Prioritizing Fuel for Optimal Performance

With Maggie Rettelle, RDN, NBC-HWC

GREATER MIDLAND CORPORATE WELLNESS

DOW FAMILY HEALTH CENTER

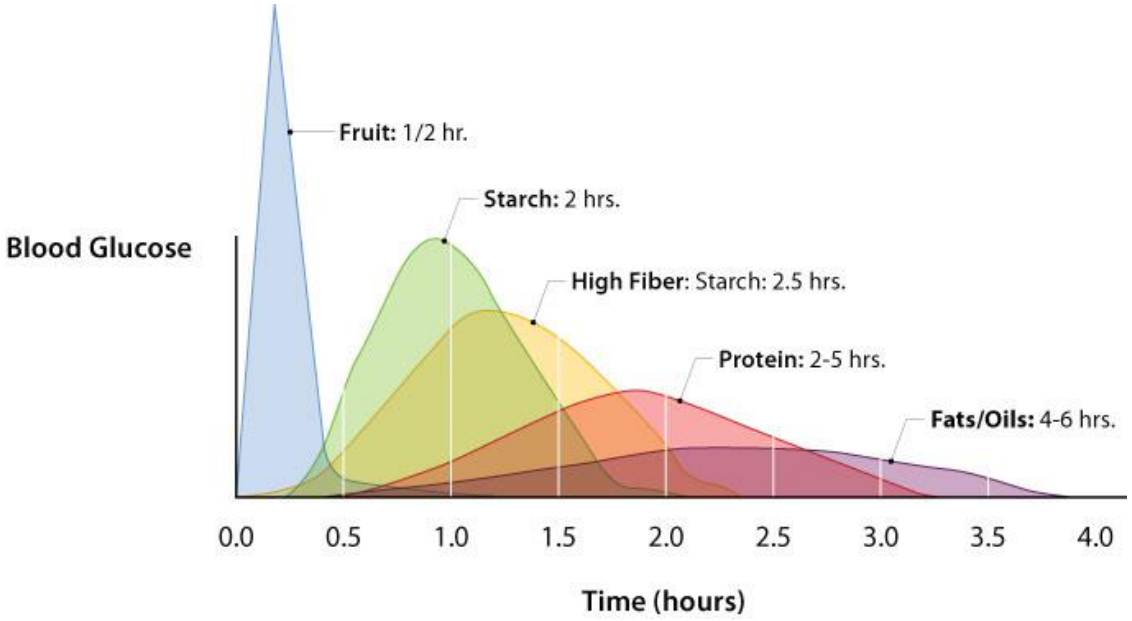
QuadMed

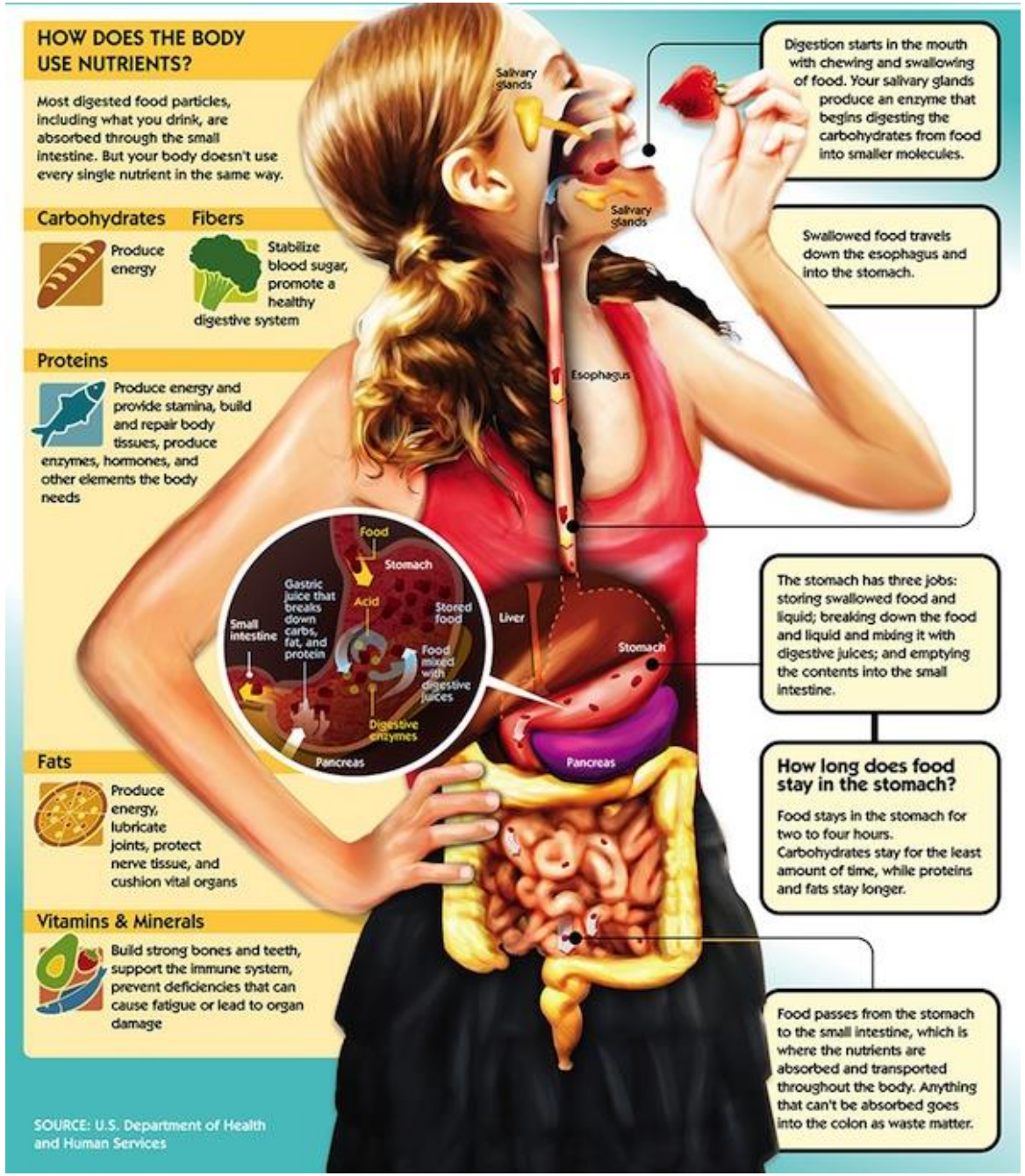
"Your body is a finely tuned vehicle; give it good fuel and it will take you places"

Your body is an amazing machine, and just like a vehicle, it needs good fuel to perform at its best. You will realize:

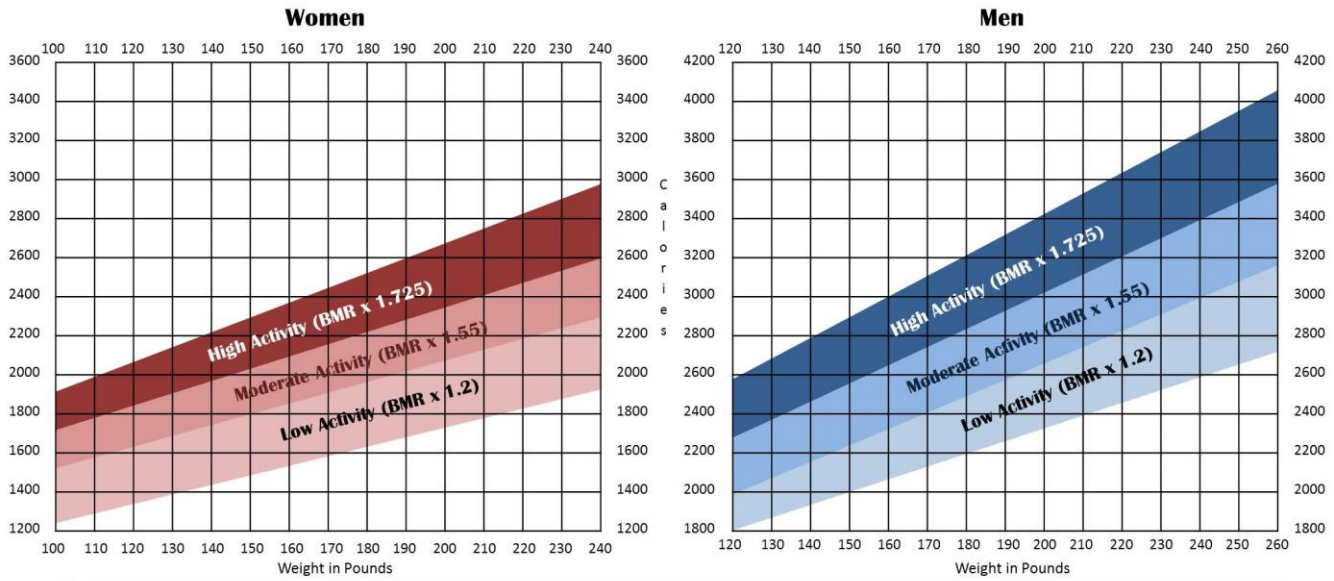
1. Increased energy levels
2. Improved brain function
3. Better mood
4. Enhanced physical performance
5. Reduced risk for chronic disease

The Digestive Process





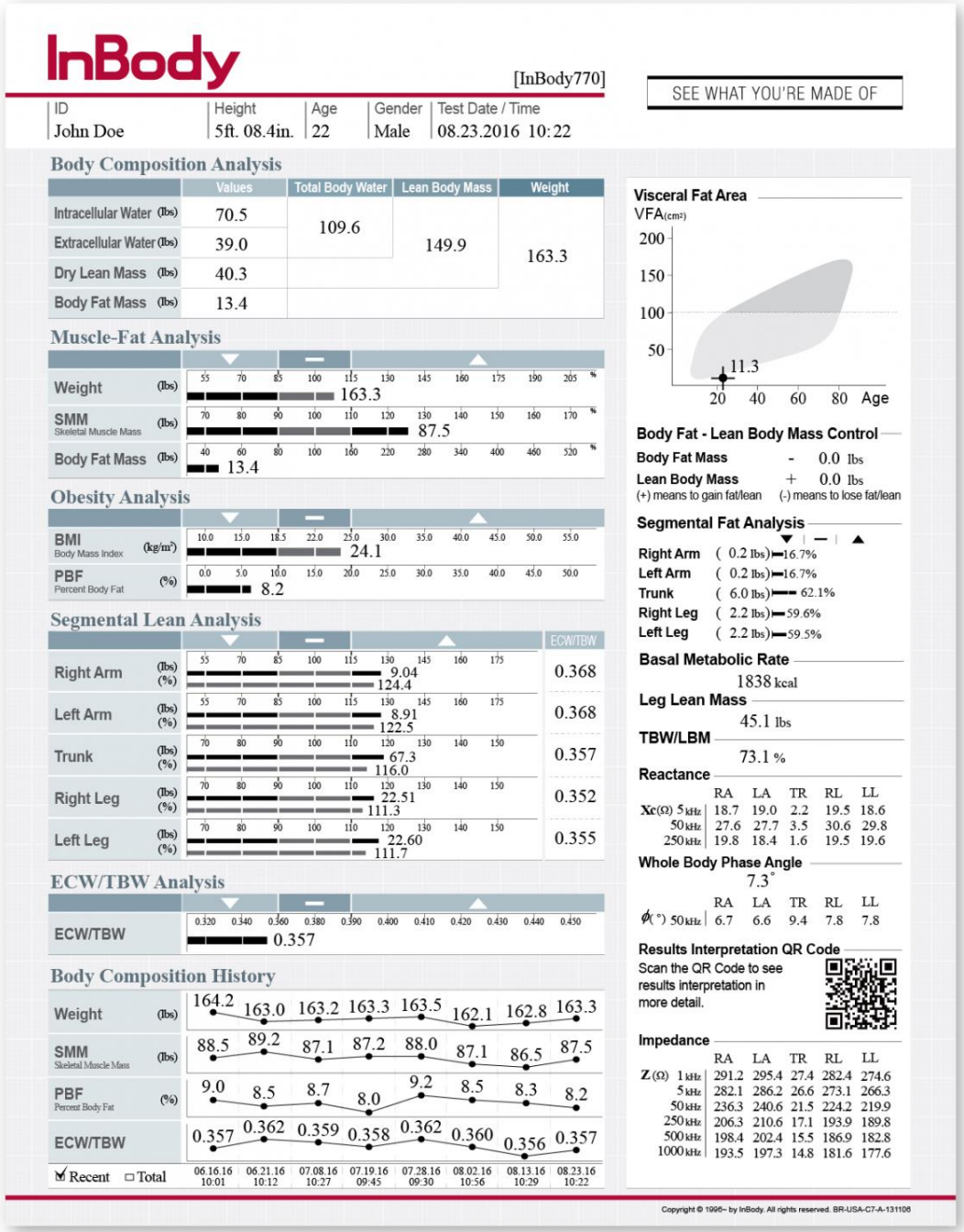
Your Daily Caloric Needs:



Basal Metabolic Rate (BMR) Calculator — BMR

Women: BMR = 655 + (4.35 x weight in pounds) ____ + (4.7 x height in inches) ____ - (4.7 x age in years) ____ = ____

Men: BMR = 66 + (6.23 x weight in pounds) ____ + (12.7 x height in inches) ____ - (6.8 x age in years) ____ = ____



InBody [InBody770]

SEE WHAT YOU'RE MADE OF

ID	Height	Age	Gender	Test Date / Time
John Doe	5ft. 08.4in.	22	Male	08.23.2016 10:22

Body Composition Analysis

	Values	Total Body Water	Lean Body Mass	Weight
Intracellular Water (lbs)	70.5	109.6	149.9	163.3
Extracellular Water (lbs)	39.0			
Dry Lean Mass (lbs)	40.3			
Body Fat Mass (lbs)	13.4			

Muscle-Fat Analysis

Weight	(lbs)	163.3
SMM Skeletal Muscle Mass	(lbs)	87.5
Body Fat Mass	(lbs)	13.4

Obesity Analysis

BMI Body Mass Index	(kg/m²)	24.1
PBF Percent Body Fat	(%)	8.2

Segmental Lean Analysis

			ECW/TBW
Right Arm	(lbs)	9.04	0.368
	(%)	124.4	
Left Arm	(lbs)	8.91	0.368
	(%)	122.5	
Trunk	(lbs)	67.3	0.357
	(%)	116.0	
Right Leg	(lbs)	22.51	0.352
	(%)	111.3	
Left Leg	(lbs)	22.60	0.355
	(%)	111.7	

ECW/TBW Analysis

ECW/TBW	0.357

Body Composition History

	06.16.16 10:01	06.21.16 10:12	07.08.16 10:27	07.19.16 09:45	07.28.16 09:30	08.02.16 10:56	08.13.16 10:29	08.23.16 10:22
Weight (lbs)	164.2	163.0	163.2	163.3	163.5	162.1	162.8	163.3
SMM Skeletal Muscle Mass (lbs)	88.5	89.2	87.1	87.2	88.0	87.1	86.5	87.5
PBF Percent Body Fat (%)	9.0	8.5	8.7	8.0	9.2	8.5	8.3	8.2
ECW/TBW	0.357	0.362	0.359	0.358	0.362	0.360	0.356	0.357

☑ Recent ☐ Total

Visceral Fat Area

VFA(cm²): 11.3

Body Fat - Lean Body Mass Control

Body Fat Mass - 0.0 lbs

Lean Body Mass + 0.0 lbs

(+) means to gain fat/lean (-) means to lose fat/lean

Segmental Fat Analysis

Right Arm	(0.2 lbs)	16.7%
Left Arm	(0.2 lbs)	16.7%
Trunk	(6.0 lbs)	62.1%
Right Leg	(2.2 lbs)	59.6%
Left Leg	(2.2 lbs)	59.5%

Basal Metabolic Rate

1838 kcal

Leg Lean Mass

45.1 lbs

TBW/LBM

73.1 %

Reactance

	RA	LA	TR	RL	LL
Xc(Ω) 5 kHz	18.7	19.0	2.2	19.5	18.6
50 kHz	27.6	27.7	3.5	30.6	29.8
250 kHz	19.8	18.4	1.6	19.5	19.6

Whole Body Phase Angle

7.3°

	RA	LA	TR	RL	LL
ϕ(°) 50 kHz	6.7	6.6	9.4	7.8	7.8

Results Interpretation QR Code

Scan the QR Code to see results interpretation in more detail.

Impedance

	RA	LA	TR	RL	LL
Z(Ω) 1 kHz	291.2	295.4	27.4	282.4	274.6
5 kHz	282.1	286.2	26.6	273.1	266.3
50 kHz	236.3	240.6	21.5	224.2	219.9
250 kHz	206.3	210.6	17.1	193.9	189.8
500 kHz	198.4	202.4	15.5	186.9	182.8
1000 kHz	193.5	197.3	14.8	181.6	177.6

Your Daily Movement and how it adds up:

YOUR WEIGHT IN LBS.	Low Intensity raking, active gardening, recreational sports (e.g., softball, golf—no cart)	Medium Intensity walking, mowing, tennis, biking, light aerobics, swimming, weight lifting	High Intensity moderate running, stair machine, racquetball, vigorous swimming	Very High Intensity running, stair climbing, cross-country skiing, jumping rope
100-120	1 cal/min	3 cal/min	7 cal/min	10 cal/min
121-140	1 cal/min	5 cal/min	9 cal/min	12 cal/min
141-160	2 cal/min	5 cal/min	10 cal/min	13 cal/min
161-180	2 cal/min	6 cal/min	11 cal/min	14 cal/min
181-200	2 cal/min	7 cal/min	12 cal/min	15 cal/min
201-220	2 cal/min	7 cal/min	13 cal/min	17 cal/min
221-240	3 cal/min	8 cal/min	14 cal/min	18 cal/min
241-260	3 cal/min	9 cal/min	15 cal/min	19 cal/min
261-280	3 cal/min	9 cal/min	16 cal/min	20 cal/min
281-300	3 cal/min	10 cal/min	17 cal/min	21 cal/min

Examples:

Limited activity:
(sits for work, light housework and cooking (2 hours), sits rest of the night)

RMR + 120-360 cals

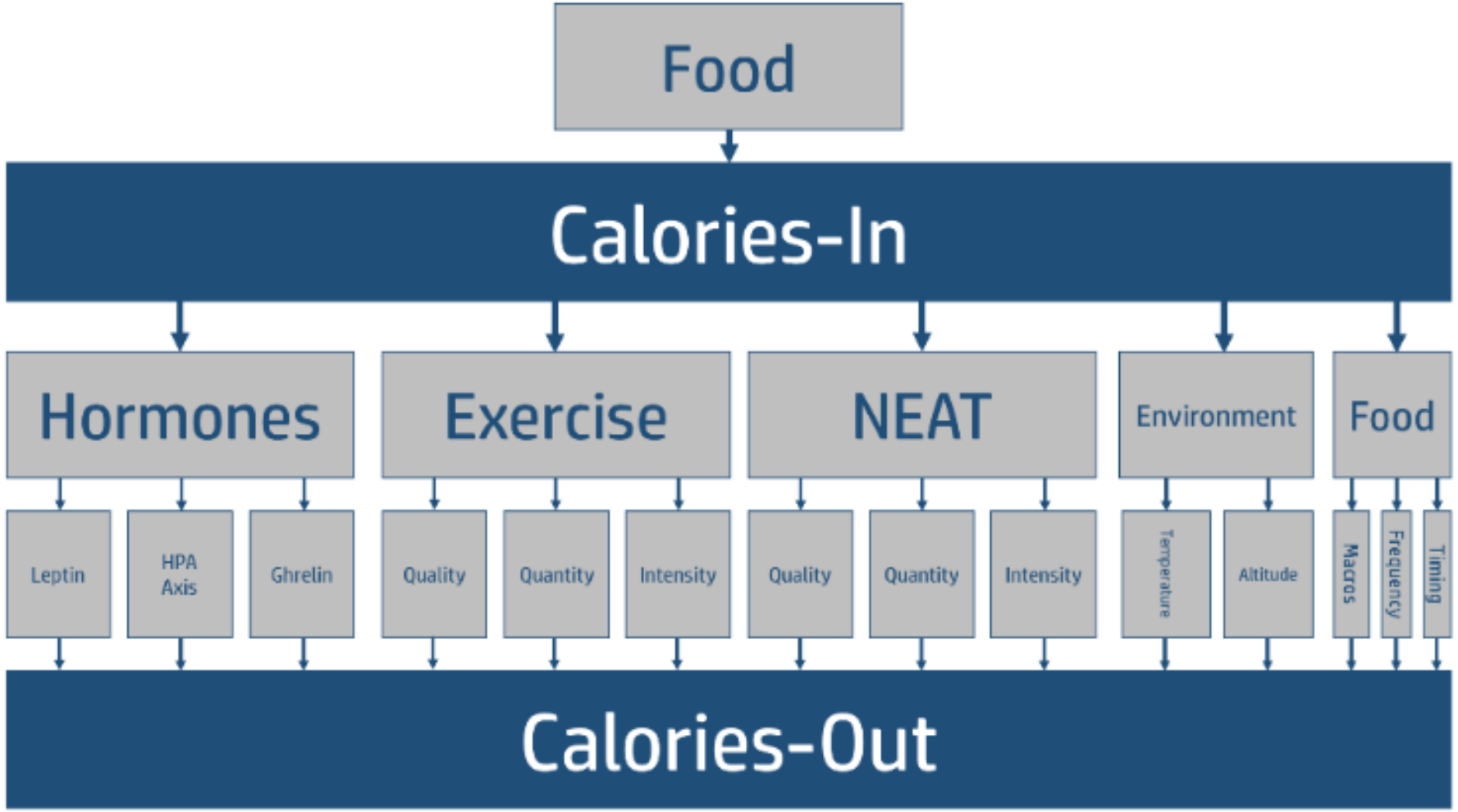
Medium activity:
(sits for work, gym or outdoor activity 1 hour, moderate housework and cooking 1 hour, sits rest of the night)

