



Remember: You can live well with osteoporosis!

Boning Up on Exercise To Reduce Fracture Risk and Manage Osteoporosis (Issue #4 of 8)

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Understanding Strength Training Exercise

What is Strength Training?

Strength training refers to exercise where the bones and muscles work by lifting, pushing or pulling against a load. The load is provided by either a heavy object (e.g., a dumbbell or soup can) or something else that provides resistance (e.g. an elastic band, or water). As the difficulty of the exercise increases over time, the muscles have to become stronger to adapt to the new challenge. Many researchers think that our bones can also adapt to strength training, resulting in stronger bones.

Why is Strength Training Important?

Strength training improves muscle mass and strength and it may increase bone density. According to the most recent Canadian guidelines, strength training should be performed at least *two times per week* at a moderate to high intensity using *all* five major muscle groups. There are some exercises that target more than one muscle group at the same time so that you can complete your workout more efficiently. The major muscle groups are:

- 1) The muscles in our legs, including the buttocks, thighs and lower leg muscles
- 2) The muscles in our arms and shoulders
- 3) The trunk or core muscles i.e. the abdominal muscles and those along the length of the spine
- 4) The chest muscles
- 5) The muscles of our upper back

When doing any type of strength training exercise using any of the equipment described below, it is important to make the exercise easy enough so that you can do 8-12 repetitions (this is called a set) with proper "form" (proper posture and technique) to avoid injury. The exercise should also be hard enough so that you cannot do more than 12 repetitions properly. This means that the last few repetitions should be hard for you to do with proper form. Once you have figured

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BONE TRIVIA

The largest living animal on earth, the blue whale, has a massive skeleton that weighs three tonnes.

out at what intensity you can exercise properly, and how many repetitions and sets you can do with proper form, you can progress the exercise by gradually increasing the resistance (this is done by increasing the weight, the stiffness of the resistance band or the size of the paddles), the repetitions, or the number of sets over time. As with any exercise, you should start low and go slow. However, to continue to see improvement it is important to progressively increase the intensity or difficulty of the exercise over time.

It is also important to practise proper form when picking up or putting away your exercise equipment, when adjusting equipment to get into and out of it and when transitioning from one type of exercise to another (e.g. getting onto or up from the floor or into position). This is especially important for those individuals who are at high risk of fracture.

Some women worry that if they do strength training exercise, their muscles will become very bulky and unattractive. Women who do strength training regularly usually become more toned, firmer, stronger and leaner. They do not become bulky like men who do body building. Men who do strength training regularly have all the same benefits as women, but unlike women they usually become bulkier because they have higher testosterone levels.

Examples of Strength Training Exercise Equipment

Strength training can be done with any of the equipment listed below which can usually be purchased at a medical equipment or a fitness equipment supply store.

- 1) Free weights (dumbbells) or weight machines at home or in a gym (weight training).



Dumbbells



Weight Machine

- 2) Stretchy tubing or elastic bands that come in a variety of levels of resistance



Band with handles



Continuous loops

Rubber bands come with different amounts of resistance or stiffness - some require less force to stretch or pull apart than others.

3. Water, usually in a pool (aqua fit), with or without paddles (resistance training)



Aqua fit paddles

Water exercise, or aqua fit, as it is sometimes called, is usually offered in community centres or athletic centres which have swimming pools. The resistance is provided by moving one's hands or legs against the water. Paddles provide a larger surface area than the hands, and are often used to increase the resistance in the water. The larger the surface area of the paddles, the greater the resistance and the more difficult or intense the exercise.

How Should I do Strength Training Exercise?

Before beginning any exercise program, it is important to know your fracture risk. You can figure out if your fracture risk is low, moderate or high with the help of your doctor. If you have spine fracture(s) or are at high risk of fracture, you should avoid heavy lifting and overhead reaching movements. You should also avoid spinal flexion (bending forward, twisting movements) and you should avoid using weight machines because these usually require bending and twisting movements in order to get into and out of them. Those who

are at moderate risk of fracture should also avoid these activities, or at least proceed with caution until, and only after, getting approval from a doctor or physical therapist. If you fall into one of these categories, you should seek guidance about the specific exercises you should do and others you may need to avoid from an instructor who has completed the Bone Fit™ course (or equivalent) certification.

If your fracture risk is low you can seek guidance from a general physical therapist, general fitness instructor or personal trainer. These individuals will help you select appropriate exercises and will ensure proper form and appropriate progression of exercise intensity.

After you have figured out your fracture risk, you can use the **Table** below *as a guide* to how often you should do strength training (frequency) and how hard you should work (intensity). Consider making a schedule that specifies when you are going to exercise and what you are going to do (including details like duration, intensity and type of exercise).

How often should I do strength training exercises? (Frequency)	At least 2 days of the week
How hard should I work? (Intensity)	If you can do many more than 12 repetitions in a set, the weight or resistance is too low. If you can't do at least 8 repetitions in a set, the weight or resistance is too high.
For how long should I exercise? (Duration)	Beginners should start with 3 to 5 strength training exercises, targeting a different major muscle group with each exercise. Progress to a program where all of the major muscle groups are covered. For each exercise you choose, start with 1 set of 8-12 repetitions & gradually progress to 2 or 3 sets
What are the benefits of this type of exercise?	Improved muscle and bone strength, and improved mobility.

Pain

Always tell your exercise trainer or physiotherapist, exactly what you are feeling (especially if you are feeling pain) at all times during exercise to be sure that you are not causing yourself harm. If you experience **chest** pain during exercise STOP the exercise and tell your exercise trainer or physiotherapist what you are feeling. Make sure you seek medical attention *as soon as possible*.

If, during exercise, you experience **sharp** pain, stop that exercise right away. If the pain goes away, switch to a different type of exercise or reduce the intensity of the exercise so that the sharp pain does not recur. Consult a fitness instructor, physical therapist or kinesiologist to ensure you are doing the exercise properly, or to find an alternative exercise. If the pain keeps recurring, see your doctor.

However, pain is not always harmful. If you experience the gradual build-up of a dull, burning sensation in the muscle group(s) that you are exercising, that usually means that you are doing the exercise properly and are strengthening that muscle or group of muscles. When you have to stop because you can no longer lift the weight with good form, it usually means that you worked the muscles to fatigue. This is a good thing. The burning sensation should subside as soon as you stop doing the exercise.

You might be a little sore the next day. However, if you are so sore the next day that you can barely move, it means that the exercise was too challenging, so the next time you do the exercise you need to reduce either the intensity or the duration. As you become more accustomed to the exercise (more "fit") the degree of soreness after

exercise will lessen, and the recovery period will shorten. At that point, you can gradually increase the duration or intensity of your exercise routine so that your exercises “progress”.

To reduce the pain or discomfort of sore muscles the day after exercise, it is very important to get adequate nutrition and sleep. You can also do stretching *at the end* of each exercise session to maintain or improve your range of motion. Stretching, also known as flexibility training, will be covered in more detail in one of our subsequent issues on exercise.

Be sure to wait until the soreness subsides before you exercise that same muscle group again. In the meantime, while you are recovering, you can exercise other muscle groups or do a different form of exercise. For example, while you are recovering from strength training of the arms, you can do strength training of the legs; or you can do weight bearing aerobic exercise or some of the exercises that are coming up in future issues of this exercise series.

Safety

Anyone who is not accustomed to exercise, or has recently broken a bone, is advised to consult a doctor or physical therapist physiotherapist before starting any type of exercise program.

Not every exercise is suitable for everyone. The safety of each activity above will depend on your age, fitness level and your fracture risk. It is also important to consider your past experience with the activity and your current health status. Choose exercises that are appropriate for your fitness level, abilities and health status. You are encouraged to

FUNNY BONE:
Is it just me, or are circles
pointless?

start slowly and build up gradually – if you progress too quickly you may increase your risk of injury. You can gradually increase the duration and intensity of your exercise to meet the recommended levels.

