Bone Up with Physical Activity

QUESTION & ANSWER

Tuesday, October 11, 2011 (1:00 p.m. to 2:30 p.m. ET)

I want to start by saying that many questions ask “is this safe?” about a particular type of exercise. It is hard to answer that with a yes or no, as there is no movement that will definitely cause a fracture in everyone, and in many cases there are movements that could cause fractures in some, but would not cause a fracture in the majority. Each person’s risk is different, and fracture risk may vary depending on the conditions.

Take for example, the risk of death associated with running a marathon. Who is more likely to die, a 27-year old or a 100-year old when running a marathon? Most would say the 100-year old, yet the opposite occurred at the 2011 Scotiabank Marathon. (http://www.cbc.ca/sports/trackandfield/story/2011/10/16/sp-singh-100-marathon-toronto.html)

So please keep in mind where you fit with respect to your 10-year risk of fracture, your current level of fitness, and your sense of body awareness, as this information can probably help you in deciding whether to perform a given movement.

Here is an example of how forward flexion can increase your risk of spine fracture. Think of each of your spinal vertebrae as a rectangular box with a fat little pig sitting on it, balanced in the middle. The more that you bend forward (forward flexion), the more likely it is that the front part of the vertebrae will become compressed by the forces applied by the weight of your torso, which is akin to the pig moving over to one side of the box, and it getting crushed under the weight because one half of the box is supporting more weight than the other half. For someone at risk of spinal fracture, the amount of weight on the front part of the vertebra might at some point be too much.

1. Tai Chi was recommended to me as a good form of exercise for someone with weak bones. There are a number of moves where one bends down as if touching one’s toes. Is this forward bending advisable or not for someone with osteoporosis?

   Answer: Forward bending, twisting and overhead lifting are risky in individuals who are at risk of fracture. Whether a person should do an exercise that involves these movements depends on their fracture risk. For someone who is low risk it
is less of a concern than someone with existing fractures, or someone who is high risk. If in doubt, or if it can be avoided, find an alternative movement.

2. I am 5'6" tall, 67 years old and 107 lbs. Would walking with a backpack be helpful in increasing bone density? If so, how many pounds should I carry? Will that have any adverse effect on by spine?

Answer: There hasn’t been research conclusively saying that it is effective or it is not effective. There is a small amount of research examining the effects of using a brace like a backpack to improve posture, but I cannot with confidence recommend it at this time. I would not advocate walking with weight on your back to attempt to increase bone density because it could also apply a compressive load to your spine. I would prioritize aerobic exercises with unusual movements to increase bone density, as well as a progressive resistance training program.

3. A question about strength training, is a program like Curves recommended?

Answer: Curves is a good mainstream way to get people more engaged in resistance training in a comfortable environment for women. It is a great idea provided that you get appropriate instruction at an appropriate intensity. However, forward bending, twisting and overhead lifting are risky in individuals who are at risk of fracture. Several of the machines (e.g., ab/back, overhead press, and possibly others) might involve these types of movements, and should not be performed in individuals who are at risk of spine fracture. Also, sometimes jumping movements are advocated, which may not be a good idea.

4. Can you comment on osteoporosis and golf?

Answer: Golf allows for social interaction and a good way to get cardiovascular exercise. Trick is, a good swing requires a lot of twisting. For someone who is at high risk, it may be something that they shouldn’t be participating in. A person with osteoporosis may also be increasing their risk of spine fracture if they are lifting a heavy golf bag. It is an individual decision; consult your physician about your risk.

5. I practice yoga and there are many forward bending. I keep my knees bent and my back straight - is this safe?

Answer: See little pig on box example above. There are things you can do to reduce the load, such as trying to maintain a neutral spin, bending with your knees, but there will still be some compressive load there.

6. Is twisting, especially in normal ROM, unloaded dangerous?

Answer: It depends on the person. Careful, control twisting can be okay. The higher risk the person is, the more careful you have to be.
7. Should side bending movements be avoided? Can you comment about doing this movement?

