NUTRITIONAL GUIDELINES

FOR ENDURANCE ATHLETES

WHAT WE'LL COVER

- What nutrition is
- Why nutrition is important to endurance athletes
- How it's broken down
- Hydration & electrolytes
- Timing

WHAT IS NUTRITION?

Dictionary Definition
: The act or process of nourishing or being nourished

Specifically : the sum of the processes by which an animal or plant takes in and utilizes food substances foods that are necessary for human nutrition

Layman’s terms

Nutrition is the process of giving your body the energy and materials it needs to perform, recover, and adapt.

What should I eat???

LET’S BREAK IT DOWN

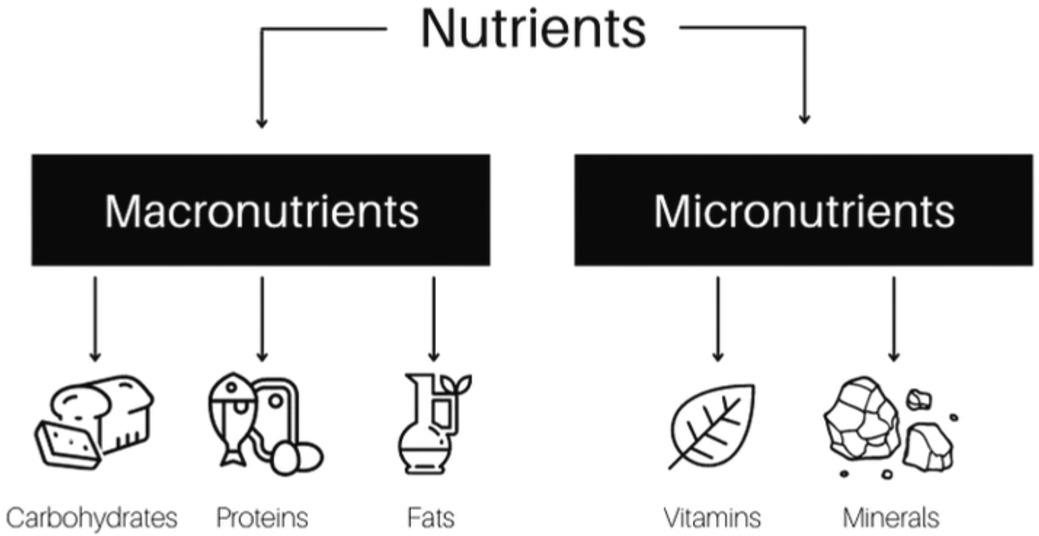
2 Main Categories:

Macronutrients
A nutrient containing calories that your body needs in large amounts to provide energy and support performance.

For distance runners, macronutrients are your primary fuel and building blocks.

Micronutrients
A vitamin or mineral your body needs in small amounts to function properly.

They don’t provide calories like macronutrients do, but without them, performance suffers.



Foundation of the pyramid: Eat enough!!

MACRONUTRIENTS

3 Types

Carbohydrates
Your body's primary fuel source for endurance performance.

