

## Eating for Exercise

From [Elizabeth Quinn](#),  
Your Guide to [Sports Medicine](#).  
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### Should I Eat Carbohydrate or Fat for Exercise?

When it comes to eating for exercise there are several things to consider while meal planning. Carbohydrate, fat, and protein all contribute to the fuel supply needed by working muscles, with carbohydrates and protein providing 4 Calories per gram and fat providing 9 Calories per gram. And all nutrients get converted to energy in the form of adenosine triphosphate or ATP. However, each nutrient has unique properties that determine how it gets converted to energy. Carbohydrate is the main nutrient that fuels exercise of a moderate to high intensity, while fat can fuel low intensity exercise for long periods of time. Proteins are generally used to maintain and repair body tissues, and are not normally used to power muscle activity.

Because the body can not easily store ATP (and what is stored gets used up within a few seconds), it is necessary to continually create ATP during exercise. There are three main pathways to convert nutrients to ATP and it is the intensity and duration of the exercise that determine which method gets used.

The first path only supplies about 10 seconds worth of energy and is used for short bursts of exercise such as a 100 meter sprint. After this, either aerobic or anaerobic metabolism is used to continue to create ATP. Then major difference between aerobic and anaerobic metabolism is the presence of oxygen to create ATP.

**Aerobic metabolism** requires oxygen to convert nutrients (carbohydrates, fats, and protein) to ATP. Aerobic metabolism is used primarily during endurance activities.

**Anaerobic metabolism (glycolysis)**, creates ATP exclusively from carbohydrates, with [lactic acid](#) being a by-product. As lactic acid builds up in the muscle it causes physical discomfort and pain that limits performance. Anaerobic metabolism produces energy for short, high-intensity bursts of activity lasting no more than several minutes before the lactic acid build-up reaches a threshold (the [lactate threshold](#)) and muscle pain, burning and fatigue make it impossible to maintain that intensity.

During exercise an athlete will move through these metabolic pathways. As exercise begins, ATP is produced via anaerobic metabolism. With an increase in breathing and heart rate there is more oxygen available and aerobic metabolism begins and continues until [VO2max](#) is reached. If [VO2Max](#) it surpassed, the body can not deliver oxygen quickly enough to generate ATP and anaerobic metabolism kicks in again. Since this system is short-lived and lactic acid levels rise, the intensity can not be sustained and the athlete will need to decrease intensity to remove lactic acid build-up.

[So what should I eat, Carbs or Fats?](#)

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