



Fall, 2011

Message from Cathy

Obesity, heart disease, and diabetes, are three epidemics that we all must take very seriously. The World Health Organization (WHO) predicts that by the year 2030, 10% of the world's population will have diabetes. This is significant.

In today's newsletter we will focus on diabetes to educate you on the risk factors and how you can prevent or minimize the effects of this difficult disease. We hope that the information will inspire you to make positive changes for your health.

Happy Holidays from our family to yours. I wish you and your family good health and happiness this coming year.

Cathy Guenthner PT, President

QUICK FACTS ABOUT DIABETES

- Diabetes is a global epidemic predicted to be the **7th leading cause of death** in the world by 2030. WHO predicts that diabetes deaths will **double** between 2005 and 2030.
- **Cardiovascular disease** is responsible for 50-80% of the deaths in people with diabetes.
- Diabetes is the **leading cause** of blindness, amputation, and kidney disease.
- Type II diabetes is the most common type of diabetes (it accounts for 90% of all diagnosed diabetes) and is **preventable with regular, moderate intensity exercise and a healthy diet**.

WHAT IS DIABETES?

Diabetes is a chronic disease that occurs when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycemia, or raised blood sugar, is a common effect of **uncontrolled diabetes** and over time leads to **serious damage** to many of the body's systems, especially the nerves and blood vessels (World Health Organization 2011).



BIOLOGY BEHIND DIABETES

Normal Role of Insulin

- In those without diabetes, **insulin** assists to expand blood vessels and transport **glucose** (sugar) from the bloodstream to cells of skeletal muscle and other tissues.
- At rest or just after eating, insulin works to pull glucose from the bloodstream to the muscle where it is stored as glycogen. The sugar remains as glycogen until it is called upon by active muscles for energy.

How Diabetes Affects the Role of Insulin

- When insulin is either not produced in the body (Type I) or when the effect is rejected by the body (Type II), the ability of glucose to transfer into the cells of skeletal muscle is impaired.
- At rest and after meals, glucose is not able to be delivered to the skeletal muscle for storage.

TYPE I DIABETES

Type I diabetes occurs in 5-10% of diabetics. In Type I diabetes (also known as insulin-dependent or juvenile onset diabetes), there is an **autoimmune destruction** of pancreatic beta cells which are responsible for the secretion of insulin. With this type of diabetes, daily administration of insulin is required. Currently there is **no cure or way to prevent this disease**. Symptoms include excessive excretion of urine, thirst, constant hunger, weight loss, vision changes, and fatigue. These can start suddenly.

TYPE II DIABETES

Type II diabetes accounts for **90% of all diabetes cases worldwide** and occurs when the body is unable to utilize insulin effectively. Type II diabetes is primarily a result of excessive body weight and inactivity and is **preventable**. Unfortunately, this is no longer an adult disease and is being diagnosed in **alarming frequency in children**. The symptoms are the same as Type I diabetes but may be less severe initially, making Type II diabetes more difficult to diagnose until complications arise.



RISK FACTORS FOR DIABETES

- Inactivity
- Obese/overweight
- High blood pressure
- Abnormal cholesterol, HDL, LDL
- Women with previous gestational diabetes
- Native American, Hispanic/Latino, Asian, and Pacific Island descent.

EFFECTS OF PHYSICAL ACTIVITY AND EXERCISE ON DIABETES

Physical Activity and Exercise can play a predominate role in the **prevention and management of diabetes**. The way it works is that physical activity causes glucose to be taken up from the bloodstream and is deposited into active muscles, where it is used as the muscle's energy supply. In Type II diabetes, exercise helps **compensate** for the body's inability to transfer glucose into the muscle tissue. Contracting muscle fibers provide a means for this passage to occur. In Type I and II diabetes, this process can help **reduce the amount of insulin required** to process the body's glucose.

In order for these positive changes to occur, exercise must be **regular, consistent, and maintained at a moderate intensity**. **A nutrient-rich diet**, regular aerobic and resistance exercise, and incorporating greater physical activity into tasks of daily living will all play significant roles in helping prevent or manage diabetes.

HOW MUCH EXERCISE IS ENOUGH?

Minimum: **150 minutes per week** of moderate to vigorous aerobic exercise. Exercise can be spread out over **at least 3 days**, with no more than two days in-between.

Resistance: Along with 150 minutes per week of aerobic exercise, those with diabetes will benefit from **moderate to vigorous resistance or weight training** at least two to three days per week.

Optimal: **5 days per week** at least 150 minutes per week of moderate to vigorous exercise, including both aerobic and resistance exercise.

Weight Loss: **Up to 60 minutes per day** may be needed when using exercise alone for weight loss.

Prevention of Type II Diabetes: **At least 2.5 hours per week of moderate** to vigorous physical activity, especially for those at high risk for developing Type II diabetes.