**Answer:** Careful, controlled side bending may be okay, but someone who is at higher risk may need to avoid the movement. For example, I know of a person with severe osteoporosis who fractured a rib when bending and slightly twisting sideways to retrieve a remote for the TV.

8. Where can someone get a resistance band?

**Answer:** Most pharmacy supply stores carry them. Any stores with exercise equipment may carry them as well. They come with different levels of resistances, brands, lengths, etc.

9. Can you list sports/activities for people living with osteoporosis?

**Answer:** Since everyone is so different with risk and interests, I don’t like to give recommendations for a particular sport or activity, but consider the movements you need to avoid, what you are trying to accomplish and what will work to fit those needs before participating in an activity you like to do.

Avoid:
- Twisting movements
- Overhead lifting
- Forward flexion, and flexion when holding things that are heavy

Try to achieve unusual loading, and exercises that challenge your balance and strength.

10. What do I need to know before approaching a personal trainer?

**Answer:** There are programs out there that help teach people about exercise prescription for osteoporosis. One example is Bone Fit which is designed by Osteoporosis Canada. For more information, visit the website at [http://www.bonefit.ca/](http://www.bonefit.ca/). Ask trainers if they have any particular training for working with people with osteoporosis and ask what they know about it and what the guidelines are. They should understand which movements are risky. They should place as a goal to increase strength and improve balance, as well as provide a method to improve cardiovascular fitness.

11. Are "Superman's" okay to do? Opposite arm and leg lift lying prone. It's not a very high lift and if the participant focuses on keeping both hips on the mat/bed, then they do not hyper-extend.

**Answer:** Yes. My preference would be to do them while on hands and knees to avoid hyperextending the spine. See “Bird-dog” here: [http://www.ahs.uwaterloo.ca/~mcgill/fitnessleadersguide.pdf](http://www.ahs.uwaterloo.ca/~mcgill/fitnessleadersguide.pdf) - note, this link is provided for instructions on how to do the bird-dog only. It is not endorsing the
other exercises. If you cannot get on hands and knees, then doing them prone is the next best option, but do not lift your arms and legs higher than a few inches.

12. Are there any exercises specifically to strengthen the wrist?

**Answer:** If you want muscle strengthening – strengthen the muscles of the forearm because those are the muscles that control the wrist (e.g., wrist flexion and wrist extension).

13. Is jumping on a trampoline good for increasing bone density? Or any other positive effects?

**Answer:** I don’t think there is any research on the effects of jumping on a trampoline, so I cannot accurately answer this question. I would not recommend it, because the applied load wouldn’t be high because you are not actually loading your bones. There may be some risk associated with it because of some load to the spine when jumping, especially someone with high risk. There is also a risk of falling.

14. Is Pole Walking good for Osteoporosis?

**Answer:** Theoretically it could be a good exercise because it involves loading both arms and legs. It may improve trunk muscle endurance because it activates the muscles in the trunk. Pole walking is often done in a quick pace, which may help achieve unusual loading and good cardiovascular training.

15. What about tennis for moderate risk person - given your comments about not twisting and bending forward, yet it has good stop and go movements.

**Answer:** If a person has been playing tennis for a long time and has good form and body awareness, and a low risk of falling, it may be ok. However, there is a risk associated with bending and twisting, and I cannot say with confidence that it will not cause a fracture in someone who is at moderate risk, so proceed with caution. I would not take up tennis as a new sport if I was a person at risk of fracture.

16. In Downward Dog, there is forward bend but is done with a flat back and the arms are supporting the body. Is that safe?

**Answer:** See little pig on box example above. There are things you can do to reduce the load, such as trying to maintain a neutral spine, bending with your knees, but there will still be some compressive load there, especially if you are bending forward to get into the position – sometimes that is the riskiest part. However, I think if it is approached cautiously (e.g., you get into the position prone → plank → downward dog) it may be safe for most people with low-moderate risk. However, as above, I cannot predict who will and will not fracture with each movement.