



Ergogenic Aids

Supplement	NCAA Guidelines	Recommended Dosage	Safety (at recommended doses)	Theorized Effects	Effectiveness
Androstenedione	Banned; anabolic steroid.	Supplementation not recommended.	Safety concerns about chronic use. Banned by the FDA and most sports governing bodies.	Potentially converts oral androstenedione into testosterone with the possible anabolic benefits of enhanced lean body mass, increased strength and decreased body fat.	Not effective.
Branch Chain Amino Acid (BCAA)	Impermissible for the institution to provide.	5 – 20 grams/day in divided doses.	Seems to be safe; 5-20 g/day in divided doses.	Greater availability of BCAA late in prolonged exercise could provide a much needed fuel source.	Not effective to delay fatigue; some promising studies related to immune system support.
Caffeine (guarnana)	Banned; stimulant; concentration must not exceed 15 micrograms/mL in urine (approx. 17 caffeine containing soft drinks).	Effective dose for athletes: 5-6 grams/kg body weight.	Seems to be safe, although known adverse effects may affect performance.	Ergogenic aid to improve endurance performance as well as to delay fatigue and enhance fat loss.	Effective as a central nervous system stimulant.
Carnitine	Impermissible for the institution to provide.	Study protocols suggest an oral dose of 2- 4 grams/day.	Seems to be safe.	Used in fat oxidation, carnitine is believed to decrease muscle pain and increase weight loss, endurance, cardiovascular function, and strength.	Effectiveness is unknown because study results are mixed.
Chromium (chromium picolinate)	Permissible for the institution to provide.	50 – 200 micrograms/day; higher intakes may decrease iron absorption.	Safety concerns about chronic use.	Enhances insulin sensitivity by increasing the number of insulin receptors, thus improving glucose utilization. Enhanced insulin sensitivity could also promote the uptake of amino acids into muscle cells and stimulate protein synthesis.	Not effective for increasing muscle mass or decreasing body fat.
Conjugated Linoleic Acid (CLA)	Impermissible for the institution to provide.	Study protocols used 3 – 4 grams/day, usually taken in 3 divided doses with meals.	Seems to be safe.	Supplemental CLA aids in weight loss, fat loss, gains in muscle mass and strength, and improved health related to heart disease and other chronic diseases.	Effectiveness is unknown because study results are mixed.



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Creatine	Impermissible for the institution to provide.	3 – 5 grams/day; short-term loading of 20 – 25 grams/day for 5 – 7 days has not been shown more beneficial.	Seems to be safe.	Supplemental creatine may increase storage of phosphocreatine, regulate phosphocreatine increases during exercise, and increase ATP production secondary to increased hydrogen ion buffering. Ergogenic effects include increased strength, endurance, and muscle gains.	Effective for increasing lean body mass in athletes performing repeated high intensity, short duration (<30 seconds) exercise bouts. Performance benefit in weight lifters.
Dehydroepiandrosterone (DHEA)	Banned; anabolic steroid.	Supplementation is not recommended.	Safety concerns about acute high doses and chronic use.	As a prohormone, DHEA will elevate blood testosterone levels, which in turn will increase muscle mass.	Not effective.
Ephedrine (ephedra, ma huang)	Banned; stimulant.	Supplementation is not recommended; ban on low-dose (≤ 10 milligrams) supplementation overturned by federal court.	Safety concerns hotly debated. Banned by the FDA due to significant safety risks. Ban on low-dose (≤ 10 mg) supplements overturned by federal court. Do not mix with caffeine.	Ephedrine use in athletes is used to promote weight loss, increase energy, and enhance performance.	Effective as a central nervous system stimulant. With caffeine, effective for short-term, 8-to9-lb weight loss in obese people. Effectiveness as a performance enhancer is unknown because study results are mixed.
Glucosamine/ Chondroitin Sulfate	Permissible for the institution to provide for medical purposes, if substance is provided by a licensed medical doctor to treat a specific, diagnosed medical condition.	Glucosamine: 1500 – 2000 milligrams/day Chondroitin: 1200 milligrams/day	Seems to be safe.	May stimulate cartilage protein synthesis or inhibit breakdown; used to reduce joint pain and improve function.	Effective in some individuals.
Glutamine	Impermissible for the institution to provide.	Manufacturers recommendations range from 5 – 10 grams/day to more than 20 grams/day.	Seems to be safe.	Used as a fuel source for immune system cells when the body is under physiological stress, supplemental glutamine is theorized to be beneficial for decreasing exercise-induced stress.	Effectiveness is unknown because study results are mixed.



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Beta-hydroxy-beta-methylbutyrate (HMB)	Impermissible for the institution to provide.	3 grams/day in three 1 gram doses.	Seems to be safe.	Promoted to enhance lean body mass and to increase strength gains by minimizing the protein break-down that follows intense exercise.	Effectiveness is unknown because study results are mixed.
Ribose	Impermissible for the institution to provide.	Supplementation not recommended Most studies used a dosage of 5 grams/day.	Seems to be safe.	Used in ATP synthesis- ribose supplementation is posed to increase ATP production and improve high-intensity exercise performance.	Not effective.
Vanadium (vanadyl sulfate)	Permissible for the institution to provide.	Upper limit (UL) equals 1.8 milligrams/day.	Seems to be safe.	Supplemental vanadyl sulfate have insulin-mimetic properties which increase hepatic and muscle insulin sensitivity, augmented glucose uptake, and a stimulation of glycogen synthesis.	Not effective as a performance enhancer; may be effective in type 2 diabetes as a pharmacological agent.
Medium-Chain Triglycerides	Impermissible for the institution to provide.	Supplementation not recommended.	Safety concerns about acute and chronic use.	Increases fat availability and oxidation in an effort to spare glycogen and prolong performance.	Not effective.
Multivitamin and mineral supplements	Permissible for the institution to provide.	Follow the Dietary Reference Intakes (DRI) for each vitamin and mineral.	Safety concerns about does that, in conjunction with diet, would exceed the Tolerable Upper Intake Level (UL).	Supplementation prevents vitamin and mineral deficiencies; many athletes view a one-a-day multivitamin as an “insurance policy” to a poor diet. Vitamins C and E are powerful antioxidants which may protect against oxidative stress in endurance athletes.	Effective to reverse nutrient deficiencies. Daily multivitamin supplements are recommended by some as effective to prevent chronic disease in adults.
Protein	Impermissible for the institution to provide.	1.2 – 1.8 grams of protein per kilogram of body weight per day.	Seems safe for those without latent or known kidney or liver disease.	Protein supplementation in combination with resistance training significantly increase lean tissue mass.	No more or less effective than food proteins.
Pyruvate and Dihydroxyactone (DHA)	Impermissible for the institution to provide.	Supplementation not recommended Most studies used a dosage greater than 20 milligrams/day.	Seems to be safe.	Increase aerobic endurance and decrease body fat as a weight loss aid.	Not effective.