

## Nutritional Ergogenic Aids

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Athletes and sometimes military personnel continually seek ways to gain a competitive and military operational advantage and often turn to nutritional ergogenic aids to build muscle, enhance energy, and improve physical and cognitive performance. Unfortunately, limited research supports their efficacy or safety, leaving us to rely on hype and hearsay rather than hard science. *Nutritional Ergogenic Aids* edited by Wolinsky and Driskell provides an up-to-date review of what is hypothetical and what is known about nutritional ergogenic aids in enhancing physical and/or cognitive performances. The twenty-six chapters are divided into six parts. Each chapter is well organized with a comprehensive list of references that will prove useful to both researchers and clinicians. The basic format includes the potential role of the dietary aid in physical performance and sometimes on cognitive performance; and a review of the literature regarding performance benefits. Safety issues and the use of these aids in sports are also covered. Although often a challenge with a multiple-author book, this reference text reads smoothly and provides well-researched information on each dietary aid covered.

Part I (introductory chapter) provides a working definition of ergogenic aids and a detailed overview of regulatory issues, including those involving sports-governing agencies. In Part II on amino acid derivatives, a total of twelve chapters give an excellent review of this popular category of supplements, such as creatine and branched-chain amino acids. Glucosamine and chondroitin sulfate are also reviewed, which points to the significance of potential ergogenic aids that may not benefit speed or strength directly but rather promote healthy joints in an effort to stave off injury or reduce wear and tear. This section could have been improved with a chapter on protein supplements, although the point was made in chapter 1 and chapter 25 to address micronutrients and macronutrients as nutritional ergogenic aids.

Parts III and IV detail lipids and other food substances, such as caffeine, lipoic acid and coenzyme Q<sub>10</sub>, as potential ergogenic aids. The chapter on caffeine

gives an excellent review of caffeine's metabolic and physiologic effects and its use in sports, which is relevant because this is the most commonly used ergogenic aid among various types of athletes and military personnel. Part V summarizes which ergogenic aids work and which do not in the four major areas of performance enhancement: such as (a) long-term endurance performance; (b) muscle mass and strength; and (c) body fat loss, and sports skills and exercise-associated health. This section expertly ties together the previous twenty-four chapters. A helpful addition to this chapter or perhaps to chapter 1 would have been an in-depth review of ergogenic aid "contamination", because this has profound implications for sports personnel being tested for substances banned for use in sports (chapter 1 briefly touches on this important topic). There are similarities between competitive athletes and some military personnel in terms of the amount of time dedicated to physical training and the actual demand for high levels of physical performance. With regards to ergogenic aids, the difference between athletes and the military is that the "cheating" associated with ergogenic aids by the former is of no consequence to the latter. The health risks of employing ergogenic aids, however, are of concern to both groups, although here again there is an important difference. It is conceivable that the health risks might be acceptable to combat units when they are considered in the light of the implications of mission failure.

In summary, I feel that this book is an important reference text for nutritionists, exercise scientists, sports physicians, strength and conditioning specialists, and trainers who dispense advice about these products on a regular basis. It also serves to educate military personnel about the use of these aids in enhancing or sustaining performance in military operational settings.

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