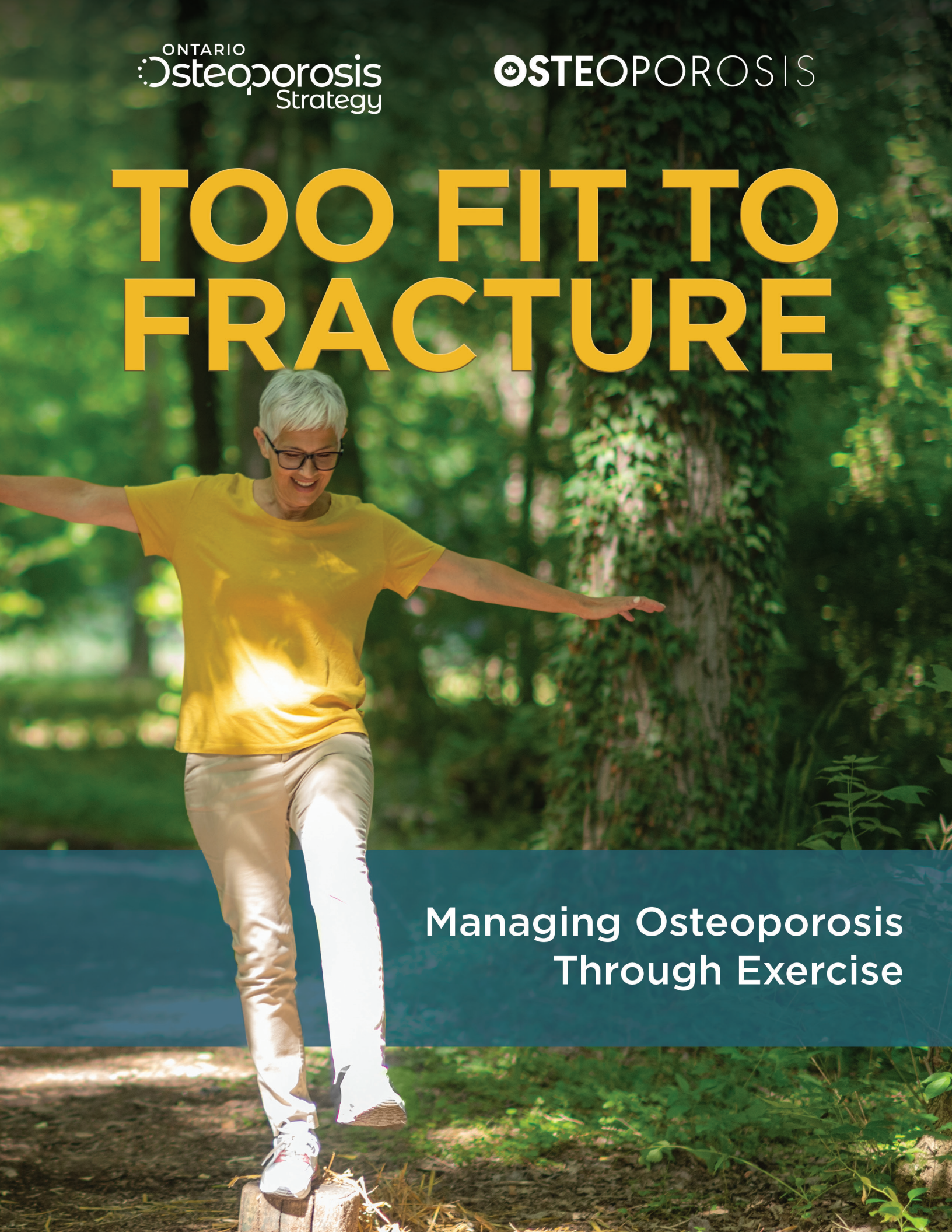
ONTARIO Osteoporosis Strategy

OSTEOPOROSIS

TOO FIT TO FRACTURE



Managing Osteoporosis Through Exercise

Disclaimer:
It is important to note that the information provided in this booklet is not intended to replace the advice of your healthcare provider. The purpose of this booklet is to offer general education on exercise and should not be considered as a substitute for personalized exercise programs. Before initiating any exercise regimen, it is crucial to discuss your plans with your healthcare provider. They can assist you in determining the appropriate starting point, identify specific areas to focus on, or recommend the involvement of an exercise professional, if available in your community.

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About this booklet

A group representative of physicians, exercise professionals, researchers, and patients has reviewed clinical trials focused on exercise in individuals over the age of 50 at risk of fractures and developed guidelines based on those trials. This booklet summarizes these guidelines and provides practical tips to help you implement them.

What's in this Booklet?

This booklet provides valuable information and resources to support your understanding and engagement in safe and effective exercise for osteoporosis prevention and management. Here's what you can expect to find:

- Exercise recommendations to help prevent falls and fractures.
- Tips for spine-safe movement and exercises suitable for individuals with osteoporosis.
- Information on approaches to various types of exercise including yoga, Pilates, walking, running, and selecting community exercise classes.
- Tools and resources to help you plan and structure your exercise program effectively.

What is Osteoporosis?

Osteoporosis is a disease characterized by weakened bones that are more prone to fractures.

- Fractures can occur during everyday activities that involve reaching, lifting, or bending and can even happen while coughing or sneezing.
- Falls or trips can also result in bone fractures.

The most common fractures associated with osteoporosis occur in the forearm or wrist, upper arm, hip, pelvis, and vertebrae (spine bones). To prevent fractures, take steps to prevent falls, such as improving balance, removing trip hazards, or addressing risk factors like poor vision. Proper nutrition, the right kinds of exercise, and medications can help prevent bone loss or increase bone mineral density.

Exercise Professionals who can help you

Exercise professionals can support you in your exercise journey. In this booklet, an "exercise professional" refers to individuals with specific qualifications and expertise. Depending on your specific needs and circumstances, consulting with exercise professionals may help you develop a safe and effective exercise plan.

