

Does It Work?

| DIETARY SUPPLEMENT | DESCRIPTION | CLAIM | FACT |
|--|---|---|--|
| Androstenedione | Substance produced by the adrenal glands and testes. | Increases energy, strength and muscle development. Decreases recovery time from workouts. | Take only under the direction of a physician. Anyone with a family history of prostate or breast cancer should avoid taking andro. It is considered an anabolic steroid by the International Olympic Committee and its use by athletes is banned. |
| Arginine, ornithine & other amino acids | Amino Acids (protein components found in most foods). | Stimulates production of human growth hormone (hGH), Increases muscle growth; decreases body fat. | Some studies show possible increased muscle growth related to hGH but amounts needed to stimulate hGH are extremely high & potentially dangerous. |
| B-Complex | Water soluble vitamins, found in foods, not stored in body; includes thiamin, riboflavin, niacin, folic acid, biotin, pantothenic acid, B6 & B12. | Increases performance & energy. | No facts to support the claim. Although exercise may increase the body's need for vitamins, these needs are easily met by increased food intake. |
| B-12 Vitamin | Water soluble vitamin, essential in cell metabolism; especially in the GI tract, bone marrow & nervous tissue. | Increases performance & energy, | No facts to support the claim. Body contains adequate supply for several years. Needed only by strict or long time vegetarians, or certain malabsorption conditions, Found in animal product sources: liver, kidney, milk & egg. |
| Bee Pollen | Bee saliva, plant nectar & pollen. Often sold with other nutrients added, Contains nucleic acid. | Enhances athletic performance; faster recovery. | American studies show no benefit to performance. Allergic reactions documented, including anaphylactic shock. If history of gout or renal disease, should avoid. |
| Beta-Hydroxy-Beta-Methyl butyrate (HMB) | A breakdown product of the essential amino acid, leucine, which is found in protein containing foods. | Slows the loss of muscle mass associated with intense training; improves strength. | Human studies are inconclusive about effectiveness. More research is needed. |
| Carnitine | Involved in the metabolism of fats. Prevalent in animal products. | Increases aerobic power & energy level. Decreases body fat. | Some performance benefit for repeated, very intense exercise. No evidence decreases body fat. Body can make adequate amounts; also plentiful in animal foods, Adverse reaction to form that is not L-carnitine. |
| Choline | Constituent of cell membrane. | Decreases body fat; delays fatigue; faster recovery. | No evidence improves performance or reduces body fat. Supplements cause diarrhea, foul-smelling intestinal gas, and may cause a "fishy" body odor. Food source mainly lecithin found in egg yolks and meats. Deficiencies uncommon. |

Does It Work?

