

Nutrition and Repetitive Strain Injuries Part III: Treatment & Healing

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In the preceding articles, we discussed nutrition from the standpoint of building healthy tissues and improving circulation and cardiovascular health to prevent Repetitive Strain Injury (RSI). We also discussed what to eat to avoid chronic conditions linked to RSI such as Type 2 diabetes and obesity. Diet is just one part of the equation that leads to health or to disease. Unfortunately, none of us gets a vote on our genetics. But we can control what we put in our mouths, how much exercise we get, and whether or not we smoke. We can also make sure that we set up our work spaces correctly at work and at home, minimize or manage mental and emotional stress, and avoid injury in our sports and hobbies. These are all things that are known to make a big difference in whether we suffer RSI or not.

If you have done everything right and still experience symptoms of RSI, this article presents the possibilities for facilitating the healing process through diet and supplements. There has been very little research on diet as it relates to RSI, but we offer recommendations extrapolated from related research and based on experience in treatment. There has been considerable research on diet, supplements and herbal therapies for related disorders. Osteoarthritis (OA) is a disorder that closely resembles RSI since OA is also a result of the wear and tear of connective tissues. For this reason we recommend that people experiencing symptoms of RSI read the suggestions for OA and try them if the suggestions for RSI don't bring results. Many people who have OA also suffer RSI, and vice versa; so it can be helpful to pursue treatment for both.

It is best to make changes in a phased approach, trying the easier things first to see if you get results. If you try several things at once, you will never know what worked. Often several things work together to facilitate healing. When the recommendations involve dietary changes, look at the changes as a short-term test rather than as giving up your favorite foods forever.¹ If the changes work, you will likely not want to go back to your old way of eating because you will feel so much better.¹ However, if you do not experience improvement after the recommended test period, there is no need to continue.¹ We have different sensitivities to various substances and unique body chemistries, so even though something has worked for many people, it may not be effective for you. Move on and try something different!

Dietary Treatment for RSI

Eat small, regular meals and healthy snacks during the day to keep your energy up and to avoid stress.² Eat small, light meals rather than larger, heavier meals. This will keep you from feeling lethargic and tired. Fatigue may lead to poor posture that aggravates RSI such as thoracic outlet syndrome. Lethargy will also reduce your ability to perform tasks with correct movements.²

The shift of the American diet to more meat and less vegetables, grains, beans and fruit parallels an increase in hormone-related disorders.¹ Excess fat in the diet causes your body to produce more estrogen, which can cause fluid retention and swelling.¹ In tunnel syndromes, especially carpal and cubital tunnel, inflammation crowds the passage of tendons through the tunnel, so

added fats may aggravate this problem.¹ In addition to being unhealthy, fatty, fried, and rich foods are hard to digest and make you feel sluggish.²

Research strongly suggests that silicon is required by humans.³ Until recently, it was considered to be a non-essential nutrient, but in fact, it appears to play both a metabolic and structural role in the growth and development of bone, cartilage, and connective tissue.³ In bone, it promotes growth and mineralization.³ In cartilage and connective tissues, silicon contributes to structural integrity.³ Silicon also appears to be required for the synthesis of collagen, which is the protein matrix found in connective tissue and cartilage.³ Speculation is that silicon deficiencies may be involved in disorders such as osteoarthritis, osteoporosis, and RSI. The richest sources of dietary silicon include hard drinking water, whole grains, cereal products, plant fiber, leafy green vegetables, and root vegetables.³ Magnesium trisilicate in over-the-counter antacids is a safe source, but is probably unnecessary if a healthy diet with a variety of whole grains and vegetables is consumed.³

Drink plenty of fluids throughout the day. Six to eight glasses of fresh filtered water or fruit juice diluted with water provides fluids without a lot of calories.² Avoid coffee, tea, and cola drinks because caffeine causes dehydration and mineral loss. Calcium, potassium and magnesium are needed for healthy bones, joints and nervous system.² Hydration is important to maintain healthy fascia (muscle casing), tendons and ligaments.⁴