Here are some examples of exercise professionals:

1. Physical Therapists:
They work in diverse fields, utilizing exercise and other therapeutic techniques to assess, diagnose, and treat symptoms related to illness, injury, or disability.

2. Kinesiologists:
They work in various areas, including health promotion, assessment, and exercise prescription.
Some Kinesiologists may also have additional qualifications as exercise physiologists.

3. Clinical Exercise Physiologists:
Clinical exercise physiologists specialize in health promotion and the assessment and prescription of exercise programs tailored to individual needs.

Bone Fit™ Professionals

Osteoporosis Canada offers an evidence-based training program called Bone Fit™ that provides education and training to health and fitness professionals. Bone Fit™ trained professionals can provide you with exercises that are safe and effective for people with osteoporosis. A Bone Fit™ trained professional can also help you plan an exercise program.

bonefit™

To see if there is a Bone Fit™ trained professional in your area visit the Bone Fit website at: **Bonefit.ca/locator**

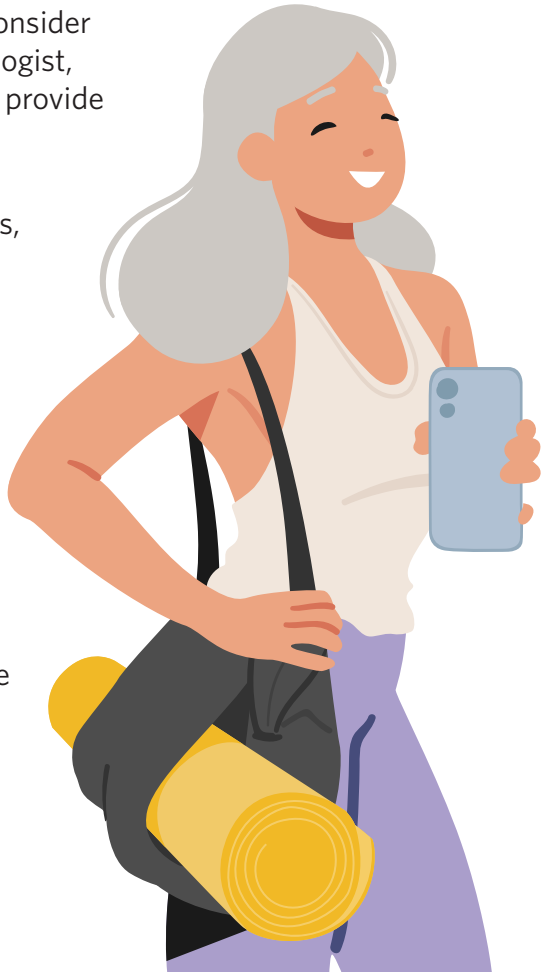
Getting Started

Important Considerations:

- Consult a doctor or nurse practitioner before starting any exercise program if you have had recent fractures, significant unplanned weight loss, low body weight, or are at high risk of fractures.
- Once you have consulted your doctor and are ready to start a new exercise program, use the **Get Active Questionnaire**.

Get Active Questionnaire:
https://csep.ca/2021/01/20/pre-screening-for-physical-activity/

- Use proper footwear with a good grip to enhance stability and safety.
- Opt for breathable clothing that allows for unrestricted movement.
- If you have any questions or concerns, consider speaking to a physical therapist, kinesiologist, or clinical exercise physiologist who can provide guidance and expertise.
- Focus on slow and controlled movements, maintaining proper form throughout your exercises.
- Have a support object, such as a chair, counter, or wall, nearby to aid in balance if needed.
- Stay hydrated by replenishing fluids lost through sweat during exercise.
- Keep a phone within reach during exercise sessions in case you need to call for help.



Tips for Safe Physical Activity

I am worried about falls or fractures during exercise.
What are my options?

- Discuss the benefits and risks of the activity with your healthcare provider.
- Balance and functional training at least twice weekly will reduce fall risk.
- People at high risk of fractures may need to avoid activities with high fall risk or high twisting or bending forces on the spine.
- Ask an exercise professional for exercise modifications (e.g., slower pace, change your swing, use devices like hip and wrist protectors).

For Indoor Exercise, ensure that your space:

- Is free of clutter.
- Has a firm, flat floor that isn't slippery.

For Outdoor Activities, be mindful of:

- Holes, obstacles, or uneven surfaces.
- Icy, wet, or slippery surfaces.
- Planning alternatives for hot, rainy, or icy weather.

When engaging in any exercise, ensure that you:

- ☐ Warm up 5-10 min. with activities that get your muscles working and heart pumping.
- ☐ Cool down 5-10 min.; move major muscles groups through their range of motion.
- ☐ If you are feeling unwell, choose a different day to exercise.

Spine Safe Movement

The bones of the spine are called vertebrae. The vertebrae are stacked with discs in between that absorb shock. Muscles attach to the vertebrae and allow you to twist, or bend forward, backward or side to side. Avoiding all spine movement is not a good strategy because it is integral to maintain independence. When loads on the spine are small, movement is healthy. The higher your fracture risk, the more likely you may need to avoid or modify certain movements, such as:

- Twisting your spine quickly, over and over, or all the way.
- Bending your spine forward quickly, over and over, or all the way.
- Combined spine twisting and bending.
- Twisting or bending the spine while holding something heavy.
- Forcing the hip to rotate out, like the pigeon pose in yoga.

Twisting

High muscle forces from twisting too fast, or while holding heavy things, can fracture spine or rib bones, or injure other tissues.
Bend at the hips, not the spine. Make sure your feet face the same direction as the rest of your body.
Use a step-to-turn. When twisting, move in a slow and controlled manner.

Bending

Bending forward compresses the bones of your spine. A fracture occurs when the compression is higher than the bones can tolerate.
Avoid curving the spine to pick something up.
Hinge at the hips, pushing the buttocks backwards.
When bending, move in a slow and controlled manner.

Holding/Lifting Heavy Objects

Bending the spine while holding something heavy can increase fracture risk. Bend at hips, knees and ankles, and let leg muscles work to help you lift.
Lift and hold heavy objects close to your body.
Keep the spine neutral, not bent.
Hold bags on both sides of the body so they are balanced.

