NUTRITION AND RECOVERY

A GUIDE TO MAXIMIZING YOUR GAINS

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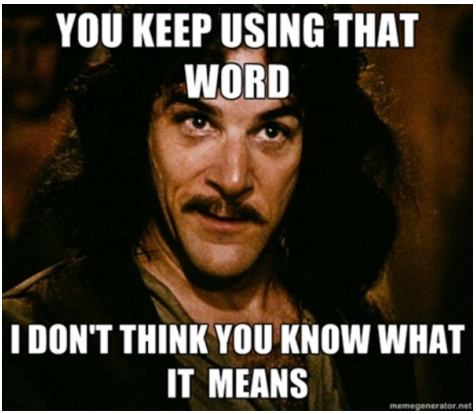
TABLE OF CONTENTS

SECTION ONE: RECOVERY

WHAT IS RECOVERY?



Recovery is a fitness buzzord. People use it, and have no idea what it really means.

Recovery is your body's ability to return to your baseline or a higher baseline after it is challenged.

For example, in illness, you get sick. Your body battles off the illness and returns you to baseline.

In sports and strength training, recovery is your body's ability to heal the microtears that occur in muscles when they are challenged, gain strength, and return to your baseline level for the next day of training. A lot of the time getting stronger, faster, and better is more about what you are doing outside of the gym than in it. If you are not putting as much effort into your recovery as your training, you're not going to improve as much as you want to.

There are many "recovery tools" on the market, but the actual things necessary for optimizing your recovery are simpler than you may think...

RECOVERY HIERARCHY

SECTION TWO: LOAD MANAGEMENT

LOAD MANAGEMENT

I'd argue managing your training load is one of the most important parts of recovery.

If you are constantly working >85% of your max and working at RPE 8-9-10 all the time, it is gonna be pretty dang hard to recover from that. A lot of this burden falls on the person programming for you. Your programming should be recoverable. Some of the burden still falls on the lifter to stick to the program and give your coach feedback.

The second piece of load management is programmed rest. This comes from rest days and deload weeks.

Rest days are where you actually build muscle because you are not challenging and breaking down the muscle. You are giving it the time to repair.

Deload weeks are necessary for your body to recover as well. You cannot be training hard 100% of the year. Your body needs a down week every 6-8 weeks. Deload weeks also make you fresh for your next cycle. When you drop intensity and then ramp back up, it is novelty. Novelty creates new neuromuscular connections, and keeps you engaged in your training.

For the lifter, your responsibility with load management is:

- Pay attention to your training loads and percentages
- Understand how hard you are working at each session
- Discuss adjusting loads and lifts with your coach when you're not feeling 100%
- Actively be involved in your programming and give your coach feedback on how you are feeling
- Not constantly up your weights in training cause you feel like it
- Stay on the program
- Take your rest days (1-2 days per week)
- Follow your deload weeks
- Listen to your body

SECTION THREE

NUTRITION

NUTRITION: MACRO NUTRIENTS

The big three:
Protein, fats, and carbs

PROTEIN

PROTEIN

PROTEINS ARE CRUCIAL for nearly every process that happens in our bodies:

- Cellular metabolism
- Sending messages within/between cells
- Enabling chemical reactions
- Creating structures

PROTEINS MAKE UP OUR:

- Muscle
- Connective tissues
- Skin
- Nails
- Hair
- Significant part of bone
- Immune system
- Hormones

PROTEIN TURNOVER
Our bodies are always building up proteins (aka protein synthesis) and breaking down proteins. Sometimes proteins are lost in this turnover process.

Because of it's important role and protein turnover, we need to eat a consistent supply of dietary protein to live and thrive.

AMINO ACIDS
Proteins break down into amino acids in the body

ESSENTIAL AMINO ACIDS
Can only come from eating food
Histidine, lysine, methionine, phenylalanine, threonine, tryptophan
Branched chain amino acids: isoleucine, leucine, valine
Leucine= the most important in muscle protein synthesis (MPS)

NON-ESSENTIAL AMINO ACIDS
We are able to make these in our own body
Alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, proline, serine, and tyrosine

A complete protein source has all of the amino acids

PROTEIN SOURCES

ANIMAL-BASED

- Beef, bison, buffalo
- Lean cuts of pork
- Lamb
- Goat
- Wild game (elk, venison)
- Poultry:
  - Chicken
  - Turkey
  - Duck
- Fish
- Mollusks
  - Squid
  - Octopus
  - Clams
  - Mussels
  - Scallops
- Shellfish
  - Lobster
  - Crayfish
  - Shrimp
- Eggs and egg whites
- Dairy: cottage cheese, Greek yogurt

PLANT-BASED

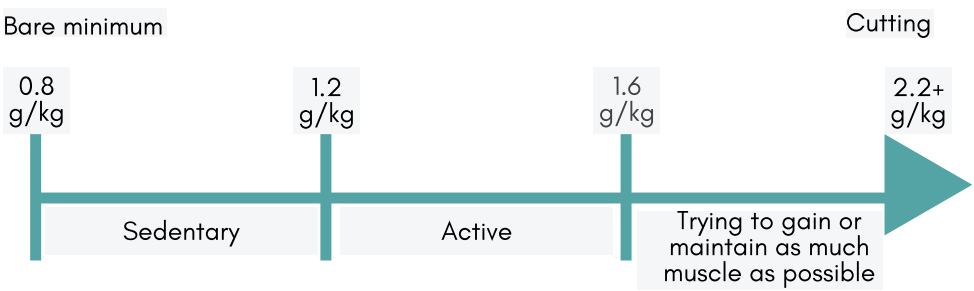
- Beans and legumes: Lentils and chickpeas
- Quinoa
- Nuts
- Tempeh, tofu
- Edamame

PROTEIN POWDER SUPPLEMENTS

- Whey
- Casein
- Pea
- Soy
- Egg
- Rice
- Hemp

HOW MUCH PROTEIN

SERVING SIZE:
1-2 palms of proteins per meal
1 palm = 20-30g of protein



HIGHER LEVELS REQUIRED WHEN:

- Frequent hard training or manual labor jobs
- To gain lean mass and/or strength
- When injured or sick, or are recovering from surgery
- Older age because we digest protein less well
- When trying to lose weight but maintain levels of muscle mass (cutting)

VEGAN/VEGETARIAN/PLANT BASED CONSIDERATIONS

- Eat a variety of foods: fruits, veggies, beans and legumes, nuts and seeds, and tubers (potatoes)
- At least 1 cup of beans/legumes per day
  - Legumes are rich in lysine which is low in plant based diets
- We need 30-45 mg/kg bodyweight per day
- Most likely need a protein powder supplement

FATS

FAT

Dietary fat is a type of lipid. It is an organic molecule made up of long chains of carbon and hydrogen.

95% of our dietary fat is in the form of triglycerides. Triglycerides are the storage form of fat. These break down into fatty acids.

Fat is essential for 6 major roles in the body:

1. Providing us with energy (it is most energy dense macronutrient)
2. Making and balancing hormones, particularly our steroid hormones.
3. Forming our cell membranes
4. Forming our brains and nervous systems
5. Transporting the fat-soluble vitamins A, D, E, and K
6. Two essential fatty acids that we need for health and physiological function

Any additional fatty acids leftover after these are stored in the form of triglycerides in either adipose tissue (body fat) or in your skeletal muscle.

In the form of body fat, it used for warmth, energy storage, and cushioning for our organs and bones.

There are three major types of dietary fats:

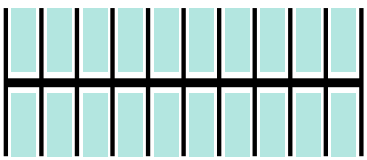
- Saturated fat
- Unsaturated fat
- Trans fat

Most fat sources have a combination of these fats.

