Just about everyone who is even moderately active, from amateur athletes to weekend warriors, probably has a supplement regimen that supports their joints and relieves pain. But what about the very structures that connect us? How often do we neglect the health of our tendons and ligaments? In this issue, we’ll take a look at supplement ingredients that support those unsung heroes of an active lifestyle, whether that activity is running a marathon, raking leaves in your backyard, or dealing with carpal tunnel syndrome or tennis elbow.

What are Tendons and Ligaments?
Tendons are tough bands of tissue. Tendons are important — you couldn’t move without them. These are the connectors between your muscles and bones. They help you walk, dance, jump, lift objects — even raise a cup to your lips. Tendons are not elastic — they are anchors, and when your muscle contracts, the tendon pulls the bone into place. Ligaments, on the other hand, connect bone to bone, and are elastic. Stretching exercises can help “loosen up” your ligaments, which helps to prevent injuries.

The two categories of common problems with ligaments and tendons are inflammation and injury, which can occur separately or simultaneously. Some of the problems you may have heard of are tendinitis, tennis elbow, carpal tunnel syndrome, anterior cruciate ligament (ACL) injuries, ruptured Achilles’ tendon, plantar fasciitis, rotator cuff tendinitis, and (indirectly) dislocated joints.

Goals of Prevention and Treatment
To keep these connective tissues healthy, or to restore them to health after damage or inflammatory problems, you need to reduce inflammation and increase the strength and hydration of the ligaments and tendons. A variety of herbs, vitamins and minerals can make an extraordinary difference in how the body repairs and maintains healthy ligaments and tendons.

Targeted Vitamins, Minerals and Herbs
Boswellia is an herbal ingredient you’ve probably heard about. It’s a traditional botanical that does an excellent job relieving pain and inflammation. Effective boswellia extracts should be standardized to provide 70% boswellic acid with 10-15% AKBA (3-acetyl-11-keto-beta-boswellic acid), and less than 5% beta-boswellic acid. Pain is definitely a factor in how well your active body (and your tendons and ligaments) will carry you. But a good boswellia extract with AKBA has been shown to inhibit the 5-lipoxygenase enzyme, and reduce degradation of synovial fluid (which serves as a lubricant) degradation in the joints. Better joint lubrication is very important for proper ligament and tendon function.

Bromelain. This enzyme from pineapple is generally well-known for reducing pain and inflammation, but also has wound-healing applications. We tend to think of “wounds” as something on the outside, like a cut, scrape or bruise, but muscle tissue tears are extremely common, and the stress on our ligaments and tendons need daily repair as well.

Helping your friend move a couch, putting in a long day in your garden, or taking an extended bike tour can cause some wear and tear on muscles and connective tissues. You’ll feel those tears as pain at first. Bromelain can help relieve that pain, and shorten the duration of the “inflammatory phase” of tissue healing. For people with blunt injuries and bruising, bromelain reduces swelling and pain whether the person is at rest or on the move.

Make Sure You Get “B”s That Are Busy!
Vitamins B6 and B12 need to be in the active form to do their work well. Bioactive ingredients are those that are in the same form that our bodies create. By supplementing with the same form, you give your body much less work to do. Most B vitamins in supplements are not in the active form.

Vitamin B6 – Pyridoxal-5-Phosphate (P-5-P) is the best. In foods or most supplements, vitamin B6 is found in one of three forms: pyridoxine hydrochloride, pyridoxal, or pyridoxamine. Inside the body, these forms of B6 have to be converted by the liver to the active form the body needs — P-5-P. Plus, common food processing and preparation methods can cut the naturally-occurring levels of B6 by 50%! So why not just start them instead? The best form you can use is the active form of vitamin called pyridoxal-5-phosphate, or P-5-P. By consuming vitamin B6 in the active P-5-P form, conversion is no longer necessary, and the full benefits are available immediately after absorption. This is the best form of B6 for anyone suffering from carpal tunnel syndrome. In fact, using P-5-P can prevent nearly ALL carpal tunnel surgeries, if used consistently when symptoms first begin to appear. It’s an excellent partner to magnesium, which I also recommend for ligament and tendon support.

More...

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down the healing process, because vitamin C, (commonly found, and the type I’d recommend) has been the most widely tested. The fact that vitamin C is a powerful antioxidant and fights reactive oxygen species (ROS) that can interfere with healthy muscle, ligament, and tendon use is an additional plus to getting this ingredient on board.

Manganese, Magnesium, and Zinc. Trace minerals are an example of good things coming in small packages, and the best forms of these minerals are amino acid chelated. They’re much better absorbed by the body, and in the case of magnesium, aren’t going to give you the same potential intestinal issues (loose stools) that other forms of magnesium can. I consider amino acid chelated forms of these minerals to really be the gold standard for supplementation.