How to Move Safely During Every Day Activities

Some movements can increase your risk of a spine fracture. Here are some examples of risky movements and safer ways to do these movements.

RISKY	SAFER
Bending all the way forward when you pick up an object from, or lower an object to, the floor.	Bend with your knees and hips, not the spine. Use a grabber tool, also called a "Reacher".
Rotating or twisting the spine when you get out of a car or sweep the floor.	Step and turn with your feet. Twist slowly and in control. Don't over twist.
Standing on an unstable footstool, chair or ladder, like to change a lightbulb.	Use a wide step stool with non-slip grips on the steps and on the feet.
Lifting heavy objects into high cupboards.	Hold the object close to your body. Stand on a step stool.
Lifting objects into low cupboards	Store heavy things at waist height. Bend at hips, knees and ankles, keep object close to body. Or get assistance.
Lowering bags from overhead storage areas on a plane.	Ask someone to do it for you or check your bags.
Lifting or moving furniture.	Get someone else to do it.
Rotating your body but not moving your feet while you vacuum or rake.	Step to turn. Your leading foot and trunk should face the same direction.
Walking or stepping into a room or pool area that has a slippery or wet floor.	Wear shoes or slippers with good traction. Walk slowly and check the floor. Take a test step before you walk.
Twisting or bending and lifting when you shovel snow.	Bend with your knees and hips, not the spine. Step to turn. Your leading foot and trunk should face the same direction.
Twisting or bending and lifting when you make your bed.	Bend with your knees and hips, not the spine. Stand close to the bed
Moving from lying in bed to getting out of bed.	Slide your arm out alongside your ear. Roll your whole body onto its side. Bend your knees to 90 degrees. Use your arms to push yourself up.

What is "too heavy"?
It depends on your fracture risk, muscle strength and abilities. Consider what you are used to habitually lifting and feel confident lifting safely. If you want to be able to lift heavier things, build strength gradually with muscle strengthening exercise. Consider HOW you lift – keep weight close to the body. Individuals who are at high risk of fracture may need to limit the amount of weight they lift, or the type of lifting activities they do.

Muscle Soreness and Pain

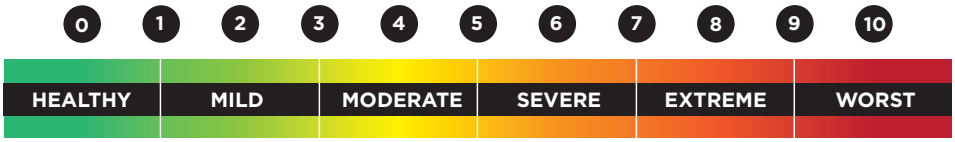
Exercise pushes your body outside of its comfort zone and may result in unusual sensations including weakness, discomfort, or pain. Take a moment to reflect, describe and monitor what you're feeling:

Describe the sensation
Where is it located? Does it radiate?
Use adjectives to express how it feels.

Describe the timing of the sensation
When does it feel better or worse?
How often does it occur and how long does it last?

Think of what aggravates the sensation
Certain movements or positions?
What makes it worse?

Think of what usually resolves your sensation
What makes it go away?
What makes it feel better?



If you feel pain, use the pain scale to rank your pain from 0 to 10.
When you experience pain, use a 0-10 scale to assign it an intensity. It helps your healthcare provider if you describe what the pain feels like to you e.g., stabbing, aching, burning, sore.

Muscle soreness is a sign that your muscles were working hard. Muscle soreness for 1-2 days after exercise is normal. This is called **Delayed Onset of Muscle Soreness (DOMS)**. Your muscles will recover and get stronger, and you will be less sore over time.

It is okay to keep exercising if:

- Muscle fatigue or soreness during or after exercise goes away after a few days of rest.
- You live with pain due to arthritis or other conditions, a small-moderate increase in pain (e.g., less than 5 out of 10) during or after exercise may be okay.

Check with a professional if you feel:

- "Burning," "stabbing" or "sharp" pain during or after exercise.
- Pain that limits your day-to-day activities.
- Pain after exercise that does not go away within 3 days.
- Chest pain or new back pain.
- Pain associated with a "popping," "tearing" or "snapping" sensation.
- If you live with pain due to arthritis or other conditions, pain above 5 during or after exercise may be too much.

Summary of Too Fit To Fracture Recommendations

Prioritize doing exercises or activities that challenge

BALANCE

or improve function twice a week or more

Practice staying stable during positions or movements that make you a little unstable. For example, walking on heels or toes, toe taps on a step, or Tai Chi.

Work on skills or strength to improve functional abilities. For example, practice sit to stands to make it easier to get out of a chair, couch, or bed.

Prioritize

MUSCLE STRENGTHENING

exercises twice a week or more

Muscle strengthening or "strength training" exercises involve working specific muscles against resistance at a prescribed intensity, progressively making it harder over time. To improve posture, your muscle strengthening program should include exercises for muscles that control your shoulder and spine movements. Example muscle strengthening exercises include: squats and bridges to improve leg strength, elastic band rows and counter push-ups for upper body and shoulder muscles, and planks and bird dog to target abdominals and back extensors.

Do other

PHYSICAL ACTIVITIES

for fun or fitness

Being physically active is important for health and wellness. Many people choose activities like yoga, Pilates, walking, Nordic walking, dancing, and jogging to improve health or for fun.

Do them in addition to, not instead of, the balance and muscle strengthening exercises as previously mentioned. Be mindful of fall risk and spine safe movement for all exercise and physical activity.

Canadian 24-Hour Movement Guidelines recommend a variety of types and intensities of physical activities for health benefits:

- 150 min or more of moderate to vigorous aerobic physical activity per week.
- Muscle strengthening activities using major muscle groups at least twice a week.
- Physical activities that challenges balance.
- Get 7 to 8 hours of good-quality sleep on a regular basis, with consistent bed and wake-up times.
- Limiting sedentary time to 8 hours or less, which includes no more than 3 hours of recreational screen time and breaking up long periods of sitting as often as possible.

For more information, visit: **https://csepguidelines.ca**

Seek advice from an exercise professional on exercise selection, intensity and progression, especially if you have had a recent fracture or if you are at high risk of fracture.

BALANCE EXERCISES

Balance and functional exercises can reduce falls by at least 20%, which may prevent fractures and other injuries.

About Balance Exercises

Static balance exercises are ones where you hold a specific position without moving your body (or while standing still).

Dynamic balance exercises involve maintaining your balance while moving around.

Functional exercises mimic everyday tasks or activities, and the focus is on skill practice. The more you practice a specific task, the better you will be able to perform it. Examples include:

- **Sit-to-stands** to improve your ability to get out of a chair.
- **Step-ups** to improve hiking and stair climbing ability.
- **Walking patterns** to practice stability during walking.

sit-to-stands

Things That Affect Balance:

- **Base of support**
  is the area between your feet, or between your feet and a walker or cane if you use one. A larger base of support makes you feel more stable.

- **Body position**
  If you lean forward too far, or move fast, you may lose your balance and fall.

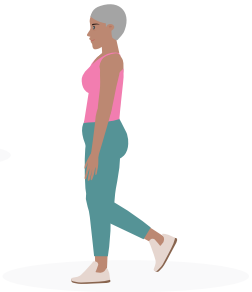
- **How you react when you become unstable**
  If you lose your balance, are you able to react quickly enough to restore stability, by taking a step or grabbing a handrail?

How to incorporate balance exercises:

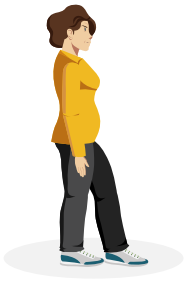
Include balance exercises two or more times per week, increasing difficulty over time.

- Select exercises that feel like a challenge, but not so difficult that they would cause you to fall.
- Examples of beginner balance exercises include:
    - Stand on one leg with a support object.
    - Stand with your feet heel to toe.
    - Start with 10 second holds for static balance exercises, and work towards increasing the amount of time.
- Try Tai Chi or exercise classes that include exercises that will challenge your balance, like yoga or Pilates.
- Add functional balance exercises into your day.

stand on one leg with support



without support



heel to toe

Ways to progress exercises:

- Rely less on supporting objects.
- Do exercises that involve reaching or weight shifting, like a kickstand or one leg Romanian deadlift without weight.
- Move your feet closer together or go onto one leg to reduce your base of support.
- Close your eyes or turn your head.
- Walk while balancing on your toes or heels only.
- Maintain balance while moving, like toe taps on a step, or complex dance moves.
- React to things that challenge your balance, like catching a ball or reaching for things.
- Move your body in many directions. Try Tai chi, stepping games, stepping patterns.

catching a ball

How Hard Should You Work?

Choose exercises that are hard enough that you have to focus on maintaining your balance, but not so hard that you feel like you will fall. If you no longer feel a challenge, progress your exercises to a higher difficulty.

Some items that you may need for balance training:

- Balls to catch
- Support object to use or have nearby (e.g. sturdy chair, counter)
- Shoes with good grip
- Reactive stepping games like ClockYourself **https://www.clockyourself.com.au**

MUSCLE STRENGTHENING

Balance and functional exercises can reduce falls by at least 20%, which may prevent fractures and other injuries.

Strength training can make your muscles look and feel stronger, improve mobility, and may increase bone strength.

About Muscle Strengthening Exercises

Muscle strengthening involves performing movements against **resistance** until your muscles are fatigued. Muscle strengthening is also called resistance training, strength training, and sometimes, functional training.

Train each muscle group at least twice a week. A basic muscle strengthening program can be as few as 5 or 6 exercises per training session. A muscle strengthening program should include the number of **sets**, repetitions per set, a **tempo**, and **rest time** between sets and in between training days.

Repetitions (Reps): The number of times you repeat the exercise. For example: 10 squats = 10 reps of squats.

Sets: The number of times you repeat a specific number of repetitions. For example: 10 squats, rest, 10 squats = 2 sets of 10 reps of squats.

Tempo: The speed at which you lift and lower the resistance. An example tempo: take four seconds to lower into a squat position, no pause, take two seconds to push back up into standing, and one second pause before lowering again (a tempo of 4:0:2:1).

Rest time: In between each set in a workout, you will take a brief rest, usually one to three minutes, depending on how hard you are working or what your goals are. After doing a strength training workout at moderate-high intensity, you might need a rest day before doing the same exercises again. Rest time is meant to help you recover.

How to incorporate strength exercises:

Choose at least one exercise for each muscle group and do it at least twice per week, increasing difficulty over time.

- Examples of different muscle groups: chest, back, quads, hamstrings, lower back, shoulders, abdominals.
- You can perform one exercise for each muscle group on the same day OR divide your training schedule by muscle group.
  Here is an example of a training split:

MON	TUE	WED	THU	FRI	SAT	SUN
Upper Body	Lower Body		Upper Body	Lower Body		

Another approach is to choose exercises in functional movement categories, such as: Push, Pull, Squat, Lunge, Hinge, Carry, Reach/Press. Learn to do the exercises properly with good form and alignment. Don't forget to add balance exercises!

Push: chest and arms

Pull: upper back and arms

Squat: upper legs and lower legs

Hinge: upper legs and lower legs

Carry: whole body, including abdominals and back extensors, and forearm muscles

Reach or Press: arms, shoulders, back

Movement	Beginner	Moderate	Hard
Push	Wall push-up	Counter push-up	Floor push-up
Pull	Elastic band row	Supported dumbbell row	Pull-up
Squat	Sit-to-stand	Bodyweight squat	Goblet or back squat
Hinge	Bridge	Hip hinge with resistance	1 leg hinge
Carry	Farmer's carry	Suitcase carry	Bottom's up carry
Reach/Press	Overhead reach	Elastic band press	Pike push-up

Reminder:
Bone Fit™ trained exercise professionals can work with you to create a personalized training schedule!