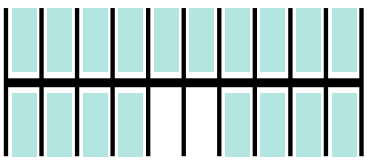
FAT TYPES

If you've looked at a nutrition label, you've likely heard of "unsaturated," "saturated" and "trans" fats. Most of our dietary fat contains a combo of these types of fats.

The fat type is determined by the number and specific arrangement of carbons and hydrogens in the fatty acids. Think of it as cars in a parking lot. Carbons are the parking spaces and the hydrogen that binds to them are the cars. If a fat has spots unfilled it is considered unsaturated.



Saturated



Unsaturated

SATURATED FATS:
Solid at room temp
Gets a bad rap but by itself isn't bad. A diet high in saturated fats in addition to a high amount of sugar/processed foods is not ideal.

Found in:

- Meat
- Egg
- Full fat dairy: like butter
- Coconut
- Cocoa butter

UNSATURATED FATS:
Liquid or soft at room temperature
There are subtypes:

- Monounsaturated
- Polyunsaturated

Include essential fatty acids

TRANS FATS:
Unsaturated fats forced to be saturated fats. Some do exist naturally. This is done artificially to extend the life of processed food and can affect:

- Cholesterol levels
- Digestion of fats
- Essential fat levels

ESSENTIAL FATS

OMEGA-3 FATTY ACIDS

The 3 key Omega-3's are:

- α-linolenic acid (ALA)
- Docosahexaenoic acid (DHA)
- Eicosapentaenoic acid (EPA)

Found in:

- ALA: flax, chia, hemp and walnut
- EPA and DHA: fatty cold-water fish and fish oil and algae

We don't convert ALA to EPA / DHA very well, so wherever possible, look for direct dietary sources of EPA / DHA.

Considered "anti-inflammatory"

- dilate (open up) our blood vessels to improve blood flow
- lower inflammation
- prevent blood coagulation and clumping
- decrease pain
- dilate our airway
- support our immune system

OMEGA-6 FATTY ACIDS

Three major Omega-6 Fatty Acids

- linoleic acid (LA)
- gamma-linolenic acid (GLA)
- arachidonic acid (AA)

Found in:

- Soybeans
- Corn, safflower and sunflower oils
- Nuts and seeds
- Meat, poultry, fish and eggs

Considered "pro-inflammatory" and help us heal and recover

- constrict blood vessels
- increase inflammation
- cause blood clotting
- increase pain
- constrict our airway

CHOLESTEROL

Cholesterol is another type of lipid. It is an essential molecule in the body. We need cholesterol to:

- Make our cell membranes
- Make our hormones

Most of the cholesterol in our body is made by the liver, and it doesn't come from the foods we eat. In fact, dietary cholesterol isn't very well absorbed.

A "cholesterol test" or "lipid profile" tests the level of molecules called lipoproteins that carry cholesterol. Each type of lipoprotein contains a mixture of cholesterol, protein and triglycerides.

There are four types of lipoproteins.

- Chylomicrons: they carry fats from the small intestine to the liver. They're the largest, and contain mostly triglycerides.
- Very low-density lipoproteins (VLDLs): travel from the liver to elsewhere in the body. Have a high-level of triglycerides and can contribute to plaque formation. Cannot be tested for directly.
- Low-density lipoproteins (LDLs): The "bad" cholesterol because they travel in the bloodstream, carry fat to our cells, and can form plaques in the blood vessels that can lead to heart disease. We need them, but don't want too many.
- High-density lipoproteins (HDLs): The "good cholesterol", they carry cholesterol back to the liver for recycling. We want these levels to be higher.

The two that are tested for are LDLs and HDLs.

HOW FOOD AFFECTS CHOLESTEROL LEVELS:

- Eating more omega-3 polyunsaturated fatty acids seems to lower LDL cholesterol and increase HDL cholesterol
- Eating more saturated fat seems to raise LDL cholesterol and triglycerides
- Diets high in processed foods tend to worsen our lipoprotein profile

FAT SOURCES

ANIMAL BASED
Aged cheese
Butter
Cream
Egg yolks
Higher fat animal protein
Fattier cuts of beef/pork
Fattier cuts of poultry (dark meat)
Fattier fish
Higher-fat dairy
Whole eggs

PLANT BASED
Avocado/Avocado oil
Dark chocolate
Cold-pressed nut and seed oil
Fresh coconut/coconut oil
Nuts and seeds
Nut and seed butter
Olives/olive oil

SUPPLEMENTS
Omega-3 Fatty Acid

The biggest thing is that we want to have a good variety of fats in our diet

HOW MUCH FAT

1-2 thumb sized portions of fat-dense foods per meal
1 thumb= 7-12g of fat

25-35% of daily calories

BASED ON ACTIVITY LEVEL

DEPENDS ON:

- Our goals
- Our age
- Our body size and lean mass
- Our physical activity level
- Our overall health status
- Whether we're pregnant / lactating
- Whether we're injured or ill (as fats are involved in inflammation).

CARBS

CARBOHYDRATES

Carbohydrates are macronutrients made up of long chains of smaller units called saccharides, or sugars.

The ratio of water to carbon has to be 1:1 for a molecule to be a carbohydrate. Carbohydrates' water-binding effect means that we'll store about 3-4 grams of water per gram of stored carbohydrate in our bodies, and that if we cut out carbohydrates, we'll quickly lose body water (which leads to the dramatic initial weight loss on a low-carbohydrate diet).

Our brain consumes about 20% of our total daily resting energy expenditure, and its preferred energy source is glucose. The daily Recommended Dietary Allowance (RDA) for carbohydrates to meet the brain's energy needs is about 125-130 grams.

Our body is capable of creating glucose by breaking down protein and fat. That means low or no carb diets are possible. The body is more likely to break down protein first, so when on low carb diets, keeping protein high is incredibly important.

While low-carb is an option, most people will feel, perform, and recover better with a higher carb diet

- Glycogen (storage form of carbs) in muscles are metabolized for energy during exercise. Low levels of glycogen lead to lower levels of performance
- In illness and major injury which require more energy for recovery and rebuilding, carbohydrates can dramatically improve outcomes
- Carbohydrate-containing foods contain vitamins, minerals, phytonutrients, water and fiber
- When building muscle, carbohydrates help to enhance anabolic signaling (i.e., cellular communication that encourages nutrient storage, growth, and repair)

CARB TYPES

TYPES OF CARBS

Monosaccharides	**Disaccharides**	**Polysaccharides**		
		Digestible	**Partially Digestible**	**Indigestible aka FIBER**
Glucose	Sucrose	Starch	Inulin	Cellulose
Fructose	Maltose	Dextrins	Raffinose	Pectin
Galactose	Lactose	Glycogen		
Mannose	Trehalose			
Ribose				

More complex carbs (dissacharides and polysaccharides) are broken down into monosaccharides.

They are then used in the body in forms of:

- Blood sugar (glucose)
  - Taken up by cells as needed via insulin and GLUT (glucose transport molecules) to power cell functions
- Glycogen in liver and muscles
  - Used for energy when exercising
  - More can be stored with more muscle mass and training status
- Fiber
  - Not digested but used to help improve digestion
- Any extra converted to body fat

GLYCEMIC INDEX (GI):

Measure of how quickly and significantly a given food raises blood sugar

- Higher GI: sugar, candy, honey, breakfast cereal and bagels
  Great right before activity
- Lower GI: legumes, whole grains and veggies

FIBER

Fiber is the part of plant-based foods (grains, fruits, vegetables, nuts, and beans) that the body can't break down. It is an important part of our diet even though our body doesn't actually get energy from it.

