



PURDUE UNIVERSITY NORTHWEST

How to Reduce (Control) Blood Sugar

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Today's Outline

1. Overview of Life's Simple 7
2. Understanding Blood Glucose Levels
3. AHA Recommended Levels
4. Diabetes Mellitus Type I vs. Diabetes Mellitus Type II
5. Dietary Strategies to Control Blood Sugar
6. Physical Activity, Exercise, and Blood Glucose
7. Maintaining Healthy Weight
8. Time for Q & A



Healthy For Good™



More recent CDC data shows that ~37 million have diabetes and ~96 million have prediabetes.

REDUCE BLOOD SUGAR
About 21 million American adults have diagnosed diabetes. That's almost 9% of the adult population.

EAT RIGHT
When you eat a heart-healthy diet you improve your chances for feeling good and staying healthy!

LOSE WEIGHT
Most Americans older than 20 are overweight or obese. About 32% children are overweight or obese.

GET MOVING
About one in every three U.S. adults – 30% – reports participating in no leisure time physical activity.

STOP SMOKING
6% of adolescents aged 12 to 17 report being current smokers. Among adults, 19% of men and 15% of women are smokers.

MANAGE BLOOD PRESSURE
About 80 million U.S. adults have high blood pressure. That's about 33%.

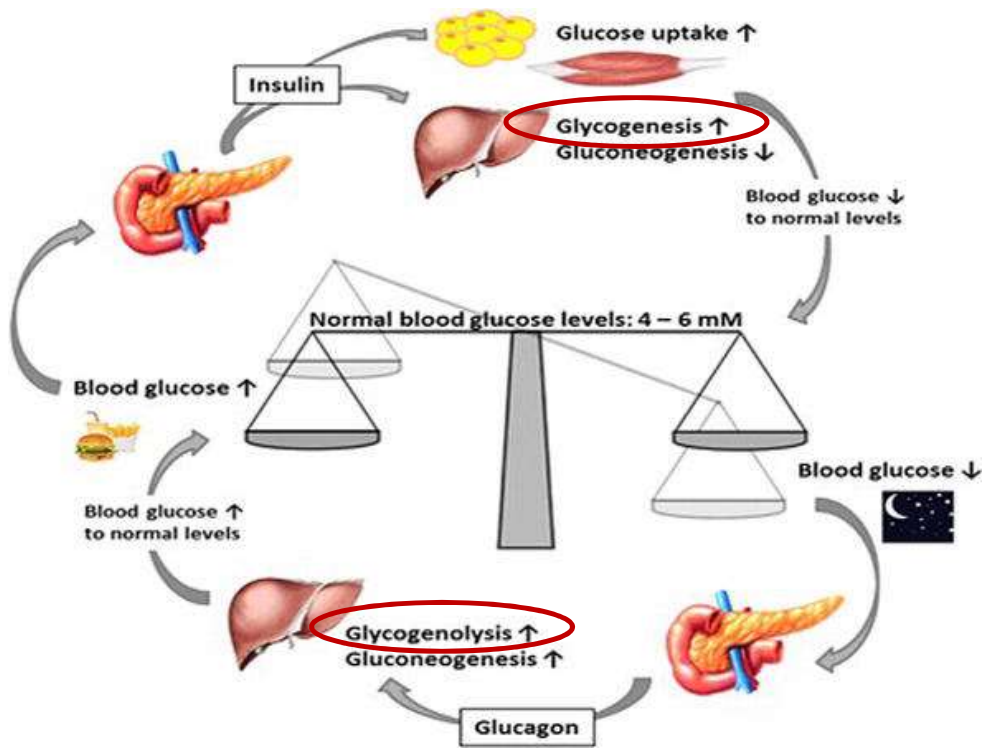
CONTROL CHOLESTEROL
More than 40% of American adults have total cholesterol levels higher than 200 mg/dL.



Get your My Life Check® Assessment now at heart.org/mylifecheck.

*Note that data shown in infographic is from 2017.

