

Name: _____

Period: _____

BIOLOGY NTI DAY 4 ASSIGNMENT

Directions:

1. Highlight or underline AND annotate the article below.
2. When you finish, write a 4 sentence summary of the entire article using complete sentences.
3. Then write a 4 sentence reflection explaining your internalization of the article? You may use the questions below to help you write your reflection if you would like.
 - Did you find the article interesting, informative, relative, etc.? Back up your claim.
 - Were you able to make the connection between muscle growth and protein synthesis after applying what you've learned to the context of the article? If so, explain the connection.
 - Can you see yourself implementing any of the suggestions that were mentioned?
 - Were you aware of the cautions that were explained in the article?

Protein Synthesis in Muscle Growth

by [STEPHANIE CRUMLEY HILL](#) Last Updated: Sep 11, 2017



Muscles grow through protein synthesis. Despite what supplement companies will tell you, there is no magic formula that will supersede the basic science of protein synthesis. Once you understand how protein synthesis creates muscle growth, you can achieve your athletic goals, whether they are bodybuilding or fitness.

Function

Muscles grow by repairing small micro-tears that occur on a cellular level during exercise, making exercise a key component of muscle growth, according to World of Sport Science. Resistance training is generally considered the best type of exercise to promote muscle growth. When the muscle experiences small micro-tears, blood flow to the area increases, bringing with it the necessary components for repair through protein synthesis. In this specific case, the repaired muscle is then stronger and larger than it was before.

Considerations

For protein synthesis and muscle growth to occur, a number of components must be present. First, the muscle must have exercise-induced micro-injury. Second, naturally occurring hormones, including testosterone and growth hormones produced by the pituitary, must be present. Finally, you must have a diet containing sufficient protein. Protein is the basic building block of all of the body's tissues, especially muscle. Proteins are made from amino acids, some of which the body can synthesize and some of which must be consumed in the diet.

Misconceptions

Protein synthesis does not create new muscle cells. Instead, protein synthesis creates a state of hypertrophy. In hypertrophy, individual muscle cells increase in size. Bigger muscle cells are stronger and may give you a more esthetically pleasing appearance.

Time Frame

Recommendations for the best time to consume protein before and after a workout to increase muscle growth and protein synthesis vary from researcher to researcher. A 2001 article in the "International Journal of Sport Nutrition and Exercise Metabolism" noted a 24- to 48-hour window following resistance exercise when meals can affect muscle hypertrophy.

Cautions

If muscle growth is your goal, you may want to avoid taking a post-workout over-the-counter pain reliever and soothe your sore muscles with a warm bath instead. According to a 2001 article published in the "American Journal of Physiology, Endocrinology and Metabolism," over-the-counter doses of acetaminophen and ibuprofen can interfere with post-exercise protein synthesis.