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Physical Activity A Nutritional Supplement to Cure Osteoporosis

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Abstract – Osteoporosis is a disease of the bones that affects men and women,* Osteoporosis *is a disease characterized by low bone mass and loss of bone tissue that may lead to weak and fragile bones. If you have osteoporosis, you have an increased risk for fractured bones (broken bones), particularly in the hip, spine, and wrist.

The word osteoporosis means "porous bones," where porous essentially means "full of holes" -- and that accurately describes the condition of osteoporotic bones.

According to International Osteoporosis Foundation; Osteoporosis causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds. Worldwide, 1 in 3 women over age 50 will experience osteoporotic fractures, as will 1 in 5 men aged over 50. By 2050, the worldwide incidence of hip fracture in men is projected to increase by 310% and 240% in women, compared to rates in 1990

Exercise of the right type, called "weight-bearing" or "load-bearing" exercise," helps keep bones strong by causing the muscles and tendons to pull on the bones, which in turn stimulates bone cells to produce more bone. The load on the bones can be created by your own bodyweight, as in running or jogging, or by external weights like dumbbells or gym machines in a weight training program. The study not only throws light on causes and symptoms of osteoporosis but also gives a clear insight on how physical activities act as supplement to manage and prevent Osteoporosis.

Keywords: Osteoporosis, Sports Exercises, Nutrition & Exercise, Bone Loss, Bone Mineral Density (BMD)

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INTRODUCTION

Osteoporosis is a disease of the bones that affects men and women, especially women beyond menopause because estrogen helps to protect bone. In osteoporosis, the bones become brittle and weak and have a greater risk of fracture. The word osteoporosis means "porous bones," where porous essentially means "full of holes" -- and that accurately describes the condition of osteoporotic bones.

CAUSES OF OSTEOPOROSIS

It's caused by a lack of bone strength or bone density. As you age, your bones get thinner naturally. But some things can make you more likely to have the severe bone thinning of osteoporosis. These things are called risk factors

1. Age, Gender, and Body type risks

Your risk goes up as you get older. Being a woman who has gone through menopause. After menopause, the body makes less estrogen. Estrogen protects the body from bone loss.

2. Family History Risks

Osteoporosis tends to run in families. Your race. People of European and Asian background are most likely to get osteoporosis.

3. Lifestyle Risks

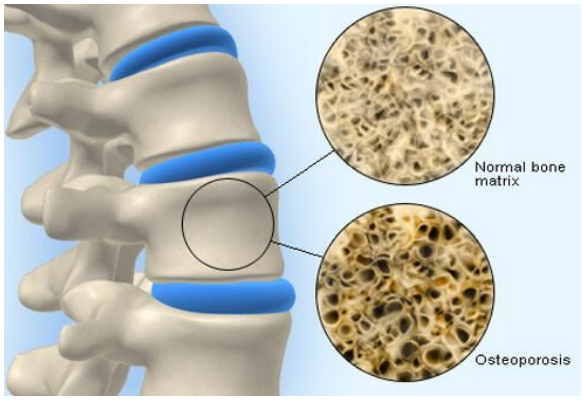
- Smoking
- Not getting enough weight-bearing exercise

- Drinking too much alcohol
- Not getting enough calcium and vitamin D

Symptoms

Osteoporosis can be very far along before you notice it. Sometimes the first sign is a broken bone in your hip, spine, or wrist after a bump or fall.

As the disease gets worse, you may have other signs, such as pain in your back. You might notice that you are not as tall as you used to be and that you have a curved backbone.



When Should Someone Seek Medical Care for Osteoporosis?

If you have constant pain in areas such as the neck or lower back, consult your doctor for further evaluation. If you are at risk for developing osteoporosis (see risk factors above), also consult your doctor for a medical assessment and bone density screening.

Osteoporosis - Incidence and burden

According to International Osteoporosis Foundation; Osteoporosis causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds. Worldwide, 1 in 3 women over age 50 will experience osteoporotic fractures, as will 1 in 5 men aged over 50. By 2050, the worldwide incidence of hip fracture in men is projected to increase by 310% and 240% in women, compared to rates in 1990. 80%, 75%, 70% and 58% of forearm, humerus, hip and spine fractures, respectively, occur in women. Overall, 61% of osteoporotic fractures occur in women, with a female-to-male ratio of 1.6.

Osteoporosis in Men

About 20-25% of hip fractures occur in men. The overall mortality is about 20% in the first 12 months after hip fracture and is higher in men than women.

It is estimated that the residual lifetime risk of experiencing an osteoporotic fracture in men over the age of 50 is up to 27%, higher than the lifetime risk of developing prostate cancer of 11.3%

Although the overall prevalence of fragility fractures is higher in women, men generally have higher rates of fracture related mortality.

In 2025, the estimated number of hip fractures occurring worldwide in men will be similar to that observed in women in 1990

Five Essential Strategies to Reduce Risk of Osteoporosis and Fractures

1. Exercise regularly
2. Ensure a diet rich in bone-healthy nutrients
3. Avoid negative lifestyle habits and maintain a healthy weight
4. Identify the risk factors which you can't change
5. Talk to your doctor: get tested, get treated if required

Exercise Helps Prevent Osteoporosis

Exercise of the right type, called “weight-bearing” or “load-bearing” exercise,” helps keep bones strong by causing the muscles and tendons to pull on the bones, which in turn stimulates bone cells to produce more bone. The load on the bones can be created by your own bodyweight, as in running or jogging, or by external weights like dumbbells or gym machines in a weight training program.

In fact, studies suggest that the best exercise may not only be weight-bearing but also "high-impact" exercise. This means imparting a jolt to muscle and bone such as you would when placing a foot forcefully on the ground while running, or lifting or pushing a weight suddenly. Naturally, you have to ensure you do such exercise safely.

One measure of the health of bones is “bone mineral density” or BMD for short. A bone scan to assess BMD is a relatively simple procedure that is offered by medical practitioners.

Exercise Prevents Falls and Fractures Too

Although strong bones may help you prevent fractures if you fall, the best way to protect from fall fractures is not to fall in the first place! Balance and strength are the keys to fall protection. Appropriate exercise as we age -- such as weight training -- not only helps keep bones healthy, it protects against

falls and fractures as well improving balance and strength.

Best Types of Exercise

All exercise benefits your general fitness. Weight-bearing exercise is best for strengthening bones. Here are some examples.

- Running and jogging
- Gymnastics
- Aerobics class -- step, dance and pump aerobics
- Weight lifting -- dumbbells, barbells, machines, body weight exercises
- Team sports involving running and throwing -- basketball, football, baseball, softball, volleyball
- Individual sports involving running -- racket sports
- Walking (but less effective than running or jogging)
- The least effective exercises for bones are:
- Swimming or water aerobics
- Cycling
- Other minimal weight-bearing exercise activities

Bear in mind that running or leg-based exercise acts mainly on the lower body. And although much of the disabling effect of bone loss is felt in the hips and spine, exercising the upper-body with weight-bearing exercise is of equal importance. Broken wrists and arms from falls as we age is not uncommon.

Consider this note of caution about endurance running such as marathons, cross country and triathlons and other extreme exercise regimens: Extremes of exercise, mainly aerobic exercise, can negatively affect bone density in women by interfering with estrogen production when combined with an inadequate intake of calcium and total food energy. (Natural loss of estrogen is the main cause of bone loss in women after menopause.) For heavy exercisers and athletes, cessation of, or having *irregular* periods is a warning sign. Bone loss, disordered eating and abnormal periods is referred to as the "female athlete triad." This need not occur if an appropriate training program and careful attention to diet and nutrition are incorporated in your schedule. Advice from a qualified sports nutritionist is worthwhile.

Nutrition and Exercise for Healthy Bones in Childhood and Adolescence

Much of the reserve of healthy bone is built in youth and before the age of 30. Women may be more susceptible to an inadequate foundation process at this time than men. Sufficient calcium intake, a balanced diet with plenty of fruit and vegetables and load-bearing exercise are the keys to solid bone growth when you're young. Then, with continued exercise into old age –- and this goes for men as well -- bone density decline can be kept to a minimum. Although women are the main focus of information about osteoporosis and low bone density (osteopenia), some men are also seriously afflicted by this condition.

Even if you do all the right things while growing up and into adulthood, your inherited characteristics –- your genes -– can present you with bones that are susceptible to osteoporosis. This is even greater reason to maximize your lifestyle to prevent poor bone health.

How Much Calcium and Vitamin D Do We Need?

Calcium

The recommended intake of calcium for adults, men and women, 19 to 50 years is 1,000 milligrams each day, with higher amounts recommended for younger and older age groups and in pregnancy. A full list of recommended intakes is available from the National Institutes of Health Calcium Fact Sheet, in addition to additional valuable information on calcium in food and how to meet your requirements. Athletes or heavy exercisers do not generally need more calcium than is recommended in the guidelines, or more than sedentary people. Exercise plus adequate calcium intake works together to enhance bone quality. A watchful attention to recommended calcium intake is all that is required.

Vitamin D

This vitamin works in concert with calcium to build bone. The recommended intake of vitamin D ranges from 200 to 600 international units each day from childhood to old age. Some experts say that this recommended intake is too low. As a consequence, the vitamin D standard is under review. The Vitamin D Fact Sheet provides more information. Particular attention is required in regions where sunlight is minimal or in ethnic cultures where full body clothing is worn, thus restricting sunlight, a major source of vitamin D.

Vitamin K

Found in green vegetables, it is also an important vitamin for bone development. In medical studies, moving weights quickly has shown greater benefits for bone density, with safety, than training with heavier weights lifted slowly. This is known as "power training" and is a specific form of weight training mostly used by athletes trying to develop powerful movements -- football, baseball and basketball being examples. For bone health, the faster movements seem to provide more bone stimulation than slower, weightier movements. If you want to try this type of training, advice from a competent strength trainer would be wise until you understand the basics of power training.

Bone Loss during Dieting and Weight Loss

Some investigations show that when you lose weight, bone density is also reduced. However, this may be preventable if you do weight-bearing exercise and ensure that you take in the recommended amount of dietary calcium while slimming down. Whether this occurs, and by how much, may differ if you are male or female and at the pre- or post-menopause age. Post-menopausal women who lose weight with diet only (without exercise) and who do not consume adequate dietary calcium seem to be most at risk during this weight loss phase.

Summarizing Weight-Bearing Exercise for Bone Health

Consider these main points. Most bone growth occurs before the age of 30 in men and women. Childhood and adolescent weight-bearing exercise and a balanced diet are required to maximize bone density in this period.

Weight-bearing exercise such as weight training, running and jogging, gymnastics, aerobic dance and step and team sports are useful to maintain and prevent bone loss into older age. Swimming, cycling and rowing are not as useful for this purpose although they are good for heart and lung fitness. Sufficient dietary calcium, vitamin D and perhaps vitamin k (from green vegetables) are necessary to build strong bones.

Appropriate exercise not only helps maintain bone density, it also provides muscular strength and balance, which can reduce the occurrence of falls and fractures. A balanced diet and weight-bearing exercise should start in childhood and continue into old age to optimize bone density and prevent fractures.

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