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Omega-3 Fatty Acids and Student-Athletes: Is It Time for Better Education and a Policy Change?

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The college years are a formative time for all students, a time in which lifelong habits associated with health, including physical activity and dietary habits, may be developed.[1] However, unlike most students, student-athletes are under the care and guidance of licensed practitioners who can positively influence the development of lifelong healthy habits. Sports dietitians are vital to the collegiate sport setting, as positive dietary habits were observed when one was available[2]; yet not all universities employ a sports dietitian. Coaches (strength and conditioning and sport coaches) and athletic trainers remain the primary sources of information for many athletes when it comes to diet.[2] Therefore, these individuals should be knowledgeable about healthy dietary habits. Educating the student-athlete should be a key focus: nutrition education improves both dietary intake and nutritional knowledge.[3]

In this issue of the *Journal of Athletic Training*, we present data to suggest that football athletes were deficient in the omega-3 (ω-3) fatty acids docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) according to a surrogate marker, the Omega-3 Index. The *Omega-3 Index* is the sum of the EPA and DHA content in erythrocytes, expressed as a percentage of total erythrocyte fatty acid, and reflects EPA and DHA intake and status in other tissues. Categorizing athletes based on the proposed Omega-3 Index risk zones for cardiovascular disease,[4] we found that 34% had a value associated with high risk, whereas 66% had a value associated with intermediate risk. None had a low risk of cardiovascular disease based on the Omega-3 Index. The results of our cross-sectional, retrospective, multicenter study are not surprising, particularly given that North America (Canada and the United States) ranks very low among countries in EPA and DHA blood levels.[5] However, our data suggesting that this population of student-athletes is not consuming an adequate amount of dietary ω-3 fatty acids are concerning. In addition to being an at-risk population for cardiovascular disease,[6] football athletes are exposed to repetitive head impacts, which may or may not result in a concussion diagnosis.[7] Irrespective of a concussion diagnosis, the subconcussive impacts sustained during participation in a contact sport such as football also result in quantifiable pathophysiological changes.[8] In addition to their cardioprotective properties,[4] ω-3 fatty acids may confer neuroprotection against the deleterious effects associated with head trauma.[8]

A food-first approach to meeting dietary recommendations should be the primary message, but education must also include the need for supplementation of ω-3 fatty acids. Dietary sources of EPA and DHA are limited. Algae are the primary producers, with fish also being rich sources because of a diet consisting of algae. With low dietary consumption of ω-3 fatty acids in the United States, dietary supplements are recognized as important sources.[9] The *Dietary Guidelines for Americans 2015–2020*[9] recommended consuming 8 oz (227 g) of fatty fish per week; yet consumption of that amount of fish would still fall short of the quantity of ω-3 fatty acids reported to be effective, particularly for potential neuroprotection.[8] Unfortunately for practitioners, ω-3 fatty acid supplements are not on the list of supplements permitted by the National Collegiate Athletic Association (NCAA). This means that member institutions may not provide ω-3 fatty acids in the form of supplements to student-athletes.

The exclusion of ω-3 fatty acids from the NCAA's permitted list was likely due to the risks associated with supplementation. However, any supplement has inherent risks, especially given the lack of oversight by the US Food and Drug Administration. Poor manufacturing processes and intentional contamination continue to put student-athletes at risk for adverse events and failed drug tests.[10] Beyond those risks, which NCAA-permitted supplements may also carry, the risks of increasing EPA and DHA intake are virtually nonexistent,[8] and the potential benefits appear to be substantial. Third-party testing for product certification minimizes the risks associated with supplementation. One third-party testing organization that is approved by Major League Baseball, the National Hockey League, and the Canadian Football League, to name just a few, is NSF International (Ann Arbor, MI). Allowing practitioners to provide safe and effective supplements in conjunction with education programs reduces the risk of a student-athlete obtaining a tainted supplement from a disreputable manufacturer. Further, given that health-related supplements are less likely to be sought out by student-athletes than those intended for performance enhancement, the addition of ω-3 fatty acids to the permissible list would allow practitioners to begin helping athletes to develop positive dietary habits for lifelong health.

In closing, the data and accompanying paper published in this issue's *Journal of Athletic Training* demonstrate a need

and serve as a call to action to those directly responsible for the health and well-being of student-athletes, including but not limited to sports dietitians, athletic trainers, and coaches as well as the NCAA. Only through proper education and allowing practitioners to provide safe and effective supplements will student-athletes be able to develop lifelong healthy habits that address the low levels of ω-3 fatty acids identified in our sample of football athletes, which are likely also characteristic of most student-athletes.

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