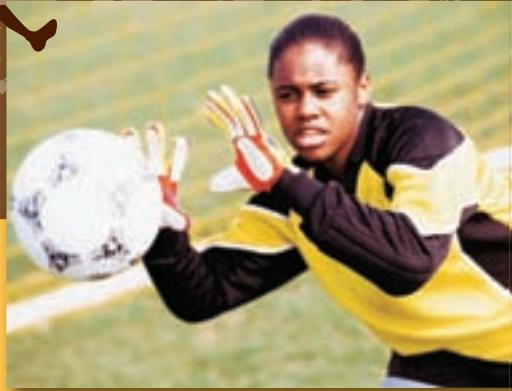


REFUEL WITH CHOCOLATE MILK

Dear Athletic Directors and Coaches:

For student athletes to perform their best, their post-workout recovery routine needs to be just as important as their pre-game regimen.



Experts agree that there is a 2-hour recovery window after physical exercise. That's when the work of refueling, rebuilding, and repairing muscles begins. Recent studies have found that lowfat chocolate milk has the right mix of carbs and protein to help athletes refuel and recover after strenuous exercise. Plus, lowfat chocolate milk has nutrients, including bone-building calcium and vitamin D, not found in typical sports drinks.

That's the message behind this free **Refuel with Chocolate Milk** post-exercise recovery program created by the curriculum specialists at Young Minds Inspired (YMI) in cooperation with the Milk Processor Education Program (MilkPEP). The program is another part of MilkPEP's ongoing effort to educate America's youth about the benefits of milk through the National Milk Mustache "got milk?"® Campaign.

Refuel with Chocolate Milk is designed to supplement your school's sports and conditioning programs, and includes materials to help you:

- Reinforce the importance of the 2-hour post-workout recovery window.
- Inform student athletes about the science behind the benefits of drinking lowfat chocolate milk as a post-workout recovery beverage.
- Encourage your athletes to make smart beverage and food choices after every workout.

We urge you to share this valuable program with other coaches and physical activity instructors in your school. Although these materials are copyrighted, you have permission to make multiple copies for use with students. Please return the enclosed reply card to let us know your opinion of the program. We depend on your feedback to continue providing free educational programs that make a real difference in the lives of your students.

Sincerely,

Dr. Dominic Kinsley, Editor in Chief

PS: Did you know that many of today's top college coaches, trainers, and professional athletes advocate for chocolate milk as a post-exercise recovery beverage? It's a trend – you'll be in good company after experiencing the benefits.

Program Components

- This six-page program guide.
- Three reproducible student athlete handouts.
- A colorful wall poster.
- A reply card for your important comments.

Program Objectives

- **Raise awareness** of the 2-hour recovery window following strenuous exercise and the importance of a post-workout recovery routine for optimum athletic performance.
- **Inform** student athletes about the scientific research that supports drinking lowfat chocolate milk as part of a post-workout recovery routine.
- **Educate** students about the importance of good nutrition for physical fitness and athletic performance.

Target Audience

This program has been designed for use with high school student athletes.

How to Use This Guide

- Review the materials by reading the handouts in tandem with the background information provided in the coach's guide.
- Photocopy and distribute the three student handouts.
- Display the poster in the workout room, locker room, gym, or hallway. Reference the poster when you talk with student athletes about the need to refuel during the 2-hour recovery window following every workout or sports event.
- Encourage your students to visit **bodybymilk.com**, a teen-friendly website that complements this program and is referenced in the handouts.

National Health Education Standards

Handout	National Standards Addressed
1	Standards 1, 5, 6, 7
2	Standards 1, 5
3	Standards 1, 5, 6

To reference the Standards, go to cdc.gov/healthyyouth/sher/standards.

