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Physical Activity and Diabetes



Physical Activity Is Like Magic for Type 2 Diabetes



What Can Physical Activity Do For You?

- Give you more energy



What Can Physical Activity Do For You?

- Help you lose weight and keep it off



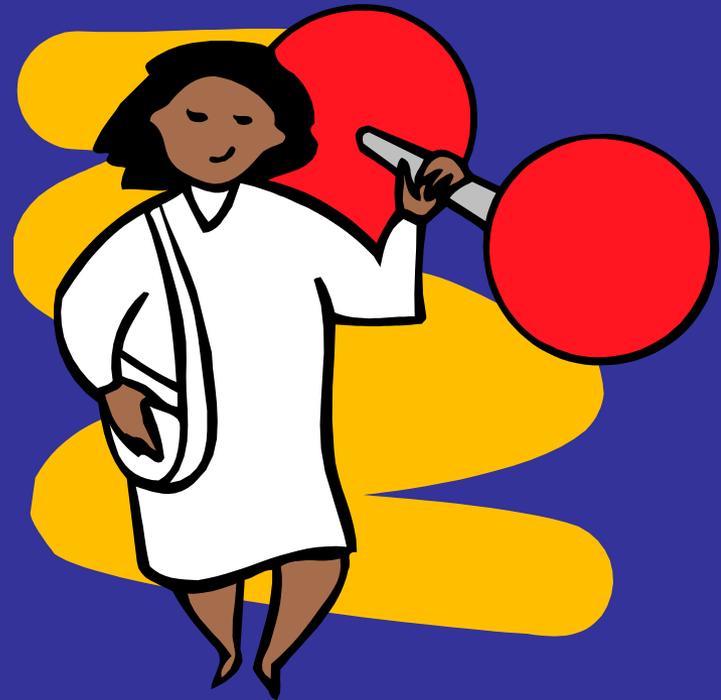
What Can Physical Activity Do For You?

- Increase flexibility and strength
- Slow bone loss
- Provide better quality of life



What Can Physical Activity Do For You?

- Build muscle



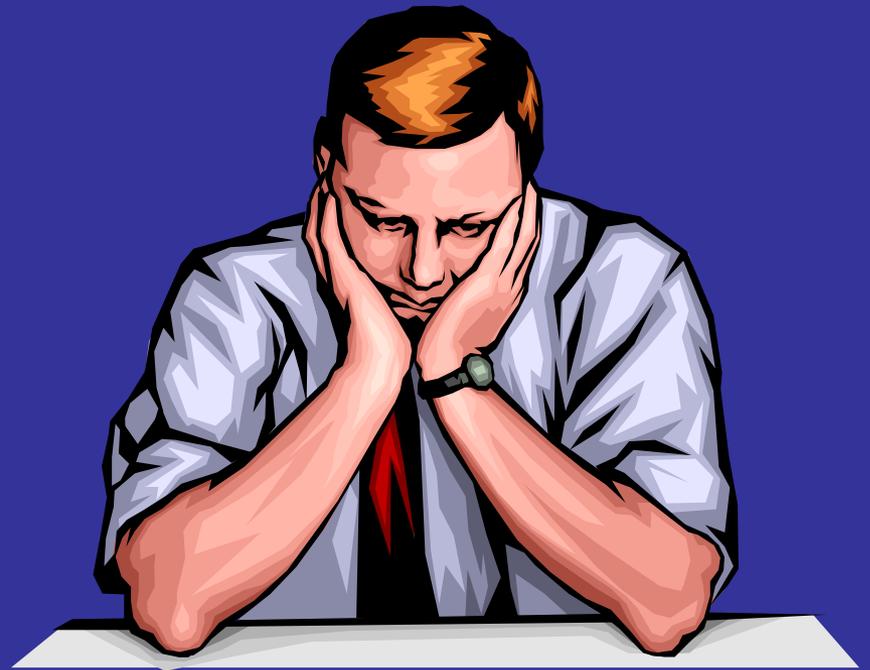
What Can Physical Activity Do For You?

- Improve your sex life



What Can Physical Activity Do For You?

- Lift your mood
- Treat depression



What Can Physical Activity Do For You?