There are two types of fiber: Water Soluble and Water Insoluble

	WATER SOLUBLE	WATER INSOLUBLE
FOUND IN	• Oats and oat bran • Dried beans • Peas • Nuts • Barley • Flax seeds • Chia seeds • Fruits:oranges, bananas, blueberries, and apples • Vegs: artichokes, tomatoes, and carrots • Konjac	• Celery • Root veggies • Dark green leafy veggies • Fuit and veggie skins • Whole-grain seed hulls • Seeds and nuts
ROLE	• Decrease cholesterol levels • Control blood sugar • Excrete byproducts	• Add bulk to stool • Ensure regular bowel movements • Help make us feel full longer • Lower blood lipids and cholesterol • Lower colon cancer risk • Keeps things moving in GI tract • Boost gut health

HOW MUCH FIBER
14g/1000 calories

Women: 25-35 g/day
Men: 25-48 g/day

CARB SOURCES

SLOWER DIGESTING, HIGHER FIBER

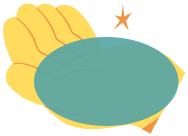
- Some fruits
- Whole, intact grains like brown or wild rice
- Quinoa
- Buckwheat
- Amaranth
- Teff
- Oats
- Wheat berries
- Starchy tubers (potatoes, sweet potatoes, yams, cassava, yuca)
- Beans and legumes

FASTER-DIGESTING

- Some fruits
- More processed grains (white rice)
- Noodles
- Pasta
- Bread
- Bagels
- Baked goods
- Crackers

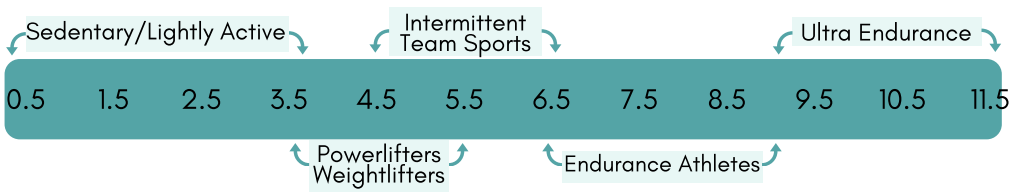
THERE ARE NO BAD CARBS. YOU JUST WANT TO HAVE A GOOD VARIETY.

HOW MANY CARBS



SERVING SIZE
1-2 cupped handful carbs per meal
1 cupped handful= 20-30g carbs

Lightly active or sedentary (e.g., regular people)	0-3.5 g/kg BW (0-1.5 g/lb BW)
Most strength athletes (e.g., powerlifters, weightlifters)	3.5-5.5 g/kg BW (1.5-2.5 g/lb BW)
Most intermittent, team-sport athletes (e.g., soccer, rugby, volleyball)	4.5-6.5 g/kg BW (2-3 g/lb BW)
Most endurance athletes (e.g., marathon runners)	6.5-9 g/kg BW (3-4 g/lb BW)
Ultra endurance athletes* (e.g., Ironman, ultramarathon)	10-12 g/kg BW (4.5-5.5 g/lb BW)



FRUITS AND VEGGIES

FRUIT

SERVING SIZE
1 fistful of fruits or veggies per meal
4-6 servings per day

RED
Red Apples
Blood Oranges
Cherries
Cranberries
Red Grapes
Grapefruit
Red Pears
Pomegranates
Raspberries
Strawberries
Watermelon

YELLOW/ORANGE
Apricots
Gooseberries
Cantaloupe
Yellow Figs
Grapefruit
Golden Kiwifruit
Lemons
Mangoes
Nectarines
Oranges
Papayas
Peaches
Yellow Pears
Persimmons
Pineapples
Tangerines

GREEN
Green Apples
Green Grapes
Honeydew
Kiwifruit
Limes

BLUE/PURPLE
Blackberries
Blueberries
Black Currants
Concord Grapes
Dried Plums
Elderberries
Grape Juice (100%)
Purple Figs
Purple Grapes
Plums
Raisins

WHITE/TAN/BROWN
Bananas
Dates
White Nectarines
White Peaches
Brown Pears

VEGGIES

SERVING SIZE
1 fistful of fruits or veggies per meal
4-6 servings per day

RED
Beets
Red Peppers
Radishes
Radicchio
Red Onions
Red Potatoes
Rhubarb
Tomatoes

YELLOW/ORANGE
Yellow Beets
Butternut Squash
Carrots
Yellow Peppers
Yellow Potatoes
Pumpkin
Rutabagas
Yellow Summer Squash
Sweet Corn
Sweet Potatoes
Yellow Tomatoes
Yellow Winter Squash

WHITE/TAN/BROWN
Cauliflower
Garlic
Ginger
Jerusalem Artichokes
Jicama
Kohlrabi
Mushrooms
Onions
Parsnips
Potatoes (Fleshed)
Shallots
Turnips
White Corn

GREEN
Artichokes
Asparagus
Broccoli
Broccoli Rabe
Brussels Sprouts
Chinese Cabbage
Green Beans
Green Peppers
Celery
Chayote Squash
Cucumbers
Peas
Snow Peas
Spinach
Sugar Snap Peas

Leafy Greens
Arugula
Leeks
Endives
Lettuce
Green Cabbage
Kale
Green Onions
Okra
Watercress
Zucchini

BLUE/PURPLE
Black Olives
Purple Asparagus
Purple Cabbage
Purple Carrots
Eggplant
Purple Belgian Endive
Purple Peppers
Purple Potatoes

NUTRITION MICRO NUTRIENTS:

Needed in smaller amounts but just as important as the macronutrients

VITAMINS

Organic compounds which are essential for normal growth and nutrition and cannot be synthesized by your body

Fat-soluble: A,D, E, K; accumulate in tissues so you don't have to eat them every day

Water-soluble: B and C; we excrete them and so need to eat more

VITAMIN	ROLE	FOUND IN
THIAMINE (VITAMIN B1)	Part of an enzyme in energy metabolism Important for nerve function	Found in all foods in moderate amounts Pork, whole-grains/enriched breads and cereals, legumes, nuts and seeds
RIBOFLAVIN (VITAMIN B2)	Part of an enzyme in energy metabolism Important for normal vision and skin health	Milk and milk products Leafy green vegetables Whole-grain, enriched breads and cereals
NIACIN (VITAMIN B3)	Part of an enzyme in energy metabolism; Important for nervous system, digestive system, and skin health	Meat, poultry, fish, whole-grain or enriched breads and cereals, vegetables peanut butter
PANTOTHENIC ACID	Part of an enzyme in energy metabolism	Widespread in foods
BIOTIN	Part of an enzyme in energy metabolism	Widespread in foods Produced in intestinal tract by bacteria
PYRIDOXINE (VITAMIN B6)	Part of an enzyme in protein metabolism Helps make red blood celll	Meat, fish, poultry, vegetables, fruits
FOLIC ACID	Part of an enzyme that makes DNA and new cells, especially red blood cells	Leafy green vegetables and legumes, seeds, orange juice, and liver Added to most refined food
COBALAMIN (VITAMIN B12)	Part of an enzyme that makes new cells Important to nerve function	Meat, poultry, fish, seafood, eggs, milk and milk products Not found in plant foods
ASCORBIC ACID (VITAMIN C)	Antioxidant Part of an enzyme in protein metabolism Important for immune system health Aids in iron absorption	Found only in fruits and vegetables
VITAMIN A (PRECURSOR: BETA-CAROTENE)	Vision, healthy skin and mucus membranes, bone and tooth growth, and immune system health	Fortified dairy; eggs; liver; Leafy, dark green vegetables; dark orange fruits and vegetables
VITAMIN D	Proper absorption of calcium Stored in bones	SUN. Egg yolks, liver, fatty fish, fortified milk, fortified margarine
VITAMIN E	Antioxidant Protects cell walls	Plant oils (soybean, corn, cottonseed, safflower); Leafy green vegetables; Whole-grain products; Egg yolks; Nuts and seeds
VITAMIN K	Needed for proper blood clotting	Leafy green vegetables (spinach, kale) Green vegetables Produced in intestinal tract by bacteria

MINERALS

Inorganic compounds from soil and water and cannot be made by the body

MINERAL	ROLE	FOUND IN
SODIUM	Fluid balance Nerve transmission and muscle contraction	Table salt, soy sauce, processed foods, milk, breads, vegetables & unprocessed meats
CHLORIDE	Fluid balance Stomach Acid	Table salt, soy sauce, processed foods, milk, breads, vegetables & unprocessed meats
POTASSIUM	Fluid balance Nerve transmission and muscle contraction	Meats, milk, fresh fruits and vegetables, whole grains, legumes
CALCIUM	Healthy bones and teeth Muscle relax/contract and nerve function Blood clotting and BP regulation Immune system health	Milk/milk products; canned fish with bones; fortified tofu&fortified soy milk; greens; legumes
PHOSPHORUS	Healthy bones and teeth Maintains acid-base balance	Meat, fish, poultry, eggs, milk, processed food
MAGNESIUM	Makes proteins and bones Muscle contraction and nerve transmission Immune system health	Nuts and seeds; legumes; leafy, green vegetables; seafood; chocolate; artichokes; "hard" drinking water
SULFUR	Found in protein molecules	Occurs in proteins: meats, poultry, fish, eggs, milk, legumes, nuts
IRON	Part of hemoglobin and carries oxygen in the body Energy metabolism	Red meats; fish; poultry; shellfish; egg yolks; legumes; dried fruits; dark, leafy greens; iron-enriched breads&cereals; fortified cereals
ZINC	Part of enzymes Makes proteins and genetic material Part of taste, wound healing, normal growth and sexual maturation, and immune system	Meats, fish, poultry, leavened whole grains, vegetables
IODINE	Found in thyroid hormone; Regulates growth, development, and metabolism	Seafood, foods grown in iodine-rich soil, iodized salt, bread, dairy products
SELENIUM	Antioxidant	Meats, seafood, grains
COPPER	Part of many enzymes Needed for iron metabolism	Legumes, nuts and seeds, whole grains, organ meats, drinking water
MANGANESE	Part of many enzymes	Widespread in foods, especially plant foods
FLUORIDE	Formation of bones and teeth Prevents tooth decay	Drinking water Fish Tea
CHROMIUM	Works with insulin to regulate blood sugar	Unrefined foods (liver, brewer's yeast, whole grains, nuts, cheese)
MOLYBDENUM	Part of some enzymes	Legumes; Breads and grains Leafy greens; Liver; Milk

PLANT BASED CONSIDERATIONS

Animal based forms of micronutrients are absorbed easier and more readily than plant based

Plant based eaters are more likely to have deficiencies in micronutrients

Plant based eaters need to be eating a variety of foods: fruits, veggies, beans and legumes, nuts and seeds, and tubers

They should consume at least 1 cup of beans/legumes per day

- Legumes are rich in lysine which is typically low in plant based diets
- We need 30-45 mg/kg bodyweight per day of lysine

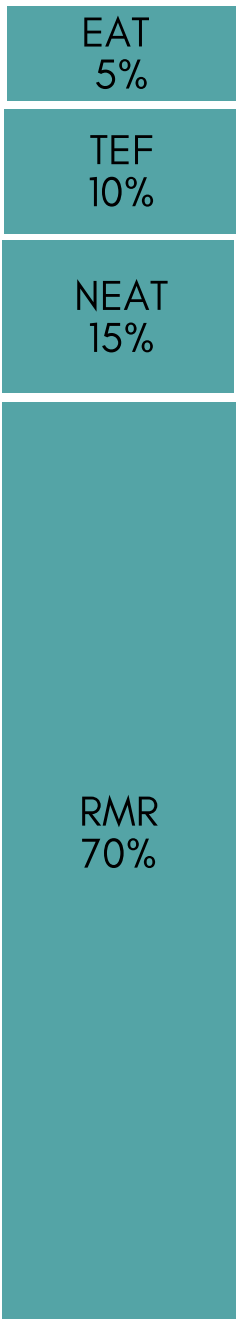
Most likely need a protein powder supplement

Plant based proteins not always a complete protein source

NUTRITION: DETERMINING YOUR NEEDS

Figuring out your individual caloric and macro needs

TDEE
DAILY CALORIE NEEDS



TOTAL DAILY ENERGY EXPENDITURE (TDEE)

The total number of calories burned in a 24 hour period with all activity, rest and digestion taken into account

AKA the total calories you need to eat in order to maintain your current weight

TDEE = RMR + NEAT + TEF + EAT

.....

RESTING METABOLIC RATE (RMR):

Calories that your body uses at rest
Includes basal metabolic rate: the minimum your body needs for vital functions

Affected by age and lean mass

Average RMR:
Women: 1400
Men: 1600

.....

THERMOGENESIS: Heat production
People vary in their individual heat production and it goes up or down with changes in energy intake

ADAPTIVE THERMOGENESIS:
Excess energy is released as heat (or movement) rather than stored as body fat
Occurs in response to higher energy intake

TDEE (CONT)

NON-EXERCISE ACTIVITY THERMOGENESIS (NEAT):

Energy expended for everything we do that is not sleeping, eating or sports-like exercise

Ex: fidgeting, walking at home/work, daily activities of living, housework

THERMOGENIC EFFECT OF FOOD (TEF):

The energy expended in the process of ingesting, absorbing, metabolizing, and storing nutrients from food

Protein has highest thermic response
fats have the lowest response

EXERCISE ACTIVITY THERMOGENESIS (EAT):

Energy expended from intentional exercise

For sedentary: 10-15% of TDEE
For active: 30% or more

EXERCISE AFFECTS METABOLISM:

- Damage muscles a little bit, which means we need to repair them
- Challenge body defenses and immunity
- Require higher oxygen and nutrient circulation
- Stress our skeleton and connective tissues
- Increased brain activity as our motor cortex and senses have to process more signals

CALCULATING TDEE

TDEE= BMR x activity multiplier

BMR

$$M = \begin{matrix}(10 \times \text{weight in kg}) + (6.25 \times \text{height in cm}) - (5 \times \text{age}) + 5 \\ \text{or} \\ (4.536 \times \text{weight in lb}) + (15.88 \times \text{height in in}) - (5 \times \text{age}) + 5\end{matrix}$$

$$W = \begin{matrix}(10 \times \text{weight in kg}) + (6.25 \times \text{height in cm}) - (5 \times \text{age}) - 161 \\ \text{or} \\ (4.536 \times \text{weight in lb}) + (15.88 \times \text{height in in}) - (5 \times \text{age}) - 161\end{matrix}$$

Activity multiplier

1.200	Sedentary (little or no exercise)
1.375	Light activity (exercise 1-3 days/week)
1.550	Moderate activity (exercise 3-5 days/week)
1.725	Very active (exercise 6-7 days/week)
1.900	Extra active (very active+physical job or 2x/day exercise)

CLICK HERE FOR A TDEE CALCULATOR

This is a great jumping off point for those starting out. It will not be perfect. But is a good place to start. Adjust as needed depending on how your weight responds. If you have been in a chronic deficit, you may gain weight to start or may find it hard to get here to begin with. That's okay and expected. Give it time and give your body fuel.