| DIETARY SUPPLEMENT | DESCRIPTION | CLAIM | FACT |
|---|---|---|---|
| Chromium Picolinate | Chromium is an essential element for metabolism of carbohydrate, protein, & fat. Picolinate is a by-product of amino acid tryptophan, | Stabilizes blood sugar; increases muscle mass; burns body fat. | Helps action of insulin in processing blood sugar. Deficiency results in impaired sugar tolerance and increased risk of heart disease. Exercise increases chromium losses but adequate chromium available in diet. Good sources: beer, oysters, mushrooms, pork, chicken, whole-grain cereals, prunes, & apples with skins. No reliable studies to support performance enhancement beyond normal levels. |
| Citrate | Buffering compound. | Delays onset of fatigue by augmenting the body's natural buffering capacity. | May cause gastrointestinal problems, nausea and diarrhea. Some benefits have been reported, but problems can occur if taken in large doses. If citrus fruits are eaten on a regular basis, dietary citrate will be high naturally. |
| Coenzyme Q₁₀ (CoQ₁₀) | An enzyme component found in the mitochondria of cells. It is a potent anti-oxidant. | Increases energy and cardiac performance. | No benefits have been reported in athletes. This substance has been used with therapeutic success in patients with heart disease to increase their oxygen utilization and exercise performance. It has also been shown to increase submaximal and maximal exercise capacities in sedentary men. |
| Copper, magnesium and zinc | Essential minerals for optimal physiologic functioning. | Beneficial effects on energy metabolism; improves muscle strength and endurance. | At high doses gastrointestinal disturbances, mineral imbalances, and toxicity may occur. Supplementation is only necessary when dietary intake is insufficient. If insufficient levels are suspected, contact your health care provider. |
| Creatine Phosphate | Liver product stored in skeletal muscle & heart. Used for energy production in muscles. | Increases muscle growth. Maintains maximal performance longer & enhances high intensity performances. | Not adequately tested. May work for short, high-intensity work, but may decrease performance in prolonged continuous exercise. Athletes with low muscle creatine may benefit, but excess is excreted in urine. "Loading" technique results in weight gain. <i>Does not alter muscle size or structure. High dosages may result in liver & kidney damage.</i> |
| DHEA (Dehydroepiandrosterone) | A substance produce naturally by the human adrenal gland. | Burns fat, builds muscle mass, and slows aging. | More research is needed to determine whether supplementation is safe and improves performance. Because DHEA is related to testosterone, it has been banned by the International Olympic Committee. High doses may cause virilization (baldness, body hair growth, voice deepening) in women and breast growth in men. May also cause oily skinn and acne. |

Does It Work?

| DIETARY SUPPLEMENT | DESCRIPTION | CLAIM | FACT |
|------------------------------------|--|---|--|
| Echinacea | An herb from the daisy family. | Enhances the immune system | Studies indicate that it is effective against the common cold. Most effective if taken at the first sign of a cold and stopped as soon as symptoms clear up. Do not take continuously, some evidence indicates that prolonged use may depress the immune system. Do not use if you have tuberculosis or autoimmune disorders or are allergic to plants in the Daisy family. |
| Ephedra (Ma Huang) | A potent herb. The active constituent is ephedrine alkaloid. | Increases metabolism and stimulates weight loss. | <i>There is no substantial evidence that it is either a safe or effective promoter of weight loss. Adverse side effects include rapid heart rate, increased blood pressure, increased risk of heat injury, depression, agitation, rhabdomyolysis, heart attack, stroke, convulsions and death.</i> Exercise and dehydration increase the risk of these effects. Caffeine also increases the effects of ephedrine alkaloids, so soldiers are advised to minimize caffeine consumption (from coffee, colas, or other dietary supplements) if taking them. Avoid ephedrine alkaloids if taking a monoamine oxidase (MAO) inhibitor or allergy, asthma, or cold medication containing ephedrine, pseudoephedrine, or phenylpropanolamine. |
| Fructose | Naturally occurring sugar in fruit. | Enhances endurance performance. | <i>Adverse effects: intestinal distress & may increase lactic acid which impairs performance.</i> May spare muscle glycogen early in exercise, but no benefit to performance found. Primarily used by the liver. Not recommended to consume immediately before exercise or as the sole sugar in a sports drink. |
| Gamma-Butyrolactone (GBL) | Converted in the body to the drug gamma-hydroxybutyrate (GHB). | Enhance athletic performance; releases growth hormone; prolongs life. | <i>Potentially life threatening. Converted by the body into gamma-hydroxybutyrate (GHB), a drug banned by the FDA. Adverse effects of GHB toxicity include coma, slow heart beat, slow breathing, hypothermia, seizures, and vomiting.</i> |
| Gelatin | Connective tissue protein derivative. | Increase energy source to muscles; prevents muscle soreness; muscle strength & endurance. | <i>No benefits found. Scientific studies do not support the claim.</i> |
| Ginkgo Biloba Extract (GBE) | Leaf extract from the oldest living tree species on earth. | Improve circulation to the brain and extremities. Decreases short-term memory loss, headaches, ringing in the ears, and dizziness at heights. | <i>There is evidence to support the claims when taken consistently. Ginkgo does reduce the clotting time of blood. Do not use ginkgo if taking a blood thinner such as Coumadin? . Individuals on non-steroidal anti-inflammatory drugs (NSAIDs) for extended periods may also have an increased risk of bleeding.</i> |

