

FUELING TACTICS, 3 WINNING STEPS TO PERFORMANCE EATING —

STEP 1: STRESS REDUCTION THROUGH NATURAL SOURCES OF VITAMIN A, C, AND E

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Dave Ellis began as a strength coach at the University of Nebraska back in 1982. While studying dietetics, he started to counsel the athletes about body composition and nutrition issues.

Over time, demands grew to the point where it consumed his energy and less time was allocated to being a strength coach and more time to counseling in matters such as nutrition and body composition. That led to a full-time job as sports nutritionist at the University of Wisconsin, Madison. He returned to Nebraska four years later in 1994 and is currently the Director of Performance Nutrition. He has a full-time assistant to work with women's sports and seven paid, graduate students to help out with all the other sports. The program currently works with 700 athletes in twenty-four sports. [Ed.]

In nutrition you have to think about the meals at home and on the road, and be involved with keeping a team fueled throughout the year. It becomes a tactical experience of management. You have to really be able to look into the future and see how the team is moving, where they're moving, have a bit of an instinct to make the best recommendation to get them well-fed, hydrated to and through the ensuing competition, and the training that comes before. So, fueling tactics as a topic really makes a lot of sense for the applied sports nutritionist, somebody who really works in an applied setting with athletes, becoming a tactician to some degree. Subsequently, that's how the idea of fueling tactics began.

Philosophies Behind Fueling Tactics

Fueling tactics is a three-step system every time we write a menu. Whether we're eating at home or on the road, these three steps are accomplished with regard to the food items offered at the meals. Educationally, the athletes are taught how to selectively think about these three steps, evaluating their plates and trays as to how well qualitatively they have done in selecting a meal that satisfies these three steps. To make it easier, we have divided the foods at our training tables so they are merchandised in three separate buffets that distinguish each of these three steps. That is a tac-

tic that makes it easy for us to see who's got room for improvement in their eating habits rather than having the athletes write down what they're eating. By watching them use the three buffets, you can see the weaknesses in their diets. It becomes obvious and you are literally doing online quality management and dietary assessment based on just the kinetics of their moving through the three buffets. That is necessary in a situation where you are dealing with a large number of athletes who are eating with the repetitious nature that they do in collegiate athletics. Stopping and getting dietary recalls for the amounts these individuals eat is very cumbersome, so this makes our initial assessment process on a qualitative basis of what they are eating simple.

It is easy for us to target what the weaknesses of the athletes are as far as their diets and eating habits. Then we start working on those individual issues as well as those involving the overall food supply that keeps the diverse number of international athletes happy — this is not easy. Fueling tactics is really about food and making it simple for people to understand the complexities of eating in a system that is one, two, three as far as its simplicity and marketability. It has really worked well and we have had a lot of people emulate it over time.

Downloading Training Table Principles for Coaches and Parents

Once you have a chance to review the simplicity of the three step fueling tactics, you will see just how often we come up short when defaulting to the food supply that surrounds us daily. It is not uncommon for us to see better eaters from families who still eat together and have some structure at home versus those who default to the drive-through. It's important for parents to understand this approach to eating so they can shop and build meals that fit the bill at home. It would even be helpful to play a bit of a game by having family members try and classify which foods apply to each of the three steps. It will very important for parents and coaches to instill in the minds of young athletes that just

because everyone around them is defaulting to the drive-through, does not mean it is the right thing to consistently practice, especially for a highly stressed athlete. In addition, it is a good idea for a group of parents to organize a rotating schedule where each is assigned to bring certain items from the three-step philosophy in an effort to provide quality pregame meals and, just as importantly, if playing in a tournament, a good post-game meal. Optimally, we look to eat pregame meals about 3-4 hours before competition. Quite often in amateur athletics, the ability to provide this level of structure can be limited by demanding schedules and limited resources. Hopefully, between the exposure at home and with sports, athletes, over time, will really start reaping the benefits that nutrition has for them. This is only possible, however, with the consistent application of these three fueling tactics. Just focusing on the meal before competition is really not going to get it done. Fueling tactics is all about supporting athletes through the rigors of day-to-day, week-to-week, and month-to-month training. If the athletes have less down time caused by illness, better energy levels, and faster rates of recovery, they will have the potential to outwork the competition.

Step 1—Stress Reduction through Natural Sources of Vitamin A, C, and E

The first step in fueling tactics is getting people to incorporate fruits, vegetables, nuts and seeds into their meals. What we want from these foods are natural sources of antioxidants that are found in abundance in fresh food. These foods are loaded with natural antioxidants like Vitamin E in nuts and seeds, Vitamin C in fruits and some vegetables, Vitamin A in the form of carotenoids that we get from vegetables and some fruits, and a host of compounds called bioflavonoids with similar antioxidant properties. Those are all nutrients that are known to have antioxidant properties, and antioxidants are things that help scavenge reactive oxygen and nitrogen species called free radicals. These nasty things are by-products of stress.

What most people don't understand about hardworking athletes is that they are a healthy population, but they are under tremendous stress, the most obvious being the physical work they endure on a daily basis as a result of their training. The metabolic by-product of their hard work is going to produce free radicals. If we don't have an adequate diet relative to the workload in the antioxidants from these good sources of fresh fruits, vegetables, nuts and seeds, then we are going to have an athlete who is more vulnerable to the cumulative stress of training. That cumulative stress begins to degrade the integrity of tissue, which breaks down on a functional basis. First, this happens peripherally in the muscle doing the work as a natural start to the inflammatory signaling process that initiates healing. If the insult is too great and too frequent, it results in a systemic response that is indicated by the monocytic production of cytokines, which can lead to symptoms characteristic of overreaching, overtraining and a compromised immune status. It's the natural inflammatory process that can potentially go too far. Factors indicative of who is more prone to suffer a systemic inflammatory insult definitely involve controllable things such as diet and lifestyle.