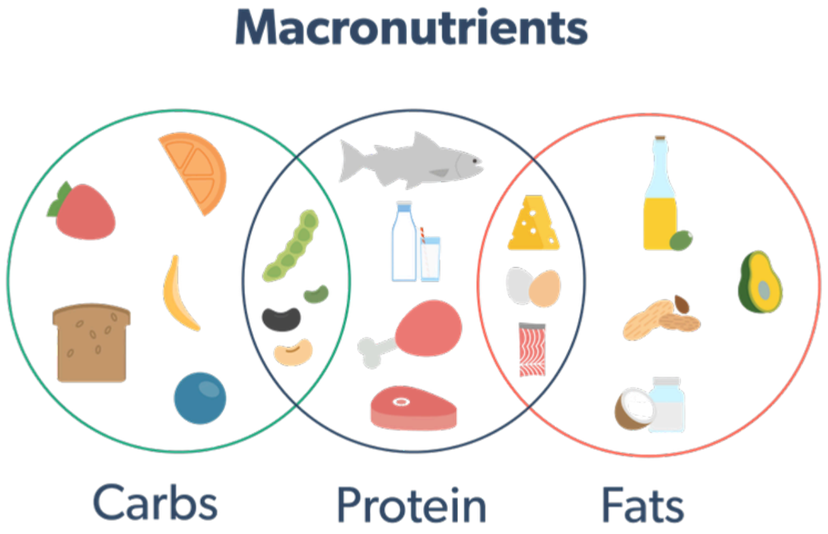
- Simple vs. Complex

Protien
Composed of amino acids that the body uses to repair, rebuild, and strengthen tissues.

- Complete vs. Incomplete
- Timing?

Fats
Your fuel at rest and helps regulate hormones, & absorb/store micronutrients

- Saturated vs Unsaturated
- Healthy fats?



Difference between these two graphics?

CARBOHYDRATES

Your body’s primary fuel source for endurance performance.

- Carbs contain 4 calories per gram

Simple vs. Complex

Complex CHO
longer chain polymer of sugar molecules

- Slower digestion
- Steadier energy release
- Timing: Pre-run ~3 hours before (think meal time).

Simple CHO
Shorter chain polymer of sugar molecules

- Fast digestion
- Quick spike energy release
- Timing: Pre-run ~30min, during exercise, immediately after

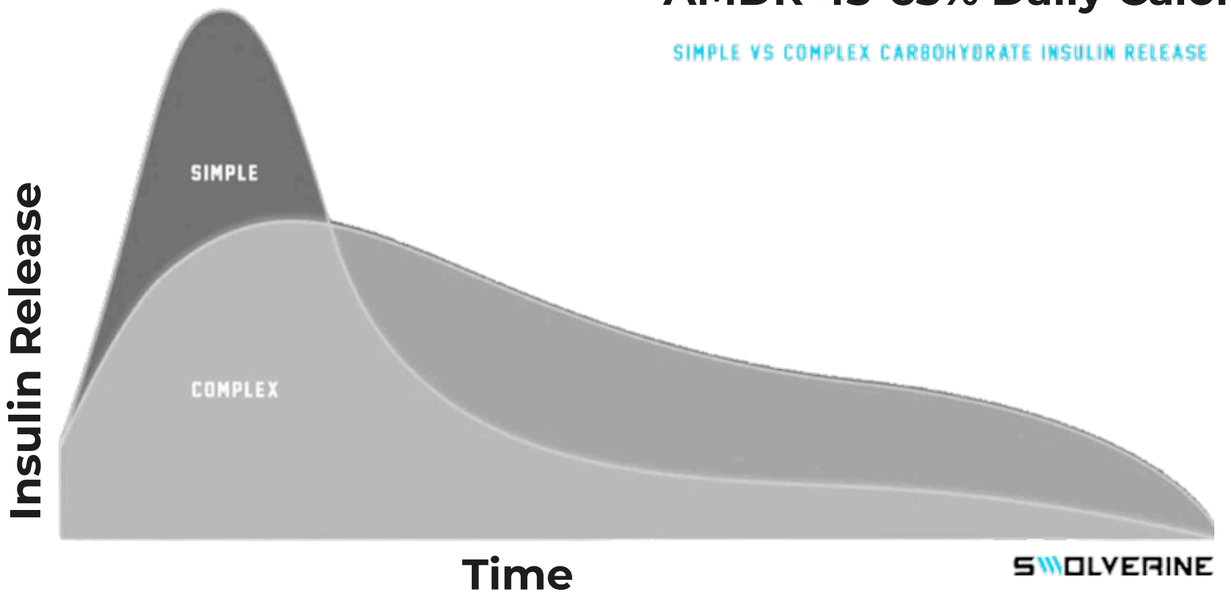
Types of complex CHO

- **Oats**
- **Rice**
- **Potatoes**
- **Whole grains**
- **Beans**
- **Pasta**

Types of simple CHO

- **Fruit**
- **Honey**
- **Sports drinks**
- **Gels**
- **Candy**
- **White bread**

AMDR 45-65% Daily Caloric



PROTEIN

Grow and repair muscles, hair, and organs. Composed of amino acids (9+11 20) building blocks.

