GATEWAY TO BALANCE

Osteoporosis

Introduction

I've attended a number of specialist workshops on Osteoporosis and have decided to produce this information sheet for my clients to give them a better understanding of this subject. I hope it helps & welcome any feedback!

This information sheet is by no means exhaustive, if you have any questions relating to exercise / lifestyle & osteoporosis, please do not hesitate to ask me. I have also included a few resource links at the end of the document you can refer too as well, but otherwise please discuss any concerns with your GP.

Rob Filmer – August '14

Background

Osteoporosis (literally meaning porous bones) is a skeletal disease, often known as "*the silent disease*" as it can develop over many years without any symptoms. It is characterised by low bone mass and deterioration of bone tissue causing bones to become fragile and prone to fracture.

A cough or sneeze could be enough to cause a fracture of a rib or partial collapse of the spine. A fractured hip could lead to arthritis or a permanent disability with chronic pain due to the bone being unable to repair itself efficiently.

Some statistics

- **1 in 2 women** and **1 in 5 men** over the age of 50 will break a bone, mainly as a result of poor bone health *(reference Royal Osteoporosis Society - ROS)*
- Every 2-3 minutes someone in the UK will have a fracture due to Osteoporosis
- After a fracture of the hip 20% of people with Osteoporosis will die and 50% will never fully recover and require nursing care.

Why does it typically affect older women?

Post-menopausal women are more likely to suffer bone loss due to the decrease of the hormone Oestrogen. This stimulates bone growth so without it bones are at risk. Up to 30% of bone mass can be lost during the menopause.

What are the most common fracture sites?

1. Hip – at the neck of the thigh bone (Femur)
2. Spinal Vertebra – Most likely between the shoulder blades (T6-T8)
3. Wrist

The ROS are proposing that every person over the age of 50 who breaks a bone should be assessed for Osteoporosis.

The Skeleton

Our skeletons perform many different functions, not just the obvious ones! For example did you know they also:

- Produce red & white blood cells
- Store minerals (such as calcium & phosphorous)
- Detoxify the blood
- Help regulate the body's pH

Bones remodel themselves throughout our life. Every week approximately 5-7% of our bone mass is replaced. In 7-10 years we replace our whole skeleton…

Basically we have "*bone builder cells*" and "*bone demolition cells*" regulated by hormone activity. During childhood & adolescence the building activity is must faster than the demolition work. We reach our maximum bone density around 25-30 years of age. After this time, the balance slowly starts to shift to the other way around. However if there is a problem with the balance of our hormones, this can significantly affect the relationship with building activity suppressed, while demolition activity continues at normal levels, in time having a significant affect on our bone density.

Certain parts of our skeleton are more vulnerable to losing bone-density as they have a different composition; this bone is designed to be lighter and provide space for blood vessels & bone marrow, but also has a much faster metabolic turnover meaning they are far more affected by Osteoporosis. It will come as no surprise that they are found at common fracture sites mentioned earlier.

How do I know if I've got Osteoporosis or Osteopenia?

This is really the problem, as symptoms are not obvious in the early stages and the condition can develop slowly over several years.

Early warning signs can include:

- Joint pains (often in the spine, or the front of the pelvis as the ribcage can press down on it)
- Having difficultly sitting and/or standing up straight
- Loss of height (possibly associated with an increase of rounding of the spine – note this is not always associated with Osteoporosis)

However, very often the first indication of the disease is a fracture.

What are the risk factors?