Supplements for RSI treatment

Vitamin B₆ (pyridoxine) supplements.¹ The body uses B₆ to make neurotransmitters, the chemicals that conduct nerve messages, including those that affect the way we feel pain.¹ Vitamin B₆ is important in the synthesis of serotonin and GABA, two neurotransmitters that inhibit pain impulses in nerves.¹ Vitamin B₆ seems to affect the perception of pain and the frequency of tingling and waking in the night.^{1,2} It doesn't actually improve the underlying nerve function or repair nerve damage.¹

50-150 mg/day is the recommended dosage of Vitamin B₆.¹ It takes 12 weeks or more to have an effect.¹ Above 200 mg/day may cause nerve problems. Supplements are required because it would be extremely difficult to obtain an adequate amount through diet alone.¹

Omega-3 fish oil. Omega-3s have anti-inflammatory properties which may help reduce the severity of RSI symptoms.² Read more about the role of Omega-3 fatty acids in the inflammation process in our articles on inflammation (<http://working-well.org/articles/archive.html>).

Herbs for RSI treatment

For complete information on herbal treatment that affects inflammation (a common symptom of RSI), refer to Part II of our articles on Inflammation.

Recommendations for homeopathic treatments are available on the Vitacost website for Carpal Tunnel Syndrome (http://www.vitacost.com/science/hn/Homeo/Carpal_Tunnel_hm.htm).⁵ We encourage you to explore these suggestions and determine their effectiveness for you and your condition. Serious research on homeopathic treatments is lacking.

Passionflower has calming properties which may help to reduce anxiety associated with RSI.²

One double-blind study found passionflower to be as effective as the drug Oxazepam in reducing anxiety, but without the side-effects of drowsiness caused by Oxazepam.⁶ The recommended dosage is 1 cup of tea three times a day, made by steeping 1 teaspoon of passionflower leaves for 10-15 minutes.^{6,7} Please check our references for these herbs to obtain further information and drug interactions.



Willow bark has proven pain relieving properties.² The active ingredient is glycoside salicin, which the body can use to create salicylic acid.⁸ Salicylic acid has anti-inflammatory as well as pain-relieving properties. Willow bark contains acetylsalicylic acid which was the original model for creating aspirin.⁸ Willow bark takes longer to have an affect than aspirin, but it may last longer.⁸ The latest studies indicate that standardized extracts of 240 mg/day are the most effective in treating pain.⁸ People with ulcers, gastritis or an allergy to aspirin should avoid willow bark; however, studies have found very little evidence that willow bark causes the same amount of gastrointestinal distress as aspirin.⁹ This may be because the salicin is converted to salicylic acid after it is absorbed rather than while it is in the intestines, or it may be because the dosage of the active ingredient is much lower than generally taken as aspirin.⁹ Please check our references for this herb to obtain further information and drug interactions.

Bromelain is derived from the stems of pineapples and has proven to be an effective anti-inflammatory agent.^{10, 11} It is helpful in healing minor injuries, especially strains and sprains, muscle injuries, tendonitis and bruising.^{10, 11} It has been found to reduce postoperative swelling in a majority of research studies.^{10, 11}

Bromelain is a proteolytic enzyme (i.e., it breaks down protein). But unlike many other digestive enzymes taken to help aid digestion, significant amounts of bromelain can be absorbed intact. Therefore, it is useful as an anti-inflammatory aid.¹⁰

Research has been conducted using enteric coated bromelain, which is not broken down by the digestive system. Since most bromelain on the market is not enteric coated, dosages are difficult to determine.

Recommended dosages are in MCUs (milk clotting units) or GDUs (gelatin dissolving units). It is advisable to follow the directions on the bottle.¹¹ Some doctors recommend as much as 3,000 MCU (2,000 GDUs) taken three times daily for several days, followed by 2,000 MCU (1,333 GDUs) taken three times daily.

Bromelain is generally free of side effects, although some people are allergic to it. It is a blood thinner, and little is known about its interaction with blood-thinning drugs.¹⁰

Treatment for Osteoarthritis (OA)

OA is a result of wear and tear degeneration of joints resulting from overuse, genetic predisposition, and injuries. It is closely related to RSI, although recommendations for treatment are somewhat different.

