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# Nutritional concerns for ethnically diverse athletes

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# Nutritional Concerns for Ethnically Diverse Athletes

**W**HEN WORKING with athletes from ethnically diverse cultures, nutrition can be quite challenging. Inadequate nutrient intake can adversely affect an athlete's performance, and more importantly, health in general. Guiding athletes to select foods from the various food groups seems simple enough. The food recommendations and guides, however, will vary from one culture to another. Korea and China use a *pagoda* to identify the food groups, Canada uses a *rainbow*, the United Kingdom uses a *plate*, and the European food guide is in the shape of a *circle*.<sup>1</sup> Many food guides recommend moderate intake of meat, milk, and dairy products. The main constant among all food guides from the various regions of the world is the recommendation to consume large amounts of grains, vegetables, and fruits daily. The USDA MyPyramid (formerly the food guide pyramid) is the food guide of choice when advising diverse groups of athletes. When guiding an athlete from a different culture, one must consider *serving equivalences*. In the United States, one slice of bread corresponds to one serving from the grain group. In Australia, the word *sample* is used in a similar manner to the American term *serving*, but 2 slices of bread constitutes one *sample*. The United Kingdom uses the term *portion*, and the food is measured in *grams* (one portion equals 30 grams of bread). China and Korea use *grams* as a measurement, but serving size varies; one serving of bread equals 300-500 grams (based on raw weight) in China, and a Korean serving of bread equals 3 slices of bread (100 grams). Filipino food guides use action words, such as "Eat Most," rather than measurements.<sup>1</sup> Ethnically diverse athletes may not like the way a particular food is prepared, how the food tastes, and may not be aware that a particular food is beneficial because of unfamiliarity with its name or appearance. An athletic trainer's awareness

of the food guides and the types of foods associated with a particular culture could prove beneficial when working with an athlete who does not have a healthy dietary plan (i.e., poor energy intake).

The strong influence that religious beliefs have on eating behaviors could affect an athlete's nutritional status. For example, Muslims will not consume pork, four-leg animals that catch prey with the mouth, birds that grab prey with the claws, animals that are not slaughtered according to ritual (except fish and seafood), and alcoholic beverages. During the holy month of Ramadan, Muslims fast from dawn to sunset. They eat two meals per day, one before the sunrise and one after sunset.<sup>2</sup> This eating practice can certainly pose a problem for an athlete during training and competition. In such instances, meal planning must be given careful consideration. Table one presents other food practices of world religions.

Proper nutrition can reduce an individual's risk for development of many chronic diseases, such as heart disease, stroke, cancer, diabetes, and osteoporosis.<sup>3</sup> Various cultures present elevated risk on the basis of dietary intake. For example, there is a higher death rate for African-Americans than for Caucasians from stroke, and diabetes is highest among Hispanic/Latino cultures. Osteoporosis is most prevalent among Caucasian, Asian, and Latino women,<sup>3</sup> and the prevalence of breast cancer, diabetes, and heart disease is very low among Asian women. The prevalence of heart disease in the French culture is very low, which is primarily attributable to eating patterns. Sixty percent of daily energy intake is consumed by 2:00 p.m. each day; thus, lunch contains the highest number of calories. Snacking on sweets is not part of the French meal plan, which generally does not include eating between meals.<sup>3</sup> Lunch and dinner are very structured. Each meal begins with a *crudités* (raw vegetables), followed