This list is not exhaustive but covers most of the factors that can have an impact, so the more of these that are relevant to you the increased risk you may have bone-density issues:

- Caucasian/Asian ethnicity
- Premature menopause or Hysterectomy before age 45 – Drop in Oestrogen production
- Low testosterone levels in men
- Heavy alcohol / caffeine consumption
- Family History – 80% of our bone health is inherited in our genes (has anyone in your family been diagnosed with osteoporosis, had a hip fracture, had a vertebral fracture, has a noticeable dowagers humps/curve in their spine?)
- Diseases that effect the way food is absorbed by the body e.g. Crohn's disease, Coeliac disease, Ulcerative Colitis
- Slight build or underweight
- Eating disorders such as anorexia or bulimia
- Smoking
- High levels of Stress
- Sedentary Lifestyle
- Long periods of inactivity e.g. bed rest
- High Fat / High Protein diet with little greens or fruit (acidic diet)
- High salt diet
- Taking certain medications long-term (Corticosteroid tablets / anti-inflammatory drugs / epilepsy medication)
- Breast Cancer treatments (such as aromatase inhibitors)
- Prostate Cancer drugs that reduce hormone levels
- Never having children or missing periods for more than 6 months prior to menopause
- Problems with glands and hormones – Overactive thyroid gland, disorders of adrenal glands, reduced output of sex hormones, disorders of pituitary gland, diabetes, rheumatoid arthritis.
- Prone to falling / Balance issues (particularly if you are over 75)
- Previous fracture – After having a fracture with Osteoporosis the risk increases greatly for having another within a year.

Bone Mineral Density Reports

If you are concerned then please talk to your GP. Once they reviewed your specific situation they may ask you to have a DEXA (Dual X-Ray Absorptiometry) Scan. This scan is very safe as it uses a very low level of radiation.

Generally, the scan measures bone density in the neck of the thigh bone (Femur) and the vertebra in your lower back (Lumbar Spine). It is also possible to assess if bone density is reduced by checking the wrist or heel. The most accurate values for bone density come from the Femur.

There are 2 main values that are produced from the scan for each area:

- **T score** – tells how the patient compares with an average young adult (25-30 years of age) when bone mass is at its peak. *I understand that this is the more useful score*
- **Z score** – tells how the patient compares with an average person of the same age and sex.

The scan gives a score as a standard deviation (SD) from the average, so:

- **T score -1** SD is regarded as Normal
- **T score -1 to -2.5** SD would be regarded as Osteopenia (mildly reduced bone mass)**.** This relates to a 10-25% reduction in bone mass.
- **T score -2.5** SD or lower indicates Osteoporosis**.** This relates to a 25% or more reduction in bone mass.

What if I have been diagnosed with either Osteoporosis or Osteopenia?

The good news is there is plenty of things that can help. The great thing is that apart from medication, you can do a lot to help yourself. Remember, it is possible to improve your T –score.

a) Medication

I have been provided with the following list of medication that may be prescribed by your GP to help treat this condition:

- Bisphosphonates e.g. Fosamax, Bonviva, Didronel, PMO, Actonel, Alendronic Acid (taken weekly)
- Strontium ranelate e.g. Protelos (taken daily)
- Selective Oestrogen Receptor Modulator (SERM) e.g. Evista (taken daily)
- Zoledronic Acid – Relast (taken annually)
- Raloxifene
- Calcitonin – Calsynar (given only to help repair a fracture)
- Parathyroid Hormone (injected for very severe cases)
- Calatriol – Rocaltrol
- HRT – Helpful to protect bones during menopause but not used as a frontline treatment.

b) Nutrition

Listed below are some general guidelines (*you can find out more from the resource links at the end of this document or consult with a qualified Nutritional Therapist*):

The Do's

- Eat plenty of foods high in Calcium (*this is not just contained in dairy, but also in other foods like broccoli & dried apricots*)
- Vitamin D – helps the body absorb calcium.
- B Vitamins and Vitamin K
- Magnesium
- Foods that are more **alkaline** (vegetable juices / figs / celery / pineapple / onions / garlic / herbs / salad vegetables)

- Green Leafy Vegetables / Sea Vegetables
- Fish (with bones) e.g. sardines or salmon
- Beans
- Nuts and Seeds
- Dairy
- Onions, garlic and herbs have other qualities that inhibit “bone demolition” activity

The Don’ts

- Fizzy drinks
- Diets rich in meat, animal proteins and grains.

