Nutritional Support for the Musculoskeletal System


Glucosamine Sulfate

- Human joints are cushioned by cartilage and fluid that surround them. In this fluid is glucosamine sulfate, a chemical precursor to other important chemicals that help build parts of the musculoskeletal system (tendons, ligaments, cartilage and joint fluid).

- Healthy joint function is enhanced by healthy fluid and cartilage function.


Key Nutrients

Key nutrients critical for the musculoskeletal system include:

- Calcium
- Phosphorus
- Collagen proteins
- Magnesium
- Manganese
- Vitamin D
- Boron
- Gelatin or glucosamine
- The ratio of calcium to phosphorus is also very important.
How MLB’s elbow epidemic is mowing through young pitchers and has no solution

By Jeff Passan
May 12, 2014 10:36 PM
Yahoo Sports

“Over the past two months, a handful of team presidents have called Major League Baseball’s offices on Park Avenue and asked what the hell the sport is doing to fix the epidemic of pitchers’ elbows blowing out . . . It is ugly. It is troublesome. It is downright depressing. It is why when 21-year-old Marlins right-hander Jose Fernandez, the best young pitcher in baseball, reportedly tears his ulnar collateral ligament and likely heads to the 34th known Tommy John surgery in organized baseball this year — that’s one every 2.5 days since the first on Feb. 18 — the GMs and assistant GMs cringe, fearful that their guy is next, that this isn’t going away any time soon.”

Musculoskeletal System

The Musculoskeletal system is comprised of all of the bones, joints and muscles in the body, along with all the tendons, ligaments and cartilage that connect and hold them together.

Just what exactly is happening with exercise?

What are some symptoms of a Calcium deficiency?

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Empty Harvest
by Bernard Jensen & Mark Anderson

Dating back to the beginning of the last century, mineral depletion in our soils, and thus in the food we eat, has been horrendous -- and it has gotten much worse in recent decades, as we strip the top eight feet of soil throughout the world of the vital major minerals and up to 80 trace minerals that man has adapted to for thousands of years and which are needed for optimum health.

In modern times, we have disrupted the natural cycle of mineral replenishment by clear-cutting the forests and trees to make crop land, removing most of the waste and dead animals, and we have over-farmed virtually all of our soil without allowing time for micro-organisms to convert the remaining minerals into usable forms for plants. Thanks to the advent of petro-chemical fertilizers in 1908, we have mostly returned to the soil only petroleum derived nitrogen, potassium and phosphorus -- which produce lush growth but nutrient-poor plants.

To make matters worse, we have applied pesticides and herbicides that have killed off vital micro-organisms which help convert remaining soil minerals to usable forms.

Thanks to the extended use of fertilizers and "maximum yield" mass farming methods, the soil in the North American continent has had an average of 85% mineral depletion over the past 100 years -- the worst of any other country in the world.

The end result is that a bowl of spinach most of us eat today contains perhaps 1/8th the nutrition of the bowl our grandparents and great grandparents ate.

The role of minerals and human health is immense, yet seldom recognized. Two times Nobel Prize winner Linus Pauling went so far as to state unequivocally "You can trace every sickness, every disease, and every ailment to a mineral deficiency."

Dr. Gary Price Todd echoed this sentiment when he stated, "The lack of minerals is the root of all disease." Considering that minerals are the most basic of building blocks for proper nutrition and health, such statements can hardly be considered exaggerations. Quite simply, without minerals, nothing else works: amino acids and enzymes don't work and so vitamins and other nutrients don't get broken down and absorbed properly and we end up with major deficiencies in both vitamins and minerals. The end result is a chain reaction of poor health where nothing works as it should.

Partial List of Nutrients Lost in the Processing of Food

Vitamins B1, B2, B3, B4, B5, B6, Vitamin E
Biotin and Folic Acid
Chromium and Iron
Calcium, Potassium and Magnesium
Zinc
Manganese and Cobalt
Molybdenum, Selenium and Vanadium
Fiber
Essential Fatty Acids
March 8, 2010

**Fosamax Warning:**

This evening ABC news revealed yet ANOTHER horrible side effect from Fosamax, (besides osteonecrosis of the jaw) which is a bisphosphonate med. The program reported
details about the apparently high occurrence of femur (thigh bone) fractures that has
been happening with people who have been on the med for some years. These fractures
were happening WITHOUT trauma! In other words, just by people going through their
normal daily routines.

This is VERY serious stuff. The report did not mention other bisphosphonate meds, just
Fosamax, but one could assume that since Actonel and Boniva (among some) are ALSO
bisphosphonate meds, that in all probability the same could happen with them too.