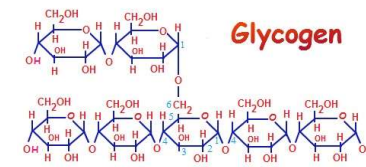
Understanding Blood Glucose Levels



intechopen.com

- Eating, especially consumption of carbohydrates, increases blood glucose

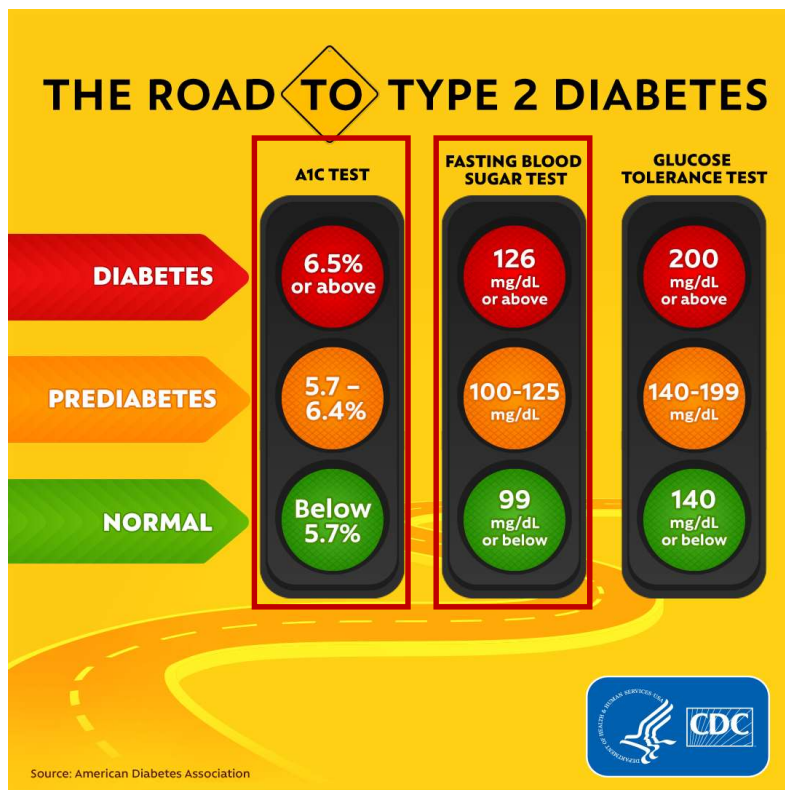
- Glycogen is stored chains of glucose



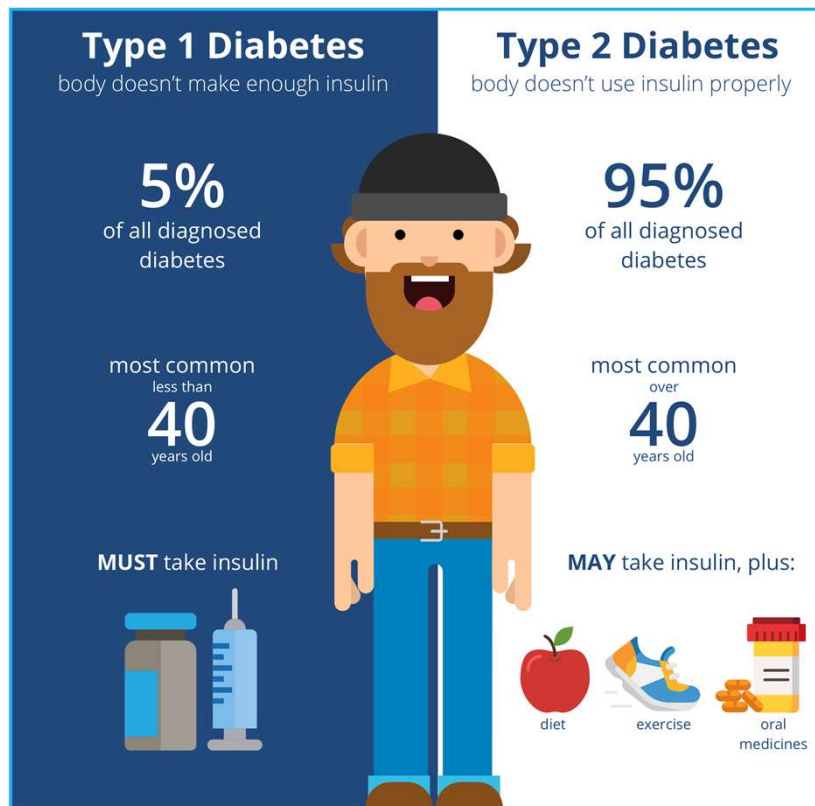
- Lack of eating, or fasting, decreases blood glucose