- Reduce stress and anxiety



What Can Physical Activity Do For You?

- Improve blood glucose control (lowers A1C)



Physical activity lowers blood glucose in type 2 diabetes by helping:

- muscle cells become more sensitive to insulin
- keep the liver from producing too much glucose
- build more muscle
- you lose weight and keep it off



What Can Physical Activity Do For You?

- Keep your heart healthy



Physical activity helps your heart by:

- Strengthening heart muscle
- Lowering resting heart rate
- Lowering blood pressure
- Improving cholesterol
- Reducing risk of heart attack and stroke



“Sitting” through life increases your risk of:

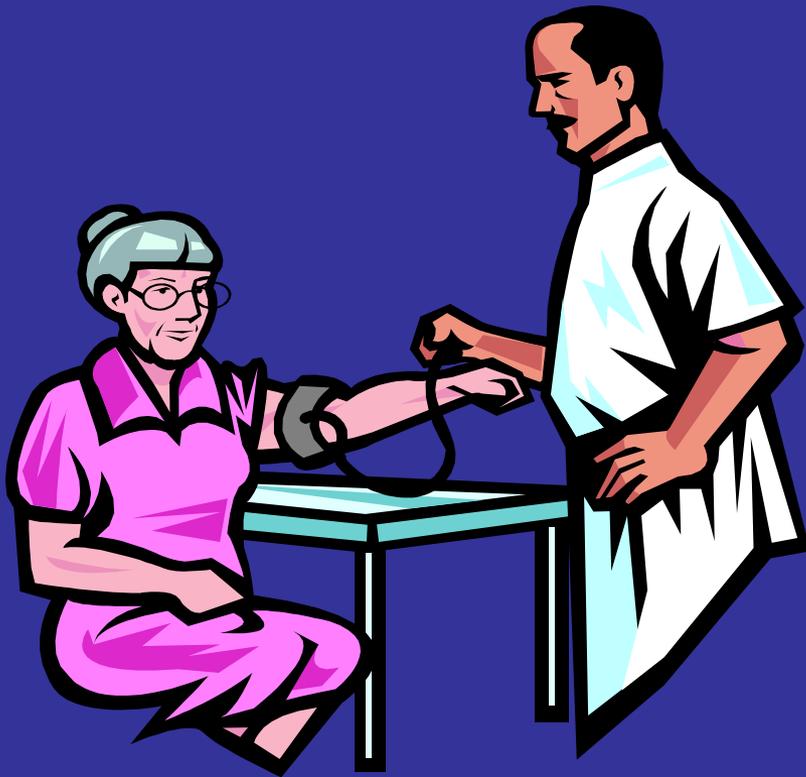
- heart disease
- high blood pressure
- high cholesterol
- overweight
- type 2 diabetes



We now must plan physical activity into our schedule



Getting Started



- Check with your doctor if you:
 - Are over age 35
 - Have had diabetes more than 10 years
 - Have high blood pressure, heart disease, poor circulation, or other diabetes complications

Aerobic Activity

- Walking briskly
- Dancing
- Bicycling
- Hiking
- Jogging/running
- Skating
- Stair climbing
- Swimming
- Water exercise



Resistance Activities

■ *“Push, Pull, and Lift”* Activities

- increase muscle strength
- prevent falls
- increase mobility
- improve blood glucose control



Stretching

- Improves your balance and coordination
- Makes you more flexible
- Reduces stiffness
- Reduces your risk of injury



How Can You Begin?

- Choose activity (example: brisk walking)
- Set a long-term goal - at least 30 minutes a day, 3-5 days a week
- Buy comfortable walking shoes
- Get a partner



Start Slowly

- Set short-term goal for one week
- Do less than you think you can

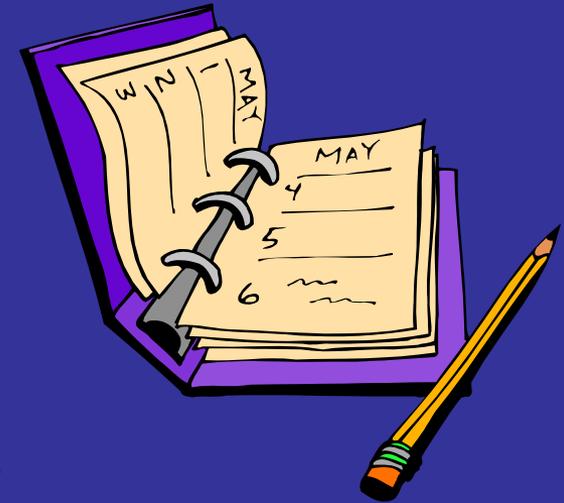


Gradually Increase Activity

Beginning Exercisers:

First Week - 3 times a week

- **Morning:** Walk 5-10 minutes
- **Lunch:** Walk 5-10 minutes
- **After dinner:** Walk 5-10 minutes



Keep track of how long and how far you walk
each day

Keep Track of Your Steps

Use a pedometer

- Keep track of how many steps you normally take in a day for one week
- Gradually add 500-1,000 steps a day
- Set a goal of at least 3,000 to 4,000 steps more than your baseline



Vary Your Activities

Monday	Tuesday	Wed	Thursday	Friday
Walk	Swim/ Water Aerobics	Walk	Swim/ Water Aerobics	Walk

Monday	Tuesday	Wed	Thursday	Friday
Exercise bike	Dance class	Exercise Bike	Dance Class	Exercise Bike

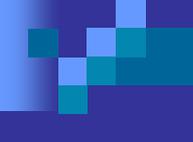
Keep A Record of Physical Activity

	Breakfast			Lunch			Activity
	Pre BG	Post BG	Carb (g)	Pre BG	Post BG	Carb (g)	
Sun	211	220	75	79	120	68	<i>Walked 30 min at 10:00am</i>
Mon	123		70		138	85	<i>Vacuumed 20 min at 4:00 pm</i>
Tues	115		72		170	68	<i>None</i>

Reward Yourself

- Use non-food rewards for reaching goals such as:
 - New book
 - Ticket to a play or ballgame
 - New clothes or walking shoes
 - Bubble bath
 - Get-away weekend





Beginning A Physical Activity Plan

- Type of activities
- List your long-term goal
- List your goal for first week

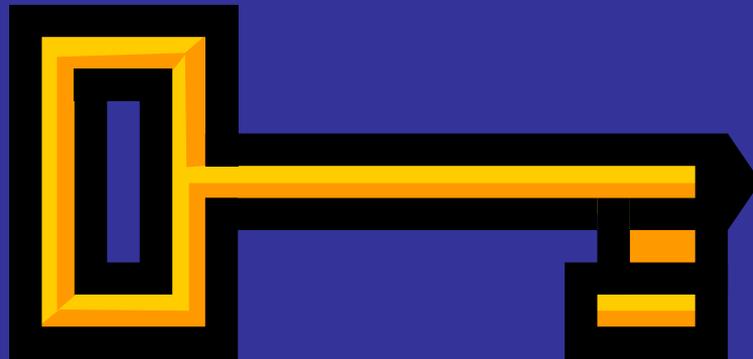
Effect of Physical Activity on Blood Glucose

- Depends on:
 - your blood glucose level before you exercise
 - diabetes medication
 - when and how much you ate last
 - your physical fitness
 - type of activity



Effect of Physical Activity on Blood Glucose

- Blood glucose checks before and after exercise are the key



Effect of Physical Activity on Blood Glucose



- Physical activity usually lowers blood glucose



- Physical activity can raise your blood glucose if:
 - your BG is >250 mg/dl before your exercise and you have ketones
 - *you're starting a new vigorous exercise program*

Physical Activity and Low Blood Glucose

- Low blood glucose can result from exercise **only** if you take:
 - insulin
 - oral diabetes medication (pills)
 - sulfonylureas (DiaBeta, Amaryl, Glucotrol, micronase)
 - nateglinide (Starlix) or repaglinide (Prandin)



What Is Happening to Sandra?

- Sandra takes insulin and is walking briskly in her neighborhood in the late afternoon. She becomes shaky, is unable to think clearly, and has changes in her vision.



What should Sandra do?