Resources

- Body By Milk – bodybymilk.com
- Milk Processor Education Program (MilkPEP) – milddelivers.org/refuel
- Young Minds Inspired – ymiclassroom.com

got milk? milddelivers.org/refuel

REFUEL WITH CHOCOLATE MILK

Coach's Guide

Experts agree: there's a 2-hour recovery window after strenuous exercise when making the right food and beverage choices can have a powerful impact on an athlete's training. And research suggests that lowfat chocolate milk may be especially effective as a post-workout recovery beverage.

Why Chocolate Milk?

Take a look at how the unique package of nutrients in chocolate milk can benefit athletes:

- The right mix of **protein** and **carbohydrates** helps build and refuel muscles (restore muscle glycogen).
- Electrolytes, including calcium, potassium, and magnesium**, replenish what is lost in sweat.
- Fluids** help rehydrate the body.
- Calcium** and **vitamin D** strengthen bones and help reduce the risk of stress fractures.
- B vitamins** help convert food to energy.
- Packed with **nutrients** not typically found in traditional sports drinks.

And, penny for penny, no other post-workout beverage contains the same vitamins and minerals found in milk. It's convenient, affordable, and great-tasting.

Student Handouts

Handout 1: The Workout's Finished. The Body Isn't.

Your student athletes know how important training and preparation are for top performance, but are they aware that recovery is just as essential to athletic achievement? This handout explains the importance of the 2-hour recovery period, provides recovery tips for rebuilding muscle

and rehydration, and features a post-workout planner, including stretching, that student athletes can use to establish or refine a regular recovery routine. *Note:* We have instructed students to ask you about proper stretching techniques.

Handout 2: Refuel with Chocolate Milk

Not all recovery beverages are created equal. This handout provides background information on the post-exercise recovery benefits of chocolate milk in teen-friendly language, along with a side-by-side challenge

comparing lowfat chocolate milk and a typical sports drink. Your athletes will learn why chocolate milk is a nutritious choice and an effective recovery beverage.

Handout 3: Perform Your Best

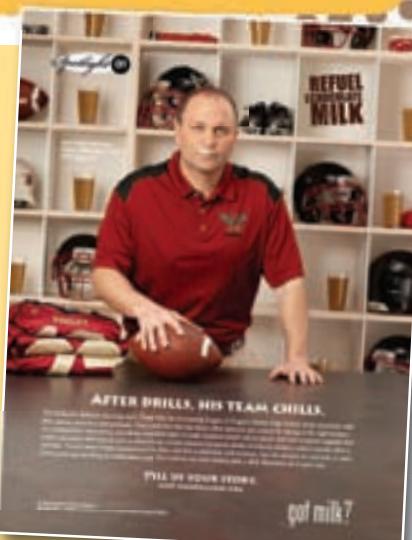
You know that good nutrition is an essential part of physical fitness and peak athletic performance. This handout can help your athletes make the right choices as they compare various food and beverage options to complement their fitness goals.

Tips to Make Chocolate Milk Your Teams' Recovery Beverage:

- Ask your district food service director to install a milk vending machine that contains lowfat chocolate milk outside your locker rooms.
- Chill a few gallons of lowfat chocolate milk prior to an event, and keep them in a cooler on the sidelines or on the bus, along with some paper cups, for after the big game.
- Have your student athletes pick up a container of lowfat chocolate milk from the cafeteria and save it in the locker room fridge for after games or hard workouts.
- It's important to drink lowfat milk at home, too! Remind your athletes to ask their parents to serve it with snacks and meals.
- Ask parent volunteers to bring lowfat chocolate milk in addition to water or other beverages for after the game.
- Work with your school foodservice director or manager to have additional chocolate milk delivered to the cafeteria for your school's athletic program.
- Share the information in this program and the resources you find on milkdelivers.org/refuel with your colleagues.