Does It Work?

| DIETARY SUPPLEMENT | DESCRIPTION | CLAIM | FACT |
|---------------------------|--|---|---|
| Ginseng | A plant root. | Increases energy; increases work capacity; reduces fatigue; improves memory. | Possibility of allergic reactions. Long term use may cause high blood pressure, sleeplessness, breast nodules. Although contains chemicals which may increase endurance and promote recovery, commercial preparations contain little to none of the active compounds. Some studies show favorable result for stress reduction but no evidence improves exercise or sexual performance. Some liquid products contain alcohol. |
| Glandulars | Ground up animal organ tissue, usually testes, pituitary or hypothalamus, | Elevates testosterone levels promoting muscle growth. | A waste of money. There are no facts to support the claims. |
| Glutamine | An amino acid found in high concentrations in animal proteins. | Prevents the loss of muscle mass; enhances the immune system. | There is no current evidence that glutamine supplementation improves body composition or exercise performance in weight training athletes. Adequate consumption of glutamine does aid the immune system in times of stress. |
| Glycerol/ Glycerin | Sweet, oily fluid found in many foods. | Improves endurance performance by optimizing hydration. | Further research needed. When ingested with water, glycerol seems to hold onto the water, thereby delaying the onset of dehydration. No known risks if food grade glycerol is used and dose does not exceed 1 g/kg body weight every six hours. |
| Guarana | Paste from the crushed seed of a climbing Amazonian shrub (liana Paullinia cupana). | Boosts energy, suppresses appetite, relieves pain. | Insufficient evidence to support claim. Has a high content of a caffeine-like compound. Avoid chronic use. May cause jittery nervousness, tremors or dizziness. Adverse effects increase dramatically if used in conjunction with ephedra-containing products. |
| Herbs | Usually sold in teas; includes dried leaves, roots, seeds & occasionally fruit of plant. | Numerous health & performance effects. | May cause allergic reaction. Little or no reported benefit for herbs that have been tested. "Natural" does not mean safe. Herbs contain potent chemicals that can cause undesirable effects or poisonings. Manufacturers do not have to test for safety or effectiveness |
| Inosine | Nucleoside; various functions in metabolism. | Increases endurance & strength. | Not found to be effective. Constant use may cause fatigue. Those with Gout should avoid. |
| L-Cartinine | A vitamin-like compound that assists in transporting free fatty acids into the mitochondria of muscle cells for use as fuel. | "Fat burner"; delays onset of fatigue; improves aerobic exercise and indurance. | Little to no benefit reported, but not harmful at recommended doses. Possible adverse effects include nausea, vomiting, and stomach cramps. It is important to remember that the "L" isomer is the active form. If you ingest the "D" form, you can actually create a carnitine deficiency in yourself. READ THE LABEL! |

Does It Work?

| DIETARY SUPPLEMENT | DESCRIPTION | CLAIM | FACT |
|------------------------------------|--|---|---|
| Lecithin | Phospholipid found in cell membrane. Functions in fat metabolism. Contains choline. | Dissolves cholesterol; prevents fat gain. | No evidence to support claim. Humans make adequate amounts. The Synthetic forms not well absorbed. Form of choline in lecithin is better absorbed than free choline. |
| Pangamic Acid (Vitamin B15) | Not a true vitamin. Mixture of calcium compound & gluconate. May contain variety of compounds . | Improves endurance by aiding oxidative metabolism by increasing muscular creatine phosphate & glycogen. | No evidence to support claim. Several of the compounds marketed under this name are potentially hazardous. |
| Pantothenic Acid | The physiologically active form of coenzyme A (co-A) which is involved in many metabolic pathways. | Improves aerobic capacity; may be an “anti-stress” vitamin. | No benefits have been reported in humans. No adverse effects have been reported. More research is needed. |
| Phosphate Salts | Essential mineral found in a variety of foods. A component of oxygenating enzymes and buffering systems. | Delays onset of fatigue, improves oxygen transport to muscles, and improves maximal aerobic capacity. | Research results are ambiguous regarding impact on performance. Gastrointestinal intolerance is a likely possibility. The phosphate content of soft drinks is high. If they are routinely consumed, further phosphate loading is not advised. |
| St. John’s Wort (SJW) | An aromatic herb. | Relieves mild depression. | Studies indicate benefit in relieving mild depression with fewer side effect than standard antidepressants. Do not use in conjunction with other antidepressant medications. If you are taking any medications, check with your primary health care provider before taking SJW. It may reduce the effectiveness oral contraceptives and other medications that are cleared through the liver. |
| Saw Palmetto | Oil extracted from the berry of the saw palmetto plant. | Relieves symptoms associated with prostate enlargement, increases urinary flow. | Numerous studies support benefit in reducing symptoms of an enlarged prostate gland (benign prostate hyperplasia). Do not use saw palmetto unless you have discussed it with your health care provider! May cause a false-negative prostate-specific-antigen (PSA) result. |

Does It Work?

| DIETARY SUPPLEMENT | DESCRIPTION | CLAIM | FACT |
|--|--|---|---|
| Sodium Bicarbonate | Baking soda | Enhances aerobic performance, delays onset of fatigue by eliminating exercise induced accumulation of lactic acid in muscles. | <i>Ineffective for events lasting less than 30 seconds or more than 7 minutes.</i> No significant effect on aerobic activity or on upper body anaerobic activity. May be effective for high intensity activities between 30 seconds & 7 minutes. Possible adverse effects include GI distress & diarrhea. High doses or chronic use causes imbalances in sodium & water. People with high blood pressure should avoid. |
| Vanadyl Sulfate | Trace element vanadium bound as a sulfur salt. | Builds lean muscle mass, enhances performance. | <i>No evidence to support enhanced body composition in weight-training athletes. Insufficient evidence to support performance enhancing effect.</i> May cause gastrointestinal upset. |
| Vitamin C | Water-soluble vitamin and powerful antioxidant.; essential for skin/tissue integrity and immune function. Found in many fruits and vegetables. | May accelerate recovery from muscle soreness and serve to minimize heat stress. | <i>Research indicates that 500 to 1000 mg per day may reduce the incidence of upper respiratory tract infections after endurance events such as marathons and ultramarathons.</i> No adverse effects noted at these doses, but some sensitive people may develop intestinal distress or irritation. Supplementation necessary only if dietary intake is insufficient. |
| Vitamin E | Fat-soluble vitamin and powerful antioxidant. | May accelerate recovery from muscle soreness and serve to minimize heat stress. | <i>Research indicates that 400 mg per day beginning 3 weeks prior to event may be beneficial. Supplementation necessary only if dietary intake is insufficient.</i> |
| Wheat Germ, Wheat Germ Oil, Octacosanol | Active ingredient is octacosanol. Rich in vitamin E & other vitamins. | Increases endurance & improves reaction times. | <i>Little or no evidence to support claims.</i> No known adverse effects. |
| Yohimbe | Herbal extract derived from the bark of the African tree, Pausinystalia yohimbe. | Increases testosterone and lean muscle mass; inhibits fat accumulation in the lower half of the body. | <i>Classified by the FDA as an unsafe herb.</i> Effectiveness is unproven. Adverse effects include anxiety, panic attacks, hallucinations, elevations in blood pressure and heart rate, dizziness, headache, and skin flushing. It is a monoamine oxidase inhibitor and must be rigorously avoided by people who take prescription MAO inhibitors, as well as those who have hypotension, diabetes, schizophrenia, or heart, liver, or kidney disease. |