

# Eat better to play better

Body composition and its effects on sports performance

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An athlete's ratio of body fat to muscle mass is related to performance. Research has shown that having the correct proportion of muscle mass increases strength, power and agility. However, gaining lean muscle is not just about choosing the right exercise protocol; it's also a matter of nutritional intake and timing.



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## The need for better nutrition

A 2004 study by Pamela Hinton published in the *International Journal of Sport Nutrition and Exercise Metabolism* found that nearly three out of four student athletes in the U.S. may not be getting enough to eat! The authors found that:

- Fully 70 percent of the women and 73 percent of the men studied were not getting enough total calories.
- Only 81 percent of the women and 90 percent of the men were consuming enough carbohydrates.
- Just 68 percent of the women and 81 percent of the men were eating enough protein based on USDA guidelines.
- Salt, fat, saturated fat and cholesterol intake often exceeded recommendations, even in diets deficient in major components.

## Measuring body composition

Body composition analysis can be an excellent tool to help you help your players. The most reliably accurate ways to measure body composition are hydrostatic weighing, X-ray scanning and air displacement testing. However, these techniques require expensive equipment, and many people do not have access to them.

The next best method is to use skinfold calipers. They are easy to use, easy to learn and very affordable. However, you want to make sure you take your time and follow strict protocols to ensure accuracy. Take a minimum of three tests at each site, and if you do not get at least two measurements within a millimeter of one another, keep retesting the site until you do. The last thing you want is to record an artificially high body fat percentage

due to poor measuring techniques, especially when the athlete made a conscious effort to make good dietary choices.

Avoid buying a bioimpedance device. Although it might seem like a good alternative, this method can be 6–10 percent off because it is affected by hydration status. Since lean tissue has a higher electrical conductivity than fat, bioimpedance devices measure how fast electrical current runs through the body. However, water is also highly conductive, so the more hydrated an athlete is, the lower his or her body fat will register.

## The value of testing

Below are several different ways body composition measurements can be utilized:

- Knowing an athlete's body fat percentage can help you determine the type of fuel

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mixture he or she needs. An athlete with a higher proportion of body fat usually needs fewer calories and fewer carbohydrates. The opposite is true for athletes with a low proportion of body fat. These individuals usually need to consume more calories and carbohydrates because of their higher lean weight.

- Every specialized conditioning or nutrition program needs a way to measure its effectiveness. Body composition testing can be an important evaluation tool, since most athletes want to gain muscle, lose fat, or both.
- When you are evaluating body composition, the challenge is not just to evaluate the percentage of body fat, but also to evaluate the percentage of lean weight. Athletes who have the appropriate body fat percentage for their sport may still have room to improve by gaining additional lean mass.
- When an athlete has encountered a severe injury that will take several months to fully recover from, measuring body composition on a monthly basis can be a tool for minimizing gains in body fat. Athletes can gain body fat quickly when activity is limited and eating habits are poor. It is difficult to get an athlete back to “full go” if he or she has lost muscle and gained body fat.
- Body composition testing can be a reassurance test. Many female athletes believe that when they gain weight, they are gaining fat. Also, athletes can exchange fat at the same rate they gain muscle; simply stepping on a scale will not reveal this positive exchange.
- Since female athletes are more vulnerable to developing eating disorders than female nonathletes, biannual body composition tests can detect any significant changes. These changes could shed light on an unhealthy food-related behavior.

## Conclusion

Body composition testing is not just about measuring fat. It can be very effective for menu planning, monitoring progress, improving current athletic status, creating a rehabilitation protocol, offering encouragement and exposing irregularities in behavior. Now that's a valuable tool!

**Table 1: General body fat percentage categories**

Classification	Women	Men
Essential	10–12%	2–4%
Athletes	14–20%	6–13%
Fitness	21–24%	14–17%
Acceptable	25–31%	18–25%
Plus	32% or more	25% or more

Source: American College of Sports Medicine

**Table 2: Nutrition, body composition and performance**

The table below shows the effect of proper nutrition (individualized menus including nutrient timing) on the body composition and performance of a 16-year-old male athlete. His goals for the program were to lower his 40-yard dash time (which he did, by 0.4 seconds) and to gain 20 pounds of lean mass (he gained 14). He accomplished this without making any changes to his workout protocol.

	Start of program	Four-month follow-up
Height	5'11"	5'11"
Weight	195 lb.	209.5 lb.
Lean weight	170 lb.	184 lb.
Body fat	12.8%	12.2%
Daily calorie intake	3500 kcal	5800 kcal
40-yard dash time	4.87 seconds	4.47 seconds