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The IMPACT MAGAZINE GUIDE TO NATURAL HEALTH PRODUCTS

Building Optimal Health and Performance

PART 5 IN A MULTI-ISSUE EXCLUSIVE FEATURE

SPORTS PERFORMANCE

BY ROB ROTH

The iconic 1920s Tour de France photo depicting cyclists mid-race, riding and sharing a cigarette, is an exaggerated example of our evolving understanding of sports performance and the factors that influence it.

In the past two decades, our knowledge of sport performance and how to manipulate its outcomes, has grown at an incredible pace.

Outside of primary training, supplementation is at the forefront of that growth.

Using supplements such as caffeine to alter glucose-to-fat utilization can improve endurance outcomes. The fine print: this works best if the athlete has avoided caffeine for a while leading up to an event — a definite downer for coffee addicts.

We know that Cordyceps mushroom can increase aortic dilation by 40 per cent during exercise,

delivering blood more efficiently to muscles. This mushroom also increases libido in both men and women, but that is a different type of performance improvement. Science has unveiled supplements that improve recovery, performance, muscle strength, endurance and more.

The key to unlocking these herbs, mushrooms, and supplements' potential is knowledge. Translating supplement consumption into improved sport performance, both at the elite and weekend-warrior levels, hinges on knowing dosing, timing and therapeutic applications.

Even professional teams still experiment and end up with a discordance of supplements for the athletes.

However, it will not take long before this approach to supplementation is as antiquated as lighting up and taking in a lung-full of cigarette smoke to "enhance" our cycling abilities.

Here is a look at natural health products that impact sport performance. References cited by IMPACT Magazine's experts are published online at impactmagazine.ca.



SPORTS PERFORMANCE

SUPPLEMENTS



CREATINE

What it is: Creatine is an organic acid produced by the human body. It is used primarily by the skeletal

muscle system as an energy source.

What it does: Provides rapid energy to the muscles. Traditionally, this has been a supplement reserved for bodybuilders and power athletes; however, recent and numerous clinical trials have demonstrated its benefit in endurance athletics as well. Trials have revealed that muscles having enhanced creatine stores are able to store more glycogen — something useful for endurance athletes prior to an event. Overall, it is an ergogenic aid that improves muscle efficiency, likely through changing the lactate threshold.

Why you might need it: To run faster, row harder, cycle with more power for longer. It may also play a role in improving injury recovery. Outside of athletics it has been recommended in the literature for cancer patients as it may improve treatment outcomes by reducing the risk of cachexia.

Who shouldn't use this: It was previously thought that creatine could cause damage to the kidneys and liver. This notion has since been shown to be antiquated and that oral supplementation does not have adverse effects on the kidneys or liver. Nevertheless, those with kidney or liver disease should exercise caution and consult a health professional before supplementing with creatine. Caution should also be exercised with women who are pregnant.

What happens if you take too much: stomach pain, nausea, diarrhea, dehydration and muscle cramping.

Where to get it: Supplementation

IMPACT Expert Picks: Signature Supplements Creatine Monohydrate Powder, Metagenics Creatine Perfect.



WHEY PROTEIN

What it is: Whey is a protein found in milk that contains all the essential amino acids in higher

concentrations than vegetable protein sources.

What it does: Assists in the building of muscle mass. It is commonly used post-exercise (both in aerobic and anaerobic exercise) to assist in muscle recovery. It has been shown that muscle development and recovery is substantially improved if protein is taken within 45-minutes of completing a workout. In addition, depending on the form of whey protein, it may also include micronutrients that enhance immune function and increase glutathione — the body's master antioxidant.

Why you might need it: Increased muscle growth and enhanced recovery. It also may be beneficial to prevent injury. Tendons require 72-hours to fully recover after a workout, and as most athletes work out more than once in a 72-hour cycle, whey protein may help prevent tendon degradation caused by inadequate recovery time. Over long periods of time, tendon degradation will occur leading to tendinopathies. Whey protein's ability to remodel and strengthen muscles and tendons may help ward off overuse injuries. Athletes who get ill frequently may also benefit from the immune enhancing properties of whey protein.

Who shouldn't use this: Those with milk allergies.

What happens if you take too much: Bloating, GI discomfort.

Where to get it: Milk itself is not recommended to achieve adequate levels of whey protein. Supplementation is recommended. A high-grade whey protein, such as a whey isolate, has only trace amounts of lactose, fat and other components, yielding a higher concentration of protein. Whey concentrate retains many of the immune-enhancing compounds and low lactose forms are available.

IMPACT Expert Picks: Metagenics BioPure, Whey Gourmet, AOR Advanced Whey, Dream Protein (Doctors for Nutrition), Douglas Labs Klean Isolate.



CAFFEINE

What it is: Caffeine is a methylxanthine compound naturally found in the seeds, fruit and leaves of

many plants, including tea and coffee. It is one of the world's most consumed central nervous system stimulants and is on the World Anti-Doping Agency's monitoring list for 2014.

What it does: Caffeine acts as a stimulant to the central nervous system and raises norepinephrine. It is commonly used as an ergogenic aid to improve metabolism, though the mechanism is unclear. The most common hypothesis is that it enhances fat use by sparing glycogen storage breakdown. It has been shown to increase speed and allow athletes to train longer, which may be in part due to a decrease in perception of pain and exertion.

Why you might need it: Many athletes use caffeine to train longer and with more intensity. Caffeine is also used in athletics for its effect on concentration and focus.

Who shouldn't use this: Those who have high blood pressure, heart rhythm irregularities, tachycardia, anxiety, diabetes, osteoporosis or kidney disease. It is not recommended to use in high doses for women who are pregnant or breastfeeding.

What happens if you take too much: Short term excess of caffeine can cause anxiety, tremors, digestive distress, dehydration and sleep disruption. Long-term excess of caffeine can affect blood pressure, heart rhythm, calcium absorption and bone health, and cause depletion of vitamin B.

Where to get it: Found in coffee, green tea, black tea, guarana berries, kola nuts and cacao beans. Also found in capsulated extracts, sports drinks, sports beans and sport powders.

IMPACT Expert Picks: Green Tea, Yerba Mate, Honey Stinger Energy Chews (Limeade & Cherry Cola), Vega Sport Sugar Free Energizer.



TART CHERRY JUICE

What it is: The juice of a particular species of cherry, *Prunus cerasus*, shown to have higher

amounts of antioxidants (flavonoids and anthocyanins) than the sweet cherry variety, *Prunus avium*.

What it does: Tart cherry juice has been shown in studies to reduce specific markers of inflammation, aid in strength recovery and reduce pain following activity. After strenuous activity, studies show that it increases antioxidant support, reduces inflammation and improves muscle recovery. It has also been used to prevent gout attacks by reducing uric acid.

Why you might need it: To help speed up recovery during training and reduce muscle soreness following intense training or competition.

Who shouldn't use this: Those who have an allergy to cherries, and those who have an allergy to Birch as there may be cross-pollination.

What happens if you take too much: Digestive upset and diarrhea.

IMPACT Expert Picks: Knudsen Just Tart Cherry Juice, Lakewood Organic Tart Cherry Juice.



SODIUM OR POTASSIUM BICARBONATE

What it is: Sodium bicarbonate and potassium bicarbonate are naturally

occurring salts. Sodium bicarbonate is commonly known as baking soda.

What it does: These salts buffer acidity, something that can be leveraged for performance. Acidity, namely lactic acid, produced during activity is a performance limiting factor and triggers a signal to the body to prevent significant further exertion. By buffering the acidity with sodium or

potassium bicarbonate, it is possible to circumvent the acid's triggering of muscle fatigue and limiting of sport performance.

Why you might need it: Studies have demonstrated ergogenic benefits in athletes, notably in short-term, high intensity workouts. Sodium or potassium bicarbonate allows for greater output by muscles, and slows the onset of fatigue. Additional benefits have been noted in the literature for improving osteoporosis outcomes, and may help in certain pain conditions as well as in preserving muscle mass.

Who shouldn't use this: Certain prescription medications will have interactions with bicarbonate supplements.

What happens if you take too much: Headache, nausea, muscle weakness, diminished reflexes.

Where to get it: Supplementation and baking soda.

IMPACT Expert Picks: BioMed Basic Powder 250, Sanum Pleo Alkala Powder, AOR TLC, Pascoe Basentabs.

HERBALS



CORDYCEPS SINENSIS

What it is: Cordyceps is a mushroom found in the Tibetan and China mountain ranges. It is unique in that

it is a parasitic mushroom. Cordyceps mycelia parasitizes the larvae of a caterpillar from a specific moth. As the caterpillar matures the mycelia grows and eventually makes its way out of the body of the caterpillar. Most supplement forms of Cordyceps are grown without a caterpillar host, this does not alter the medicinal properties of the mushroom.

What it does: This mushroom has been shown to increase circulation in the body, notably from a Japanese study demonstrating a 40 per cent dilation of the aorta under stress. This

increased blood distribution benefits muscles at maximal exertion, enhancing endurance. Bronchodilation has been shown to occur after consuming this mushroom, improving oxygen exchange and making it an important medicine in treating asthma and lung infections.

Additionally, Cordyceps has extensively been used as a prophylactic treatment for altitude sickness in mountain climbers. Aside from athletic performance enhancement Cordyceps' research has shown antitumor activity through the upregulation of macrophage and natural killer cells in the body, increased libido in both men and women, antimicrobial action, and cholesterol lowering properties due to its triterpene compounds.

Why you might need it: Improves endurance.

Who shouldn't use this: Those allergic to mushrooms (90 per cent of mushroom allergies are to button mushrooms — a mushroom category distinct from the Cordyceps category. Caution should always be exercised around allergies).

What happens if you take too much:

Cordyceps has a large window of safety, with effective doses of the mushroom being well below this window's threshold. The LD-50 (50 per cent of the lethal dose) is 27g/Kg: effective doses of this mushroom for the above noted benefits is 1-4 grams per day.

