Osteoporosis
-The “Silent Epidemic”-

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Osteoporosis the “Silent Epidemic”

• “Some scientists estimate that half of all women and 20% of men older than 50 will suffer an osteoporosis-related fracture in their lifetime” (ref 1)

• “Leon Speroff, of the Oregon Health Science Center in Portland, reported at the 1999 American College of Obstetricians and Gynecologists meeting that the estimated number of hip fractures will increase sixfold between 1999 and 2050.” (ref 2)
Stats

- 2 million Canadians live with osteoporosis

- 1 in 4 women & 1 in 8 men over 50 have osteoporosis

- “Hip fractures related to osteoporosis result in death in up to 30% of cases”

- “23% of patients who fracture a hip die in less than a year”

- More women die each year as a result of osteoporotic fractures than from breast & ovarian cancer combined.
Osteoporosis the “Silent Epidemic”

Females over 11 weren’t consuming even 75% of the RDA for calcium (JAMA 1994)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Osteoporosis Bone mass</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Osteoporosis</td>
<td>9,100,000</td>
<td>10,500,000</td>
</tr>
<tr>
<td></td>
<td>Low Bone Mass</td>
<td>26,000,000</td>
<td>30,400,000</td>
</tr>
<tr>
<td>Male</td>
<td>Osteoporosis</td>
<td>2,800,000</td>
<td>3,300,000</td>
</tr>
<tr>
<td></td>
<td>Low Bone Mass</td>
<td>14,400,000</td>
<td>17,100,000</td>
</tr>
</tbody>
</table>
Are we Getting Enough Calcium In Our Diet?

• Women across Canada are not getting the recommended amount of calcium daily (TUMS Survey 2002)

• Of the women surveyed, almost 31% only get 600 mg or less of calcium on a daily basis - half of the recommended amount.
Risk Factors for Osteoporosis?

• Hormonal considerations:
  – Estrogen/progesterone deficiency
  – Early menopause (< 45 years of age)
  – Absence or cessation of menstrual periods (amenorrhea > 1 year)

• Prolonged corticosteroid therapy
  – prednisone, or equivalent, 7.5 mg or more daily with an expected use of 3 months or more

• Maternal family history of hip fracture
• Having a small frame

• Female (women are more at risk than men)

• Asian or Caucasian

• A poor diet low in calcium
• Lack of exercise

• Smoking

• Regular and excessive alcohol consumption

❖ If you have one or more of these risk factors you should have your Bone Mineral Density (BMD) tested?

❖ "Quantitative computed tomography" (QCT) is more sensitive than "Dual energy X-ray absorptiometry" (DEXA) test
Bone Density of Men & Women By Age

- 30% of men are at risk of getting a hip fracture after age 50
- As the graph illustrates men are also at risk
Added Insurance

Harvard University’s Healthy Eating Pyramid

- White rice, white bread, white pasta; potatoes, soda, and sweets
- Use sparingly
- Dairy or calcium supplement, 1-2 times/day
- Fish, poultry, eggs, 0-2 times/day
- Nuts, legumes, 1-3 times/day
- Vegetables (in abundance)
- Fruits, 2-3 times/day
- Plant oils (olive, canola, soy, corn, sunflower, peanut, and other vegetable oils)
- Whole grain foods (at most meals)
- Daily exercise and weight control
- Alcohol in moderation (if appropriate)
- Multiple vitamins for most
- Multiple Calcium Sources, Wakame, Broccoli & D₃, Green Food Concentrates, O.A. Flax & Silica, Grape Seed Extract

Complete Calcium
Adult Women
Femmes Adultes
Help develop & maintain healthy bones.
Les aliments développant et maintenant les os sains.

Progressive®
120 Caplets
Supplément de calcium
Q. If I Eat Enough Fruits, Veggies & Calcium Rich Foods Am I Getting Enough Calcium?

A. Possibly Not!
## Summary of Changes in the Mineral Content of Vegetables, Fruit & Meat Between 1940 and 1991

<table>
<thead>
<tr>
<th>Year of Analysis</th>
<th>Mineral</th>
<th>Vegetables (27 Varieties)</th>
<th>Fruit (17 Varieties)</th>
<th>Meat (10 Cuts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1940</td>
<td>Sodium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(Na)</td>
<td>Less 49%</td>
<td>Less 29%</td>
<td>Less 30%</td>
</tr>
<tr>
<td>1940</td>
<td>Potassium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(K)</td>
<td>Less 16%</td>
<td>Less 19%</td>
<td>Less 16%</td>
</tr>
<tr>
<td>1940</td>
<td>Phosphorous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(P)</td>
<td>Plus 9%</td>
<td>Plus 2%</td>
<td>Less 28%</td>
</tr>
<tr>
<td>1940</td>
<td>Magnesium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(Mg)</td>
<td>Less 24%</td>
<td>Less 16%</td>
<td>Less 10%</td>
</tr>
<tr>
<td>1940</td>
<td>Calcium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(Ca)</td>
<td>Less 46%</td>
<td>Less 16%</td>
<td>Less 41%</td>
</tr>
<tr>
<td>1940</td>
<td>Iron</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(Fe)</td>
<td>Less 27%</td>
<td>Less 24%</td>
<td>Less 54%</td>
</tr>
<tr>
<td>1940</td>
<td>Copper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>(Cu)</td>
<td>Less 76%</td>
<td>Less 20%</td>
<td>Less 24%</td>
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</tbody>
</table>

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Why Take 2 or 3 a Day?

