



DELAWARE 4-H

Healthy Living

SPORTS NUTRITION

GOALS

To learn key concepts of building muscle, burning fat and the role different nutrients play in activity. Participants will increase knowledge of nutrition and exercise for athletes.

SUPPLIES

- This sheet of paper
- Fitness dice
- Beach ball with numbers 1-10
- Question and answer sheet attached

TIME REQUIRED

15-30 minutes

SUGGESTED AUDIENCE

Ages 8 and up

MUSCLE FIBER EXPLANATION

People have two general types of skeletal muscle fibers: slow-twitch (type I) and fast-twitch (type II). Slow-twitch muscle fibers help with long-lasting activity such as distance running, while fast-twitch muscles get tired faster but are used in powerful bursts of movements like sprinting. Fast-twitch muscles break down into two categories: moderate fast-twitch and fast-twitch. Moderate fast-twitch muscles are thicker, quicker to contract, and wear out faster than slow-twitch. Fast-twitch, the most powerful but lowest in how long they last when working, are activated when the body nears its most effort.

There are important benefits to working to the point of temporary tiredness and therefore making sure fast-twitch fibers are used. For instance, if you're looking to increase muscle mass, and improve strength, using fast-twitch fibers is the only way to do it. On the other hand, aerobic exercises, those that mainly use slow-twitch fibers, can increase stamina and the oxygen capacity of your muscles.

Slow-twitch muscles use oxygen carried by blood as their energy source. On the other hand, fast-twitch fibers are powered by glycolysis, which is the process of using stored glucose for energy. This occurs because fast-twitch fibers are so fast they can't use oxygenated blood fast enough, so they must depend on glucose already available in the body.

Fast-twitch muscle fibers burn more fat during and after your exercise. Your muscles must rely on stored glucose for energy, so they tap into your fat stores. A workout that uses mainly fast-twitch fibers is a more intense workout because it requires you to exert power and speed. As a result, it releases more fat-burning hormones during your workout and causes your body to continue burning fat for eight hours after your exercise. Workouts such as aerobics and general strength-training exercises that use slow-twitch fibers only boost your metabolism for an hour after your workout.

Thank you for participating in this fun activity!



Cooperative Extension

COLLEGE OF AGRICULTURE &
NATURAL RESOURCES

For information on booking 6-10 hours for your club or students, visit our website at <http://extension.udel.edu/4h>. Or call your County Cooperative Extension Office.



Our thanks for supporting DE 4-H
"Youth Voice, Youth Choice"
building healthy communities
through engaged youth!



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SPORTS NUTRITION PROCEDURE AND QUESTIONS

PROCEDURE

1. Spread students out in a large room.
2. Read aloud the Muscle Fiber Introduction to the students.
3. Throw the numbered beach ball to a student.
4. Have student answer question of the number their thumb lands on.
5. If answered wrong, have student ask for help of other students in the class.
6. If still unable to answer the question have students roll fitness dice.
7. Repeat until each question is answered correctly.

REFLECT: Ask Youth

1. What did you learn about the roles protein plays in building muscle?
2. What did you learn about the role of carbohydrates and fats in exercise?
3. What did you learn about the best types of exercises used to burn body fat?

APPLY: Ask Youth

1. How will you use this information to help you become a more capable athlete?

QUESTIONS & ANSWERS:

1. What types of muscle fibers do you use while completing heavy lifting exercises or while sprinting at full speed?
ANSWER: Fast-twitch muscle fibers
2. What types of muscle fibers do you use when you are running for a long distance?
ANSWER: Slow-twitch muscle fibers
3. What types of muscle fibers are best to work in order to burn body fat?
ANSWER: Fast-twitch muscle fibers as it will help speed up your metabolism
4. What nutrient is the main source of energy for the body?
ANSWER: Carbohydrates
5. What nutrient is the second source of energy for the body?
ANSWER: Fat
6. What is the nutrient that helps you rebuild and replenish your muscles?
ANSWER: Protein
7. What makes up protein, and is responsible for signaling muscle cells to increase protein synthesis?
ANSWER: Amino acids
8. How many calories must you burn in order to loose 1 pound?
ANSWER: 3,500 calories
9. What nutrients affect fluid balance and are needed for our nerves and muscles to function?
ANSWER: Electrolytes (potassium and sodium are the most common)
10. Name a food that is protein rich and will contribute towards muscle recovery?
ANSWER: Steak, Skinless chicken breast, Tofu, Eggs, etc.