How hard should you work?

Practice good form first, before increasing intensity. Do two sets of 5-10 reps of each exercise.

Progressive overload means gradually making the exercise program harder over time by changing the intensity, the type of exercise, the frequency or the sets and reps. We must do harder exercises over time to continue improving.

Increase the number of repetitions over time, up to 12. The last 2-3 repetitions should feel like hard work. Here are some other ways to make your exercise program more difficult:

- Increase volume (e.g., increase the reps, sets, weight, number of exercises, or training days per week).
- Increase intensity (e.g., increase how hard the exercise is by increasing the amount of weight or resistance you use or by slowing down or speeding up the tempo, and doing fewer repetitions).

Note: Change only one at a time; wait two workouts before making another change.

What is exercise intensity?

Intensity refers to how close to your maximal capacity you are working at.

Low/Light Intensity

- Does not feel like hard work.
- You can do it for a longer period of time without getting tired.

Moderate Intensity

- Feels like hard work.
- You are breathing harder,
  but you can still carry on a conversation.
- For muscle strengthening exercises: can do 8-15 repetitions, but not more.

Vigorous or High Intensity

- Feels VERY hard.
- You are breathing a lot harder, and you cannot say more than one or two words without stopping for breath.
- For muscle strengthening exercises: can't do more than 5-6 repetitions.

What is the difference between functional exercises and muscle strengthening exercises? Which should you start with?

Functional training means doing exercises that are similar to an activity you want to get better at e.g., step-ups to get better at climbing stairs.

Resistance or muscle strengthening exercises involve muscles contracting against resistance to "overload" or close to fatigue. The resistance can be weights, elastic bands, or working against gravity.

Many exercises can be both functional and muscle strengthening exercises.

It depends on your goals and abilities! There is overlap because some functional exercises will also improve muscle strength, and muscle strengthening can also improve function. It is ideal to do a combination of balance, functional and strength training exercises, but some people may want to start with a few balance and functional training exercises, and progress to a more challenging program that includes moderate or high intensity muscle strengthening once they have built up strength, balance and confidence.

Start with functional training if:

- You are new to exercise or want to get better at specific activities.
- You have balance difficulties.
- You want to reduce falls and improve physical functioning.

Muscle strengthening might be beneficial for you if:

- You are ready to exercise at moderate or high intensity.
- Falls prevention or functional training programs are too easy.
- You want to improve physical functioning, muscle strength, or bone mineral density.

If you want to focus on functional and balance exercise to reduce fall risk, the Otago program is a balance and functional training program for adults aged 65 years and over who have a history of falls:
www.physio-pedia.com/Otago_Exercise_Programme

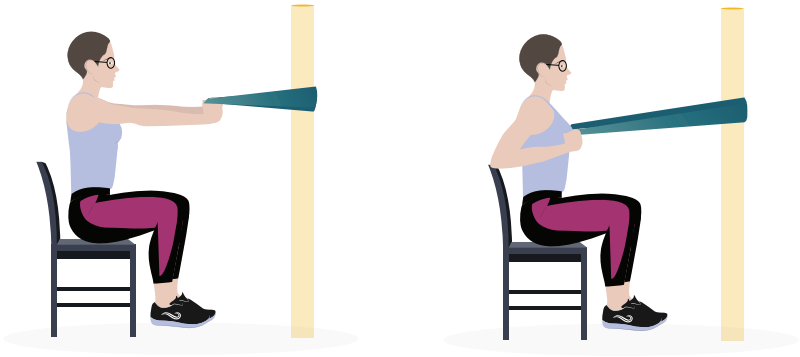
Items that you may need for strength training:

- Exercise bands or weights for resistance
- You can use household items such as full shopping bags, jugs of laundry detergent or vinegar to add resistance to exercises

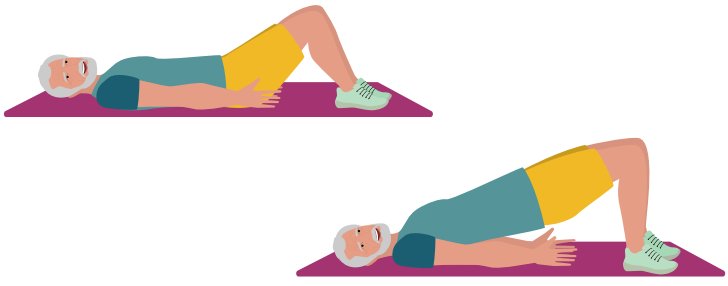
What if standing exercises are too hard?

If you need to, start with exercises done lying down or seated below. Slowly progress to more challenging exercises.

seated leg extension



seated row with band



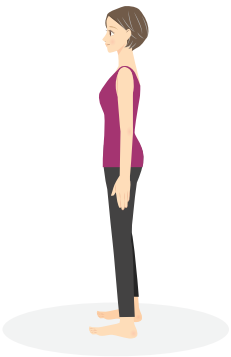
bridge

IMPROVING POSTURE

Posture is how you hold your body when moving or standing. "Good" posture can vary from person to person. A slight curve in the upper back is normal, however, an exaggerated curve can occur because of a spine fracture. Posture can be affected by certain health conditions, habits, muscle weakness, and joint mobility. Your muscles work to counteract gravity or maintain posture, therefore muscle weakness and some posture habits can cause pain and stiffness.

Tips to Maintain Good Posture

- Use a mirror to be aware of your posture.
- Take mobility breaks every 30 minutes. Stand up and move around for 5 minutes or more.
- Mobilize joints that may get tight from sitting (e.g., knees, hips).
- Practice standing and sitting tall.

