# Holistic Health
# MAKEOVER

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“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

- World Health Organization

## WHAT IS BLOOD SUGAR

- Your body's main and preferred source of fuel is glucose (sugar).

- We get this in our diet by eating carbs. All carbs (the good and the bad!) break down to sugar in the body except fibre.

- Fats are secondary source of fuel BUT it is easier for your body to convert glucose to energy so it will always burn that FAST & FIRST …glucose is your "go to source"

- The body needs to have a certain amount of glucose (sugar) circulating in the system (blood) and also in storage form for later use when glucose is not coming in through the diet, in order for all bodily functions to take place.

- The circulating glucose available for immediate energy use at any time is called blood sugar

## BLOOD SUGAR LEVELS

In order to keep energy stable, there need to be approx. 4g of circulating glucose in the blood at all times Higher or lower than 4g causes immediate energy imbalance

- Short term not ideal but long term = DANGER

- A leading cause of weight, health & mental issues with the most significant being diabetes

## What hyperglycemia & hypoglycemia?

**HYPERGLYCEMIA • Symptoms include:** fatigue, lack of mental clarity (brain fog), aches and pains, extreme thirst and symptoms of dehydration, excessive urination, loss of appetite. These are the same symptoms you will find in typ

e 1 and type 2 diabetes.

**HYPOGLYCEMIA** • A blood sugar level that is too low is referred to as hypoglycemia. **Symptoms include:** dizziness, feeling shaky, sweating, anxiety, panic, lack of mental clarity, hunger, faintingns

## The 2 types of hypoglycemia

**Hypoglycemia is a condition where blood sugar levels drop too low (aka low blood sugar) There are two main classifications: fasting hypoglycemia and reactive hypoglycemia.**

**1. FASTING HYPOGLYCEMIA** • occurs when food has not been eaten for a long period of time and either: a) glycogen stores have run low or b) the body systems are not working effectively to release stored glycogen and convert it into glucose.

**2. REACTIVE HYPOGLYCEMIA** • occurs when a meal is eaten, usually containing a large amount of carbs which elicits a high insulin output • This drops blood sugar levels too low approximately 3-5 hours after the meal is eaten. • This is the more common form of hypoglycemia and is associated with the risk of insulin resistance and type 2 diabetes. Symptoms of hypoglycemia include: dizziness, feeling shaky, sweating, anxiety, panic, lack of mental clarity, hunger, in extreme cases fainting

## GLYCOGEN

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• The storage form of glucose is called glycogen.

• It is stored in 2 places in the body for later use: The Liver & Muscle

• We store about 500-600g of total glycogen in the body, ~100g in the liver and ~400-500g in the muscle tissue.

• We store it in these two areas because these are the places that need to access glucose the quickest.

• Shortage of glucose circulating in the blood, the liver will break apart glycogen to make glucose and release it into the bloodstream.

• When we engage in vigorous or long term activity the muscles cells will break down glycogen into glucose for immediate energy in that area.

## HOW IT WORKS

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### There is an order that your body follows to get energy:

1. **Glucose** (a.k.a. sugar) in your blood is immediate energy; it's the cash in your wallet.

2. **Glycogen** is stored glucose in your liver and muscles, it's easy to access, but there's not much there. Think of glycogen as the money in your checking account.

3. **Body Fat** is an efficient way to store energy, but the least accessible; think of body fat as the savings in your retirement account.

4. **Muscle tissue** can be burned as a last ditch effort to get energy. If you're starving or losing weight too quickly, your body starts burning muscle. Think of burning muscle as going into debt to pay your bills.

# BLOOD SUGAR BALANCE

## THE DYNAMIC DUO: Insulin & Glucagon
## The 2 hormones that maintain proper blood sugar balance

**BLOOD SUGAR BALANCER HORMONE #1: Insulin**

**What is Insulin?** • a hormone made by the beta cells in the pancreas that allows your body to use sugar (glucose) from carbohydrates in the food that you eat for energy or to store glucose for future use.

• keeps your blood sugar level from getting too high (hyperglycemia) or too low (hypoglycemia)

• Known as the “storage hormone”

**How does it work?**

• The cells in your body need sugar for energy. However, sugar cannot go into most of your cells directly.

• There is a locked channel that needs to open up to allow glucose into the cell.

• Insulin acts as “the key” in a lock and key mechanism allowing sugar to enter the cell for energy

• If insulin isn’t present glucose has no way of getting into the cell.

**BLOOD SUGAR BALANCER HORMONE #2: Glucagon**

**What is Glucagon?** • A hormone is produced by the alpha cells in the pancreas and has the opposite effect of insulin.

**How does it work?**

• Glucagon kicks into action when there is not enough glucose circulating in the blood or when energy demands increase through physical activity.

• When blood sugar is low, glucagon will signal to liver the breakdown of stored glycogen

• If there is not sufficient glycogen in the liver to break down for glucose energy, glucagon will signal the kidneys and liver to create glucose out of non-sugar based molecules (amino acids, glycerol and possibly fatty acids aka lean muscle tissue or stored fats!)