

WHY IS PROTEIN SO IMPORTANT?

- Protein helps to repair muscles after exercise and promotes the growth of muscle tissue.
- Protein is vital for:
 - Immune system function.
 - Hormone function.
 - Proper digestion and absorption of nutrients.
 - Nutrient transport and regulation of blood volume.
- Although protein is not used to a large extent for energy in the body, it can be under certain circumstances.

Protein: Important terms to know

- **Amino acids** are the individual building block units of protein.
- **Essential amino acids** are those required for normal growth and development
 - Histidine, threonine, lysine, tryptophan, phenylalanine, methionine, leucine, isoleucine, and valine.
- **Complete proteins** contain all of the essential amino acids in amounts sufficient to support growth; for example eggs, milk, yogurt, cheese, beef, pork, chicken, fish, turkey, and soyfoods.
- **Incomplete proteins** do not have enough of one or more essential amino acids to support growth.
 - Grains (e.g., rice, wheat, corn) are often low in methionine but high in lysine.
 - Legumes (e.g., beans other than soybeans, lentils, peanuts, peas) are often low in lysine but high in methionine.
- **Complementary proteins** are combinations of proteins in which each protein makes up for the lack of essential amino acids in the other. Combinations of legumes and grains are generally complementary. Examples: rice and beans, peanut butter, and bread.

How can I get high-quality protein?

- For people who consume animal products, getting enough protein is not hard.
 - Animal products are a good source of complete, high-quality protein.
- For vegetarians, especially those who avoid animal products, extra care is needed to get high-quality protein.
 - Use of soyfoods as a complete protein source.
 - Consume a wide variety of complementary proteins throughout the day
 - You don't necessarily need complementary proteins at the same meal, as long as they are consumed within a few hours of each other.

How much protein do I need per day?

- For most healthy youth athletes, 0.7 to 0.9 g protein per pound of body weight per day should be enough to support the requirements of physical activity.

If I am trying to add muscle and strength, do I need a high-protein diet?

- Adding muscle requires:
 - Adequate intake of energy (calories) and nutrients
 - Adequate protein
 - Training the muscles, especially via strength training
- A protein intake of 0.7 to 0.9 g per pound of body weight per day is roughly double the Recommended Dietary Allowance for protein. Assuming the athlete is consuming enough calories, this level of protein intake should be sufficient to build muscle when combined with appropriate training.
- Most research indicates little additional benefit of protein intakes above 0.9 g per pound of body weight per day for gaining muscle.

Should I take protein or amino acid supplements?

- Many athletes can meet their protein needs with diet alone. However, protein supplements can be convenient when access to regular food is limited or when an athlete is having difficulty taking in enough food to meet increased calorie requirements.
- Amino acid supplements may have benefits under certain circumstances, but the most important focus for the athlete is to obtain enough high-quality protein from diet and/or intact protein supplements first.



Nutrition: Protein

Sample distribution of protein intake over several small meals per day

• Here is a sample profile for a male athlete named Sam. Sam's needs are listed below along with a sample plan for his protein intake.

- Age: 14 y
- Height: 5 feet 7 inches
- Weight: 130 lbs.
- K-cal need: 3,400 per day
- Carbohydrate need: 520 g per day (about 4 g per pound)
- Protein need: 100 g per day

Meal	Time	Protein (g)
Breakfast	7:00 a.m.	10
Mid-morning snack	10:00 a.m.	5
Lunch	Noon	15
Pre-exercise meal	1:30-2:00 p.m.	5
During exercise	3:00-5:00 p.m.	0
Post-exercise meal	5:00 p.m.	25
Dinner	6:30 p.m.	25
Nighttime snack	9:00 p.m.	15
	TOTAL	100

EAS products that can help

- **Myoplex Strength®**: Provides 25 g protein and 23 g carbohydrate per 14 oz. bottle. Myoplex provides the combination of protein and carbohydrate needed for post-exercise recovery.

SOURCES OF PROTEIN FOR THE MEAL PLAN

- 1 egg, 2 egg whites, or 1/4 c. egg substitute = 6-7 g
- 1 cup of milk = 8-10 g
- 1/4 c. cottage cheese = 7 g
- 1 cup of yogurt = 8 g
- 1 oz. of chicken, fish, pork, or beef = 7 g
(A 3-ounce portion (21 g protein) is the size of the deck of cards)
- 1 oz. of cheese (except cream cheese) = 7 g
- 1 slice of bread or 1/2 bagel = 3 g
- 1 cup of cereal = 3-6 g
- 2 T. peanut butter = 7 g
- 1/2 to 2/3 cup of dried beans or lentils = 7 g
- 3 T. miso = 7 g
- 4 oz. raw, firm tofu = 9 g
- 1 cup soy milk = 7 g
- 1/2 c. peas or corn = 3 g
- 1/2 cup of non-starchy vegetables = 2 g
- 14 oz. **Myoplex Strength®** Shake = 25 g

Timing of protein intake

- The combination of protein and carbohydrate, consumed as soon as possible after exercise, is better than either protein or carbohydrate alone for promoting muscle recovery from exercise.

Some research suggests that protein intake before and during exercise can help improve amino acid availability and muscle protein synthesis in the post-workout period.