 around objects
  - Step overs
  - Toe walking/heel walking

- Walking with distractions
  - Walk forwards while counting backward by 7 from 100
  - Walk backwards while counting forward by 6
  - Spell words while doing any of the previous patterns
  - Walk with a second person, stop and start on their command
  - Turn your head to look at signs, posts
  - Change direction on command

Ensure you are not choosing a task that is too difficult for you, build up to the more challenging activities. Use support as needed. Always consider your safety.

Balance

- Very important – Practice daily with good shoes, proper support for hard and soft floors
- Simple test – Should be able to stand on each leg for 20 seconds. (Have support nearby to help for safety). If you need to hang onto something or have a lot of difficulty and problems, this is something you need to improve
- Balance depends on many things, it's a complex function
    - Visual cues (eye sight)
    - Auditory cues (hearing)
    - Muscle strength
    - Posture
    - Sensation of feet on the ground
    - Movement
    - Body awareness, especially head position
- Poor balance can lead to increased risk of falling, high risk of fracture, and fear of falling
- What is your walk like? Shuffling gait increases risk. Or do you walk quickly to reduce balance time on each foot?
- Do you "furniture surf" or touch walls?
- Work on proper gait patterns and/or use walking aids as required.

Websites

- **Osteoporosis Canada**
  www.osteoporosis.ca
  1-800-463-6842
  Can view or download the following:
  - Osteoporosis Guidelines
  - Too Fit to Fracture - guidelines for exercise prescription, workbook
  - Information on nutrition (calcium calculator), medications
  - Are You Too Fit to Fracture?
    - Videos – how to get down to floor
    - How to get up after a fall
    - After a fracture
  - Bone Matters Webinars
  - Bone Fit
  - Osteo Fit Canada
  - Phone number to call for information

- **Melioguide (Margaret Martin, Physical Therapist)**
  www.melioguide.com
  Books that can be ordered:
  - "Exercise for Better Bones"
  - "Yoga for Better Bones"
  - "Strengthen Your Core"
  - **DVD:** "Stronger Bones, Stronger Body"

  Age strong with exercise – YouTube series

- **Finding Balance**
  www.findingbalancealberta.ca
  Can view or download the following:
  - Online fitness videos
  - Physical Activity Toolkit
    - Movement log
    - 8 week walking program
    - Community resources

- **Inform Alberta**
  www.informalberta.ca
  Service directory for Alberta programs and services

- **Canadian Continence**
  www.canadiancontinence.ca
  Information on busy bladders

- **Silver Times**
  www.silvertimes.ca/home/active-living
  A publication of Active Aging Canada
  Advice on keeping active, information on exercises, activities (balance, polewalking, travelling)

- **Walk like a penguin (AHS)**
  https://www.youtube.com/watch?v=LHaWGibGwyk

- **Walkalberta.ca**
  - Walking clubs eg. St Albert Trekkers

- **Other Exercise Programs**
  - Urban Poles
    www.urbanpoling.com
  - Tai Chi

- **Movement Moments (You Tube)**
  - https://youtu.be/8XkQ35MrMBo

Resources

- **To find an OT:** Alberta College of Occupational Therapists
  780-436-8381 1-800-561-5429
  www.acot.ca

- **To find a PT:** Physiotherapy Alberta (College and Association)
  780-438-0338 1-800-291-2782
  www.physiotherapyalberta.ca

- **To find a Rec Therapist** Alberta Therapeutic Recreation Association
  1-403-258-2520 1-800-258-2520
  www.alberta-tr.org

The listed resources are provided solely for information purposes and Covenant Health does not endorse any particular resource listed.