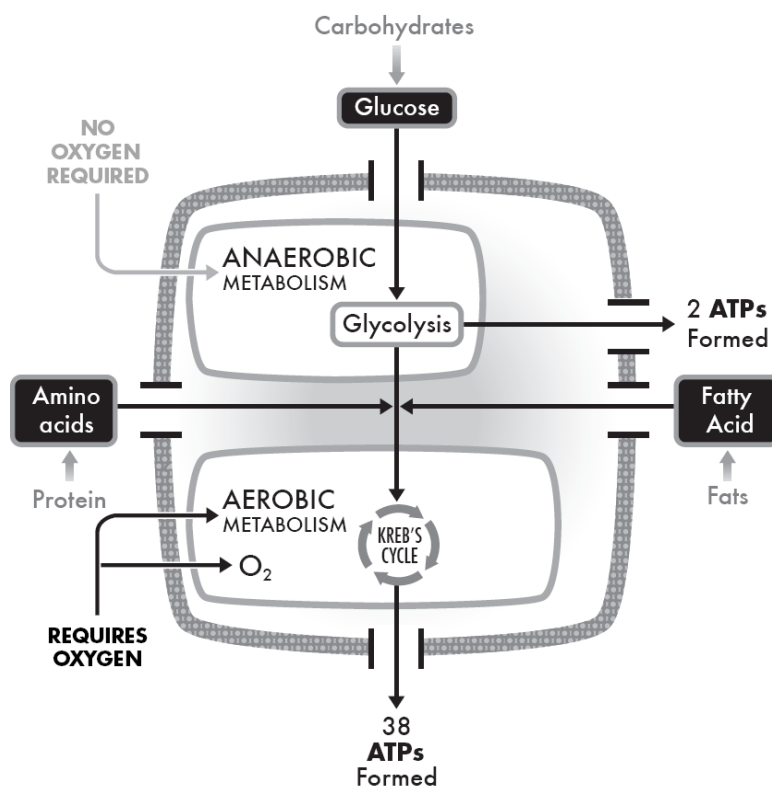


Metabolism in Motion

Once made, all ATP is equal. The quantity produced, however, depends on the type of fuel making it. The illustration shows, for normal everyday needs, the body continuously goes through a cycle of chemical reactions to make ATP. When energy is needed, the body calls on metabolic processes to help with the chore. How ATP is produced depends on the type of metabolism the body is demanding—aerobic or anaerobic.

For example, carbohydrates, the prime anaerobic fuel, go through a process called *glycolysis*. When glucose is burned or metabolized anaerobically (without oxygen) to make ATP, every unit of glucose produces two units of ATP, and glycogen—the form of stored carbohydrates in your body—produces three units of ATP. In short, carbs from food are stored in the body as glycogen and broken down into glucose when needed to make ATP. The end product of glycolysis can enter the aerobic metabolism process, called the *Krebs cycle*. Here it can contribute to the creation of much more than two ATPs.



As you can see, there are only two ATPs formed from glucose at the glycolysis level. It is not until the addition of oxygen, the carbohydrate end products from glycolysis, acetyl-CoA from fats, or particular amino acids from protein into the Krebs cycle that we produce more ATP from our fuels. Acetyl-CoA is the primary fuel of choice for aerobic metabolism because of its greater supply in the body compared to protein and carbs and its high caloric potential (more ATP production). Essentially, fat takes longer to burn and is harder to lose, but provides a more steady and consistent supply of ATP when combined with oxygen and fat to run your machine more efficiently.