

Why Breakfast Is the Most Important Meal of the Day

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It is quite clear that nutrition can have a major impact on exercise performance as well as training adaptation. In fact, without proper nutrition, exercise goals will not be fully realized. Recent research, however, indicates that when one eats may have as much influence over achieving exercise goals as what one eats. In other words, timing of nutrient consumption or “nutrient timing” can significantly impact exercise performance, recovery and training adaptation. These responses to nutrient timing are built into our DNA and therefore not limited to the elite athlete. Everyone, young and old, male and female, untrained and trained will respond to nutrient timing.

Simply stated, nutrient timing is the delivery of appropriate macronutrients during the time in which the body is primed to use them most effectively (1). While most nutrient timing programs designed for athletes and individuals who exercise regularly are centered on nutrient intake prior to and after workouts and competitions, timing of daily meals and their composition are also of importance. Of the 3 basic meals of the day, breakfast, lunch and dinner, breakfast is by far the most important.

Breakfast is a critical meal because it influences practically every dimension of our being during the course of the day, including how we perform physically and mentally. Breakfast immediately raises the body’s energy level and restores the blood glucose level to normal after an overnight fast. It also raises the muscle and liver glycogen stores. Carbohydrate is the preferred fuel for muscle and the nervous system (2, 3). Low carbohydrate levels result in poor performance and rapid fatigue during training and other physical activities (4, 5). Perceived exertion is also elevated when blood glucose and muscle glycogen levels are low making exercise mentally challenging (5, 6). Therefore, starting a training session with low carbohydrate availability can significantly limit the quality of one’s training session and adversely impact training adaptation. A well-designed breakfast can provide an adequate amount of carbohydrate and other essential nutrients to raise the blood glucose levels and get a morning training session going with vigor and vitality, and without being overly filling.

Second, breakfast immediately lowers the blood level of the stress hormone cortisol, which peaks during the early morning hours (7, 8). We generally think of sleep as a non-stressful period. From a psychological viewpoint this is generally true. Physiologically, however, it is quite the opposite. Even though our metabolic needs decrease significantly while we are sleeping, the body still needs to

maintain critical physiological and metabolic functions required to support life as well as those which foster daily recovery, tissue repair and growth and development – key components to training adaptation. The energy to support these functions come from blood glucose, liver glycogen and free fatty acids.

When we first go to sleep, blood glucose and liver glycogen are sufficient to support the energy requirements of the body. During the initial hours of sleep growth hormone peaks and protein synthesis is elevated (7). However, by the early morning hours our liver glycogen stores start to wane and blood glucose, insulin and growth hormone levels decline. To prevent a drop in blood glucose, blood cortisol starts to rise and peaks just before waking up. Cortisol is a stress hormone released from the adrenal glands and causes the breakdown of muscle protein and fat. Amino acids generated from this protein breakdown are then transported to the liver where they are converted into glucose and released into the blood to limit the decline in blood glucose. When we awaken, cortisol levels are at their highest point of the day. To lower blood cortisol levels requires nutrient intervention, and if we do not consume nutrients upon awakening, cortisol will remain elevated until we do. This will result in a prolonged breakdown in muscle protein, which over the long-term can have a significant impact on the fitness status of the athlete. In addition, maintaining an elevated blood cortisol level will promote fat storage, particularly in the abdominal area and stimulate appetite (9). Chronically elevated cortisol levels are directly associated with increased risk of obesity and a number of medical conditions associated with the metabolic syndrome such as type 2 diabetes and coronary heart disease (9, 10). Individuals that routinely skip breakfast have a much greater chance of being obese than individuals that routinely eat breakfast (11, 12, 13).

Third, breakfast is the most satiating meal of the day (14). This satiating-effect can impact food consumption for the entire day. Investigators have found that the pattern of food intake has a dramatic effect on overall daily food consumption. This is due to the impact of our meal pattern on the release of gut hormones that control appetite. Secretion of these hormones early in the morning is in part due to the elevation in blood cortisol and can have a sustained effect throughout the day. Therefore, eating a larger breakfast and reducing the blood cortisol level lowers appetite and reduces daily caloric intake (15, 16, 17). Research findings suggest a strong correlation between regular breakfast eating and long-term weight maintenance and weight loss (18, 19, 20, 21). In fact, seventy-eight percent of successful dieters, defined as those who have lost more than 10% of their body weight and kept it off for two years, reported eating breakfast every day (22). Interestingly, researchers have also found that even when the same amount of calories are consumed daily that dieters who eat breakfast lose on average 50% more weight than dieters who skip breakfast (23). This implies that cortisol may alter the manner in which the body processes food. As mentioned earlier, sustained elevation of blood cortisol promotes increased abdominal fat storage.

Perhaps the most compelling study on the critical role of breakfast as it relates to control of body composition was a study by Jakubowicz et al. (24). The study was conducted over eight months and compared two groups of dieting obese subjects. The first 4 months were supervised while the second 4 months were unsupervised. One group consumed a low carbohydrate-high protein diet that totaled 1,085 calories per day. For this group, breakfast was the smallest meal of the day. The second group consumed a high carbohydrate-protein diet that totaled 1,285 calories per day. For the high carbohydrate, higher calorie group breakfast was the largest meal of the day. Total calories per day were the same for both groups during the initial 4 months of the diet program. For the first 4 months each group lost approximately the same amount of weight (low caloric breakfast, 15.1 ± 1.9 kg; high caloric breakfast, 13.5 ± 2.3 kg). However, during the final 4 months when food consumption was not controlled the low caloric, low carbohydrate breakfast group gained back 86% of the weight it had lost; whereas, the high caloric, high carbohydrate breakfast lost an additional 6.9 ± 1.7 kg. Related to this greater loss in body mass was a greater reduction in hormones that stimulate appetite, a significant increase in satiety and reduced hunger throughout the day. From these findings, it is evident that one should not skip breakfast. However, they also indicate that breakfast should contain a significant amount of one's daily caloric intake and be high in carbohydrate content. For athletes that have difficulty in controlling their weight and body composition or compete in sports that have weight limits, eating an appropriate breakfast is paramount to their nutritional program.

Fourth, breakfast has a significant effect on cognitive function during the day. If we fail to replenish our carbohydrate stores during the early morning hours, the resulting low blood glucose levels can adversely affect our ability to concentrate and perform mental tasks (25). Studies have shown that children who eat breakfast perform at a higher level in school and are more physically active than those who skip breakfast (26, 27). Also, breakfast helps increase the ability to focus and reduces declines in attention and memory over the morning hours. This is particularly true when attempting to process complex visual tasks (27, 28).

Whether one exercises or trains in the morning, afternoon or both morning and afternoon, breakfast should be a major component of one's daily nutritional plan. Breakfast immediately raises the energy level of the body, increasing vigor and vitality. It reduces blood cortisol levels and helps control appetite, which over the long-term, can significantly impact body composition. Breakfast also increases cognitive function and the ability to concentrate. For the athlete and health enthusiast, this translates into more proficient training sessions and enhanced training adaptation.

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