MACRO CHEAT SHEET

Protein	1.4-2.2 g/kg BW 15-35% calories
Fat	65-1.5 g/kg BW 20-35% calories
Carbs	3.5-5.5 g/kg BW 45-65%
Fruits & Veggies	4-6 servings per day
Fiber	W: <35 g/day M: <48 g/day or 14g/per 1000cal

Protein has about 4 calories per gram
Carbohydrate has about 4 calories per gram
Fat has about 9 calories per gram

For determining macronutrient and caloric needs, you can either:

- Calculate your daily macro needs using grams/bodyweight and then from there determine total calories
- Calculate daily macro needs using grams/bodyweight and ignore calories
- Calculate your TDEE and use percentages to determine macro needs

NUTRITION: TRACKING

UNDERSTANDING LABELS

Nutrition Facts

8 servings per container

Serving size **2/3 cup (55g)**

Amount per serving

Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

This is the only part of the packaging that is really regulated. Any claims on the front do not need to be checked. There are some separate certifications that may appear on the packaging that are accurate/regulated like "certified gluten free."

Serving size: go by the weight if possible, all nutrition facts are based on this serving size

Calories: total amount of energy; often incorrect & can be calculated by macros

Total Fat: gram amount used in counting macros

- **Saturated fat:** total for day should be <10% of fat
- T**rans fat:** want this to be 0g

Cholesterol: don't worry too much about this

Sodium: important to look at if you require a low sodium diet, otherwise just drink a lot of water

Total Carbohydrates: gram amount used in counting macros, includes sugar and fiber

- **Dietary Fiber:** in theory you can subtract this from total carbs for net carbs, but not necessary
- **Total Sugars:** important if you need to keep a lower sugar diet
- **Added sugar:** sugar artificially added as opposed to natural sugar in the product

Protein: gram amount used in counting macros

Vitamin D, Calcium, Iron, Potassium, Vitamin C, Vitamin B: important micronutrients, look at % DV and add up.

% Daily Value: based on 2000 calorie diet, and recommended daily amounts, sometimes lower than what you need

TRACKING

LOWEST EFFORT
- Take pictures of what you eat
- Write down general amounts

MODERATE EFFORT
- Use hand-size portions

One portion of protein is about the size of your palm

One portion of non-starchy veggies is about the size of your fist

One portion of high carbohydrate is about the size of a cupped handful

One portion of fat food is about the size of your thumb

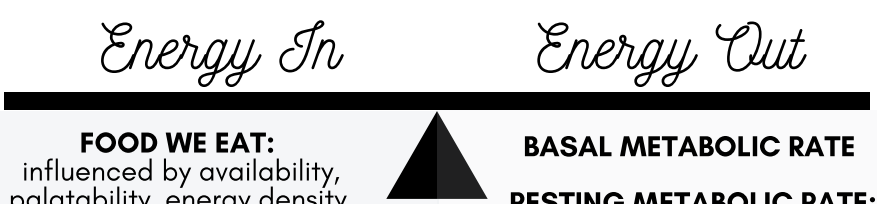
- Use a portion controlling plate

HIGH EFFORT
- Use measuring cups/spoons for things and/or standardized amounts
- Weigh everything using a food scale or measure with measuring cups/spoons, and track all items precisely using software

TRACKING APPS
- If you have a smart watch, do not allow for the app to add your exercise calories. Your goal is to eat your tdee which accounts for your activity
- MyFitnessPal: fairly easy to use, has a pretty large library of foods
  - Do not use their macros/calories
- MyMacros
- Cronometer

NUTRITION: ENERGY BALANCE BASICS

ENERGY BALANCE
= ENERGY IN-ENERGY OUT



FOOD WE EAT:
influenced by availability, palatability, energy density, education, socioeconomic status, and culture

HOW THE FOOD IS COOKED OR PREPARED

HOW EFFICIENTLY AND EFFECTIVELY WE DIGEST AND ABSORB THOSE FOODS:
influenced by macronutrient intake, food prep, age, microbiome, health and energy status

OUR HUNGER, APPETITE, AND SATIETY SIGNALS (AND HOW WE LISTEN TO THEM):
influenced by hormones that regulate appetite and satiety

OUR SLEEP, RECOVERY, AND STRESS LEVELS

OUR PSYCHOLOGY AND MINDSET

OUR EMOTIONS ENVIRONMENTAL CUES

OUR CULTURAL PRACTICES AROUND EATING

BASAL METABOLIC RATE

RESTING METABOLIC RATE:
influenced by body size, hormones, dieting history, genetics, health, sleep quality and age

Producing heat
thermogenesis

Thermic effect of food:
influenced by macronutrient makeup and how processed the food is

OUR EXERCISE AND PURPOSEFUL MOVEMENT:
influenced by exercise ability, intensity, duration, frequency, environment, hormones, and sleep quality

TISSUE HEALING AND GROWTH
surgery, injury, pregnancy, building new muscle

NON-EXERCISE MOVEMENT:
influenced by health, energy status, stress, hormones, occupation, leisure activities, and genetics

EXCRETION

OUR SLEEP, RECOVERY AND STRESS LEVELS

OUR HORMONAL STATUS

GENETIC FACTORS

ENERGY BALANCE AND WEIGHT

ENERGY IN = ENERGY OUT
WEIGHT MAINTAINS

ENERGY IN > ENERGY OUT
WEIGHT INCREASES

ENERGY IN < ENERGY OUT
WEIGHT DECREASES

IN AN ENERGY DEFICIT FOR TOO LONG

EFFECTS ON REPRODUCTIVE HEALTH

- Body decreases production of sex hormones (testosterone, estrogen, progesterone)
- Women: irregular or lost menstrual cycles, hormone disruptions, pre-menopause symptoms or even early menopause
- Men: impotence, lowered energy

EFFECTS ON COGNITIVE FUNCTION:

- Brain needs 300 calories/kg of brain weight
- Brain fog, forgetting things, decreased creativity
- Mood changes: crabbier, lethargic, anxious, and/or trouble sleeping

EFFECTS ON METABOLIC FUNCTION:

- Decreases in metabolic response

WEIGHT MANIPULATION

When starting out or if you have never paid attention to your nutrition before, you should focus on just eating at maintenance and optimizing nutrition.

Maintenance means maintaining your weight and is equal to eating your TDEE. Most people have no idea how much they are eating or not eating. Most women are eating way too little.

But at some point we may want to either gain or lose weight. This requires weight manipulation. We use two terms to describe these phases: cutting and bulking.

> Cutting means to lose weight or be in a caloric deficit.
> Bulking is to gain weight or to be in a caloric surplus.

There are certain times and situations for these phases. You may never need one or the other. But we will discuss the reasoning, rules and steps required of each.

CUTTING

Cutting comes from establishing a caloric deficit

This can come from:
- Decreasing energy consumption
- Increasing energy burned

WHEN TO CUT:
- Earn it first
  - At least three to four months spent in maintenance
  - Eating 1.4-2.2g/kg bodyweight protein
  - Eating sufficient fiber - fruits and veggies
  - Drinking enough water
  - Stress is managed
  - Getting sufficient sleep
  - Thyroid and hormones are in check
- To be competitive in a lower weight class
- To stay in your weight class after bulking to gain more muscle

RULES OF CUTTING
- Cutting is best managed by a nutrition coach who can pay attention to your biofeedback and make sure you do this in a healthy way
- Maximum weight loss per week should be 1-2lbs to minimize muscle loss
- You should NEVER be below your RMR

TO DO IT YOURSELF:
1. Set out a 8-12 week period
2. Calculate your TDEE based on current bodyweight
3. Subtract 150-200 calories (maximum amount at a time)
   a. This should mostly come from your carbs to start
   b. Fat should be kept high as it is important for hormones
4. Protein must stay high >2.2g/kg bodyweight
5. Weigh yourself multiple times per week
6. Average these weights to determine weekly weight
7. Do not subtract calories again until your weight loss plateaus
8. Repeat step 3 when you do plateau

BULKING / GAINING

Bulking comes from establishing a caloric surplus. It doesn't mean you are going to be "bulky" it just means that you are going to be able to gain more muscle mass.