- MAXIMUM elemental calcium you can absorb at a time?
  - 500 mg

- Don’t use a one a day “High Potency” calcium!
  - Divide Your Dose With Each Meal

- Time Release Calcium
  - Not Effective (REFER TO NEXT PAGE)
Supplementation Timing Matters

“Study found that 2 doses of 500 mg calcium & 400 IU vitamin D taken 6 hrs apart resulted in a prolonged decrease in serum parathyroid hormone levels (low levels indicate adequate calcium levels) than a single dose with the same total amounts of calcium and vitamin D.”
Bioperine (a phytochemical extract from black pepper) has been added and can significantly improve absorption of vitamins, minerals and herbal extracts.
What Forms of Calcium are Best for Absorption?

• Stomach acid levels decline with age
  – Stomach acid ↑ mineral solubility and in turn absorption.
  – Calcium carbonate not the best for ↓ stomach acid conditions
What Forms of Calcium are Best for Absorption?

- Progressive Calcium bound to Krebs cycle intermediates
  (Organic acids bound to calcium for improved absorption)

- Citrate
- Malate
- Glutarate
- Fumurate
- Succinate
- Ascorbate
- Carbonate (not an organic acid)
Greens That Are High in Calcium, Rich in Trace Minerals & Alkalizing

Wakame, Kelp, Nettle, Broccoli & Alfalfa

- Botanical Sources=co-factors not found in a straight calcium
- Rich in calcium and magnesium
- Rich in trace minerals
- Alkalizing
Complimentary Compounds That Support Bone Matrix

• **Magnesium**
  • Important for bone formation and calcium absorption
  • Increases bone mineral density
  • May prevent excessive accumulation of calcium in the kidneys
  • Often lacking in diet or low due to malabsorption

• **Vitamin D**
  • ↑ calcium absorption ↓ calcium excretion
Complimentary Compounds That Support Bone Matrix

• Zinc, Copper, Manganese and Potassium
  • Necessary for “strengthening” bones
  • Post menopausal women that used calcium plus these complimentary minerals showed less bone loss than those using calcium on its own!

• Minerals don’t interfere with each other
  • Calcium & zinc normally interfere with each other but not when minerals are in a citrate form and in the presence of Vit C (also in our formula)
Complimentary Compounds That Support Bone Matrix

• **Silica**
  - Strengthens connective tissues in body
  - Found in high concentrations in bones while they’re growing

• **Vitamin C**
  - Studies show it helps prevents bone loss

• **Boron and Vitamin k**
  - Play an important role in bone formation
  - Although we don’t have these directly added to formula we use **Apple Cider Vinegar, Nettle & Alfalfa**, as naturally occurring sources of boron and vitamin k
Reduce Homocysteine Levels!

- Homocysteine levels accelerate osteoporosis
  - Reduce bone mineralization

- Vitamins B6, B12, and folic acid
  - These B vitamins decrease Homocysteine levels

- Progressive Calcium
  - One of the 1st calcium supplement products on the market to address this important concern!
Lower Cortisol Levels!

• **Cortisol**
  • Hormone released by the adrenals during times of emotional and physical stress.

• **↑ Cortisol levels**
  • REDUCE calcium absorption INCREASE excretion

• **Cortisol lowering compounds**
  • Progressive Calcium has **Vitamin C, CLA, Glutamic Acid, and Phosphatidyl Serine** to lower cortisol!
Healthy Hormone Balance!

• **With Ageing**
  - Hormonal support needed for strong/healthy bones

• **In Women**
  - **Estrogen** levels ↓
  - Low Estrogen levels = Lower bone density
  - **Red Clover Isoflavones** = weak estrogens
Healthy Male Hormone Balance!

- **Testosterone** levels ↓ with age
- These botanicals help balance testosterone levels *Tribulus*, *Muira puama*, & *Avena sativa*

- **How Do You Address These Hormonal Factors With A One Formula Fits All Approach?**
  - **YOU CAN’T!**
Why a Caplet versus a Capsule or Tablet

• To accommodate the required amounts of calcium and all its synergistic co-factors we would have had to use 6 capsules or more instead of the 2-3 caplets

• The primary objection to caplets is how quickly they dissolve
  • Ours dissolve completely in less than 30 minutes

• Vegetarian friendly

• Dissolves completely in the duodenum where most calcium is absorbed.
Is Your Cup Leaking?

