Fueling for Football

As your athletes perform summer workouts to prepare for a new season on the gridiron, their nutrition choices may determine the success or failure of their training programs.

By Dr. Kris Clark

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In March 2009, Penn State quarterback Shane McGregor came to me for advice. He wanted to cut body fat and gain weight by increasing muscle mass, so we began with a body composition analysis. It revealed that of his 211 pounds, 165 were lean mass, leaving his body fat at roughly 22 percent. That was our starting point, and after talking through his goals, I put him on a comprehensive nutrition plan.

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In football, every pound matters. Players can make major performance gains by adding "good" weight, dropping "bad" weight, or like Shane, doing some of both. And the optimal ratios vary greatly depending on position, playing style, body chemistry, and a host of other factors.
As your football players prepare for the upcoming summer, they should know this is the best time of year to optimize their nutritional habits and thereby improve body composition. A successful plan to do so focuses on energy consumption and expenditure, nutrient timing, and willingness to pay attention to a few key nutrient categories.

**BALANCING ENERGY**

One of the most common off-season goals for football players is to add strength, so many of them hit the weightroom with intensity over the spring and summer. They often don't realize how much their success depends on their fueling strategy.

To increase strength and mass, athletes must be in a state of positive energy balance--they must consume more calories than they're burning. Even if it's unlikely that a player will make a habit of counting his daily calories, examining energy expenditure creates an important guidepost around which to set goals for meals and workouts.

To make this calculation, you must first determine baseline resting energy expenditure (REE), then multiply it by an activity factor. The Harris-Benedict equation calculates REE as follows:

\[
66.5 + (13.75 \times \text{weight in kg}) + (5.0 \times \text{height in cm}) - (6.78 \times \text{age in years}) = \text{REE}
\]

For example, with a 199-pound athlete (90.4 kg) who is 6-foot-3 (190.5 cm) and 20 years old, you'd come up with \(66.5 + 1243 + 952.5 - 135.6 = 2126.4\), which we'll round to 2,125 for simplicity. Standard activity multipliers for football players are:

- Little/no strenuous activity = REE x 1.6-1.7
- Moderate strenuous activity = REE x 1.8-1.9
- Heavy strenuous activity = REE x 2.1-2.4

Assuming this athlete is performing highly strenuous off-season workouts, we'll use the activity multiplier of 2.1 to 2.4, making for a calorie range of 4,463 to 5,100 per day.

That figure represents energy expenditure--the amount that the athlete must eat to avoid a calorie deficit. To gain weight, he must consume even more energy.

If he understands that calories from all five food groups are essential for getting the full spectrum of macronutrients, vitamins, minerals, antioxidants, and phytochemicals--that is, if he's a generally healthy eater--then the extra calories in his diet should come from the same types of foods he's already eating every day. When a football player is looking to gain weight, I typically suggest increasing energy intake by 500 to 700 calories per day. About half of the "new" calories should come from foods high in carbohydrates, a quarter from protein-
rich items, and a quarter from healthy sources of fat. (For some easy ways to add more healthy calories to a diet for weight gain, see "Stacking Calories" below.)

If an athlete isn’t already a fairly healthy eater, you should take a step back and explain the basics of healthy macronutrient balance. One of the most critical areas to address with these athletes is carbohydrate consumption, because carbs provide the bulk of energy that’s available to the body during daily workouts.

As a general rule, 55 to 60 percent of all calories in a football player’s diet should come from foods rich in carbohydrates. Remind athletes that carbohydrates are not their own food group, but rather a class of nutrients found in all five basic groups. In fact, the vast majority of food sources contain at least some carbs.

Roughly 80 percent of calories from foods in the grain and vegetable groups, 100 percent of the calories in fruit, and approximately 60 percent of the calories in dairy products come from carbohydrates. Even some foods traditionally thought of as protein sources, such as beans, nuts, seeds, and nut butters, contain a significant amount of carbs. With the exception of animal tissue (meat) and eggs, carbs are plentiful everywhere, so eating an adequate supply should never be difficult.

If an athlete needs further reinforcement on the importance of carbs, try pointing out that many of the best sources are plant-based foods, which also provide other significant "perks." For instance, orange vegetables, citrus fruit, and green leafy vegetables are rich in antioxidants and hundreds of phytochemicals, which research shows can prevent muscle damage due to intense exercise. In addition, these compounds help stabilize free radicals, which essentially means they neutralize harmful chemicals formed when the body is under physical stress. So besides greater energy stores and support for muscle growth, a carb-rich diet will help speed recovery during periods of intense training.

**PROTEIN: THE BUILDING BLOCKS**

The only macronutrient with a recommended daily allowance (RDA) is protein. That fact underscores its importance for overall health, but for football players, it’s even more critical. Without an adequate supply of protein and the amino acids it provides, the body can’t translate hard work in the weightroom into substantial muscle growth.

The RDA for protein in the average healthy adult is 0.8 grams per kilogram of body weight per day. For athletes, the overwhelming consensus of published research supports a higher daily figure for muscle maintenance, tissue growth, and optimal recovery.

In football, research has produced a few different target numbers, but one of the most common recommendations is a protein intake of up to two grams per kilogram per day. Besides all the benefits of the protein itself, this level practically
ensures a positive nitrogen balance in the body (since protein provides nitrogen), which will also aid in muscle growth.

Many football players have the misconception that more protein always results in more muscle. They may consume massive quantities of protein shakes, lean meat, and other protein-rich items during intense off-season weight training hoping to maximize new muscle, only to be disappointed when it doesn't produce the desired outcome.

The truth is that excess protein (beyond about two grams per kilogram per day) will not produce additional muscle growth. Even worse, too much protein can have negative side effects. If it displaces carbohydrates in the diet, athletes will have less energy for workouts and daily activities, and they may even experience muscle loss. Research has also linked excess dietary protein to increased risk for lower bone density, dehydration, and kidney stress.

The key, once again, is macronutrient balance--optimal muscle growth occurs when protein works together with a ready supply of dietary carbohydrates. For years, researchers have debated whether carbohydrates alone, protein alone, or a combination of both promotes faster recovery, greater strength gains, and more mass, and while the debate still exists, more and more researchers are coming on board with the combination approach. A recent study from the University of Texas provides the latest evidence: It showed that carbohydrates and protein together, consumed immediately after an intense two-hour weight training session, increased insulin and insulin-like growth factor (IGF) and improved amino acid absorption by muscle cells more effectively than protein only.

The study also highlighted another crucial component of protein and carbohydrate consumption--timing. For football players looking to add muscle and recover quickly from lifting sessions, it's essential to provide the body with protein and carbs as soon as possible after a workout to promote glycogen replacement and other main aspects of recovery. I always advise our players to eat something containing protein and carbs immediately after working out, even if it's as simple as cereal and milk, a cheese sandwich, or yogurt and a bagel. Post-workout shakes, bars, and gels are other convenient and effective options.

**FAT & WEIGHT LOSS**

Fat is probably the most misunderstood macronutrient among athletes. It plays a vital role in strength building, yet fear of gaining "fat weight" prevents many young people from eating enough of even healthy fats. This often proves counterproductive--several studies have demonstrated that diets in which less than 20 percent of total calories come from fat result in decreased serum testosterone, androstenedione, and free testosterone. That's a huge drawback for football players looking to get stronger.

Some of the best options for getting an adequate supply of monounsaturated fats (the healthier alternative to saturated fat) are olive and canola oils, nut-based oils, peanut butter and other nut butters, fish, lean meat (beef, pork, chicken, and
turkey), dairy products, and eggs with yolks. Besides healthy fat, many of these foods contain omega-3 fatty acids, which can benefit athletes during intense training by helping to regulate the inflammatory response in muscles after a workout.

The athletes most likely to restrict fat to an unhealthy degree are those actively trying to lose weight in their off-season. For these individuals, it's essential to stress that the way to drop unwanted pounds is by moderately reducing calorie consumption—not avoiding healthy fat intake.

For football players, I typically recommend reducing daily calories by 200 to 500 below the range needed for weight maintenance, which results in the loss of half a pound to one pound per week. Anything faster than that, particularly when an athlete is actively training, and the weight loss will likely come from muscle and not just adipose (fatty) tissue.

Of course, most athletes aren't adept at counting calories on the fly, so when one of our players is looking to lose weight, I ask him to keep a three-day log of all foods and beverages he consumes. When reviewing the results, it's often easy to cut out those 200 to 500 calories without significantly upsetting his diet. Sometimes it's just a matter of cutting out sugary soft drinks, replacing the afternoon junk food fix with a healthy piece of fruit, or switching from sports drinks to water for hydration throughout the day.

I'm frequently surprised by how many athletes don't know how to read food labels, so I keep some in my office—things like a box of cereal, a jar of peanut butter, and a bag of potato chips—to give them a basic primer on keeping track of calories. Once my players know what to look for, they find it's easy to keep a rough count of their calorie consumption through this email.

Subject: Fueling for Football
Date: Fri, 10 Sep 2010 09:24:10 -0400
MIME-Version: 1.0
Content-Type: multipart/related; type="text/html"; boundary="--=_NextPart_000_0000_01CB50C9.ECFAD060"

X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2900.5931
This is a multi-part message in MIME format.

--=_NextPart_000_0000_01CB50C9.ECFAD060 Content-Type: text/html; charset="utf-8"
Content-Transfer-Encoding: quoted-printable
Content-Location: http://www.training-conditioning.com/2010/06/03/fueling_for_football_1/index.php
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