**EFFICACY & SAFETY OF POPULAR SPORTS SUPPLEMENTS**

**HMB**

**Significance...** B-Hydroxy B-Methylbutyrate (HMB) is an amino acid metabolite often sold in products containing creatine-monohydrate, glutamine, carnitine, DHEA, and/or N-acetylcysteine (NAC) and is claimed to enhance lean body mass and to increase strength gains.

**Studies...** Preliminary studies have shown both positive changes and no changes in increased strength and lean body mass when supplemented with exercise programs. Whether this effect actually enhances exercise performance remains to be tested.

**Safety...** Although HMB supplements seem to be safe, to date there are no long-term studies.

**NO2**

**Significance...** Nitric oxide (NO2) is involved in hemodilatation. Hemodilatation is the widening of blood vessels resulting in increased blood flow and thus increased nutrient and oxygen delivery to cells. The product marketed as “NO2” is an arginine alpha-ketoglutarate (AAKG) supplement that stimulates NO2 in the body. Supplementation is claimed to increase strength during exercise.

**Studies...** Preliminary studies suggest AAKG in “NO2” may improve blood flow and enhance exercise function. The claim that “NO2” can build muscle is unsubstantiated at this time.

**Safety...** Caution: It should be noted that there are currently no reputable studies that have tested the safety of “NO2” supplementation with exercise. Thus, safety of “NO2” is questionable.

**L-Arginine**

**Significance...** L-Arginine is an amino acid that cells use to make NO2. NO2 has hemodilating properties in cells and is promoted to increase strength during exercise.

**Studies...** Preliminary studies suggest NO2 may improve blood flow and enhance exercise function. The claim that NO2 “builds muscle” is unsubstantiated at this time.

**Safety...** In general, arginine supplements have been well tolerated. There are no human studies testing the safety of long-term supplementation.

**Caffeine**

**Significance...** Caffeine is a central nervous system (CNS) stimulant. Caffeine is promoted to improve endurance performance as well as to delay fatigue and enhance fat loss.

**Studies...** The consensus opinion is that caffeine may be an effective ergogenic aid. Benefits may be related to its role as a CNS stimulant resulting in a heightened sense of awareness and decreased perception of effort. There is no evidence to support that caffeine alone has any significant effect on fat or weight loss.

**Safety...** Although use is considered safe for most adults, blood pressure is increased at rest and during exercise, heart rate is increased, gastrointestinal distress can occur, and insomnia may result.

*Disclaimer: Diet supplements are not regulated by the FDA.*