Section 3

Purpose

In Section 3 students will learn more about physical activity and its role in maintaining a healthy body weight. There is an overview of different types of exercises and the benefits of each, as well as descriptions of fitness equipment for each type of exercise. This section reviews exercise recommendations for teens and includes several interactive ways to help students determine which physical activities they would enjoy.

Equipment and Materials Needed

- Reserve the computer lab. You will need one computer for each student.
- Earphones are recommended.
- Have the students' passwords to the website.

Procedure

- **Before class**: Make sure the computers are functional and the website is open for the students to login.
- **During class**: Use the supplemental content to answer any questions that the students may have about the content.
- **At the end of class**: Help the students successfully log off and answer any questions they may have.

Supplemental Content

A. Types of Physical Activity

United States National Guidelines recommend that adolescents engage in physical activity for a minimum of 60 minutes most days (United States Department of Agriculture, 2005). For the child with type 2 diabetes, regular physical activity may help to achieve a healthier body weight; for the child with type 1 diabetes care should be taken to prevent hypoglycemia (US Department of Health and Human Services, 2006). Blood glucose taken before exercise and after exercise will guide use of carbohydrate intake to regulate blood glucose.

B. Fitness Equipment

Children don't need special equipment to be physically active. However, examples are provided of equipment used for aerobic exercise, strength training, and balance.

C. Working Out
Physical Activity and Diabetes

A person with Type 2 diabetes should consult with their physician before they start an exercise program for an evaluation of their glycemic control both at rest and after exercise, cardiovascular status, physical limitations, and the presence or severity of neuropathy, retinopathy, and nephropathy. Exercise is beneficial to people with diabetes as it improves weight loss, improves insulin action, improves lipid profile, and improves cardiac function.

Exercise is a useful adjunct to dietary changes for maintaining weight loss. Individuals who are obese and have Type 2 diabetes may not be able to lose weight with only physical activity and will have to combine it with medical nutrition therapy for successful weight loss. Most individuals with Type 2 diabetes experience a decrease in their blood glucose after exercising but this effect is transient. Thus, to maintain the beneficial effect of exercise, it should be performed consistently at least every two to three days.

Aerobic Activity

Aerobic activities include bicycling, brisk walking, dancing, housework, jogging, lawn work, running and swimming. These activities help to make both heart and lungs stronger. The American Diabetes Association recommends 150 minutes per week of moderate intensity aerobic activity for those with diabetes. Moderate intensity activity is defined as 50-70 percent maximal heart rate. Maximal heart rate is determined by the equation \(220 \text{ minus age in years} = \text{maximum heart rate}\). The duration of exercise regimens depends on the individual's fitness levels, health and medical status, age and their own goals. Individuals who are just starting to exercise may only start with 10 minutes per session whereas others may reach 60 minutes of activity. The positive effect of aerobic exercise on glucose control, glucose tolerance, and insulin sensitivity in subjects with Type 2 diabetes is reported in many studies.

Resistance Training or Strength Training

Resistance training includes activities like curl-ups, leg lifts, machine workouts, and weight lifting. These type of activities tone muscles but do not work the heart and lungs as much as the aerobic activities. Strength training has a positive effect on the general fitness of those with diabetes as well as on glucose control and insulin action. Thus, the American Diabetes Association and the American College of Sports Medicine recommend a combination of both strength training and aerobic exercise for those with diabetes.

C. Fun Physical Activity for Daily Life

Physical activity doesn't have to mean going to a gym. Everyday life has plenty of opportunities for being active. The key to staying physically active is to find those activities that you enjoy doing.
As children become older, physical activity often declines. This is especially true for girls. Children who are heavier also may avoid physically active activities. Children who are not athletic may also avoid being active. Non-competitive games may be a better choice for some children, while others prefer some competition, even if it is with themselves.

D. Take a Walk

Walking is non-competitive, individual-type activity. Children need to be safe while walking, however. Many schools have participated in the Kids Walk to School programs sponsored by the Center for Disease Control and Prevention (CDC). According to their website (http://www.cdc.gov/nccdphp/dnpa/kidswalk/)

The goals of Kids Walk to School are to

- Encourage children to walk and bicycle to and from school.
- Increase awareness of the importance of regular physical activity for children, improved pedestrian safety, and healthy and walkable community environments.
- Mobilize communities to work together to create safe routes to school.

Anticipated benefits of the Kids Walk to School program include

- Increased levels of daily physical activity for children.
- Increased likelihood that children and adults will choose to walk and bike for other short distance trips.
- Improved neighborhood safety.
- Fewer cars traveling through the neighborhood.
- Fewer cars congesting the pick-up and drop-off points at the school.
- Friendlier neighborhoods as people get out and about interacting with one another.

There are selected resources to help schools promote this program on the website as well.

E. Hot Trips

This section allows the children to see how many steps or miles favorite destinations are from each other. It does require the children to know the addresses of their destinations if it is not a "known" spot. For instance, parks or restaurants can be searched for, but "home" could not. Some advance preparation may be needed.

Supplemental Activity Online: Have students visit the Fun Place for games and activities to re-enforce concepts, especially HOT Reviews for diabetes and physical activity, and HOT Trips.
Supplemental Activity Offline: Discuss or have students research how the heart and lungs work together. Have students identify activities they are already doing, would like to do, or plan to do. Discuss how physical activities may change with the season.