- Glycogenolysis is breakdown of glycogen

Healthy Blood Glucose Levels According to the AHA and CDC



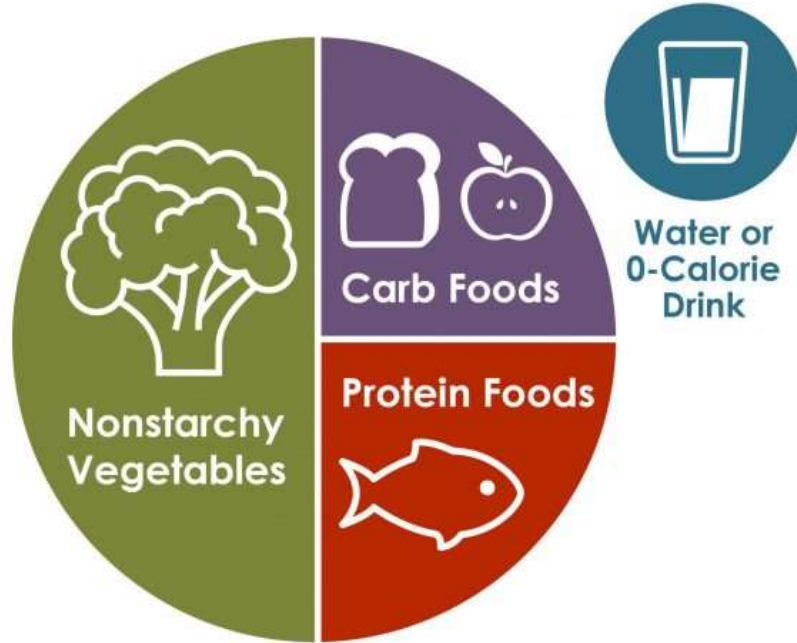
Type 1 vs. Type 2 Diabetes Mellitus



Source:
Centers for Disease Control and Prevention. National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2017. Atlanta, GA: U.S. Department of Health and Human Services; 2017. Accessed from: <https://www.cdc.gov/diabetes/library/socialmedia/infographics.html>

- Type 1 cannot be prevented or cured
- Genetics likely a big factor in Type 1
- Type 2 can be prevented through lifestyle modifications
- Diet, inactivity, and obesity are factors for Type 2

Dietary Strategies to Control Blood Sugar



cdc.gov

Nutrition Facts

Serving Size	½ cup		
Servings per container	4		
Amount per serving			
Calories	250	Fat Cal	120
%DV			
Total Fat	13g		20%
Sat Fat	9g		40%
Cholesterol	28mg		12%
Sodium	55mg		2%
Total Carbohydrate	30g		12%
Dietary Fiber	2g		
Sugars	23g		
Protein	4g		8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

Mediterranean Diet to Control Blood Sugar



Physical Activity and Blood Glucose

Tips for Being Active With Diabetes

How Much Activity?

- Start by doing what you can do, and then look for ways to do more until you reach 150 minutes a week of activity.
- Find the time that works best for you to add up to 150 minutes. For example:
 - 30 minutes at one time five times a week.
 - 15 minutes at a time 10 times a week.
 - 10 minutes at a time several times a day.



Do It Your Way

- Brisk walking is a great way to be active.
- Try dancing, gardening, following a video, or taking a class.
- Be active with a friend or family member.
- Start with 10 minutes a day and build up over time.

Be Safe

- Check your blood sugar before you are physically active.
- Carry a snack with you in case your blood sugar goes too low.
- Carry identification that says you have diabetes.

Physical Activity and Exercise Recommendations

ACSM and CDC Recommendations



150 minutes
of moderate-intensity aerobic activity every week

2X per week
Muscle-strengthening activities on 2 or more days a week that work all major muscle groups



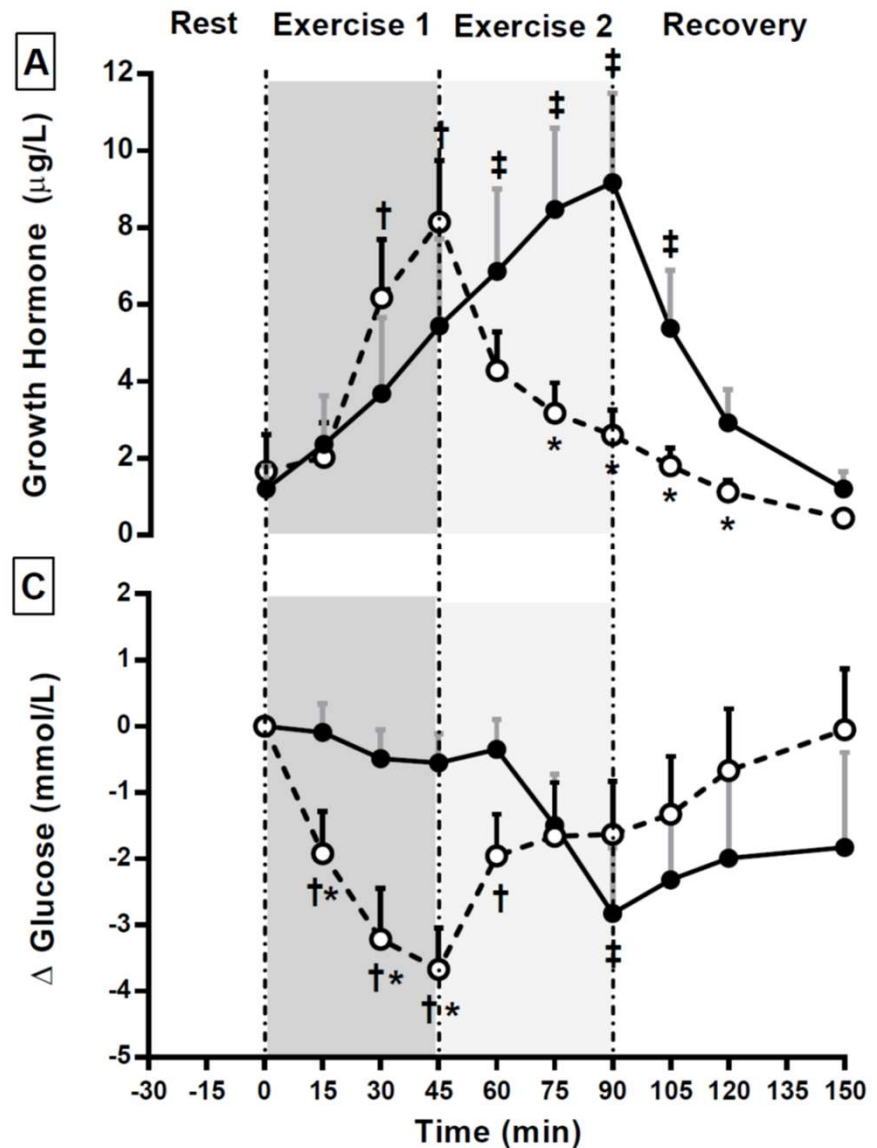
Table 2. The ACSM Guidelines for Resistance Training (2010)

Frequency	Intensity	Repetitions	Sets	Type
2-3 days/week with at least 48 hours rest for the same muscle groups	Moderate to hard; the last repetition should be difficult	8-12 (healthy adults) 10-15 (older adults)	2-4, with a rest interval of 2-3 minutes between sets	Multi-joint exercises using more than one muscle group. (May also include single-joint exercises.)

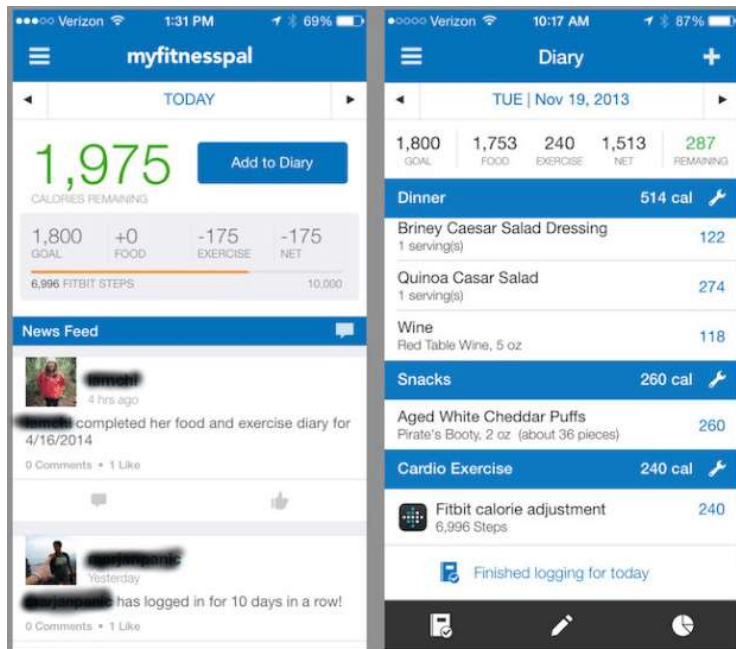
Combined Resistance and Aerobic Training Tips

Jane Yardley et al., *Appl Physiol Nutr Metab.*
2014 Feb;39(2):262-5.

AR is in open circles
RA is in solid circles



Maintaining Healthy Weight



1 KEEP TRACK

Understanding how many calories you take in and your activity level can help you identify changes you want to make. To lose weight, you need to burn more calories than you eat.



REDUCE CALORIES IN:

Keeping track of what and how much you're eating can help you know whether you're eating out of habit, stress or boredom instead of real hunger.



INCREASE CALORIES OUT:

An activity tracker can help you learn how much physical activity you currently get.

2 LEARN YOUR BMI



Body Mass Index (BMI) is a numerical value of your weight in relation to your height. It can help you know whether you're at a healthy weight or need to lose weight.

3 TIPS FOR SUCCESS

Goal setting and making small changes can help set you up for success.



CONTROL PORTIONS

Learn about portion sizes and how much you might really be eating.



GET ACTIVE

Find 30 minutes in your day to get physically active! You can get health benefits even if you split it into two or three 10- to 15-minute segments a day.



EAT SMART

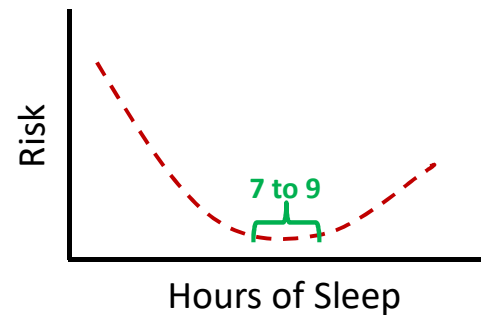
Follow a healthy eating pattern that emphasizes fruits and vegetables and includes whole grains, low-fat and fat-free dairy products, skinless poultry, fish, lean meat, beans and legumes, and nuts. Limit sugary foods and drinks, fatty or processed meats, salty foods, and highly processed foods. Make smart substitutions when cooking, snacking and dining out.

Review of Controlling Blood Glucose

1. What is a “normal” fasting blood glucose according to AHA?
2. What is a “normal” hemoglobin A1c percentage?
3. What percentage of a plate should be from carb rich foods?
4. Adults should get at least _____ minutes of aerobic activity per week and at least ___ days of resistance exercise.

Normal Sleep vs. Sleep Deprivation

- Normal sleep is 7 to 9 hours per night on a consistent basis



- Sleep deprivation can be one of 3 types:
 - 1) Total sleep deprivation **24-48 hrs.**
 - 2) Sleep restriction **4 hrs. for 3-6 consecutive nights**
 - 3) Sleep fragmentation **repeated awakening during a specific stage**
Poly-somno-graphy needed
 V_E , BP, ECG, EEG, EMG (eye), O_2 sat., actigraphy, etc.