Treatment for Low Blood Glucose

Equal to about 15 grams
of carbohydrate:

- ½ cup fruit juice
- ½ cup soft drink (not diet)
- 3 glucose tablets
- 8 Lifesavers



Physical Activity and Hypoglycemia

- More common **after** physical activity
- Body is replenishing stored carbohydrate (glycogen)



Check your blood glucose after you exercise

How Can Sandra Prevent Low Blood Glucose Next Time?

Adjust Insulin

- For planned, regularly scheduled physical activity



Eat Snack

- For unplanned physical activity
- When exercising for an extended period of time



Check blood glucose before, during, and after exercise

Carbohydrate Snacks for Physical Activity

Intensity	Time (minutes)	Carbohydrate
Mild	Less than 30	May not be needed
Moderate	30-60	15 grams
High	Over 60	30-50 grams

Carbohydrate Snacks for Physical Activity

Examples of 15 gram carbohydrate snacks

- 6 saltine-type crackers
- 1 cup yogurt
- 2 fig bars
- 1 ounce sport or energy bar
- 8 ounces sports drink - ideally with less than 8% carbohydrate

Beware of Too Many Snacks

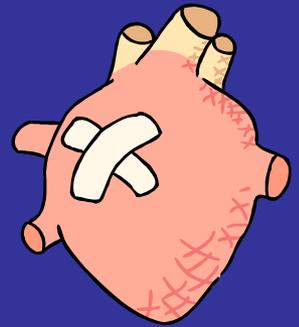
- Avoid routinely eating *extra food if you're trying to lose weight*
 - ask about adjusting your medication dosages
 - change the time of day you exercise



Exercising With Diabetes Complications

- If you have diabetes complications:
 - An exercise stress test is recommended
 - *Don't consider diabetes a barrier to exercise*
 - Most moderate lifestyle activities are safe
 - Some activities may need to be modified

Exercising With Heart Disease



Caution:

- Very strenuous activity
- Heavy lifting or straining
- Exercise in extreme cold or heat

Choose:

- Moderate activity such as walking, swimming, biking, gardening
- Moderate lifting, stretching

Exercising with Hypertension (high blood pressure)



Caution

- Very strenuous activity
- Heavy lifting or straining

Choose

- Moderate activity like:
 - walking
 - weight lifting with light weights
 - stretching

Make sure your blood pressure is in control first

Exercising with Retinopathy (eye disease)



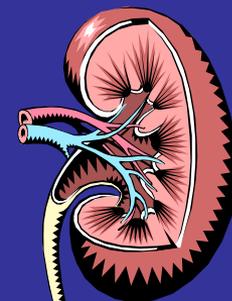
Caution

- Strenuous exercise
- Heavy lifting and straining
- High-impact aerobics, jogging
- Bending your head below your waist – toe touching

Choose

- Moderate, low-impact activities:
 - walking
 - cycling
 - water exercise
- Moderate daily chores *that don't require lifting or bending your head below your waist*

Exercising with Nephropathy (kidney disease)



Caution

- Strenuous activity

Choose

- Light to moderate activity like walking, light housework, gardening, water exercise

Exercising with Neuropathy (nerve disease)



Caution

- Weight-bearing, high impact, strenuous, or prolonged exercise:
 - jogging/running
 - step exercise
 - jumping
 - exercise in heat/cold

Choose

- Low impact, moderate activities:
 - biking
 - swimming
 - chair exercises
 - stretching
 - light to moderate daily activities

Check feet after exercise

Exercise Safely

- Check your blood glucose before and after exercise
- *Don't exercise if your blood glucose is too high or too low*
- Carry carbohydrate to treat low blood glucose if you are at risk



Exercise Safely

- Stop exercising if you feel pain, lightheaded, or short of breath
- Avoid strenuous activity in extremely hot, humid, or cold weather
- Wear proper shoes for the activity to reduce the risk of injury



Exercise Safely

- Wear diabetes identification
- Include warm-up and cool-down sessions
- Drink plenty of fluid



Words of the Wise...

*One step and another step.
I am slow but I am steady.”*

*“One step, another step.
One step and another.
Slow and steady.”*

*“One step and another.
I can do it!”*

*“ I am slow but I am steady.
And I am the winner !”*



The Tortoise in *The Tortoise
and the Hare*