What we see as the first manifestation of weak fruit, vegetable, nut and seed eaters is that they get upper respiratory illnesses quite easily. This is very common in athletes. If they are under stress and not eating these foods, one of the things affected is their immune system. It knocks their work capacity down and knocks them out of training and academic participation, which always puts them behind. We can't afford that, especially in the off season when there are small windows for adaptations. Some sports have only one annual window of opportunity for adaptations for off season gains. If athletes are sick half the time, I can promise you they will fall significantly behind over the course of their careers. That could be the difference between being first, second or third on the depth chart, not making the team at all or losing a scholarship. Athletes cannot afford to have unnecessary downtime because of a vulnerable immune system. Stress is not only metabolic work; it's also affected by environmental conditions. Heat, cold, pollution and other stresses all contribute. If athletes train in a heavily polluted area, that is also another stress source. Visual distractions and loud noises can also contribute, such as being in a tournament situation. You also have metabolic and emotional stresses. Athletes who are worried about their position on the

depth chart and maintaining their scholarship, ensuing competitions, academics (especially at the end of a semester), all are stress or situations that produce these free radicals. In addition, they are human beings and have stress in their personal lives. Athletes have very high levels of stress that can come from all angles. It can be overwhelming and build up over time during the long grind of the season. Athletes who did not grow up eating fresh fruits, vegetables, nuts and seed, and who express a greater amount of stress-inflammatory response are definitely more vulnerable when a virus makes it's way through a campus. For those who are doing the three-step dietary program, especially step one, hopefully, we can minimize the down time. Being taken down for a day or two is much better than missing a week or more.

Vitamin A, C and E Supplements


In a pinch, you might be able to reduce the stress of not having fresh fruits, vegetables, nuts and seeds in the diet by taking supplements. But in the long run, you never want to totally replace fresh food form sources. There is so much we don't understand about these foods, both physiologically and biochemically. No matter how sophisticated a dietary supplement is, it most likely lacks something that exists in our food supply. Also, anytime food is canned or frozen for a long time, nutrient yields diminish. Fresh foods require shopping, cooking, chopping up, etc., but are worth the work considering all the nutrients they bring into our diet. This is a return to the times when some shopped for the family weekly and people ate at home together as a family. We have become dependent on a ready-to-eat food supply that tolerates little loss of profit from spoilage of fresh produce. Vendors are more likely to sell foods they can pull from the freezer prior to cooking.

All stressed people can benefit from some higher standards when it comes to step one. Athletes for sure need to have higher standards because of the stresses they endure, and that is why there are training tables. But don't worry. You can do this at home, at some restaurants, and even some fast-food establishments, like a sub shop.

Eating Practices

Breakfast is typically a good time to get the benefits of fresh fruits. We try to have our athletes lean toward fresh fruits as sources of Vitamin C, particularly those heavily pigmented fruits, such as cantaloupe and tangerine, which also have Vitamin A. Because most people don't find nuts and seeds palpable in the morning, it's a bit harder to get that Vitamin E

intake. For lunch, salads and sandwiches are appealing. Dark greens are desirable, as are nuts and seeds on a salad. Also, oils from salad dressings are excellent sources of Vitamin E, so there is such a thing as good fats. For dinner, cooked vegetables are available to the athletes for a source of Vitamin A. These include dark (red, green, orange) pigmented vegetables, such as squash, cooked greens, asparagus and fresh snap beans. Athletes love nuts and seeds as quick and healthy snacks en route to class. This brings me back to my point that not all fats are bad. The fat-phobia among Americans these days has left athletes vulnerable to not taking in enough good fats listed under the vitamin E sources on the three-step poster. Athletes have a tremendous potential to dispose of calories from monounsaturated vegetable fats, so don't shy away from them. Sunflower seeds are the most concentrated Vitamin E source and like fruits are portable, so they are easy to eat on the go.

We are more likely to have success getting our worst fruit and vegetable eaters to try watermelons and tangerines first. Jumping right to tomatoes may be a bust. But if they can start eating soups, marinara sauces and salsa, they can eventually move up the more heavily pigmented vegetables that are so rich in antioxidants. For a full list of foods high in vitamins A, C and E, refer to the accompanying step one of the performance meal guide poster. You will see a list called "High Priority Sources of A & C." These foods deliver a good source of both antioxidants from one food so they are a priority for athletes who are just learning to eat these foods. For chronically training athletes, we are fortifying antioxidants into sports drinks as they are training. This is a fueling tactic that yields antioxidants into the blood stream relative to the stress insult. The more stress athletes are under, the more consistently they should fulfill step one when eating. See, 3 Winning Steps—Performance Meal Guide, page 11. 

More Information Please!

Be sure to watch for "Step 2" and "Step 3" in future issues.

For a copy of the poster Performance Meal Guide, item # AZ 218 P, which includes all three steps with food selections, call 1-800-578-4636. Cost is \$4.95 plus \$1.95 shipping and handling.

Also available is the Fueling Tactical Video, # AZ 218 V for \$19.95 plus \$3.95 shipping and handling. For both the poster and video the cost is \$23.95 plus \$4.95 shipping and handling. You can contact the author at 402-472-3333 or via e-mail at dellis@huskers.unl.edu.