TABLE 1. FOOD PRACTICES OF WORLD RELIGIONS<sup>9</sup>

RELIGION	DIETARY PRACTICES
Judaism	<p>Kashrut: Jewish dietary law of keeping Kosher.</p> <p>Meat and poultry. Permitted: meat of animals with a split hoof that chew their cud. Not permitted: Pig and pork products. All animals require ritual slaughtering. All meat and poultry foods must be free of blood, which is done by soaking and salting the food or by broiling it.</p> <p>Fish permitted. Shellfish and fishlike mammals.</p> <p>Meat and dairy are not eaten or prepared together. Meals are dairy or meat not both.</p> <p>All fruits, vegetables, grains, and eggs can be served with dairy or meat meals.</p> <p>All processed food is considered kosher only if the package has a rabbinical authority's name or insignia.</p>
Buddhism	<p>Dietary laws vary, depending on the country and the sect. Many Buddhists do not believe in taking life, and so they are lacto-ovo vegetarians (eat dairy products and eggs but no meat or poultry).</p> <p>Celebrate feast and fast days.</p>
Mormonism	<p>Prohibit tea, coffee, and alcohol; Some Mormons abstain from anything containing caffeine.</p> <p>Eat only small amounts of meat and base diet on grains.</p> <p>Some Mormons fast once a month.</p>
Hinduism	<p>Encourages eating in moderation.</p> <p>Meat is allowed, but the cow is sacred and is not eaten. Also avoided are pork and certain fish. Many Hindus are vegetarian.</p> <p>Many Hindus avoid garlic, onions, mushrooms, and red foods such as tomatoes.</p>
Seventh Day Adventist	<p>Many members are lacto-ovo vegetarians (eat dairy products and eggs but no meat or poultry).</p> <p>Avoid pork and shellfish.</p> <p>Prohibit coffee, tea, and alcohol.</p> <p>Drink water before and after meals, not during.</p> <p>Avoid highly seasoned foods and eating in-between meals.</p>
Catholicism	<p>Abstain from eating meat on Fridays during Lent (40 days before Easter).</p> <p>Fast (one meal is allowed) and abstain from meat on Ash Wednesday (beginning of Lent) and Good Friday before Easter.</p>
Protestant	<p>Food on religious holidays is largely determined by a family's cultural background and preferences.</p> <p>Fasting is uncommon.</p>
Eastern Orthodox	<p>Numerous Feast days.</p> <p>On fast days, no fish, meat, or other animal products (including dairy products) are allowed.</p> <p>Shellfish are allowed.</p>

From Drummond and Brefere (2007).

by the main course, a salad, a cheese course, and a dessert. Americans have experienced a consistent rise in obesity and cardiovascular disease, which are believed to be related to factors such as inactivity, larger portions, and a tendency to graze on food throughout the day.<sup>4</sup> Snacking is a \$30 billion industry in the U.S., which has increased 33% since 1988.<sup>4</sup> Snacking includes foods that are high in sugar, fat, and calories, and lacking nutrient density. Foods high in sugar, fat, and calories should be considered a *treat* and not a

*snack*. Treats should be eaten once in awhile, and then consumed in moderation.

Fast foods comprise a daily meal for many athletes and nonathletes, both in the U.S. and internationally. For example, if a McDonald's Ham and Cheese Breakfast is the meal of choice, 40% of a 2,200 calorie-day is consumed by one meal that has 27% of its calories derived from saturated fat. The "westernization" of China (McDonald's and Kentucky Fried Chicken) has produced increasing obesity. "The Buddha belly, once



a sign of wealth, is now a sign of obesity.”<sup>5</sup> The World Health Organization estimates that 5% of China’s 1.3 billion population is obese (about 65 million people), which is double its level in 1992.<sup>5</sup> Poor eating habits increase the potential for chronic diseases, i.e., diabetes and obesity. A trend observed among young children and teenagers is the consumption of soda instead of milk. In the U.S., soda constitutes the biggest single source of calories and added sugars in the diets of teenagers.<sup>4</sup> Over the course of four years in high school, a student could gain 9.6 pounds from sugary drinks consumed from vending machines. The average intake of non-diet carbonated soft drink purchased at school by high school students is 12.5 ounces per week, and the average intake of all sugary drinks (including sports drinks, juice drinks, sweetened iced teas, and non-diet soda) from schools by high school students is 22 ounces per week. Thus, the average high school student consumes about 8,557 extra calories over a 36-week school year from sugary beverages purchased at school.<sup>4</sup> Without increased activity, or a reduction of other daily calorie intake, an extra 10 pounds of body fat will develop over a four-year period from sugary beverages purchased from school vending machines.<sup>4</sup> Once an athlete stops competing, either due to injury or graduation, the same dietary pattern and chronic disease susceptibility as that for a nonathlete is likely.

### **Impact of Poor Nutrition**

Diabetes prevalence among minority populations is related to dietary habits. Type-2 diabetes was historically referred to as delayed-onset diabetes, because the onset of the condition was typically identified at age 65 or older. In recent years, an increasing number of people as young as age 25-30 are developing the disease. All demographic groups and all ages have experienced an increase in diabetes.<sup>3</sup> Two out of three Americans with diabetes die from cardiovascular disease. The greatest prevalence of cardiovascular disease is among Caucasian, African-American, Hispanic/Latino, Asian-American, and Pacific Islander ethnic groups. American Indians and Alaska natives are two times more likely to develop diabetes than non-Hispanic Caucasians.<sup>3</sup> The major predisposing factor is a diet that is too high in saturated fat and too low in terms of fruit, vegetable, and fiber and too little exercise. Rhode Island, the smallest U.S. state with a population of 1,043,323, has documented a 52% increase of diabetes since 1998. The highest increase (177%)

was viewed by Hispanic/Latino culture.<sup>3</sup> Development of Type-2 diabetes (non-insulin dependent) can be delayed by exercise and eating a healthy diet.