The Coaches Corner at milkdelivers.org/refuel

Visit the Coaches Corner for updates to the Refuel with Chocolate Milk program and more about scientific research on the post-workout recovery benefits of lowfat chocolate milk. Plus, you'll find free downloadable resources, tips, and other tools you can share with your student athletes. Be sure to visit the special "Spotlight On" area of the website, where you can share your success stories about using lowfat chocolate milk as a post-workout recovery beverage for your athletes. You could become a Milk Mustache celebrity like Coach Jason Tindal from Eugene Ashley High School in Wilmington, NC, and win other great prizes!



The Science Behind Nature's Protein Drink

Strengthen Your Student Athletes' Recovery Routine with Lowfat Chocolate Milk

It was the combination of carbohydrates and protein that first made researchers take notice of the potential exercise benefits of lowfat chocolate milk. Following are select findings from research on the benefits of milk as part of a post-workout recovery routine.

Recovery and Performance

- A study conducted at Indiana University found that endurance-trained cyclists who drank lowfat chocolate milk after an intense period of cycling were able to work out longer and with more power during a second exercise period compared to when the same athletes drank a commercially available carbohydrate replacement drink, and just as long as when they consumed a traditional fluid replacement drink. The researchers concluded that *"chocolate milk, with its high carbohydrate and protein content, may be considered an effective alternative to commercial fluid replacement drinks and carbohydrate replacement drinks for recovery from exhausting, glycogen-depleting exercise."*¹
- In another study, after an initial exercise period and subsequent recovery period, cyclists were able to cycle longer after drinking chocolate milk than after drinking a carbohydrate replacement drink with the same number of calories (51% longer) and a fluid replacement drink with the same amount of fluid as the carbohydrate drink (43% longer).²
- Replacing muscle fuel (glycogen) after exercise is essential to an athlete's future performance and recovery. A recent study found that drinking 16 ounces of fat-free chocolate milk with its mix of carbohydrates and protein (compared to a carbohydrate-only sports drink with the same amount of calories) led to greater concentration of glycogen in muscles at 30 and 60 minutes post exercise.³

Muscle Repair and Recovery

- In a study of 13 male college soccer players, post-exercise consumption of lowfat chocolate milk was found to provide equal or possibly superior muscle recovery compared to a high-carbohydrate recovery beverage with the same amount of calories.⁴
- One study found that active adults who drank fat-free milk after resistance exercise experienced greater support for muscle gain compared to the same adults who drank a soy protein beverage. While both beverages promoted muscle maintenance and gain, muscle promotion occurred more rapidly and in greater amounts after drinking milk.⁵

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- In a study of healthy, untrained men, those who consumed fat-free milk after exercise gained more muscle and lost more body fat at the end of a 12-week training program than those who drank a soy protein beverage or a beverage containing only carbohydrates. All three beverages had the same amount of calories. A second study found similar results for women.^{6,7}
- Several studies have shown that drinking lowfat milk after resistance exercise helps with protein metabolism and may increase lean muscle tissue.^{8,9,10}
- Another study found that people who drank reduced-fat regular or flavored milk after a strenuous muscle workout experienced less exercise-induced muscle damage than those who drank water or typical sports drinks.¹¹
- Athletes risk muscle breakdown following exercise when the body's demands are at their peak. In a recent study, researchers found that drinking fat-free chocolate milk after exercise helped decrease markers of muscle breakdown compared to drinking a carbohydrate sports drink.¹²

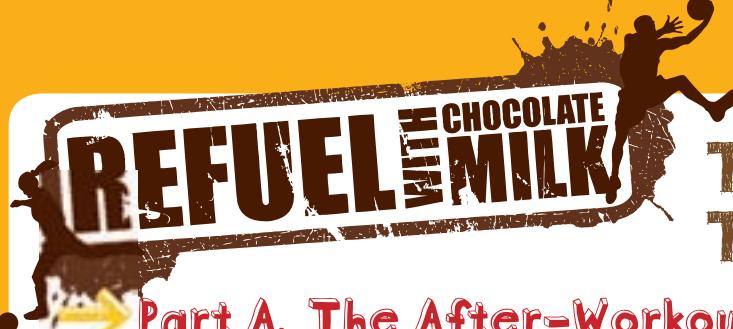
Rehydration and Electrolyte Replenishment

- Milk may be especially effective as a post-workout rehydration drink due to the mix of nutrients it contains. According to a Position Statement by the National Athletic Trainers' Association, rehydration beverages should include water, carbohydrates, and electrolytes—a nutrition profile that closely matches milk.¹³
- Research has shown that drinking lowfat or fat-free milk after exercise could restore and maintain hydration better than other popular post-exercise beverages. The study compared the rehydration effectiveness of four beverages: lowfat milk, lowfat milk with added sodium, water, and a sports drink. After an exercise session in a warm climate, participants were given one of the four test beverages, and researchers measured hydration status. They found that milk may be more effective than water or sports drinks at restoring and maintaining normal hydration status after exercise, likely due to milk's electrolyte content and energy density.¹⁴
- In a second study, the same researchers found that drinking fat-free milk after a period of exercise-induced dehydration restored fluid balance better than a commercial sports drink.¹⁵
- Drinking milk after exercise can help replace electrolytes—including calcium, potassium, and magnesium—that are lost in sweat. Some research suggests rigorous exercise could cause substantial losses of calcium, which may increase the risk of stress fractures.^{16,17,18}

Visit milkdelivers.org/refuel for the latest updates on the science of chocolate milk and recovery.

For more information, visit milkdelivers.org/refuel





The Workout's Finished. The Body Isn't.

Part A. The After-Workout Workout

Regardless of which sport or physical activity you're involved in, you probably have your prep routine down pat—including special warm-up exercises and favorite carbs to load up on. But what happens after practice or when the game's over? Experts will tell you that what you do in the two hours after a tough workout is every bit as important as what you do to prep. In fact, that 2-hour recovery period is critical, because that's when you need the right fuel to rebuild your muscles and refuel your body, and the right post-workout plan to help your body recover.

Cool-Down Exercises

Cool down your body to help recover for the next day. Cooling down should include:

- 5-10 minutes of light aerobic exercise such as jogging or walking to lower your heart rate and body temperature and to remove waste products such as lactic acid from your muscles, followed by
- 5-10 minutes of stretching exercises to help your muscles relax and re-establish their normal range of movement. Stretches should be held for approximately 10 seconds. Stretching exercises include the bicep wall stretch, lying stretch, toe grab, and lying neck pull. But whichever stretching exercises you do, the important thing is to do them correctly. (Ask your coach for a quick review to make sure you're using the correct techniques.)



Post-Workout Nutrition

Staying hydrated—before, during, and after physical exercise—is always important, so be sure to drink plenty of water. But you need more than water to recover *after* strenuous exercise. Athletes need:

- **Carbs** to refuel your muscles.
- **Protein** to help reduce muscle damage and help rebuild your muscles.
- **Fluids and electrolytes** to replenish what's lost when you sweat and to rehydrate your body.



A post-workout best bet: Lowfat Chocolate Milk

Some studies suggest that lowfat chocolate milk may be as effective as other sports drinks. Chocolate milk has the right mix of carbs and protein to help you refuel, high-quality protein to help build muscle, and fluids and electrolytes, including calcium, potassium, and magnesium, to help replenish and rehydrate.

Part B. Make It Routine

Now, let's put it all together. Do you have a regular post-workout routine that you follow during that 2-hour recovery window? It should include:

- Cool-down exercises and stretches, performed in a specific order and for a specific length of time;
- Fluids and nutritious snacks to help your body refuel and recover.

If you already have a routine, great! If you don't have a regular plan—it's time to get started! Either way, use this chart to record what you're currently doing after a game or workout. Then talk with your coach or trainer to see if he or she can help you improve your plan. Note their suggestions in the space provided. Then write up your new and improved post-workout recovery plan, and stick with it for the next 2-3 weeks.