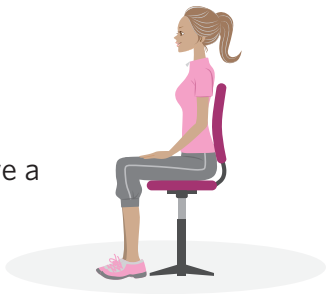


Cues for Standing Posture

- Look straight ahead and gently tuck in your chin.
- Lift your chest slightly and relax your shoulders.
- Brace or tighten your core muscles.
- Stack your ribs over your pelvis instead of letting your ribs stick out.
- Balance your weight evenly on both feet.

Cues for Sitting Posture

- Look straight ahead and gently tuck in your chin.
- Lift your chest slightly and relax your shoulders.
- Sit up straight.
- Place something behind you to support your lower back if you have a tendency to slump (I.e., small pillow)
- Place your feet flat on the floor.

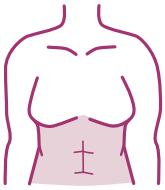


Posture During Exercise and Physical Activity

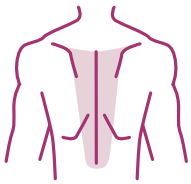
- ✓ Tuck in your chin if it is sticking out. Spread collarbones apart, stack ribs over pelvis, tuck ribs in.
- ✓ Keep your knees relaxed.
- ✓ Brace or tighten your abdominal muscles to stay stable and strong.
- ✗ Avoid holding your breath. Instead sync your breathing to the exercise. i.e., exhale during the exertion portion of the movement.
- ✗ Instead of just bending at the spine, bend at the hips, knees, and ankles.
- ✗ Avoid pulling your shoulders back so much that your chest is pushed out, because it can cause muscle fatigue and strain.

What muscle groups are involved?

Back extensor and abdominal muscles create movement at the spine and stabilize the spine during movement. Muscles around the shoulder blade keep your shoulders from hunching forward. Strengthening shoulder, back and abdominal muscles may help improve posture or prevent a stooped posture.



Abdominal muscles
are at the front and sides of your torso.



Back extensor muscles
are at the back of your torso, close to your spine.

Other muscles that affect posture are the muscles that move the head, the muscles around the shoulder blade, and the muscles of the chest.

If your goal is to improve your posture, include exercises for back extensor muscles, abdominal muscles, and muscles that move the shoulder blades as part of your muscle strengthening program.

Exercises that can help Improve Posture

Back Extensor Muscle Exercises: Bird Dog
Create a strong, straight line with your body. Lift and extend one arm and one leg. Extend in front and behind you, not up. Keep your abdominal and buttock muscles tight.

bird dog

bird dog
with chair support

Abdominal Muscle Exercises: Plank
Form a strong, straight line with your body. Use your abdominal and buttock muscles to keep your hips level with the rest of your body.

Shoulder Muscle Exercises:

- Seated row with band (Beginner)
- Bent-over row with dumbbell (Advanced)
- "Make a W" exercise

bent-over row

Chest and Shoulder Stretches:
Chest muscles shorten when our shoulders are rounded forward. Therefore, it is important to do exercises and stretches for these muscles to prevent rounding of the shoulders.

Community and Recreational Activities

Yoga and Pilates

- ✓ Yoga and Pilates may improve physical functioning and quality of life.
- ✓ If you do yoga or Pilates, do them in addition to, but not instead of, balance and functional or muscle strengthening exercises.
- ✗ For people at risk of fracture there aren't many studies of the risks or benefits of yoga or Pilates
- ✗ Some movements that involve bending or twisting of the spine may be risky.

Yoga

Tips for Safe Yoga Practice

- Tell the instructor you have osteoporosis or have recently broken a bonebone, and share your level fracture risk.
- Look for a class or instructor who knows safe and effective exercises specific for osteoporosis. (i.e., locate a Bone Fit™ trained professional).
- Focus on control, not intensity.
- Be mindful of how you move during transitions between poses/moves.
- Consider using a support object or yoga socks for better traction.
- Consider consulting a Bone Fit™ trained exercise professional on what is safe for you.

Poses that can be included:

- ✓ Shavasana with Pranayama
- ✓ Bridge
- ✓ Chair
- ✓ Warrior 2
- ✓ Mountain

warrior 2

Poses to consider modifying:

- ✗ Seated spinal twists
- ✗ Ragdoll
- ✗ Saw
- ✗ Pigeon

downward dog

Pilates

Moves that can be included:

- Warm-up: Pilates Breath, Head Nod, Imprint and Release
- Shoulder/Scapula Isolation
- Shoulder Bridge
- Breast Stroke Prep
- Side Leg Work
- Plank
- Cool-down: Shell Stretch modified for osteoporosis with hip hinge

Moves to consider modifying:

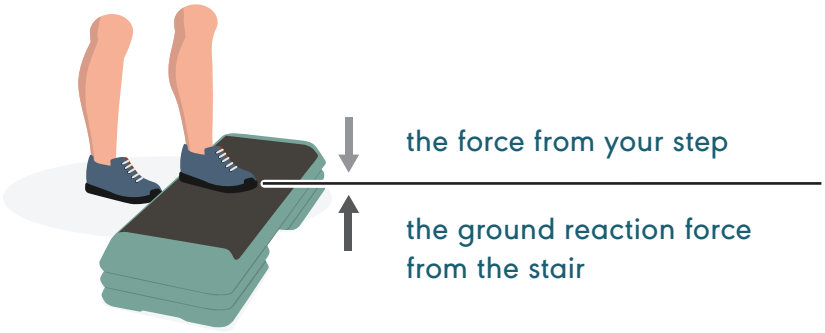
- Ab Prep
- Rolling Like a Ball
- Criss Cross
- Spine Twist

Ask Questions!

If you are unsure how to do or modify these activities safely, consult a healthcare provider or an exercise professionalwho knows how to modify yoga or Pilates for someone with osteoporosis.

Impact Exercises and Activities

Impact exercises or activities are when your arms or legs come in contact with the ground or other surface while supporting your body weight, and there is an impact that is absorbed by bones, muscles and joints. The more force (**impact**) we put on the ground, the more force we experience in our bones, muscles, and joints. Think of the jolt you feel in your legs after you jump (high impact), compared to when you walk (low impact).



What Do We Know About Impact?

Impact exercise may help maintain or increase bone mineral density, but more studies need to be done. Few studies looked at impact exercise alone and most studies combine impact with strength training.

Some people may want to add impact exercises to their balance and muscle strengthening program. If you do, start with low impact exercises, and progress the intensity gradually.

Studies researching moderate or high impact exercise often exclude people at high risk of fracture or with joint and back problems. The effect of impact exercise on fractures, pain, or injuries in individuals at high risk of fractures or joint pain are unknown.

To prevent the risk of falls or fractures, individuals with osteoporosis should do balance and functional training, combined with strength training. Some individuals with osteoporosis can add moderate-high impact exercise, if it is safe for them.

- **Low impact: Heel Drops**
- **Moderate impact: Aerobic Step Class**
- **High Impact: Jumping**

How to incorporate impact exercises

- Begin with low impact activities.
- If you have osteoporosis, progress impact exercise slowly.

Before you progress to moderate or high impact, consider:

- Have you had a spine or hip fracture?
- Are you at high risk of fracture?
- Do you have other problems with muscles, bones or joints that might get worse with impact exercise?
- Has a healthcare professional told you to avoid impact exercise or stick to low impact?

If you answered yes to any of the above, or you are unsure, you can:

- Continue low impact activities.
- Ask an exercise professional with training on osteoporosis whether impact exercises are right for you, which ones you should do and how to progress them.

Here are some examples of Impact Exercises:

Low impact:

- Dancing
- Grape vine
- Brisk walking

Moderate Impact:

- Running
- Jump rope
- Racquet sports
- Field sports
- Side hop

High Impact:

- Star jumps
- Tuck jumps
- Vertical jumps
- Drop jumps

Walking and Running

Walking and Nordic Walking
Nordic walking is a vigorous walking technique using poles to increase stride, stability, endurance and even speed, unlike regular walking, yet similar to cross-country skiing. The push-pull of the poles engages all muscles groups. Nordic walking is a popular four-season outdoor physical activity whether in the city, on the hiking trail or along the beach.

What do we know about walking or Nordic walking for osteoporosis?

- There are very few studies of walking or Nordic walking that can be used to draw conclusions.
- A cane, walking poles or walker can be used to make you feel more stable.

DO
walking, hiking or Nordic walking for enjoyment or other health benefits.

DON'T
skip balance and functional or muscle strengthening exercises.

Jogging and Running:

- Are types of vigorous physical activity.
- Both are considered moderate impact activities.
- May have additional health/cardiovascular benefits.
- May be okay for some people and risky for others. For example, if a person has had a prior spine fracture due to running, they may be at risk of another one.

There are very few studies on the risks and benefits of jogging and running. Consult a physical therapist, kinesiologist, or a clinical exercise physiologist to see if jogging or running is right for you.

Did you know?

Walking or Nordic walking has not been proven to increase hip bone mineral density or prevent falls in people with a higher risk of fracture. Functional and balance training prevents falls. Muscle strengthening combined with impact exercise may help maintain or increase bone mineral density.

What about physical activities that you enjoy or that you do with family or in the community?

- Continue these activities if they can be done safely.
- Find ways to add balance or strength challenges or embed them into activities you enjoy.

Exercise in Your Community

Finding a Group Class

What should you look for?

- Classes with a focus on the quality of movement, not speed or intensity.
- Classes that use spine safe movement or movements that can be modified to be safe for you.
- Lower-impact activities: some people may progress to moderate-impact or high-impact.
- Instructors who know what osteoporosis is, and how to modify exercises.

Here are some ways to check community centers, recreation centers and gyms near you:

Online - Check their website to see a schedule of classes.

Phone – Call the information desk to ask about programs they offer.

In person – Go in person to your local gym or recreational facility to learn more.

Questions to ask your instructor

- What certifications or training do you have specific to people living with osteoporosis?
- How would you support and empower people in your class who are at risk for falling and fracturing?
- What modifications for safe movement do you offer in your classes for people at a higher risk of fracture?
- How do you accommodate people with a range of abilities?

Tai Chi is an example of a community class that involves using slow, controlled body movements while focusing on breathing. Tai Chi is:

- Safe for people with low bone mineral density.
- An activity that challenges balance.
- A great group activity.

Click here for more information on the benefits of Tai Chi or visit Osteoporosis.ca

Case Studies

Mark's Exercise Story

Mark, who is 79 years old, was diagnosed with osteoporosis a few years ago. He enjoys walking his dog, although he has noticed that his pace has slowed, and he finds stairs difficult. In the past six months, Mark has experienced two falls. He broke his wrist at age 72, which lead to an osteoporosis diagnosis. Mark was surprised to learn that men could get osteoporosis.

After reviewing materials from Osteoporosis Canada on exercise, Mark created home exercise plan. He also started attending a community Tai Chi class every Friday with a friend.

WHAT exercises is Mark going to start with?

Choose 3-5 balance exercises:

1. Tandem stance with chair (2 sets x 10 second hold)
2. Toe taps on step, step-ups, and side stepping (2 sets, 10 repetitions each)
3. Community Tai Chi class 1x/week

Choose at least 1 functional or muscle strengthening exercises from each group:

Squat – sit-to-stand

Hinge – wall tap hip hinge

Push – wall push-ups

Pull – supported bent over dumbbell row

Reach – bird dog using counter or chair

3 sets of 8-10 repetitions, moderate intensity

Other Physical Activities:

Walking the dog briskly, and practising stair climbing once daily to improve his ability to climb stairs.

WHEN is Mark going to complete each type of exercise?

MON	TUE	WED	THU	FRI	SAT	SUN
✓ Balance ✓ Functional / Strength		✓ Balance ✓ Functional / Strength		✓ Balance		

WHERE and HOW will Mark do his exercise?

- Balance and functional exercises will be done in the kitchen after breakfast, using the counter as a support object. Use exercise band for resistance. Progress to a harder band.
- Keep pictures of exercises on bulletin board and set calendar reminder on phone.
- Tai Chi at community centre, set calendar reminder for Friday mornings.