- PRO contains 4 calories per gram, however we do not use this as a source of energy (typically).

Complete vs Incomplete Pro.

Complete

Contain all 9 essential amino acids

- Eggs
- Fish
- Meat
- Dairy Products

Incomplete

Low in or lacks 1+ Essential amino acid

- Beans
- Rice
- Lentils
- Oats

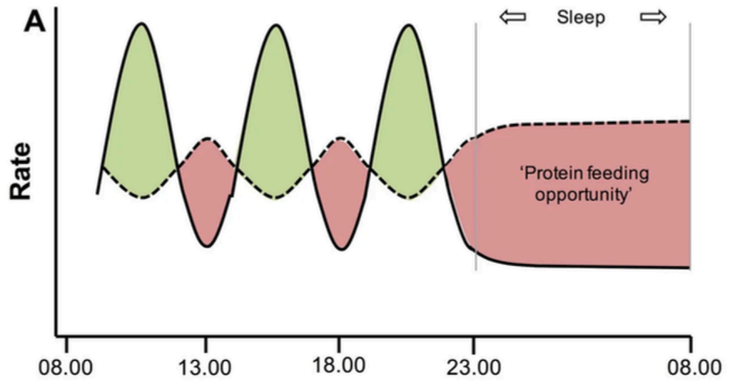
(Can make a complete protein by combining).

AMDR - 10-35% of daily caloric intake

Athletes need closer to 25-35%
1.2-2.0g/Kg BW Daily

NOT ALL AT ONCE.
Protein synthesis maxes out around 20-40g per meal
1-2 hours rise
2-3 hour peak
3-5 hour return to baseline

Eggs are gold standard for biological value



FATS

Provide long-lasting energy, support hormone production, protect organs, and help your body absorb certain vitamins.

- Contain 9g kCal/ Gram

MUFA

A heart-healthy fat with one double bond in its structure, found in foods like olive oil, avocados, and nuts, and helps improve cholesterol levels.

PUFA

- A fat with multiple double bonds, found in foods like fish, walnuts, and sunflower oil, and includes essential omega-3 and omega-6 fatty acids your body cannot make.

Saturated Fat

- A type of fat with no double bonds in its structure, typically solid at room temperature, found in foods like butter, cheese, and red meat, and should be eaten in moderation.