CALORIC SURPLUSES ARE NECESSARY TO BUILD MUSCLE MASS. THIS IS SOMETHING WE WANT!

This can come from:

- Increasing energy consumption
- Decreasing energy burned

WHEN TO BULK

- To get stronger especially when strength has plateaued
- To increase muscle mass
- To go up a weight class to be more competitive

RULES OF BULKING

- There are really no rules with bulking
- You will gain some fat and that is okay
- It doesn't have to be a "hard" or drastic bulk
- It can just be a slight surplus

HOW TO BULK:

1. Calculate TDEE
2. Add 100-250 calories (can be in the form of carbs, fats or proteins)
3. Keep protein high to maximize muscle gain (>2.2g/kg bodyweight)
4. Weigh self multiple times per week and average weights
5. When plateaus, add more calories
6. Continue until desired weight/size
7. Get bigger/stronger

WORKOUT NUTRITION

PRE-LIFT

3-4 HOURS BEFORE

Large meal
Normal serving of carbs, protein, fat

P: 30-60g **C:** 30-60g **F:** 7-24g

1-2 HOURS BEFORE

Smaller meal

P: .25 g/kg BW **C:** 30-100g **F:** low; <10g

<1 HOUR BEFORE

Snack
Carbs only

C: 30-100g **H20:** .25-5 L

AM TRAINING CONSIDERATIONS

Try to eat a large meal the night before
Eat what is comfortable in AM depending on wake up time

INTRA-LIFT

Drink about 0.5-1 L of water per hour of physical activity
SIP, DON'T CHUG

TO BOOST RECOVERY:
Add 15-25 g protein powder or 10-15 g essential amino acids to water

TO HELP WITH MUSCLE MASS:
Add protein + carbohydrate drink during workout
30-45g carb + 15 g protein in 500-600 mL water every hour

MOD INTENSITY >2 HOURS OR HIGH INTENSITY >1 HOUR TRAINING:
30-45 g carb +15 g protein + electrolytes in 600 mL water every hour

COMPETITION:
45-60 g carb + 5 g protein + electrolytes in 500 mL water every hour

POST-LIFT

Drink about 0.5-1 L of water of water in the hour after

Anabolic window is 24 hours
There is no magic 30 minute window

1-2 HOURS AFTER

P: .5 g/kg BW **C:** 30-100g **F:** 10-30g

NUTRITION: SUPPLEMENTS

NUTRITIONAL SUPPS

FOR ALL SUPPLEMENTS:

- Look for third party testing
- They are unregulated by the FDA and can contain whatever they want
- Third party testing ensures that there are no extras in the supplement

FISH OIL

- Contains an omega-3 fatty acid that can help with everything from cardiovascular health and brain functioning to arthritis and inflammation.
- Approximately 500 mg recomended
- Looking for molecularly distilled

VITAMIN D

- Vitamin D is either low or deficient in 50% to 60% of people in the United States
- Can be helpful in preventing illness
- Recommended amount: at least 800 to 1,000 IU a day
- Get your levels tested first

MULTI-VITAMIN

- Recommended by most PCPs
- Increases overall nutrient intake and helps get the recommended amounts of vitamins and minerals when they can't or don't get them from food alone
- Can also raise the chances of getting too much of some nutrients, like iron, vitamin A, zinc, niacin, and folate/folic acid, especially when a person takes more than a basic, once-daily product that provides one hundred percent of the Daily Value (DV) of nutrients.
- Not necessary if eating well rounded diet
- Try to find one as specific to your gender and age as possible

PERFORMANCE SUPPS

CREATINE
- Improves performance, maximal strength, energy output
- Makes muscles fuller
- Take 2-3g/day

CAFFEINE
- Increases performance, decreases RPE, and focus
- 3-6mg/kg approximately 60 minutes before

PRE-WORKOUTS
- Increase focus and attention via stimulants
- Pre-workout drinks can have less caffeine and still be effective due to combo with other ingredients
- Caffeine, carbs, B vitamins, tyrosine, creatine

BRANCHED CHAIN AMINO ACIDS (BCAAS):
- Leucine, isoleucine and valine.
- When consuming adequate amounts of protein, additional supplementation is not necessary
- Good for:
    - Fasted workouts (if you have to lift early in the morning)
    - Those who don't eat enough protein
    - Improving recovery by decreasing protein breakdown
    - Taste good- increase water intake

ESSENTIAL AMINO ACIDS (EAAS):
- Isoleucine, leucine, valine, lysine, methionine, phenylalanine, threonine, tryptophan.
- Same idea as BCAAs, but more amino acids included which make it more effective
- Better for intra workout than BCAAs, but not better than a full protein source (protein powder)
- When consuming adequate amounts of protein, additional supplementation is not necessary
- Good for fasted workouts (if you have to lift early in the morning)
- Improves recovery by decreasing protein breakdown

PROTEIN POWDERS

WHEY PROTEIN

- High in protein but also harbors lactose (can be difficult for some to digest)
  - Whey protein concentrate retains some lactose
  - Isolate version contains very little
- Whey digests quickly and is rich in branched-chain amino acids (BCAAs)
- Whey protein increased muscle protein synthesis (MPS) 31% more than soy protein and 132% more than casein protein following resistance exercise
- It is considered the gold standard for protein powders

CASEIN

- Digested and absorbed much more slowly
  - Casein forms a gel when it interacts with stomach acid, slowing down stomach emptying and delaying your bloodstream's absorption of amino acids
  - Results in a gradual exposure of your muscles to amino acids, reducing the rate of muscle protein breakdown
- More effective at increasing MPS and strength than soy and wheat protein — but less than whey protein

EGG

- Egg white based
- Complete protein source like whey and casein
- Eggs have the highest protein digestibility
- Second highest level of leucine

COLLAGEN

- Collagen=most abundant protein in body and the major building block of skin, muscles, bones, tendons, and ligaments
- Not a complete protein source
- Only limited evidence that collagen may help with things like joint health
- Ingesting more collagen does not actually translate directly into higher levels of collagen in our body

PLANT-BASED PROTEIN POWDER

With their high fiber content, plant proteins tend to digest slower than animal proteins. This can limit the amino acids your body can use immediately after exercise. They are a great alternative for those who choose to avoid dairy/animal products. Typically grainier in texture.