c) Lifestyle

- Learn to keep the spine lengthened and in neutral
- Learn to hip hinge (to move from the hips more to lessen the impact on the spine) to sit, stand, lift, bend etc.
- Learn to breathe with good rib movement and deep lower abdominal contraction
- In general, avoid all flexion (i.e. forward bending), side bending and rotational movements
- Learn to sit up tall – especially to cough / sneeze and when going to the toilet!
- Work to improve balance and co-ordination – be aware of drugs that may make you drowsy
- Sit in the sun (within reason!) This triggers vitamin D production
- Help to prevent falls – eliminate hazards in the home, wear sensible footwear, check eyesight, avoid drinking too much alcohol!
- Reduce stress levels – The hormone Cortisol is produced when the body is under stress causing calcium to be pulled from the bones. *(You might consider breathing exercises or meditation to help with this)*
- Improve diet *(see above)*

d) Exercise

General Guidelines

- Weight bearing exercises with impact
- 30 minutes of walking daily is recommended (Aerobics, Dance etc.)
- Lengthening & extension of the spine (e.g. Diamond Press, Dart etc.)
- Performing strengthening exercises with weights, therabands or body weight

The Do's

- Breathing exercises to expand ribcage laterally and to posterior with deep abdominal control
- Weight Bearing Exercises (inc. 4-point work, push-ups)
- Thoracic spine extension (such as Diamond Press, Dart, Scarecrow)
- Spinal elongation and alignment exercises – foam roller!
- All abdominal strengthening exercises performed with a neutral spine
- Bridging – emphasising neutral bridging & lengthening the spine
- Cat stretches – emphasising even movement along the spine & lengthening
- Exercises in neutral spine – in all positions inc. standing, sitting, 4-point
- Squatting – hip hinge to disassociate movement between hip and spine
- Balance work – single leg standing maintaining height (fall prevention)
- Exercises to open chest and shoulders
- Exercises to lengthen flexors through trunk and hips and strengthen extensors (*to help create a more upright posture*)

The Don'ts

- Exercises involving spinal flexion (forward-bending) – this would include Rolldowns, Curl-Ups, traditional Hundreds etc. (*modified Bridging is okay*)
- Exercises involving loaded side-bending
- Exercises involving loaded rotation (*Side Rolls with the legs down and reduced range are okay, as are Arm Openings*)
- Exercises involving forced rotation, adduction & abduction of the thigh bone (Femur)

My Perspective

- As many of my clients fall into the higher risk category,I teach a lot less "forward bending" exercises than I used to (such as many Pilates "Classic Mat" exercises). It doesn't mean you have to have an easy class though!!!
- Whilst some clients tell me that they "*only have a reduced bone density in one area*", I will teach them as though we need to take care of **all** the vulnerable parts of their skeleton.
- I also will take the same precautions with those clients who are diagnosed with Osteopenia (mildly reduced bone density) as those diagnosed with Osteoporosis.
- There are variations of some Pilates exercises that allow for limited (non-loaded) spinal forward bending and rotation.
- I continuously review the exercises I teach & welcome feedback from my clients.

And don't forget….

If you are diagnosed with either Osteoporosis or Osteopenia, please do not forget to tell me (as we'll need to review appropriate exercises), your osteopath, chiropractor, physiotherapist or any other manual therapist / movement teacher / personal trainer you see.

Even if you are not affected, please consider looking into lifestyle/exercise and nutrition advice mentioned above anyway!

Resources

Royal Osteoporosis Society (UK) - theros.org.uk

Has excellent / clear information with plenty of fact sheets including tips for talking to your GP if you're concerned.

National Osteoporosis Foundation (USA) - nof.org

Again some excellent information about the condition, diagnosis, risk factors and how to live with Osteoporosis.

Therapilates (USA) - www.therapilates.com/index.html

An amazing American physiotherapist & Pilates teacher I have studied with, who has a real passion for helping clients with Osteoporosis.

Sources:

Osteoporosis & Exercise Training Course – June 2014 (Diane Nye)
Therapilates For Osteoporosis Training Course – May 2006 (Sherri Betz)
Royal Osteoporosis Society website