As is true for RSI, being overweight increases the risk of developing OA. If you determined that you are overweight in Part I of this series

(http://working-well.org/articles/pdf/Nutrition_Prevention,%20part%201.pdf),

it is critical to start a weight loss program. Every 10 pounds of excess weight increases the risk of OA in the knees by 30%.¹ It appears that this is due not just from chronic stress, but because fat cells produce more estrogen, which may be involved in joint damage.¹ Research has shown that weight loss of approximately 5 kg (11 lbs.) will reduce the risk of developing knee OA over the next 10 years by 50%.¹²

Diet for OA

*Avoid fatty foods and emphasize grains, vegetables, fruits, and beans.*¹ Meats, dairy products, fried foods, and vegetable oils encourage weight gain. Besides losing weight, your blood estrogen levels drop quickly to healthier levels by avoiding these foods..¹

Nightshade plants are controversial. For many years it was recommended in a famous diet created by Dr. Warmbrand that people with both rheumatoid- and osteo-arthritis avoid foods in the nightshade family.¹³ Nightshade plants include tomatoes, potatoes, all peppers (except black pepper), tobacco and eggplant.^{13, 14, 15, 16} The belief is that nightshade plants contain solanine, which may not be broken down by some individuals and may be toxic to them.¹³ Preliminary studies and experiential evidence of some patients indicate that nightshade sensitivity is definitely a cause of OA symptoms.^{13, 14, 16, 17} This theory has not been tested clinically since the 1950s.

Complete elimination of all nightshade foods and cessation of tobacco use is the only way to determine if a person is nightshade sensitive.^{14, 16, 17} In general, it is recommended to avoid these plants as a last resort if other measures have not worked to alleviate the symptoms of OA.¹⁷ It is extremely difficult to avoid these foods since they are a component of so many other food products and processed foods (especially tomatoes and potato starch).¹⁶ Additionally, these foods are very nutritious, containing vitamin C, beta-carotene, fiber, and vitamin B6, so elimination of them can be a detriment to good nutrition.¹⁵

Supplements for OA

Glucosamine sulfate and/or Chondroitin sulfate. 1,500 mg of glucosamine sulfate, 800-1,200 mg of chondroitin sulfate, or a combination of both daily is recommended for pain management and joint protection.^{13, 18, 19} There is strong clinical evidence for both substances in treating OA. Studies have found that either taking three smaller doses daily (totaling the recommended daily dose), or one large dose produces significant improvement in symptoms and halts degeneration of the joints.¹⁴ Glucosamine sulfate doesn't cure people and it may be needed as a lifetime supplement, but benefits generally become evident after 3-8 weeks of treatment.^{14, 18} Chondroitin sulfate appears to actually cause healing of the joints after several months.^{14, 19}

Vitamin E, Vitamin C, Betacarotene, and Vitamin D

The best longitudinal study, the Framingham Knee OA Cohort Study, did not find that intake of these vitamins reduced the incidence of developing OA in the knees. However, there was a significant reduction in progression of OA with daily doses of Vitamin D, C and betacarotene. Betacarotene produced a smaller effect when researchers adjusted for the effects of simultaneous Vitamin C intake.¹² Vitamin E has only been proven to reduce risk of OA progression in men.¹² Vitamins C, D and E perform other biochemical functions that may be important in OA.¹²

Vitamin C

In addition to being an antioxidant, Vitamin C is important in the stabilization of collagen fibers.¹² Research has shown that the presence of Vitamin C significantly increased sulphated proteoglycan biosynthesis in cartilage, a presumed measure of repair, and also decreased levels of active proteinase (a protein digestive enzyme).¹² Another study demonstrated that higher doses of

Vitamin C (equivalent to 500 mg/day in humans) showed consistently less severe joint damage than animals on low dosages.¹²

A dose of 500 mg/day of Vitamin C is probably adequate, though up to 1000mg/day can be taken safely.²⁰ Digestive upset can usually be avoided by taking the vitamin as Ester-C.