When you're thinking about new snacks, make sure you get the right mix of carbs, protein, and fluids to help aid recovery. Consider fruits and vegetables, whole grains, and protein—like peanut butter and banana

sandwiches on whole wheat bread, or turkey and cheese on multi-grain rolls. And don't forget the lowfat chocolate milk!

Visit bodybymilk.com
to learn more about the
recovery benefits of lowfat
chocolate milk!

My Recovery Routine Now

For cool down:

For nutrition (fluids and snacks):

Coach/Trainer Comments

For cool down:

For nutrition (fluids and snacks):

My New Recovery Routine

For cool down:

For nutrition (fluids and snacks):

Refuel with Chocolate Milk

What you do during that 2-hour recovery window after a hard workout is critical to how well your body is able to recover. And that includes replenishing your body and rebuilding and repairing the muscles that worked so hard to help you perform at your peak.

Part A. The Facts: Chocolate Milk & Recovery

Check out what the latest research says:

→ Milk has high-quality protein and essential amino acids that may be beneficial in **building and maintaining muscle mass** when combined with exercise. Several recent studies suggest lowfat milk after exercise can help **increase lean muscle**.

→ Exercise-induced muscle damage can lead to future impairments in performance. A study in the United Kingdom found that research subjects who drank regular or flavored milk after a strenuous muscle workout experienced **less exercise-induced muscle damage** than those who drank water or typical sports drinks.

→ Chocolate milk is effective in helping athletes **refuel muscles** after a hard workout. A study at Indiana University found that cyclists who drank lowfat chocolate milk were able to work out longer and with more power during a second workout than when they drank a commercially available carbohydrate replacement sports drink and just as long as when they consumed a traditional fluid replacement drink.

→ Drinking lowfat chocolate milk after you exercise can help replace the **fluids and electrolytes**—nutrients like calcium, potassium, and magnesium—that you lose when you sweat. And you can bet you'll be getting plenty of fluid, because milk is 90% water!



REFUEL WITH CHOCOLATE MILK



Part B. Chocolate Milk: It's the Real Deal

You see them on every food or drink you buy, but do you know how to read a nutrition facts panel? Not all sports drinks have the same vitamins and minerals as lowfat chocolate milk. Check it out and draw your own conclusions!

Lowfat Chocolate Milk

Nutrition Facts

Serving Size 1 cup (8 oz)	
Amount Per Serving	Calories from Fat 20
Calories 160	% Daily Value*
Total Fat 2.5g	4%
Saturated Fat 1.5g	8%
Trans Fat 0g	0%
Cholesterol 15mg	4%
Sodium 150mg	6%
Potassium 370mg	11%
Total Carbohydrates 26g	8%
Dietary Fiber 1g	4%
Sugars 25g	
Protein 8g	
Vitamin A	10%
Vitamin C	0%
Calcium	30%
Iron	0%
Vitamin D	25%
Riboflavin	20%
Niacin**	10%
Vitamin B-12	13%
Phosphorus	20%
Magnesium	7%

Important
Electrolytes

Nutrients
to Refuel

Important
Electrolytes

Sports Drink

Nutrition Facts

Serving Size 1 bottle (20 oz)	
Amount Per Serving	Calories from Fat 0
Calories 160	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 240mg	10%
Potassium 90mg	2%
Total Carbohydrates 39g	12%
Dietary Fiber 0g	0%
Sugars 32g	
Protein 0g	
Vitamin A	0%
Vitamin C	4%
Calcium	0%
Iron	2%
Vitamin D	0%
Riboflavin	0%
Niacin**	6%
Vitamin B-12	0%
Phosphorus	6%
Magnesium	0%

*Percent Daily Values are based on a 2,000 calories diet. Your Daily Values may be higher or lower depending on your calorie needs.

