THE BODY’S FUELS

There are three basic fuels, also known as “substrates,” that the body uses to produce energy. These substrates are found in varying amounts in all foods. Because an individual requires varying amounts of each substrate in the diet, monitoring what goes into the body is important.

**Carbohydrates** Carbohydrates are the body’s main source of fuel. The body’s muscles rely on carbohydrates to keep them contracting during body movements. The brain is also heavily dependent on carbohydrates to keep it functioning well. In the United States, carbohydrates, or “carbs,” are often thought of as grain-based foods, such as bread, cereal, rice, and pasta. While these items do indeed include carbohydrate as a source of energy, vegetables and fruits are also considered to be great sources of carbohydrate. In order to meet the body’s fuel preferences, approximately 45-65%* of an average adult’s diet should be in the form of carbohydrate. There are four (4) calories per gram of carbohydrate. Thus, if a food item has 20 grams of carbohydrate, the food contains 80 calories of carbohydrate (20 grams x 4 calories per gram).

**Fat** Fat is found in both “whole” foods such as avocados and natural plant oils, as well as found in “convenience” foods found in “fast foods,” butter, margarine, mayonnaise, potato chips, cakes, etc. While the body does need some fat for stored energy, organ protection and other functions, and a healthy diet typically consists of 20-35%* of fat. Variations in recommended fat consumption may vary depending on health conditions a person may experience, on a physician’s or dietician’s philosophies. Many physicians and dieticians recommend diets lower in fat for those at risk for cardiovascular disease and some forms of cancer. For weight loss, there is research supporting both higher- and lower-fat diets that help individuals meet their goals. A smart approach to weight loss would be to work with health professionals to track any health changes that may occur with deviations in fat intake. There are nine (9) calories in one gram of fat. A food item with five grams of fat, then, contains 45 calories worth of fat (5 grams x 9 calories per gram).

**Protein** Found in meat, dairy products, beans, and various vegetables, protein is required for tissue rebuilding and repair, among other functions. While protein is important, most healthy individuals do not use the substrate as their bodies’ predominant fuel source. Subsequently, only 10-35%* of an individual’s daily calorie intake needs to be in the form of protein. Excess protein not immediately used by the body can be converted to and stored as fat. Furthermore, the body may excrete excess protein through the urine, so protein overconsumption over extended periods of time can lead to problems related to water loss and kidney overexertion among some individuals. There are approximately four (4) calories in one gram of protein. Thus, if a food item has 10 grams of protein, the food contains 40 calories of protein (10 grams x 4 calories per gram).

*Values are based on Acceptable Macronutrient Distribution Ranges, published in: