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COMMENTARY

Re: Dietary Supplement Use by Children and Adolescents in the United States to Enhance Sport Performance: Results of the National Health Interview Survey

Douglas MacKay · Taylor C. Wallace

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To the Editor,

While obtaining key nutrients from foods is recommended, many Americans of all ages are not obtaining the necessary levels of vitamins and minerals by consuming foods, even when nutrient-containing dietary supplements are considered (Fulgoni, Keast, Bailey, & Dwyer, 2011). Dietary supplements are necessary for those who do not obtain adequate nutrient status from their diet alone. Subpopulations such as young athletes have increased protein and micronutrient requirements, and many dietary supplements may increase physical performance among athletes of all ages by simply helping them to maintain nutrient adequacy. Only 3–4 % of Americans eat according to the *2005 Dietary Guidelines for Americans* (Academy of Nutrition and Dietetics, 2009) and, therefore, supplementation is warranted, especially among those with increased levels of physical activity. In their article, Evans, Ndetan, Perko, Williams, and Walker (February 2012 issue) confuse responsible use of dietary supplements to support nutrient adequacy in adolescence with supplementation intended to gain a competitive edge. The main outcome of their study was that "the vast majority of youth sport participants do not report taking dietary supplements for sports performance" (p. 9). This means that a significant minority of youth sports participants use dietary supplements. Moreover, of those children ($M_{age} = 10.8$ years) who reported using dietary supplements to enhance sports performance, 94.5 % were taking a multivitamin. Very few children reported consuming non-multivitamin supplements. In reality, these 11-year-olds are likely consuming a multivitamin formulated for children, and a small number of upper-class, college-bound high school athletes are the consumers of other dietary supplements such as creatine. Yet Evans et al. make a presumptive link between creatine use and younger children without supportive data, and go on to discuss "the potential for future use of more dangerous substances as well, if use of any supplement is occurring at 11 years of age" (p. 10). The authors' concern related to any supplement use at 11 years of age is unfounded. For example, according to the Johns Hopkins Children's Center, "Several large-scale studies have found that vitamin D deficiency is widespread—one in 10 U.S. children are estimated to be deficient—and that 60 percent of children may have suboptimal levels of vitamin D" (Johns Hopkins Children's Center, 2012). Thus, Johns Hopkins Hospital recommends that pediatricians screen all kids for vitamin D deficiency and recommend vitamin D supplements when patients' blood levels of the vitamin

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D. MacKay (✉) · T. C. Wallace (✉)
Scientific and Regulatory Affairs, Council for Responsible Nutrition, Washington, DC, USA
e-mail: dmackay@crnusa.org

T. C. Wallace
e-mail: twallace@crnusa.org

are low (Johns Hopkins Children's Center, 2012). If these children use a vitamin D supplement, are they at risk for potential use of more dangerous substances? A subset analysis of their data would clarify the controversial and likely incorrect assumption that 11-year-old children are using creating to get a competitive edge in sports and give more credibility to the findings of Evans et al.

Like most foods and over-the-counter drugs, many dietary supplements have not been extensively studied in children because of difficulties in recruiting study subjects and because of ethical reasons. Vitamins and minerals do have a significant amount of dose–response data, which are used in the development of the Dietary Reference Intakes by the Food and Nutrition Board of the U.S. Institute of Medicine (IOM). The available data, as well as the IOM recommendations, have led to the development of many innovative, efficacious, and safe dietary supplements (e.g., children's multivitamins) that have been successful in helping adolescents achieve adequate nutrient status and thus attain optimal sports performance. Despite the small fraction of study participants using creatine, Evans et al. treat this finding as significant through ample discussion of the potential risks of this practice. The safety of creatine has been studied in preadolescent patients (Escolar et al., 2005; Louis et al., 2003; Tarnopolsky et al., 2004). No adverse effects occurred in these long-term studies of creatine supplementation to treat muscular dystrophy. A lack of adverse events from creatine supplementation among individuals undergoing treatment at higher doses than what is typically taken by healthy individuals to attain optimal sports performance may give some insight into the safety of this legal dietary supplement.

Thus, Evans et al.'s findings should be placed into perspective. Fairly low numbers of children (<2 %) reported taking *any* dietary supplements to enhance sports performance. The majority of children who reported use of any dietary supplements were consuming multivitamins. There is a role for dietary supplements among young athletes, who have increased nutrient needs, as well as in active children, who are growing and in need of adequate nutrition. Most Americans do not obtain adequate nutrient status from food alone and, therefore, supplementation is warranted when appropriate.

References

Academy of Nutrition and Dietetics. (2009). Position of the Academy of Nutrition and Dietetics: Nutrition supplementation. *Journal of the Academy of Nutrition and Dietetics, 109*, 2073–2085.

Escolar, D. M., Buyse, G., Henricson, E., Leshner, R., Florence, J., Mayhew, J., et al. (2005). CINRG randomized controlled trial of creatine and glutamine in Duchenne muscular dystrophy. *Annals of Neurology, 58*, 151–155.

Evans, M. W., Jr., Ndetan, H., Perko, M., Williams, R., & Walker, C. (2012). Dietary supplement use by children and adolescents in the United States to enhance sports performance: Results of the National Health Interview Survey. *The Journal of Primary Prevention, 33*, 3–12.

Fulgoni, V. L., 3rd, Keast, D. R., Bailey, R. L., & Dwyer, J. (2011). Foods, fortificants, and supplements: Where do Americans get their nutrients? *The Journal of Nutrition, 141*, 1847–1854.

Johns Hopkins Children's Center. (2012). Memo to pediatricians: Screen all kids for vitamin D deficiency, test those at high risk. Retrieved from http://www.hopkinschildrens.org/Screen-All-Kids-for-Vitamin-D-Deficiency.aspx.

Louis, M., Lebacq, J., Poortmans, J. R., Belpaire-Dethiou, M. C., Devogelaer, J. P., Van Hecke, P., et al. (2003). Beneficial effects of creatine supplementation in dystrophic patients. *Muscle and Nerve, 27*, 604–610.

Tarnopolsky, M. A., Mahoney, D. J., Vajsar, J., Rodriguez, C., Doherty, T. J., Roy, B. D., et al. (2004). Creatine monohydrate enhances strength and body composition in Duchenne muscular dystrophy. *Neurology, 62*, 1771–1777.