These breaks were considered unusual in that the actual fracture literally seemed to
shatter the bone in two pieces as would occur in - for example - an automobile accident
or similar such trauma, but which, until now, was not reported by people from non-
traumatic activities UNTIL NOW. Merck has apparently been VERY reluctant in admitting
this prob and has only very recently added it to it’s list of warnings in it’s patient print-
out.

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**The Game of Calcium**

*Calcium is a game of co-factors:*

- HCL is required for GI uptake
- Vitamin D needed to move Ca+ from GI tract into the blood
- EFA transports Ca+ from the serum into the tissues – metabolism/adequate dietary efa’s
- Vitamin K activates the protein MGP which directs calcium to the bones
- Parathyroid Gland – Hormonal Factors
- Adequate Dietary Calcium
- Calcium / Phosphorus ratio 10:4

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**Low Stomach Acid – It’s a BIG DEAL!**

John Trowbridge, MD - A legend in the alternative health field and Health Alert advisor: "First fix the gut."

Jonathon Wright another famous author and MD has claimed: "Correcting a minor problem in the stomach can help you achieve breakthroughs modern science has deemed impossible." He also discusses how low stomach acid is a major cause of disease and how increasing stomach acid can help increase the immune response, clear out arteries, improve vision, memory and much more.
The Game of Calcium

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Vitamin D - Poorly Understood

Where does it come from?
1) Sunlight in the skin. 30 minutes of sun exposure (without sun block or clothing) = 20,000 units of Vitamin D
2) Some fish, cod liver oil, shitake mushrooms and egg yolks.

D2 or D3
Do not take D2 - ergocalciferol (generally found in dairy and other "fortified" foods), it is inactive and may cause a build up / toxicity to the body. D3 – cholecalciferol is a more active form and a far superior way to supplement.

The Role of the Liver and Kidneys
The liver and kidneys convert Vitamin D to its active form: Calcitriol.
Therefore people with impaired liver and/or kidney function will develop Vitamin D deficiencies.

Calcitriol

- The universal blood test for vitamin D measures 25 hydroxyvitamin D, also named calcitriol.
- Vitamin D is carried to the liver and converted to calcidiol.
- Calcidiol is further converted to calcitriol in the kidneys.
- Calcitriol supports calcium, phosphate and magnesium absorption in the gut; it regulates bone matrix changes; and since many cells in the body have a vitamin D receptor, vitamin D is thought to have a broad, if yet undefined, role in overall body health.

http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/otherendo/vitamind.html
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**The Role of the Liver and Kidneys**
The liver and kidneys convert Vitamin D to its active form. Therefore people with impaired liver and/or kidney function will develop Vitamin D deficiencies.

**The Role of the Gall Bladder**
Poor GB function = poor fat metabolism = difficulty absorbing dietary fats - of which D is a fat soluble vitamin.

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**Vitamin K’s Role**

Vitamin K enriches osteoblastic activity and activates proteins which direct calcium to the bones where we want it and out of the arteries where is can have detrimental side effects. “The only mechanism for arteries to protect themselves from calcification is via the vitamin K dependent protein MGP.”

-British Medical Journal

Vitamin K provides major protection from osteoporosis, cardiovascular blockages and pathological calcification.” Vitamin K’s job is to put calcium in the right places and keep it from being deposited in the wrong places. The right places are bones and blood, and the wrong places include calcification of the vessels, bone spurs and calcification of soft tissues.
**The Game of Calcium**

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**Calcium : Phosphorus ratio in the Serum**

Decreased Calcium and/or increased Phosphorus >>>>> tooth erosion
bone erosion

Increased Calcium and/or decreased Phosphorus>>>>> Ca+ precipitates out of solution into kidneys, eyes, joints, teeth, etc...

Systemic alkalinity >> Ca+ precipitates out of solution into kidneys, eyes, joints, teeth, etc...

**Types of Calcium**

<table>
<thead>
<tr>
<th>Ionized</th>
<th>Non-Ionized</th>
</tr>
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<tbody>
<tr>
<td>(Muscles, Nerves, Immune System)</td>
<td>(Teeth, Bones, Ligaments)</td>
</tr>
<tr>
<td>Calcium Lactate</td>
<td>Raw Bone Meal</td>
</tr>
<tr>
<td>Calcium with Phosphorus</td>
<td>Vitamin D</td>
</tr>
<tr>
<td></td>
<td>Cruciferous Vegetables</td>
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- Vitamin K
**TISSUE CALCIUM TEST**

Muscle cramping at rest is a primary indicator of tissue calcium deficiency. This test is a means of quantifying tissue calcium status.

**PROCEDURE**
Place a blood pressure cuff on the patient’s calf and pump it up slowly. Instruct the patient to let you know when they feel THE ONSET of a sharp, cramping type pain.