Vitamin D

Research indicates that low levels of Vitamin D may have negative effects on normal bone metabolism including calcium metabolism, matrix ossification (building bone), and bone density.¹² During skeletal growth, Vitamin D regulates the transition from growth plate cartilage to bone. It was recently discovered that osteoarthritic cartilage can redevelop Vitamin D receptors.¹² Therefore, it appears that OA cartilage is sensitive to the effect of Vitamin D, but its exact effect on matrix synthesis and degradation are not clear.¹² Low intake of Vitamin D is associated with an increased risk in progression of OA.¹²

As with Vitamins C, E, and betacarotene, there are no adverse effects from taking a normal recommended dose of Vitamin D either through daily sun exposure where the skin converts UV light to Vitamin D, or through dietary sources.

Evidence of the benefits of Vitamin D is increasing through current research. The recommended daily dose for people 51-70 years old is 10 micrograms. Never exceed 50 micrograms a day, since Vitamin D is a fat-soluble vitamin and can build up toxic quantities in the body.

Vitamin E

Vitamin E may relieve pain and improve mobility.¹ A few smaller studies have found that Vitamin E (400 mg, alpha tocophorol) helps OA patients experience greater improvement in every measure including pain at rest, pain on movement, and reduced use of analgesics, when compared with a placebo.¹²

Vitamin E has been promoted as an antioxidant, but not all sources agree it is effective.²¹ This is because it is currently not possible to measure oxidant activity within joints and little is known about the bio-availability of antioxidant molecules within joints.¹²

Vitamin E could reduce synovial inflammation associated with OA and may account for the positive results obtained from Vitamin E supplements in some studies.¹² It blocks the formation of arachidonic acid from phospholipids and inhibits lipoxygenase activity.¹² (Please refer to our article on Inflammation: Part I for a complete explanation of this mechanism. <http://working-well.org/articles/archive.html>)

Other supplements

Many more supplements are suggested for treatment of OA. Supporting research is available on the MotherNature.com website¹⁴ and the ConsumerLab.com website.²¹ (Note: The most useful information on the Consumer Lab website requires a subscription of \$24 per year.)

Herbs for OA

Topical capsaicin.^{1, 22, 23} Capsaicin is the hot chemical in chili peppers and is available in a cream. Dolorac is the most potent option available.¹ Capsaicin causes a brief stinging sensation which stimulates the pain nerves and then shuts them down.^{1, 23} This is reported to help relieve OA pain in 70% of patients. Effectiveness increases after several weeks of use.^{1, 23}



Ginger has been widely touted for its usefulness in reducing inflammation associated with OA.²⁴ Sadly, this is based on the results of one poorly designed large study. However, ginger's effect may be proven with further research.²⁴

Additional herbs for use in OA treatment are described with supporting research on the MotherNature.com website.¹⁴

Treatment for Osteoporosis

Back pain may be caused by small to moderate spinal fractures from osteoporosis. Osteoporosis is not an overuse disease, but can increase the risk of developing RSI. Osteoporosis is not caused by inadequate calcium intake; it is caused by calcium loss from the bones.¹

Diet for Osteoporosis

Follow these recommendations to reduce calcium loss and to increase calcium uptake by the bones:

Follow a plant-based diet.¹ Animal protein causes calcium to leach from the bones.¹ Protein in fish, poultry, red meat, eggs, and milk appear to be the primary culprits.^{1, 25} Focus on obtaining protein from a variety of beans, rice, grains, and lentils rather than from animal proteins.

Reduce sodium intake.¹ Sodium encourages calcium to pass through the kidneys, so reduce sodium intake to 1-2 grams/day.¹ Avoid salty snack foods, soft drinks, canned goods with added sodium, prepared foods like instant soups and noodles. Use a limited amount of salt in cooking and at the table.^{1, 26}

Limit caffeinated drinks to no more than 2 cups a day.¹ Caffeine causes water and calcium loss via the kidneys.¹

Limit sugar intake.¹ Sugar appears to encourage calcium loss. However, there is not a lot of research on this yet.¹

Limit alcohol intake.^{1, 26} Alcohol appears to reduce the body's ability to replace normal bone loss, so limit your daily consumption to less than 2 drinks per day of spirits, beer or wine.^{1, 26}

Supplements for Osteoporosis

Vitamin A

Excessive consumption of Vitamin A may increase the risk of osteoporosis.²⁶ Therefore, it is recommended to limit doses of Vitamin A to 10,000 I.U. daily.