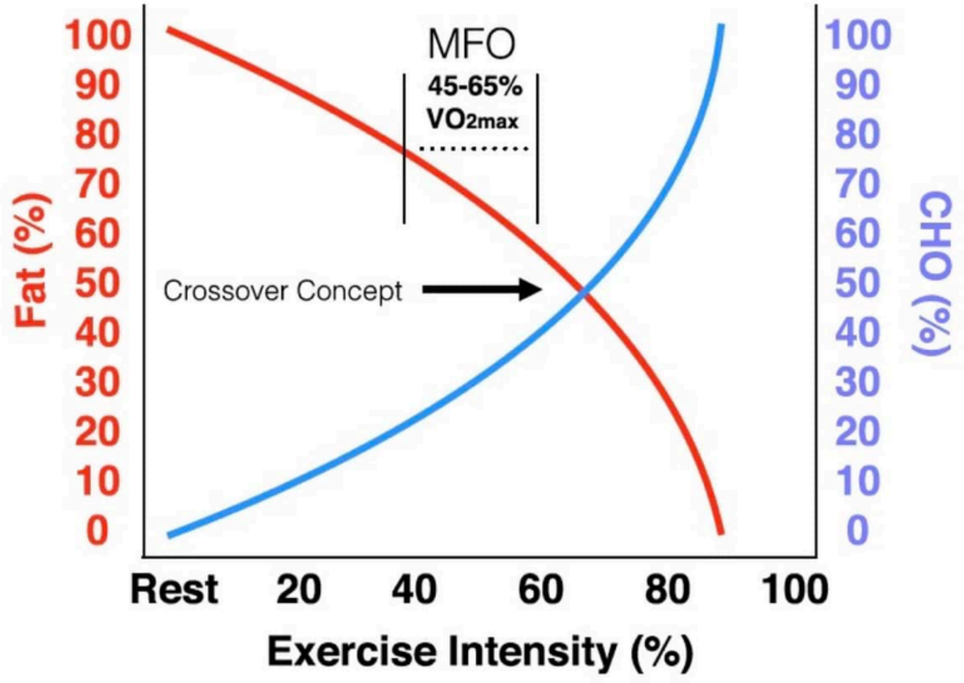
Trans Fat

- An artificially created fat (mostly from hydrogenated oils) that raises bad cholesterol, lowers good cholesterol, and is strongly linked to heart disease.

AMDR 20-35% of daily caloric intake

Athletes need closer to 25-30%
while ensuring enough carbohydrates remain available for training and performance.

Fat is fuel at VERY low intensity and at rest
“Fat burn zone”



MICRONUTRIENTS

Important for endurance athletes because they support energy production, oxygen transport, muscle function, recovery, and immune health. (NO CALORIES)

Vitamins

Helpful in growth and development, organ function, & building + maintaining structures
Water soluble
EXCEPT:
A - Retinal Health
D - Bone Health (sun)
K -Blood clotting
E- anti-oxidant

Minerals

Conduct electricity & affect fluid balance, muscle PH & function.
Water Soluble

Vitamins that work well together

Vitamin D + Calcium + Magnesium

Vitamin C + IRON (Not Calcium).

B Vitamins

Sodium + Glucose (SGLT1 Transporter).

Multi-vitamin is cheap insurance!

HYDRATION + ELECTROLYTES

Critical for maintaining homeostasis, blood volume, transportation of nutrients, & essential for optimal athletic performance.

How it's stored

Accounts for ~60% of total bodyweight
35% in extracellular form

- Blood plasma 7%
- Interstitial Fluid 28%

65% Intracellular fluid

States

Hyper-hydration : Too much water (diluted electrolytes)
Eu-hydration : Normal state (balanced)
Hypo-hydration : Not enough water

Process

Dehydration - Losing fluids
Rehydration - Restoring Fluids

Electrolytes

All electrolytes are minerals, not all minerals are electrolytes.

- Conduct electricity
- Retain H2O

- **Sodium**
- **Potassium**
- **Calcium**
- **Magnesium**
- **Chloride**
- **Phosphate**
- **Bicarbonate**

- **Iron**
- **Zinc**
- **Copper**
- **Iodine**

Lose 2% of BW due to sweat it becomes detrimental to performance. (measure sweat rate).

Higher blood viscosity, lower stroke volume, higher heart rate, higher RPE.

Drink pre-during-post exercise
(6-8% CHO Soluition 30-60g per hour with electrolytes)

TIMING

Timing for nutrition is critical and kinda a pain in the ass...

Carbohydrates

Complex:

- During meals and larger snacks typically 3-5 hours
  - 3 hours before run

Simple:

- Small snacks, Pre, During, Post workout.

Protein

20-40g every 3-5 hours (meals) limit to ~3 hours before exercise
++Post Exercise (convenient).

Fats

Every 5 hours or at meals - can be helpful to take vitamins with fattier meals to increase absorption of fat soluble vitamins.

POST RUN

REFUEL ALWAYS AFTER YOUR RUN WITHIN 30 MINUTES OF FINISHING WITH
4:1 CARB TO PROTIEN RATIO SNACK OR BEVERAGE

Hydrate hydrate hydrate

Drink water with electrolytes frequently throughout the day.

Water isn't the only thing that counts towards hydration but it is the purest.

During exercise experiment with sports drinks or CHO beverages.

QUESTIONS