A muscle that can withstand 200 millibars of pressure is considered to have sufficient calcium stores. A patient who has cramping prior to 200 millibars/mercury is considered to be deficient in tissue calcium. The optimal tissue calcium level is considered to be 200 millibars or more.

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**TISSUE CALCIUM TEST, PART II**

If a deficiency is identified, various forms of calcium and/or calcium co-factors are tested orally to determine which nutrients will be the most effective for increasing tissue calcium. Have the patient taste the different nutrients until the pain threshold is sufficiently increased. In many, if not most cases a calcium co-factor will need to be used rather than just the calcium source by itself.

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**Tissue Calcium**

- Digestion
- Fat Metabolism
- Essential Fatty Acids
- Hormonal
- Other Factors – D
- Calcium Source
Trace Mineral for Endocrine Glands

- Manganese - Pituitary
- Iodine - Thyroid
- Copper - Adrenal
- Chromium - Pancreas
- Zinc - Prostate/Uterus
- Selenium - Testes/Ovaries

Zinc Testing

There are many options out there but zinc is a good indicator of overall mineral deficiency, so testing is a good idea.

Zinc Deficiency Linked to Prostate Enlargement

January 14, 2010
by Sheryl Walters
January 8 2009

NaturalNews: Zinc is an integral part of the male hormonal system, and a primary part of the semen. It plays a major role in the production of sperm. Studies also reveal that Zinc Deficiency may be a cause of Prostate Enlargement. As men age into their 50s and older, there is a natural decline in zinc. A zinc deficiency can lead to prostate enlargement, as well as a number of other male problems including impotency. This is because the prostate tissues are highly dependent on zinc to maintain its health and integrity. Zinc increases sperm count and sperm motility. High zinc levels also mean lower levels of estrogen and prolactin thereby reducing the risk of prostate disease.
Zinc Deficiency Linked to Prostate Enlargement, cont.

Adequate zinc also prevents the formation of dihydrotestosterone (DHT). When testosterone levels decline, the prostate gland converts the testosterone to dihydrotestosterone. This testosterone is 17 times more potent than testosterone. Unfortunately DHT breaks down testosterone causing a range of problems including prostate enlargement, potentially prostate cancer, and even male baldness since it can damage the hair follicles.

Irving Bush, M.D., senior consultant at the Center for Study of Genitourinary Diseases in West Dundee, Illinois, and former chairman of the Food and Drug Administration panels on gastroenterology, urology and dialysis, studied the effects of zinc on enlarged prostates. Nineteen men with enlarged prostates took 150 milligrams of zinc sulfate every day for two months, followed by 50 to 100 milligrams a day as a maintenance dose. 14 of the 19 men experienced shrinkage of the prostate.

DISCUSSION:

The most consistent and persistent biochemical characteristic of prostate cancer (PCa) is the marked decrease in zinc in the malignant cells. Using biochemical methods (A.A.S), this study of zinc in pathologic conditions such as BPH and prostatic carcinoma showed a significant difference in concentration of tissue zinc, plasma zinc, and urine zinc/creatinine ratio in these patients as compared with normal healthy persons.

We observed a significant decrease in mean tissue zinc levels in prostatic carcinoma and BPH as compared to normal prostate from autopsy cases. It was observed that plasma zinc levels before surgery from patients presenting with prostatic carcinoma showed a significant decrease as compared to normal healthy volunteers.

Journal of Urology 2011, Jan-Mar

Partially Hydrogenated Oils lead to PG2 excess

Ill effects of excessive prostaglandin II production:
- Heart attack & strokes
- Cancer
- Any inflammatory condition
- Autoimmune diseases
- Headaches, joint and back pain
- Arthritis, asthma, skin problems
- Hot flashes, PMS & menstrual cramps
**Essential Fatty Acid Testing**

A good screening test for EFA need is to test the oral pH. Anyone whose oral pH is below 7.0 is a candidate for EFA therapy – either directly, or by increasing absorption through improved biliary function.

- Flax Seed Oil
- Wheat Germ Oil
- Sesame Seed Oil
- Black Currant Seed Oil
- Evening Primrose Oil
- Fish Oil

**Pain and Omega 3's**

In patients suffering from chronic pain subsequent to degenerative spinal disease, 59% can eliminate the need for pain drugs by consuming adequate levels of omega 3 essential fatty acids. (Surgical Neurology, 2006)

**Glutamate (MSG) and Aspartame**

Glutamate and aspartame can cause chronic pain sensitization, and removing them from the diet for 4 consecutive months can eliminate all chronic pain symptoms. (Annals of Pharmacotherapy, 2002)
“The great aim of education is not knowledge but action.”

*Herbert Spencer*