Where to get it: Supplementation is best.

It is important to be cautious of using unprocessed Cordyceps sinensis mushroom that was grown on caterpillar larvae. This increases the risk for unwanted bacteria, viruses, and contaminants in the mushroom.

IMPACT Expert Picks: Host Defense Cordyceps, Host Defense Cordychi (a blend of both Cordyceps and Reishi mushrooms).



GANODERMA LUCIDUM (REISHI)

What it is: Ganoderma lucidum (Reishi mushroom) is a potent medicinal

THE IMPACT MAGAZINE GUIDE TO NATURAL HEALTH PRODUCTS IS COMPILED WITH THE EXPERT ASSISTANCE OF:



Dr. Rob Roth is a naturopathic doctor and herbalist practicing in Calgary, who focuses on pain management and injury rehabilitation.



Dr. Kiley Hunt is a naturopathic doctor practicing in Calgary who focuses on hormones, stress balancing, optimized nutrition and therapies that address pain and injury while optimizing performance.



Dr. Melina Roberts is a naturopathic doctor and clinic director of Advanced Naturopathic Medical Centre in Calgary, specializes in uncovering root causes of problems, digestive issues, hormonal balancing and chronic disease.



Dr. Ryan Nakama is a naturopath in Calgary who works with high performance athletes and weekend warriors to improve performance, minimize injury and speed recovery.

mushroom used in Asia for thousands of years. These mushrooms grow naturally on decaying logs and trees.

What it does: Strengthens the immune system to fight off infections and remove toxins. It improves blood circulation, improves liver function, restores normal respiratory function, prevents fatigue. It also has anti-inflammatory properties.

Why you might need it: Many athletes use it as a performance-enhancing tonic. Mountain climbers use it to combat altitude sickness.

Who shouldn't use this: May prolong bleeding, so do not use if you have a bleeding disorder or while taking anticoagulants.

What happens if you take too much: Minor side effects include: dry mouth, throat and nasal area itchiness, stomach upset, nosebleeds, bloody stools, rashes and headaches.

Where to get it: Typically taken as a capsule or powder.

IMPACT Expert Picks: New Chapter,

Organika, Host Defense Reishi, Host Defense Cordychi, Mikei Red Reishi.



**ELEUTHEROCOCCUS
SENTICOSUS**
(SIBERIAN GINSENG)

What it is: Eleutherococcus senticosus (Siberian Ginseng) is a tall, prickly shrub native to China, Russia, Korea and Japan. It has been used in Chinese medicine for more than 2,000 years. The active ingredient is the root.

What it does: Eleutherococcus senticosus exerts most of its effects through the pituitary-adrenocortical system. Active ingredient, eleuterosides, strengthens the immune system by stimulating increased immune cell production. Increases resistance to environmental stress by helping the liver to detoxify harmful toxins. Contains choline, a brain chemical that can improve mental performance and memory. Its antioxidant, anti-inflammatory and neuroprotective

properties improves the use of oxygen by exercising muscles.

Why you might need it: Improves athletic performance, increases stamina and endurance, protects the body against stress-induced illness and fatigue, enhance mental acuity, helpful against chronic infections

Who shouldn't use this: Should not be taken by those on blood thinning medication, corticosteroids, digoxin, diabetes medication or drugs that suppress the immune system. Safety in pregnancy and nursing has not been established. Caution must be exercised by people with uncontrollable hypertension.

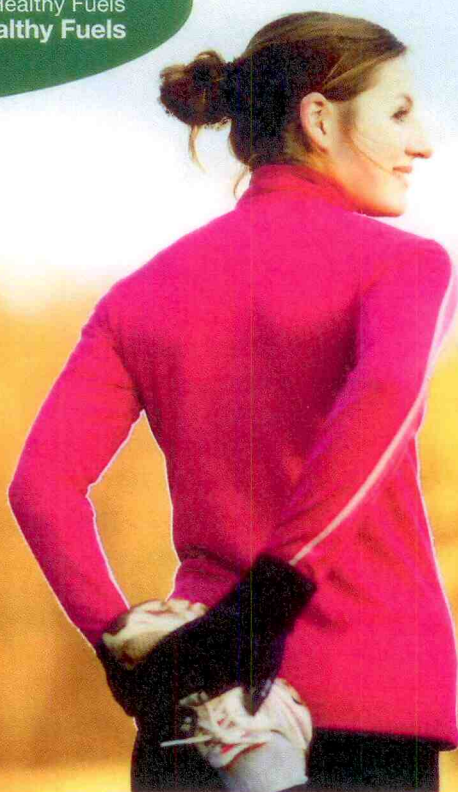
What happens if you take too much: Possible side effects include insomnia, drowsiness, vomiting, heartache, confusion, irregular heart rhythm, nosebleeds, and/or anxiety.

Where to get it: Typically a tincture (liquid alcohol extract) or standardized capsules.

IMPACT Expert Picks: St. Francis, Orange Naturals, Botanica tincture, Golden Flowers Eleuthro tablets. ■

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