Vitamin D

We need 200 I.U. (5 mcg) of Vitamin D each day to efficiently absorb and retain calcium.^{1 26} Vitamin D can be through moderate sun exposure, diet or supplements.^{1 26} Some evidence exists

that older people who take Vitamin D have a lower tendency to sway while standing or walking and are less likely to fall.²⁶ Since the most common adverse consequence of osteoporosis is bone breakage from a fall, this could be a meaningful benefit.²⁶

Dietary Calcium

If you are active, don't smoke, eat a vegan diet, and limit salt intake, the World Health Organization recommends just 400-500 mg/day of calcium. It is very easy to get this much calcium from plant sources.¹ If you consume meat, fish or dairy products, are sedentary, smoke, and/or eat higher levels of sodium, you will need to increase your calcium intake to counteract the effects of these dietary and lifestyle habits. General dietary guidelines are 1,000 mg/day for males and females 19-50 years old, increasing to 1,200 mg/day for males and females over 50.²⁷

Trace minerals

One study found that adding a combination of 15 mg zinc, 2.5 mg copper, and 5 mg manganese may enhance the effects of calcium and Vitamin D supplementation.²⁶

Vitamin K

Preliminary research indicates that Vitamin K, when taken along with calcium and Vitamin D, may help prevent osteoporosis.²⁶ More research is needed, but early results from research are very promising.

Soy Isoflavones for postmenopausal women

Lower testosterone levels in older men and lower estrogen levels in older women encourage osteoporosis. Soy contains isoflavones produce an effect similar to estrogen, but unlike estrogen which simply helps prevent the destruction of bone, isoflavones appear to assist in creating new bone.²⁶ Genistein is a naturally occurring chemical present in soy and is an isoflavone.²⁸ It appears that genistein regulates the effects of estrogen by either increasing or blocking the sensitivity of estrogen receptors on cells.²⁸ In older people, this effect may work to increase estrogen sensitivity when there is less estrogen available, thereby helping to prevent osteoporosis.²⁸ Research indicates that soy isoflavones can significantly reduce bone loss from the spine.²⁹ The use of progesterone cream however, another proposed treatment for osteoporosis, may decrease the effectiveness of soy isoflavones in bone loss.²⁹

Dosage is difficult to determine, but the typical Asian diet includes about 10 g of soy protein daily.²⁹ The recommended amount for reducing cholesterol levels is 25 g of soy protein daily which is significantly higher than the Asian diet.²⁹ 25 g of soy protein is the amount contained in about 2 ½ cups of soy milk or ½ pound of tofu.²⁹ Effects of consuming too much soy protein are not clear, but it appears to have some effect on the thyroid gland.²⁹ Those with impaired thyroid function should avoid large amounts of soy products except under the supervision of a physician.²⁹ Soy may inhibit the absorption of zinc, iron, and calcium, so it is advisable to allow 2 hours between the consumption of soy products and these minerals.²⁹

Wild Yam

Yam is not effective; it's a scam. Wild Yam acts neither like estrogen nor progesterone. In controlled research, yam does not reduce hot flashes nor raise levels of estrogen or progesterone in the body.²⁶ Chemists can create progesterone from wild yam in the lab, but the body cannot do this.²⁶ Granted, some wild yam preparations contain progesterone, but synthetic progesterone has been added to these products.²⁶

This article and all of our articles are intended for your information and education. We are not experts in the diagnosis and treatment of specific medical or mental problems. When dealing with a severe problem, please consult your healthcare or mental health professional and research the alternatives available for your particular diagnosis prior to embarking on a treatment plan. You are ultimately responsible for your health and treatment!

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