PEA

- Made of yellow split pea, a high-fiber legume that boasts all but one of the essential amino acids.
- Not a complete protein but rich in BCAAs
- Absorbed slower than whey protein but faster than casein.
- Its ability to trigger the release of several fullness hormones may be comparable to that of dairy protein
- Similar increases in muscle thickness seen in those who consume pea protein as those who consumed the same amount of whey protein daily

HEMP

- Rich in beneficial omega-3 fatty acids and several essential amino acids
- Not complete protein because it has very low levels of the amino acids lysine and leucine
- Appears to be a well-digested plant protein source

RICE

- Generally considered inferior to whey protein for building muscle
- Contains all of the essential amino acids but is too low in lysine to be a complete protein

SOY

- Complete protein source
- Soy protein is higher than whey protein in arginine, phenylalanine, and tryptophan but lower in leucine, isoleucine, methionine, and lysine
- Higher in carbs and fat due to it containing fiber and plant oil
- Contrary to concern, research shows it has no effect on hormone levels

SECTION FOUR: HYDRATION

FLUID BALANCE

FLUID IN

- From food (approx 1L/day)
- Drinks
- Absorb a little water through skin
- Create minimal amount through metabolic reactions

FLUID OUT

- Sweat
- Urine
- Feces
- Vomiting
- Tears
- Saliva

HOW MUCH WATER TO DRINK

Most people need 3 liters/day at baseline, with 1 liter of water coming from food

When it is warmer: water requirement increases by up to 0.5 liters of water

With exercising: water requirements can increase by up to 3 liters of water

MORE WATER IS NEEDED:

- Hotter weather
- Drier weather
- Salty food
- After drinking alcohol
- When sweating (especially for heavy sweaters)

$$\text{SWEATING RATE} = \frac{\text{pre-exercise BW - post-exercise BW + fluid intake - urine volume}}{\text{exercise time in hours}}$$

LESS WATER IS NEEDED:

- Cooler weather
- Sedentary

CALCULATE YOUR INTAKE GOAL BASED ON BODYWEIGHT:

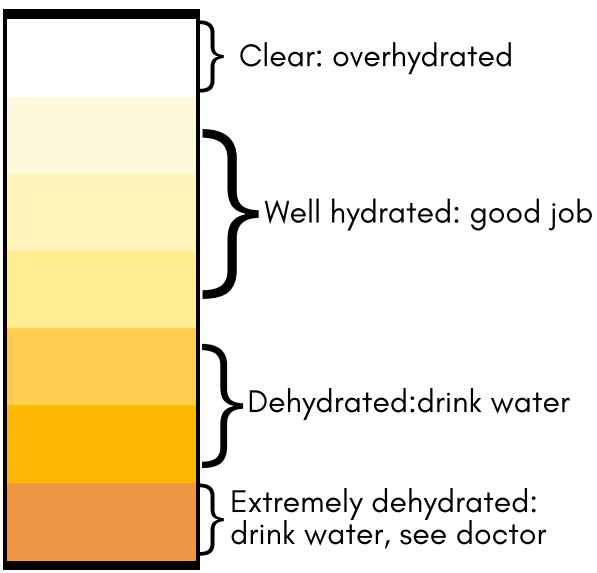
- 30-40 mL / kg body weight per day
  OR
- 1 ounce / lb bodyweight per day

DETERMINING HYDRATION STATUS

BODYWEIGHT

- If you weigh the same before and after exercise, good job you drank enough water
- If you weigh more after, you can drink less fluid
- If you weigh less, you need to drink more

URINE COLOR



THINGS THAT CAN AFFECT HYDRATION

CAFFEINE
- At higher dosages >300mg, it is a diuretic
- If you drink coffee regularly, coffee can be included in water intake

ALCOHOL

Quickly dehydrates us at a rate faster than we can replace

ELECTROLYTES:

Minerals with charge: sodium, potassium chloride, calcium and magnesium

REPLENISHING ELECTROLYTES:
- Diluted carbohydrate drink with electrolytes at 10% concentration
- More concentrated takes longer to absorb and cause GI upset
- Can also add protein to workout drink which allows for muscle protein synthesis and less protein breakdown during exercise (more on that in the next section)

WHY ADD ELECTROLYTES?
- Improves how quickly fluid is absorbed
- Enhance endurance
- Increase blood glucose and glycogen synthesis
- Lower the stress response and inflammatory damage of training
- Improve immunity
- Enhance whole body hydration
- Improve muscle and liver glycogen synthesis

FLUID IMBALANCE CONSEQUENCES

% BW LOST	CONSEQUENCES
0.5%	Increased strain on heart
1%	Reduced aerobic endurance Usually when we first notice thirst
3%	Reduced muscular endurance
4%	Reduced muscle strength & motor skills Muscle cramps
5%	Heat exhaustion, cramping, fatigue Reduced mental capacity
6%	Physical exhaustion, heatstroke, coma
10-20%	Death

SYMPTOMS OF DEHYDRATION

Headache
Fatigue
Low blood pressure
Dizziness and/or fainting
Nausea
Flushing
Rapid heart rate

SYMPTOMS OF HYPONATREMIA:

Too much water relative to sodium
Caused by drinking a lot of water without replacing electrolytes

GI discomfort
Headache
Swollen hands/feet
Confusion
Restlessness

SECTION FIVE: SLEEP

OPTIMAL SLEEP

OPTIMAL HOURS OF SLEEP

AGE	OPTIMAL	OCCASIONAL
Teenagers (14-17)	8-10 hours	7-11 hours
Young adults (18-25)	7-9 hours	6-11 hours
Adults (26-64)	7-9 hours	6-10 hours
Older adults (65+)	7-8 hours	5-9 hours

GOOD QUALITY SLEEP LEADS TO:

- Losing fat
- Gaining muscle
- Recovery and repair
- Regulate blood sugar and lipids
- Regulate hormones
- Regulate hunger, appetite, and satiety
- Clean up and get rid of waste products

This is due to the your bodily rhythms. Your body processes are controlled in part by the circadian rhythm and the sleep-wake cycle.

CIRCADIAN RHYTHM: all bodily processes occur on 24 hr schedule
SLEEP WAKE CYCLE: influenced by light and dark

THESE CYCLES REGULATE:

- Body temp
- HR and rhythm
- Digesting food and absorbing nutrients
- Releasing hormones
- Immunity and tissue repair
- Appetite and hunger
- Mood and emotions
- Energy and alertness
- Growth development and aging

IMPROVING SLEEP

SLEEP SUPPLEMENTS

- Melatonin: secreted in response to darkness to manage metabolism and sleep
  - Helps balance a person's wake-sleep cycle.
  - Start with 1 to 2 mg
- Magnesium: 200-400mg

SLEEP HYGIENE

- Dimming lights/blackout curtains
- Set a go to bed alarm
  - Pre-planned bedtime
  - A scheduled reminder 1-2 hours pre bed to wind down
    - Now a feature on iPhones!
- Consistent sleep schedule
  - Same/similar bed and wake time every day if possible
- Having a cool or hot shower/bath
  - Depending on your preferences
- Listening to calming music or white noise
- Turning off stimulating electronics 1 hour before bed
- Journaling:
  - Brain dump: write down everything you need to do, remember, are stressed out about so it doesn't keep you up
- Read a book
- Deep breathing, muscle relaxation, yoga
- Aromatherapy (lavender)
- Cuddling
- Herbal tea
- Cutting off caffeine and stimulants 8 hours before bed
- Bedroom temperature 60-67
- Weighted blanket

SECTION SIX: STRESS MANAGEMENT

WHAT IS STRESS?

Everyone has felt stressed at some point in their life.

But what is stress?

As a human being, stress is emotional or physical tension. You have a bodily response to it. It triggers your fight or flight response and raises your cortisol (the stress hormone) levels.

Stress is not necessarily a bad thing. Stress can be good for you. It can make you better. For example, training is a stressor. With proper load or stress management you can improve your levels of strength and make yourself better.

This section is going to focus on non-training related stress. It is going to focus on life stressors. We need to talk about this because, there is more going on in your life than training.

You have a job, classes, a family, friends, relationships, illness, injury, health issues, environmental issues, state of the world issues.

We need to be able to manage these as well. This comes from first recognizing these stressors. Then managing your body's response to these stressors.

