

Nutrition

Fact Sheet

Fueling the School-Aged Athlete – Protein in Perspective

Protein is a popular nutrient among athletes. The body needs protein for

- sustaining normal growth,
- building and repairing body tissues,
- creating hormones and enzymes,
- regulating fluid balance, and
- maintaining proper immune function.

Protein, like carbohydrate and fat, can also be broken down in the body and used for energy. However, the body prefers to spare protein as a fuel source using it instead for other important functions. The school-aged athlete relies on adequate protein intake primarily for growth and building, maintaining, and repairing muscle.



Protein and the School-Aged Athlete

Determining how much protein a school-aged athlete needs is difficult because not much research has been done on young athletes. If a school-aged athlete is consuming adequate energy from a variety of foods, eating a sufficient amount of protein is not a problem.



For boys and girls, the Recommended Dietary Allowance (RDA) for protein is

- 0.43 grams per pound of body weight per day for 4–13 year olds, and
- 0.39 grams for per pound of body weight per day for 14–18 year olds.



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RDA values for protein are not a minimum amount but include a generous margin of safety that will meet the needs of most healthy people who consume an adequate amount of energy (Institute of Medicine [IOM], 2002).

Protein Calculations

For a 10 year old swimmer who weighs 80 pounds:

$$80 \text{ pounds} \times 0.43 \text{ grams/pound} = 35 \text{ grams}$$

For a 15 year old runner who weighs 130 pounds:

$$130 \text{ pounds} \times 0.39 \text{ grams/pound} = 51 \text{ grams}$$

It is unclear whether active children and adolescents require more protein than non-active children and adolescents (McArdle, Katch, & Katch, 2008). In comparison, some research indicates adult athletes may require more protein during heavy training and exercise. Protein is needed to build muscle and to a lesser extent, to repair muscles damaged by exercise when athletes strength-train. More protein is also used for fuel in endurance events especially when carbohydrate stores and/or energy intake is low.

For adult athletes, sports nutrition experts and exercise physiologists suggest safe guidelines for protein intake that range from 0.5–0.8 grams per pound of body weight depending on the type, intensity, and duration of exercise performed (American Dietetic Association [ADA], 2009; McArdle et al., 2008; Tipton & Wolfe, 2004). However, not all experts agree that protein needs are higher for adult athletes and more research is needed.



The limited research on active children appears to support the idea that protein needs are probably not any different than the amount recommended for non-active children (Bolster Pikosky, McCarthy, & Rodriguez 2001; Boisseau, Persaud, Jackson, & Poortmans, 2005; Pikosky, Faigenbaum, Westcott, & Rodrigues, 2001). However, this may not be the case for adolescent athletes

going through a growth spurt. One study found that the recommended protein allowance for non-active male adolescents was not sufficient to meet protein requirements for growth and increased activity for male adolescent soccer players (Boisseau, Vermorel, Rance, Duché, & Patureau-Mirand, 2007). The authors

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suggested an estimated 0.64 grams of protein per pound of body weight per day for male adolescent athletes. Other sports nutrition experts estimated that an adolescent in the middle of a growth spurt might need 0.68 grams of protein per pound of body weight per day (Petrie, Stover, & Horswill, 2004).

Protein Calculations

For a 14 year old male athlete in the middle of a growth spurt who weighs 140 pounds
 $140 \text{ pounds} \times 0.68 \text{ grams/pound} = 95 \text{ grams}$

Practical Protein Pointers

In general, school-aged children appear to consume plenty of protein. Based on national survey data, the mean usual daily protein intake exceeds the RDA (IOM, 2002).

Gender and Age	RDA (grams/day)	U.S. Average Usual Intake (grams/day)
Boys		
9–13 years	34	79
14–18 years	52	99
Girls		
9–13 years	34	65
14–18 years	46	67

When compared to their non-active peers, school-aged athletes appear to eat more healthful foods, and their customary diets provide adequate protein, often exceeding the speculated amount required for intensive training (Croll et al., 2006; Meyer et al., 2007). However, school-aged athletes dieting, eating high carbohydrate foods, and cutting protein for their sport, or following certain vegetarian diets may have an inadequate protein intake (Habash, 2006).

The timing of an athlete's protein intake is receiving attention. Some preliminary research indicates consuming protein, especially skim milk, shortly after intense resistance training increases muscle gain (Phillips, Moore, & Tang, 2007; Wilkinson et al., 2007). Research focusing on school-aged athletes is needed to determine if including protein in the recovery meal and perhaps before strength training is critical for increasing muscle gain (Habash, 2006).

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Protein Rich Foods

School-aged athletes who drink 3 servings of milk a day and eat a protein source at lunch and dinner can easily meet their protein needs.

Food Item	Serving Size	Grams of Protein
Skim milk	1 cup	8.4
Yogurt, lowfat	1 cup	11.9
Cheddar cheese	1 ounce	7.1
Lowfat cottage cheese	1 cup	28.0
Eggs, scrambled	2 large	13.6
Chicken, light meat roasted	3.5 ounces	30.9
Canned tuna, white	3 ounces	22.7
Hamburger pattie, lean	3.5 ounces	24.5
Peanut butter	2 tablespoons	9.0
Baked beans	1 cup	11.0



Pitching Protein

A common myth is that athletes and those who exercise need huge amounts of protein. It is based on the faulty logic that since muscle is made of protein, consuming more protein will increase muscle mass and strength. Despite these widely held beliefs, research has not shown that protein supplementation in any form, such as food, powders, and amino acids, above the RDA enhances muscles mass or increases strength, power, or endurance (McArdle et al., 2008). Although heavily advertised for athletes, high protein products are often expensive and unnecessary.

- It has not been determined if school-age athletes require more protein than their non-active peers.
- School-aged athletes will typically eat more to meet their energy needs and consequently increase their protein intake.
- School-aged athletes that eat enough of a variety of foods easily meet their protein requirements.

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For More Information

American College of Sports Medicine. www.acsm.org

American Dietetic Association. www.eatright.org

Board Certified Specialist in Sports Dietetics (CSSD) by State as of 2008.

www.cdrnet.org

Eat Smart. Play Hard. for Kids. www.fns.usda.gov

Kidnetic. www.kidnetic.com

MyPyramid for Kids. www.mypyramid.gov

President's Council on Physical Fitness and Sports. www.fitness.gov

SCAN—Sports, Cardiovascular, and Wellness Nutritionists – A Practice Group of the American Dietetic Association. www.scandpg.org

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For more information, contact NFSMI at 800-321-3054 or www.nfsmi.org.

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