Paulina's Exercise Story

Paulina, a 52-year-old woman, was diagnosed with osteoporosis three years ago. She has never had a fracture. She has been going to the gym three times per week to do Zumba classes and a class with some muscle strengthening exercises using light dumbbells. Ready to try more challenging muscle strengthening exercises, Paulina consulted a clinical exercise physiologist to design a program for her and teach her how to progress her exercises.

To make it easier for her to form a habit of going almost every day, Paulina decided to split up her program and visit the gym more often. She also learned how to adapt her exercises for home workouts when she doesn't go to the gym. Posture is important to her, so Paulina includes exercises for abdominal and back extensor muscles.

WHAT exercises is Paulina going to start with?

Balance exercises:

1. Grapevine stepping pattern (2 sets, 10 feet in each direction)*
2. ClockYourself App (5 minutes)* https://www.clockyourself.com.au
3. Zumba class 1x/week (stepping patterns)

*done as warm up before weights

Functional or Muscle Strengthening Exercises:

MONDAY & THURSDAY

Squat -

1. Goblet squat;
2. Rear foot elevated split squat

Hinge -

Partial deadlift (kettlebell on block not floor)

TUESDAY & FRIDAY

Pull – seated row

Push – plank to push-up

Reach / Press – incline bench press

Carry – farmer's or suitcase carry

3 sets of 6-8 repetitions,

moderate-high intensity.

Other Physical Activities:

- Posture – dead bugs (2 sets, 20 reps/side), planks (2 sets, 30 sec holds), bird dogs (2 sets, 5 sec holds)
- Zumba class once a week

WHEN is Paulina going to do each type of exercise?

MON	TUE	WED	THU	FRI	SAT	SUN
Balance Functional / Strength Posture	Balance Functional / Strength Posture		Balance Functional / Strength	Balance Functional / Strength Posture		Zumba

WHERE and HOW will Paulina do her exercise?

- At the gym or at home, first thing in the morning. Use free weights.
- If a session is missed, do it on Saturday.

Overcoming Barriers to Exercise

"I'm afraid of falling or breaking a bone."

- Brainstorm what might make you more confident
- Focus on the quality of the movement. Concentrate on the exercise. Avoid distractions.
- Have a support object nearby, like a chair, counter, or wall.

"I'm worried about exercise in bad weather."

- Always wear shoes with good traction.
- What exercises can you do at home, at a community centre, or in a gym?
- Use a cane or walker if your healthcare professional suggests you use one.

"I don't feel like exercising."

- Make a list of all the reasons you want to exercise.
- Reflect on how you felt after exercise the last time you did it.
- Have an exercise schedule to keep you accountable. If you don't feel like it on a scheduled day, commit to doing it for 10 minutes. After that, you can decide to stop, or you might want to keep going!
- Find someone to exercise with.
- Turn on some fun music.
- Give yourself a reward.

"I have a limited budget."

- What activities can you do for free, at home or outside?
- Do you have exercise bands, or jugs of water or laundry detergent to use for strength training?
- What exercises are challenging enough with no equipment?
- It does cost money to see an exercise professional, but it may be worth it! A few visits will cost about $150-$200.

Create a Plan for Success

What things might stop me from exercising?

Who can help me meet my goals?

How can these people help me?

How can I change my plan if things get in the way?

What physical activities do I enjoy? What new physical activities or exercise do I want to try?

What will I do over time to increase the challenge?

My Physical Plan

WHAT exercises?

Choose 3-5 balance exercises:

1.

2.

3.

4.

5.

Choose at least 1 functional or muscle strengthening exercise from each group:

Squat –

Hinge –

Push –

Pull –

Carry –

Reach/Press –

Other Physical Activities:

WHEN are you going to do each type of exercise?

MON	TUE	WED	THU	FRI	SAT	SUN
○ Balance	○ Balance	○ Balance	○ Balance	○ Balance	○ Balance	○ Balance
○ Functional / Strength	○ Functional / Strength	○ Functional / Strength	○ Functional / Strength	○ Functional / Strength	○ Functional / Strength	○ Functional / Strength

WHERE and HOW will you do your exercise?

Resources

Too Fit to Fracture:

www.osteostrategy.on.ca/exercise-guidelines

- Download or print resources to plan your exercise program.
- Watch videos to inspire your exercise program: www.osteoporosis.ca/video-series-on-exercise-and-osteoporosis
- Share these resources with your friends or on social media and tag Osteoporosis Canada or #toofittofracture.

The information in this booklet is not intended to replace individual medical advice.

Osteoporosis Canada has a free information line. You can call and speak to an information counsellor to learn what resources are available.

English: 1-800-463-6842
French: 1-800-977-1778

After the Fracture:

www.osteoporosis.ca/after-the-fracture

- After the Fracture is an online resource for people who have broken a bone due to osteoporosis.

Your Fracture Journey:

www.osteostrategy.on.ca/YFJ

- Your Fracture Journey is an online tool for people who have broken a bone due to a slip, trip, or fall, that includes information on how to manage your broken bone and reduce the risk of future falls and fractures.

National Newsletter:

www.osteoporosis.ca/our-national-newsletter/

- Stay informed on updates and information about bone health and osteoporosis, organizational developments, upcoming webinars, podcasts, blogs and more by subscribing to the National E-Newsletter.

Bone Fit™ Professionals:

Bone Fit™ is a workshop that educates and trains exercise professionals and exercise instructors on safe and effective exercise for osteoporosis. Over 2,000 people have received this training, most of them in Ontario. A Bone Fit™ professional can help you plan an exercise program.

Are there Bone Fit™ professionals in your area?
Check the Bone Fit™ website at: **www.bonefit.ca/locator**

If there isn't a Bone Fit™ trained person near you, ask your exercise professional about their approach to osteoporosis or whether they know about Osteoporosis Canada's guidelines. Health and fitness professionals can get more information about the Bone Fit™ program at **www.bonefit.ca**

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