STRESSORS

PHYSICAL
- Physical activity
- Poor nutrition
- Low energy intake
- Fasting
- Poor quality sleep
- Inadequate sleep
- Pathogens
- Illness
- Alcohol/drugs/toxins
- Smoking
- Injury
- Jet Lag
- Pregnancy/breast feeding

MENTAL
- Anxiety
- Racing thoughts
- Too many cognitive demands
- Decision fatigue
- Information overload
- Poor mindset and mental skills
- Perfectionism
- Having to function in non-native language
- Mental illness

EMOTION
- Grief, loss
- Sadness, depression
- Anger, aggression
- Shame, guilt
- Fear and apprehension
- Loneliness

EXISTENTIAL
- Meaningless, purposelessness
- Hopelessness, apathy
- Depression, despair
- Loss of certainty or belief system
- Worrying about one's place in the world

RELATIONAL/SOCIAL
- Unsupportive/dysfunctional relationships
- Relationship conflict
- Loneliness
- Social rejection or judgment
- Lack of community
- Low social status
- Cultural misfit/shock

ENVIRONMENTAL
- Disrupted light/dark cycles
- Pollution
- Noise, odors
- Extreme conditions (heat, cold, altitude)
- Chaos
- Violence

Allostatic load: total sum of all stressors

STRESS RESPONSE

VOCABULARY

Homeostasis=dynamic equilibrium, your body's baseline

Stress response= reaction to a stressor

The goal of the stress response is to:

- Get our attention
- Manage a threat
- Deal with damage
- Return our body to homeostasis

BREAKDOWN OF THE STRESS RESPONSE

1) Start in homeostasis

2) Enter a stressor (like an intense workout)

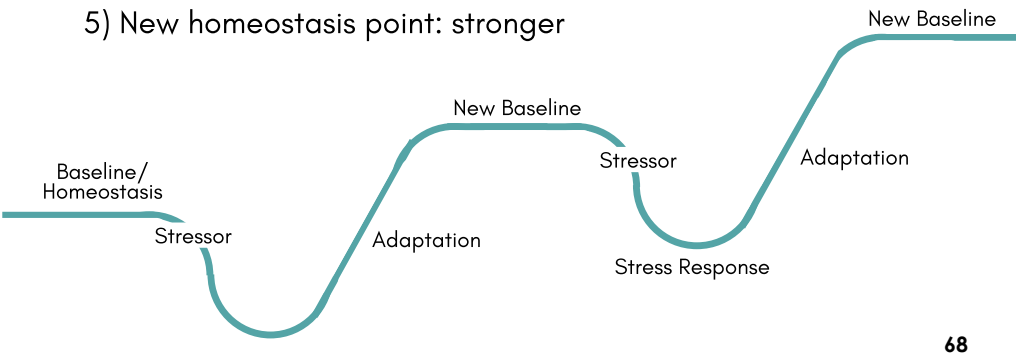
3) We enter an alarm phase as we respond to stressor

Workout example: Increased ATP turnover, HR to have O2 reach tissues, stress hormones, SNS response

After: metabolic byproducts build up, ATP turnover slows down, nutrients such as glycogen briefly depleted in our liver and muscles, immune system briefly depressed, microdamage and inflammatory hormones increase inflammation

4) Recovery: stronger and more resilient for future stressc

5) New homeostasis point: stronger



GOOD STRESS VS BAD STRESS

EUSTRESS=GOOD STRESS	DISTRESS=BAD STRESS
Find it valuable	Not valuable
Short	Lasts a long time
Infrequent	Chronic
Over quickly	Ongoing
Positive life experience	Negative life experience
Inspires us	Depressing/demoralizing
Leaves us better	Breaks us down
Example: training for an event, winning, starting a new job voluntarily, a difficult work assignment that you enjoy	**Example**: losing a game, exercise you don't enjoy, relationship issues, losing income, boring work tasks

STRESS SWEET SPOT= HIGHLY INDIVIDUAL
Based on

- Genetics
- Allostatic load
- Attitude and outlook
- Life experience
- Perception of control
- Tendency to be control freaks
- Ability to deal with emotions
- Environment

CHRONIC STRESS

Chronic stress includes chronic energy deficit (from undereating, chronic dieting, and/or over-exercising), nutrient deficiency, or other chronic stressors

RESULTS IN

- Hypothalamic-pituitary-adrenal and hypothalamic-pituitary-gonadal (HPA-HPG) axis dysfunction
  - Loss of sex drive
  - Low energy or more fatigue
  - Moody
  - Anxiety
- Low fertility
- Women:
  - Low FSH and LH levels, Low estrogen and progesterone
  - Amenorrhea and menstrual disruption
- Men:
  - Low testosterone
  - Low sperm count

STRESS REDUCTION

MINDFULNESS BASED STRESS REDUCTION (MBSR): meditation, purposeful relaxation exercises

CHANGING MINDSET

- Fixed mindset: outcomes/abilities are fixed and unable to change
  - Catastrophizing, shame, guilt, regret and self-criticism leads to decreased recovery and higher stress
- Growth mindset: able to change, everything is something to learn from
  - Improves outcomes and recovery

MENTAL AND EMOTIONAL RECOVERY

- Mind-body scan: paying attention to parts of the body and bodily sensations in a gradual sequence from feet to head
  - Bring awareness to every single part of your body, noticing any aches, pains, tension, or general discomfort
  - Begin observing sensations in your feet. If you notice pain, acknowledge it and any thoughts or emotions that accompany it, and gently breathe through it
- 20 minutes of purposeful de-stressing
  - Walking
  - Seeking laughter
  - Social connection
  - Cuddling
- Information vacation (social media detox)
- Being active outside, in nature
- Crucial conversations with people

SECTION SEVEN: ACTIVE RECOVERY

EXAMPLES

WHAT ACTIVE RECOVERY IS

- Walking
- Light cardio (biking, swimming)
- Yoga
- Mobility work/stretching
- Rules of stretching:
    - Greater than 30 seconds spent in each position is required to change tissue length
    - No bouncing

WHAT IT IS NOT:

- Lifting but at a lower percentage
- High intensity training (running, crossfit, HIIT style workouts)
- Complete rest (sitting on the couch)

SECTION EIGHT: RECOVERY TOOLS

BENEFITS?

Ultimately, recovery modalities have the least amount of benefit compared to everything else. It can add an extra benefit for those at the highest level of competition who are looking for an extra edge.

But the other stuff matters more. Hence, the modalities sitting at the top of the pyramid. You need to focus on the bottom of the pyramid first before you can get to the top.

For 99% of people it is more important to be focusing on your nutrition, sleep and stress. Then, and only then, should you really worry about upgrading your recovery.

RECOVERY MODALITIES

EXAMPLES OF RECOVERY MODALITIES:

- Foam rolling
- Massage guns
- Lacrosse ball massages
- Steam sauna
- Dry sauna
- Cryobaths
- Epsom salt baths
- Sensory deprivation floats
- Compression garments
- Ice/Air compression boots
- Electric stimulation
- Massage chairs
- Deep tissue massage
- Dry needling
- Hyperbaric oxygen therapy

ABOUT KATE DRISCOLL

I'm a Doctor of Physical Therapy and coach based in Massachusetts. I earned my Doctorate in Physical Therapy from Northeastern University in 2018. A year later I earned my CSCS from NSCA. This year I completed a course through Precision Nutrition and became a PN Level 1 Nutrition coach.I've been a lifelong athlete and played pretty much any sport my school and town offered growing up. In high school, I rowed crew for four years. After high school, and during my time at Northeastern I discovered the fascinating sport of powerlifting through Northeastern's club powerlifting team. It has become one of my biggest passions since.I not only love competing in powerlifting, I love helping others become stronger versions of themselves. I returned to Northeastern's club team as a coach for the women's team in 2019. My mission is to guide people to take control of their mental and physical health through strength training. I want to provide evidence based education on the benefits of strength training.

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