**Provided through Niacin equivalents.

These nutrition facts labels are for educational purposes and not actual labels. Data from USDA National Nutrient Database for Standard Reference, Release 22.

Lowfat Chocolate Milk: A Nutrient Powerhouse

Take a look at how the unique package of nutrients in milk can benefit you:

- The right mix of **carbohydrates and protein** to help build and refuel muscles (restore muscle glycogen).
- **Electrolytes**, including **calcium, potassium, and magnesium**, to replenish what is lost in sweat.
- **Fluids** to help rehydrate the body.
- **Calcium** and **vitamin D** to strengthen bones and help reduce the risk of stress fractures.
- **B vitamins** to help convert food to energy.
- Packed with **nutrients** not typically found in traditional sports drinks.



Final score? Chocolate milk has the right mix of carbs and protein and other important nutrients to help you refuel and recover. Ask your coach to stock up after every event, grab some from the cafeteria, or make a quick stop for chocolate milk on your way home from school. Better yet, have some at home in the fridge ready to gulp down!

Visit
bodybymilk.com
to learn more about the
recovery benefits of lowfat
chocolate milk.



Perform Your Best

Staying in top shape and maintaining your overall health and fitness is a 24-7 job!

Of course, training and practice are key to being fit. But your body also needs proper nutrition, hydration, and rest. And that includes making sure you eat the right kinds of foods and the right amounts of food.



Part A. Healthy Eating Tips for Athletes

- **Eat a variety of foods.** Different foods contain different types of nutrients, so you need to eat a variety of foods to get everything you need to stay in top condition.
- **Don't skip meals.** Eating regular meals provides a steady and balanced source of the nutrition you need to ensure you'll be at your best.
- **Eat healthy snacks.** Because you're an active teen, you may need small, healthy between-meal snacks to maintain your energy level.
- **Drink plenty of fluids.** Don't wait until you are thirsty to start drinking water and other fluids. And be sure to drink even more fluids when it's hot and humid.
- **Eat for energy before exercise.** Eat a light meal that's high in carbs two to three hours before exercise. Foods that are high in carbs—like pasta, rice, and fresh fruit—will provide fuel for your muscles. Avoid sugars and sweets such as sodas and candy before your workout.
- **Eat to refuel and recover after strenuous exercise.** Grab a drink and/or a snack that includes carbs, protein, and fluids—such as lowfat chocolate milk—within the first 2 hours after a tough workout or game.

Part B. Smart Food Choices

Smart food choices can be as simple as a few food swaps. Follow these guidelines to make healthy food choices—after a workout and throughout the day!

Choose This...

- Lowfat chocolate milk
- Whole grain bread
- Lowfat yogurt and fruit
- Lean meat and lowfat cheese
- Fresh vegetables (carrots, broccoli, celery, etc.)



Instead of This...

- Sodas and sports drinks
- White bread
- Toaster pastry or donut
- High fat meats
- Candy and chips



And You Will Get...

- A beverage that's packed with 9 essential nutrients, including protein and B vitamins to help convert food to energy
- A healthy carb and fiber boost
- A healthy combination of carbs, protein, and essential nutrients
- A lean source of protein to help build muscle
- A healthy snack packed with fiber, vitamins, and minerals



Why Milk?

Drinking lowfat or fat-free milk for a change can help you make a difference in your fitness and your body. It's a natural source of high-quality protein, which, when combined with exercise, can help **build** lean muscle. It also has the right mix of carbohydrates and protein to **refuel** and fluids and electrolytes to help **replenish** after exercise.

So eat right, get active, and drink three glasses of milk a day to be at the top of your game!



The Workout's Finished. The Body Isn't.