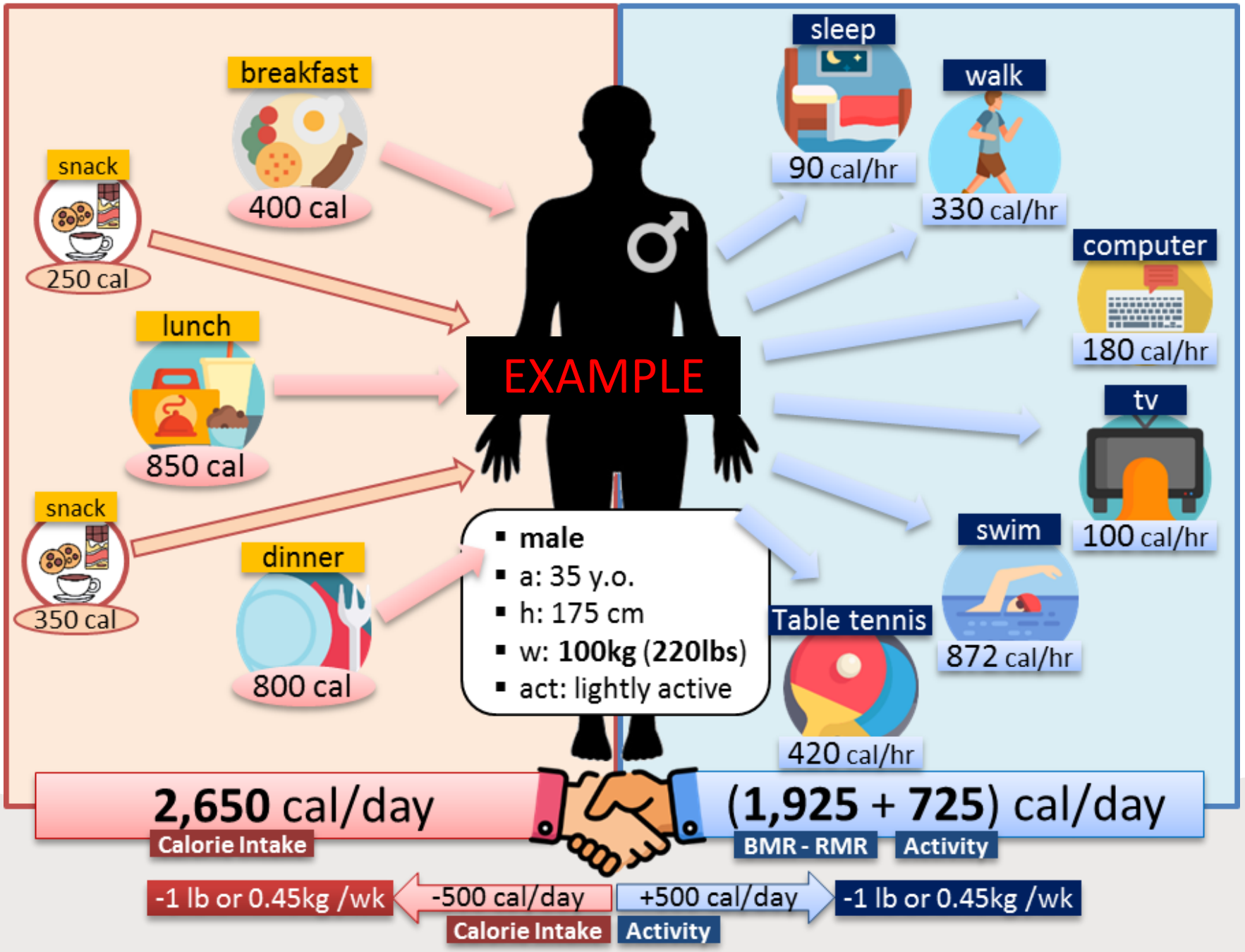
RMR + 360-1200 cals

High Intensity activity:
(sits for work, moderate gym or outdoor activity 2 hours, moderate housework and cooking 1 hour, sits rest of the night)