There is clearly a link between poor nutritional habits to poor athletic performance. Among athletes, we are observing a poor intake of total energy intake (calories), macronutrients such as carbohydrates, and micronutrients such as minerals (calcium) in athletes. Poor nutritional habits will impact the health status of athletes as they age.

Calcium is a critical nutrient that is often deficient among athletes from many cultures. Calcium intake does not provide any performance advantage, but inadequate intake impairs skeletal integrity (bone mineral density), nerve impulse transmission, and muscle contractility. Most athletes consume less than the daily recommended intake for calcium.<sup>6</sup> A decrease in blood calcium level can lead to an increase in cortisol, which in turn leads to bone loss. A low calcium intake among African-Americans is associated with the development of hypertension. Dwyer et al.<sup>7</sup> found that calcium supplementation can lower diastolic blood pressure in African-American adolescents with low dietary intake of calcium. Satia-Abourta et al.<sup>8</sup> have associated micronutrient deficiencies with colon cancer risk in African-Americans and Caucasians. African-Americans have the greatest prevalence of colon cancer among American racial/ethnic groups. Adequate intake of calcium, vitamin C, and vitamin E is associated with a 30-70% reduction in colon cancer. Latino and Asian women are at risk for development of osteoporosis due to low calcium intake.<sup>7</sup> Over the next 50 years, the number of hip fractures is expected to increase sharply, especially among Asian and Latino women with low bone mineral density. Asian women have a lower prevalence of hip fractures than Caucasian women, but their prevalence of vertebral fractures is as high as that for Caucasians.<sup>7</sup> Although African-American female athletes have greater bone mineral density than Caucasians do, they are still at risk for osteoporosis. African-Americans with osteoporosis number 300,000, and they are more likely to die following hip fractures than others.<sup>8</sup> Low calcium intake might relate to the fact that 75% of African Americans are lactose intolerant.<sup>8</sup>

Athletes from some cultures may consider the use of supplements as part of a nutrition plan. Because supplements are not regulated by the Food and Drug Administration, the nutritional quality of supplements purchased via the Internet or manufactured outside



the U.S. may be questionable. They might not be pure, or they may contain banned substances that present risk to an athlete's eligibility. In many cases, athletes improperly use supplements as a meal replacement. Athletes who rely on supplements to manage a feeling of fatigue, loss of focus, and lack of energy could relieve the symptoms by switching to whole foods that provide a wide variety of nutrients.

## Conclusion

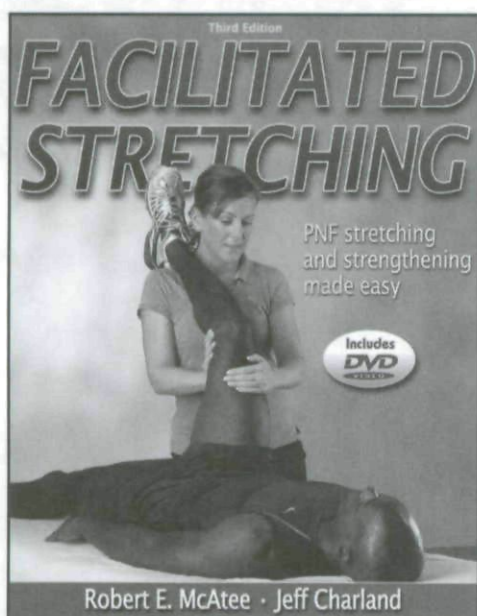
A healthy diet is one that provides adequate energy, necessary amounts of nutrients, and proper hydration, which cannot be provided by any single food or supplement. Athletic trainers should be aware of the existence of differing international food guides when advising diverse athletes on selection of food options and portions. Most athletes recognize that dietary intake can affect performance. Recommendations provided by an athletic trainer can provide a foundation for healthy eating habits during a young athlete's competitive years that will provide long-term health benefits. ■

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