ACSM's Exercise is Medicine® On Campus at PNW

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Background (from exercisemedicine.org)

Exercise is Medicine® On Campus (EIM-OC) calls upon universities and colleges to promote physical activity as a vital sign of health. EIM-OC encourages faculty, staff and students to work together toward improving the health and well-being of the campus community by:

1. Making movement a part of the daily campus culture.
2. Assessing physical activity at every student health visit.
3. Providing students with the tools necessary to strengthen healthy physical activity habits that can last a lifetime.
4. Connecting university health care providers with university health fitness specialists to provide a referral system for exercise prescription.

EIM On-Campus at PNW Team

- Advisor, John J. Durocher, Biological Sciences and IPHS Center
- Healthcare Professional, Jodi Allen, Nursing
- Health Fitness Professional, Tabitha Stills, Athletics
- Student Representative, Colleen Torongian, Graduate Student
- Student Representative, Elijah Walker, Undergraduate Student

ACSM Recommendations

- Moderate Intensity Cardiorespiratory ≥ 150 minutes / week
- Or, Vigorous Intensity Cardiorespiratory ≥ 75 minutes / week
- Resistance Exercise 2-3 days / week for major muscle groups
- Flexibility Exercise ≥ 2 days / week (60s per muscle group)
- Neuromotor Exercise for Balance, Agility, and Coordination

Goals of EIM at PNW

Focus on 4 Pillars of Proactive Health:

1. Physical Activity and Exercise
2. Quality Sleep and Recovery
3. Stress Management
4. Nutrition for an Active Lifestyle

Exercise is Medicine Month at PNW Schedule (April)

- The Purdue University Northwest Provost and Vice Chancellor of Academic Affairs, Dr. Chris Holford, has declared April the Exercise is Medicine Month at PNW. Honors College 5k event in Hammond on April 2.

EIM Month Activity	Leader	Location	Date & Time
EIM at PNW Poster Presentation at the Days of Discovery	John Durocher	Hammond SULB 360	April 7, 12:30-2:30 pm
Extensive Health Benefits of Being Physically Active	Hassan Naji	Westville Dworkin Center	April 13, 10:00-11:00 am
How to Recognize Physical Activity as a Vital Sign	Jodi Allen	Hammond Nils	April 13, noon-1:00 pm
Healthy Eating for Physically Active Adults	Ezra Mutai	Hammond Nils	April 18, noon-1:00 pm
Tips for Stress Management and Better Sleep	John Durocher	Westville Dworkin Center	April 27, noon-1:00 pm
De-stressing for Finals	Brigitte Morin	Zoom	April 29, noon-1:00pm
Introduction to Resistance Training	Tabitha Stills	Hammond and Westville	Upon request

The Purdue University Northwest Hammond Fitness Center has free classes by John Bobalik as follows: Beginning Abs and Core on MW 12:15-12:45 pm; Advanced Abs and Core MW 4-4:45 pm; Extreme Abs and Core Sat 9:15-10:15 am; Silver Sneakers MWF 9-9:45 and 10-10:45 am.

Favorite Area Hiking Options:

- Indiana Dunes West Beach
- Indiana Dunes Cowles Bog
- Indiana Dunes State Park (from near Nature Center)

Favorite Area Mountain Biking Options:

- Imagination Glen in Portage, IN
- Creekside Trails in Valparaiso, IN
- Soldiers Memorial in La Porte, IN

Free Outdoor Resistance Training Options:

- Wicker Memorial Park in Highland, IN
- Old Fair Grounds Park in Valparaiso, IN
- Bluhm County Park in La Westville, IN

How to Get Involved

- Promote healthier habits in healthcare professionals.
- Be proactive about your own health.
- Volunteer and help others.
- Participate in research and events.
- Start an accountability group.
- Take active movement breaks.
- Set specific and measurable goals.

ACSM and CDC Recommendations



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**Exercise
is Medicine®
On Campus**

Purdue University Northwest

Roles of the Integrative Physiology and Health Sciences Center

- ↑Human Health Research at PNW, ↑Extramural Funding, and ↑Health Initiatives in Northwest Indiana