Magnesium is an essential mineral for tendon and ligament health. First, it helps relax muscles, so you don’t get that “tightness” from activity or more recurring concerns like carpal tunnel syndrome. Deficiencies of magnesium, common enough in the diet because of refined foods and “dumbed down” vegetables and fruits grown in mineral depleted soils, can cause muscle cramps and numbness. As an extra bonus, magnesium has synergistic effects with bioactive B6 (P-5-P) and helps to facilitate of its biological activities.

Zinc is a required trace mineral for protein synthesis, cell division, and proper DNA synthesis. It helps ensure that any tendon and ligament repair proceeds along the right track to help you get active again, sooner, or to help you stay active in the first place. In models of wounds or tissue stress, zinc concentrations at the site peak after a few days, usually at the time you notice the strain most acutely. Again, make sure to look for zinc in an amino acid chelate form.

Vitamin B12 is essential for nerve function, metabolism, energy and blood pressure health. The best form is methylcobalamin, the bioactive form readily used by the body. Beyond its already impressive list of abilities, it has been shown to rebuild and regenerate damaged sciatic nerves. High dose methylcobalamin shows real promise in treating diabetic neuropathy and, with more research, may actually slow the progress of muscle wasting in amyotrophic lateral sclerosis (ALS) as well. I include it in my list because healthy nerve function is important for muscle enervation (nerves telling muscles what to do) and movement. Muscle health is closely associated with ligament and tendon health. In fact, vitamin B 12 deficiency interferes with your tendons’ ability to respond to signals, and dampens their reflex.

Niacinamide is a form of niacin that doesn’t cause upset stomach or the “flushing” sensation that most people associate with the B vitamin. You want to get niacinamide in your regimen if you’re at all concerned with ligament and tendon issues, because it gives the body’s anti-inflammatory abilities a real boost. First, it inhibits TNF-alpha, a pro-inflammatory enzyme. Secondly, it may be a starting material for PARP, an enzyme that helps the body’s DNA repair tissues properly. Plus, like vitamin C, niacinamide is a strong antioxidant that fights reactive oxygen species that can inhibit muscle, ligament, and tendon movement, function, and activity.

Vitamin C is generally considered an immune booster, but it is truly a multitasking vitamin. In fact, vitamin C enhances neutrophil formation and lymphocyte transformation during the inflammatory phase of wound or bruise healing and is crucial for collagen formation during the tissue rebuilding proliferative phase. Most people, especially the elderly, can be deficient in this water-soluble vitamin to begin with. This stacks the deck against connective tissue repair because any deficiency weakens fibrous material in the body like ligaments and tendons right off the bat. After stressful exercise, or commonly recurring conditions like carpal tunnel, a vitamin C deficiency dramatically slows down the healing process, because vitamin C is essential to reconnecting the intracellular matrix. Ascorbic acid form of vitamin C, (commonly found, and the type I’d recommend) has been the most widely tested. The fact that vitamin C is a powerful antioxidant and fights reactive oxygen species (ROS) that can interfere with healthy muscle, ligament, and tendon use is an additional plus to getting this ingredient on board.

The vitamins, minerals and herbs I have outlined can do a fantastic job of helping your ligaments and tendons stay strong and whole, and help them repair when damaged. That is the first part of the equation. The second part has to do with nutrition and lifestyle. Make sure you’re eating foods that don’t cause inflammation and pain. Avoid refined grains and sugar and focus on whole, nutritious proteins, vegetables, and fruits instead. They’ll help your efforts tremendously. And, if your job requires repetitive movement like using hand tools, typing, or sewing, make sure to stop and stretch often enough during the day to let your muscles realign. Making a few simple changes in your routine and adding supplements that reduce inflammation while strengthening ligaments and tendons will have a tremendous impact on your every day health!

Vitamin C (ascorbic acid) 500 mg 833%
Niacinamide 200 mg 1,000%
Vitamin B6 (as pyridoxal-5-phosphate) 40 mg 2,000%
Vitamin B12 (as methylcobalamin) 500 mcg 8,333%
Magnesium (as amino acid chelate) 75 mg 18%
Zinc (as amino acid chelate) 10 mg 66%
Manganese (as amino acid chelate) 36 mg 1,800%
Bromelain (2400 GDU) 100 mg **
Boswellia (Boswellia Serrata) Gum Resin Extract standardized to contain >70% Total Organic and Boswellic Acids with AKBA >10%

Terry recommends a product with these ingredients.

Stay Connected: Healthy Ligaments and Tendons

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