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MATT BRZYCKI

EXERCISE PRESCRIPTION

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Caloric Contributions and Needs

By Matt Brzycki

Proper nutrition plays a critical role in your capacity to wrestle at optimal levels. You can improve your nutritional skills by understanding the caloric contributions of the various nutrients and knowing your caloric needs.

CALORIC CONTRIBUTIONS

Everything that you do requires energy. The energy is obtained through the foods (or nutrients) that you consume and is measured in calories (which, technically, is a unit of heat).

Three macronutrients—carbohydrates, protein and fat—furnish you with calories, albeit in different amounts. Carbohydrates and protein yield four calories per gram (cal/g). Fat is the most concentrated form of energy, containing nine cal/g. Armed with this information, you can determine the caloric contributions for each of the three energy-providing macronutrients in any food—provided that you know how many grams of each macronutrient are in a serving.

As an example, consider a snack food such as Fritos® Brand Original Corn Chips (Frito-Lay, Incorporated). Examining the nutrition label reveals that a one-ounce serving of this product contains 15 grams of carbohydrates, 2 grams of protein and 10 grams of fat. To find the exact number of

calories that are supplied by each macronutrient, simply multiply its number of grams per serving by its corresponding energy yield. In this example, each serving of the food has 60 calories from carbohydrates [15 g x 4 cal/g], 8 calories from protein [2 g x 4 cal/g] and 90 calories from fat [10 g x 9 cal/g]. Therefore, this food has a total of 158 calories per serving (which is rounded up to 160 on the nutrition label). As you can see, this product has 50 percent more grams of carbohydrates than fat (15 compared to 10)—yet nearly 57 percent of the calories (90 of the 158) are furnished by fat. Moreover, consuming the entire contents of the 2.5-ounce bag will contribute 25 grams of fat—or 225 calories from fat—to your caloric budget.

Compare this to Baked Lays® Potato Crisps, another snack food by the same manufacturer. A one-ounce serving of this product has 23 grams of carbohydrates, 2 grams of protein and 1.5 grams of fat. Each serving of this food contains 92 calories from carbohydrates [23 g x 4 cal/g], 8 calories from protein [2 g x 4 cal/g] and 13.5 calories from fat [1.5 g x 9 cal/g]. So this food has a total of 113.5 calories per serving (which is rounded down to 110 on the nutrition label). This particular product, then, has more than 15 times as many grams of carbohydrates than fat (23 compared to 1.5)—and only 11.9 percent of the calories (13.5 of the 113.5) are supplied by

fat. Furthermore, consuming 2.5 ounces of this product will add a mere 3.75 grams of fat—or 33.75 calories from fat—to your caloric budget.

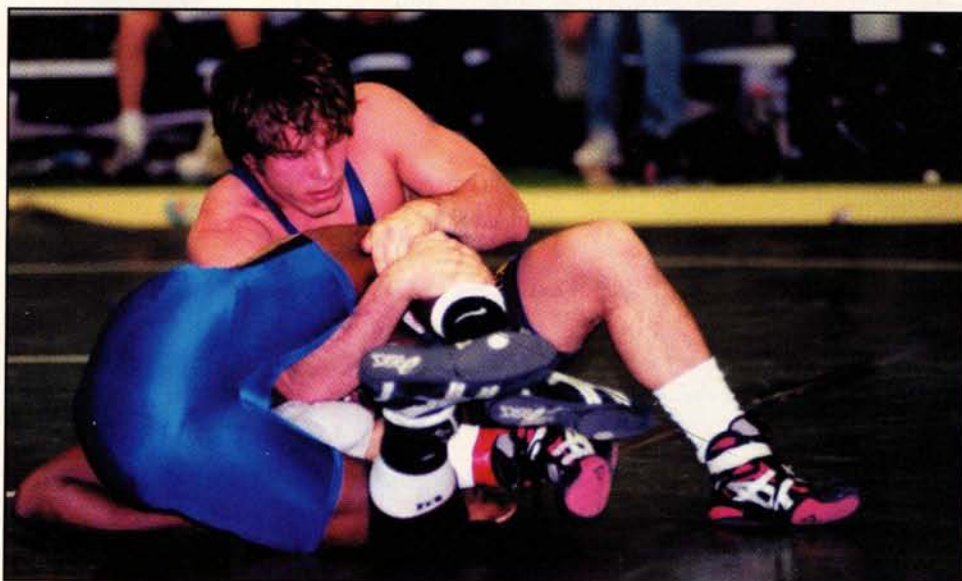
Knowing the different caloric contributions of the macronutrients is also helpful in understanding information about fat content on the packaging of a product that could easily be misinterpreted. Case in point: A package that proclaims a product to be “99 percent fat free” means that it’s 99 percent fat free by weight, not by calories. How critical is this distinction? Placing one gram of fat into 99 grams of water forms a product that, by weight, is “99 percent fat free.” But since water has no calories, this particular “99 percent fat free” product would actually be—in terms of calories—100-percent fat.