Coming up Next!

Regardless of which strength training exercise program you adopt, it is important to combine strength training exercise with some form of weight bearing exercise (see Issue #3), posture & balance training, core exercises and flexibility and stretching, which are described in future issues of COPING. Our next issue will discuss *balance training* exercise. Improved balance can reduce the risk of falls and fewer falls mean fewer fractures (broken bones), so *stay tuned!*

The Boning Up on Exercise articles come from a collaboration of experts. Initiated by a contribution of material from Jo-Ann James, a Certified Medical Exercise Specialist who is Bone Fit™ trained, an impressive team of dedicated volunteers from COPN and the Scientific Advisory Council and OC staff further developed the material into a comprehensive series of eight articles that are all being published for the first time here in COPING !



Anyone who is not accustomed to exercise, or has recently broken a bone, is advised to consult a doctor or physical therapist before starting any type of exercise program. Osteoporosis Canada has been providing specialized training to health and exercise specialists to provide safe screening, planning, progression and adaptation of exercise for people with osteoporosis. Bone Fit™ is a growing program that now has trained professionals in seven provinces. There may be a Bone Fit™ Trained professional (Physical Therapist or Kinesiologist) that you could consult with in your area – visit the Bone Fit™ locator at: www.bonefit.ca/locator/

Public Education Forum “Osteoporosis Myth Busters – What You Thought You Knew and What You Need to Know” offered as a Virtual Forum – March 27, 2013



Can't attend in person? Join us via webcast!
<http://www.osteoporosis.ca/event/osteoporosis-myth-busters/>

A Recipe from Our Sponsor – Corn, Sweet Potato and Salmon Chowder



Warm and comforting chowder is even better with the bright colour and flavour of sweet potatoes and salmon. The touch of lemon brightens the flavour even more. Serve with a slice of whole grain bread and a green salad for a complete meal.

Course: *Main Dishes*

Preparation Time: *10 mins*

Cooking Time: *20-25 mins*

Yields : *4 servings*

1/2 milk product serving(s) per person

Tips

After adding the salmon, use a slow, gentle stirring motion to keep the soup smooth and help it cook evenly without breaking up the chunks of salmon.

If you have fresh dill, omit the dried and add 2 to 3 tbsp (30 to 45 mL) chopped fresh dill with the lemon zest and juice.

Preparation

- 1 tbsp (15 ml) **butter**
- 1 onion, finely chopped
- 1 clove garlic, minced
- 1 tsp (5 ml) dried dill weed
- 1/2 tsp (2 ml) salt
- Pepper
- 1 sweet potato, peeled if desired and cut into 1/2-inch (1 cm) cubes (about 2 cups/500 mL)
- 1 1/2 cups (375 ml) corn kernels (fresh or frozen, thawed)
- 2 cups (500 ml) water
- 1/4 cup (50 ml) all-purpose flour
- 2 cups (500 ml) **milk**
- 12 oz (375 g) skinless salmon fillet, cut into chunks
- 1 tsp (5 ml) grated lemon zest
- 3 tbsp (45 ml) freshly squeezed lemon juice

Instructions

In a large pot, melt butter over medium heat. Sauté onion, garlic, dill, salt and 1/4 tsp (1 mL) pepper for about 5 min or until onions are softened. Stir in potatoes, corn and water; bring to a boil over high heat. Cover, reduce heat to medium-low and simmer for 5 to 10 min or until potatoes are almost tender.

Increase heat to medium. Whisk flour into milk and gradually stir into pot. Stir in salmon. Simmer, uncovered and stirring often but gently, for about 5 min or until salmon is firm and opaque and soup is thickened (do not let boil). Stir in lemon zest and juice and season to taste with pepper. Ladle into warmed bowls.

For more information about this recipe:

<http://www.dairygoodness.ca/getenough/recipes/corn-sweet-potato-and-salmon-chowder>

This issue of COPING is sponsored by Dairy Farmers of Canada



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