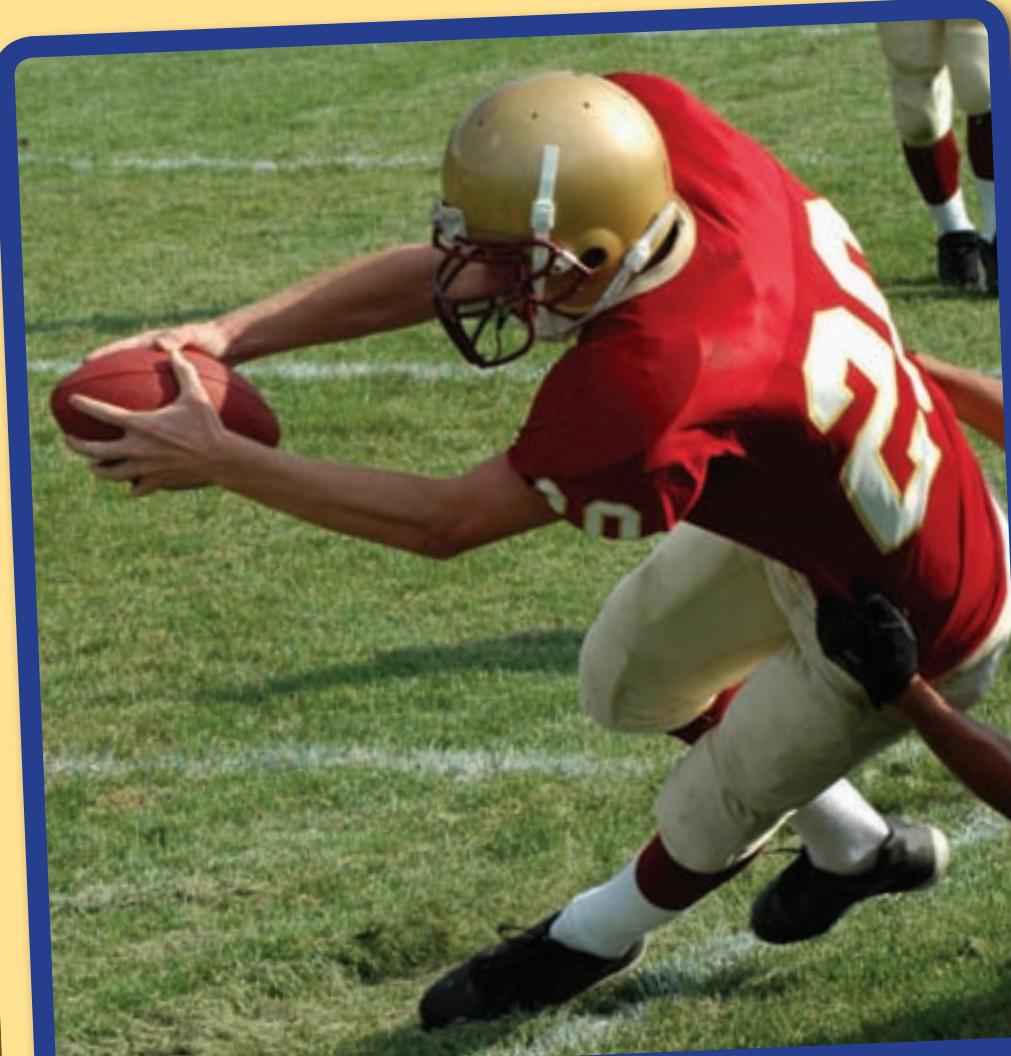
Lowfat chocolate milk has essential nutrients your body needs after a workout.



The right mix of high quality **protein** and **carbohydrates** to help build and refuel muscles (restore muscle glycogen).



Fluids and **electrolytes**, including **calcium**, **potassium**, and **magnesium**, to rehydrate and replenish what's lost in sweat.



Calcium and **Vitamin D** to strengthen bones and help reduce the risk of stress fractures.



B vitamins to help convert food to energy.

Did You Know???

→ Many of today's top professional and collegiate coaches, trainers, and athletes advocate for chocolate milk as a post-exercise recovery beverage.



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Visit
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chocolate milk.

got milk?