Although the preceding example was hypothetical, the fact is that this discrepancy actually occurs on the package of many products. Here are four illustrations of real products:

- A package of Hershey®’s Chocolate Drink (Hershey®’s Foods Corporation) states that it’s “99% fat free.” As would be expected, this leads many consumers to believe that a mere one percent of its calories come from fat. In reality, one serving of this product (eight ounces) has 129 calories of which 9 are from fat—meaning that it’s 6.98-percent fat. (The numbers on the nutrition label are rounded up to 130 calories per serving with 10 calories from fat.)

- A package of Black Bear of the Black Forest™ Gourmet Cooked Ham (Black Bear Enterprises, Incorporated) notes that it’s “98% fat free.” Naturally, this prompts many consumers to think that only two percent of its calories are derived from fat. In actuality, one serving of this product (two ounces) has 49 calories of which 9 are from fat—meaning that it’s 18.36-percent fat. (The values on the nutrition label are rounded up to 50 calories per serving with 10 calories from fat.)

- A package of Black Bear of the Black Forest™ Barbeque Flavor Breast of Chicken



Cyclone Open Championship Bout. 174 lb. Passolano, ISU, decisioned Carter, IC, 7-1. Photo by John C. Johnson.

states that it's "96% fat free." This, of course, leads many consumers to conclude that only four percent of its calories come from fat. In reality, one serving of this product (two ounces) has 66 calories of which 18 are from fat — meaning that it's 27.27-percent fat. (The numbers on the nutrition label are rounded up to 70 calories per serving with 20 calories from fat.)

•A package of Oscar Mayer Dinner Ham (Oscar Mayer Foods) notes that it's "96% fat free." Again, this leads many consumers to believe that only four percent of its calories are from fat. In actuality, one serving of this product (three ounces) has 83 calories of which 27 are from fat — meaning that it's 32.53-percent fat. (The values on the nutrition label are rounded down to 80 calories per serving with 25 calories from fat.)

While the percentages of fat calories for these four products aren't terribly bad, it's certainly a far cry from how the percentages on the package can be interpreted.

CALORIC NEEDS

Your need for calories (or energy) is determined by several factors such as your age, gender, size, body composition, meta-

bolic rate and level of activity. During a resting state, your caloric requirements can be established precisely by both direct and indirect calorimetry. Direct calorimetry measures the heat produced by the body in a small, insulated chamber; indirect calorimetry calculates the heat given off by the body based upon the amount of oxygen that is consumed and carbon dioxide that is produced. Unfortunately, both of these methods can be expensive and impractical for most people. For a quick and reasonably accurate estimate of your daily caloric needs, the U. S. Department of Agriculture suggests that you multiply your body weight by a number that corresponds to your approximate level of activity. Essentially, this number represents your energy requirements in calories per pound of body weight (cal/lb). For females, the values are 14 if the woman is sedentary, 18 if she's moderately active and 22 if she is very active; for males, the factors are 16, 21 and 26, respectively. For instance, a 150-pound male who is very active requires about 3,900 calories per day (cal/day) to meet his energy needs [150 lb x 26 cal/lb]. In other words, this individual needs to consume approximately 3,900 calories per day to maintain his current

body weight of 150 pounds.

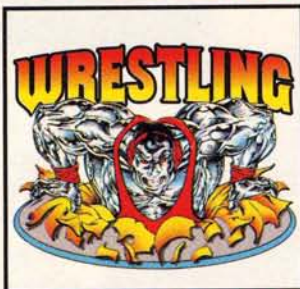
Although this calculation has gray areas — such as the characterization of the term "moderately active" — it still results in a fairly good estimate.

Once you've estimated your caloric budget, you can determine how many of these calories should come from carbohydrates, protein and fat. Using the previous example, someone who requires about 3,900 cal/day should consume roughly 633.75 grams of carbohydrates [3,900 cal/day x 0.65 - 4 cal/g], 146.25 grams of protein [3,900 cal/day x 0.15 divided by 4 cal/g] and 86.67 grams of fat [3,900 cal/day x 0.20 divided by 9 cal/g]. Note that these numbers are based upon a diet for an active lifestyle that consists of 65-percent carbohydrates, 15-percent protein and 20-percent fat.

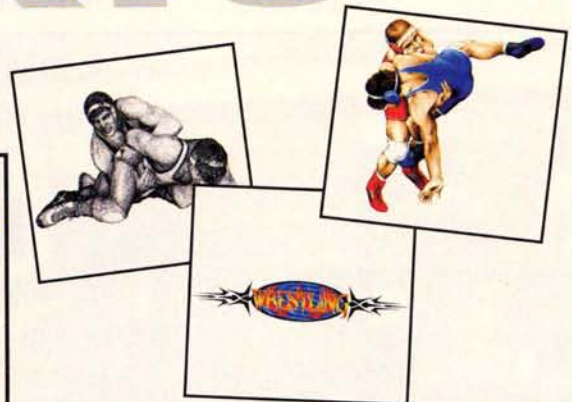
Matt Brzycki has been involved in the strength and conditioning of collegiate wrestlers for more than 20 years. Since 1986, he has authored nearly 60 articles for *Wrestling USA Magazine*. He is also the author of three books including: *A Practical Approach to Strength Training* - and the editor of *Maximize Your Training*, a 455-page book that features chapters written by more than 30 strength and fitness professionals.

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