• Imagine a cup with a hole. No matter how much water you pour into the cup the leak will keep you from filling it. In this analogy the cup represents your bones & the water the calcium. Many calcium supplements simply keep “pouring” in the calcium without addressing the leak.

• Progressive Complete Calcium uses nutrients that balance pH, lower cortisol, reduce homocysteine & regulate hormones. Progressive Complete Calcium not only “pours” in the calcium it helps patch the hole & keeps it from “leaking.”
CLA & Omega-3’s

• Lower the inflammatory protein PGE2 which has negative impact on bone

• Progressive women’s & women’s 50+ calcium have both CLA & Flax
“Milk Does The Body Good”
The Research Disagrees

• 12-year Harvard study of 78,000 women, those who drank milk three times a day actually broke more bones than women who rarely drank milk.

• A 1994 study in Sydney, Australia, showed that higher dairy product consumption was associated with increased fracture risk: those with the highest dairy consumption had double the risk of hip fracture compared to those with the lowest consumption.
Many Calcium Rich Foods Other Than Milk

- More than 85% of girls and 60% of boys ages 9 to 18 fail to get the recommended 1,300 mg of calcium per day

  (http://www.healthykids.ca/secure/articles/pdf_articles/Weak_Bones.pdf)

- Low fat 1% milk 142mg/100g
- Arugula 160mg/100g
- Basil 154 mg/100g
- French beans 186mg/100g
- Kidney beans 142mg/100g
- Yellow beans 166mg/100g
- Dandelion Greens 187mg/100g
- Dill weed 208mg/100g
- Dried figs 162mg/100g
- Kale 135mg/100g
- Whey 200mg/40g
Are we Consuming Things that Deplete or Inhibit Calcium Absorption?

- **Salt**
  - More than 2g per day will increase calcium elimination through urine and cause calcium to be leached from our bones (Ref)

- **Sugar**
  - Estimates place annual sugar consumption at 170 pounds per person per year. (Ref)
  - Sugar has been shown to interfere with the absorption of both calcium and magnesium (Ref)

- **Alcohol**

- **Smoking**
Caffeine
- If you do consume caffeinated beverages keep

Pop
- Pop is now the most consumed beverage by children in North America

Fluoride
- Fluoride found in drinking water and toothpaste may contribute to bone destruction (Turner et al. 1992, 1997; Sogaard et al. 1995)

Aluminum-based antacids
- Given that calcium supplements can function as antacids there should be no need for aluminum-based ones. By simply using antacids to treat acid reflux you are simply masking the underlying cause.
Numerous medications interfere with or deplete calcium levels in our bodies.

Eg’s. cholestyramine (lowers cholesterol) and glucocorticoids (anti-inflammatory)

Both of these deplete calcium stores warranting increased calcium supplementation.
**Things that Deplete or Inhibit Calcium Absorption?**

**Excessive Meat Protein Consumption**

- Consuming large quantities of animal proteins in the absence of fruits, vegetables and the minerals calcium and magnesium can lead to an overly acidic body thereby increasing calcium losses.

- It should however be noted that several studies have found that diets low in protein actually increase the risk of bone fractures and bone loss.
The controversy surrounding protein & bone density

• Several studies have suggested that high meat protein consumption and limited vegetable protein intake increases the rate of bone loss and risk of hip fractures.

• Studies have also shown that the relationship between protein and bone loss is more a question of balancing protein intake with adequate calcium supplementation.

• Several studies have shown that if seniors have a low protein diet their risk for bone loss and fractures goes up significantly!
Not All Proteins are the Same!

- It is important to keep in mind that not all proteins are equal!
- Balance your protein intake by consuming both whey &/or soy protein daily
- Try having a minimum of one shake a day

These osteoclasts are bone “breaking down” cells. Both Whey and soy can lower the activity of them and in turn result in less bone loss.

These osteoblasts are bone “building” cells. Whey can increase the activity of them and in turn result in more bone production.
The Importance of Exercise Can Not be Overstated!

- Women who added exercise to their medical therapy increased spinal bone density by 4.4%, while women receiving only bone-restoring medicines showed an increase in spinal bone density of just 1.6%.

Suppressing Pro-Inflammatory Cytokines

- As people age they produce excessive levels of inflammatory compounds. These compounds have been shown clinically to damage the bone matrix. (James et al. 1997; Brod 2000)

- Omega 3 fats from both fish and flax seed oil can suppress these high levels of inflammatory compounds thereby offering protection to the bone matrix (Burke et al. 1997)
“Recent research suggests that advanced glycation end products, or AGEs, are implicated in bone loss. AGEs are formed when proteins interact with glucose molecules to form damaged structures in the body. One study examined the proteins in osteoporotic bones to determine if there was damage by AGEs. More AGEs present resulted in fewer bone-building osteoblasts” (Hein G et al 2006).