EXAMPLES OF MODERATE AND VIGOROUS ACTIVITIES

Moderate Intensity

- Walking briskly (3 miles per hour or faster, but not race-walking)
- Water aerobics
- Bicycling slower than 10 miles per hour
- Tennis (doubles)
- Ballroom dancing
- General gardening

Vigorous Intensity

- Race walking, jogging, or running
- Swimming laps
- Tennis (singles)
- Aerobic dancing
- Bicycling 10 miles per hour or faster
- Jumping rope
- Heavy gardening (continuous digging or hoeing)
- Hiking uphill or with a heavy backpack

The Borg Rating of Perceived Exertion

The Rating of Perceived Exertion (RPE) is a way to measure physical activity intensity levels. Perceived exertion is how hard you feel like your body is working. It is based on the physical sensations a person experiences during physical activity, including increased heart rate, increased breathing rate, sweating, and muscle fatigue. Although this is a subjective measure, the RPE provides a fairly good estimate of the actual heart rate during physical activity* (Borg, 1998).

*A high correlation exists between a person's perceived exertion rating times 10 and the actual heart rate during physical activity; so a person's exertion rating may provide a fairly good estimate of the actual heart rate during activity (Borg, 1998)

Practitioners generally agree that **perceived exertion ratings between 12 to 14 on the Borg Scale suggests that physical activity is being performed at a moderate level of intensity.**



BORG SCALE

Rating of Perceived Exertion (RPE)	Description	Training Zone	Intensity Level	Aerobic Activity
6	No exertion at all			
7	Extremely light			
8				
9	Light			
10		ENDURANCE TRAINING ZONE	50% HR Max	
11		ENDURANCE TRAINING ZONE		
12	Moderate	ENDURANCE TRAINING ZONE	60% HR Max	MODERATE AEROBIC
13		ENDURANCE TRAINING ZONE		
14			70% HR Max	VIGOROUS AEROBIC
15	Hard	STRENGTH TRAINING ZONE		
16			80% HR Max	
17	Very hard			
18			90% HR Max	
19	Extremely hard			
20	Maximal exertion			

Instructions for Borg Rating of Perceived Exertion (RPE) Scale

During physical activity, rate your perception of exertion using the scale above. Your rating should reflect how heavy and strenuous the exercise feels to you, combining all sensations and feelings of physical stress, effort, and fatigue. Do not concern yourself with any one factor such as leg pain or shortness of breath, but try to focus on your total feeling of exertion. This will give you a good idea of the intensity level of your activity, and you can use this information to speed up or slow down your movements to reach your desired range.



Keys to a successful exercise program

Consistency: It is critical to design your program so that you will be able to keep up with it at **least three days per week**. This means making exercise a part of your **regular routine** so that it will become a permanent part of your life.

Intensity: Exercise needs to include **aerobic activity and resistance or weight** training. It is critical that this exercise be at least at a **moderate intensity** which means getting your **heart rate to 60-80%** of your target heart rate and sustaining that for at least 30 minutes. Moderate to vigorous activity has been described as a brisk walk, one where you feel that it is a little tougher than a leisurely stroll, but still comfortable enough to hold a conversation while walking.

Fun: Do something **you like and will keep up with**. Doing exercise with a friend or group can help with motivation when the doldrums kick in. There are **so many options!** Swimming, biking, running, dancing, exercise classes such as spinning, zumba, or aerobics, yoga, Pilates, and tai chi, just to name a few. Just get started!

WALKING

Did you know that walking is one of the **simplest** ways that we can get ourselves healthy? As a matter of fact, a study done in 2002 on diabetes prevention showed that **walking as little as 30 minutes per day** 5 days a week, **decreases your risk** of diabetes by 58%! That is significant.

How much walking is enough to reach a moderate activity level per day? The answer is surprisingly simple-**10,000 steps per day**. How do we know how many steps we take in a day? An inexpensive **pedometer** is an easy, quick way to develop a baseline (taken over three days) of how many steps you are currently averaging per day. From there you can set a goal to **increase the number of steps** you take each day. You can work on increasing your steps by **2000 per day** and slowly build to that 10,000 mark.

Recommendations for older adults over 65 and for those with chronic illness or disability: **Any increase** in physical activity is beneficial to improving overall health. Goals for walking are modified to **at least 5,500 steps/day** over the course of 5 days.



PEDOMETERS

A pedometer, or step counter, is an **exercise tool** that can be used to record the total number of steps that a person takes in a day. Most often, a pedometer is worn at the hip, where it can be clipped to a waist band or belt, or thrown in a pants or book bag pocket. Pedometers like the ones pictured below can be purchased at numerous sporting goods stores or purchased online, with **reasonable prices** ranging from \$5-\$30. Some of the pedometers on the market are advanced enough to count calories burned and can be plugged into a computer to track progress.



Guenther Physical Therapy is offering a variety of health and wellness classes designed to help you continue to move forward after your therapy, or just improve your overall health and fitness. These classes are offered in the same manner as our therapy services with an emphasis on personalized attention, modification, small classes, and a focus on quality. Please read the enclosed insert describing our classes and times and give us and your health a try!

Healing injuries, restoring lives



GUENTHNER
PHYSICAL THERAPY

CARE™ Approach

At Guenther Physical Therapy, we deliver complete patient healing and restored function to pre-injury levels. For 23 years, we have applied the **CARE™** approach to our work.

Complete **A**ttention

Our patients receive a personal treatment process. We work one-on-one with you to heal your injury.

Results

With one-on-one care, you receive immediate satisfaction and healing.

Experience

At the end of your treatment, you leave with a **positive reaction, healed injury, and restored life.**