RMR + 880-2040 cals

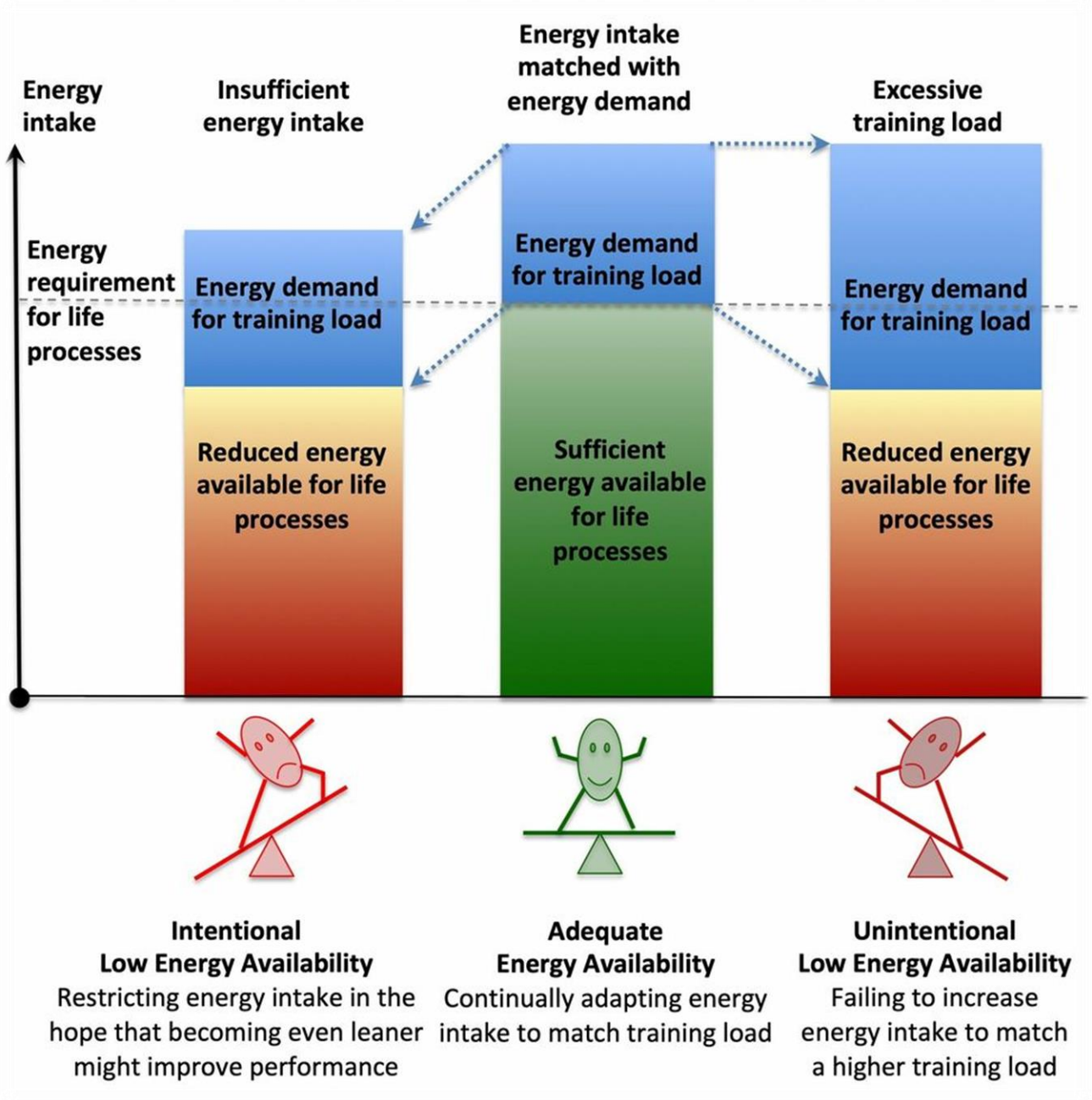
Putting all the factors together





What is my calorie goal for the day?

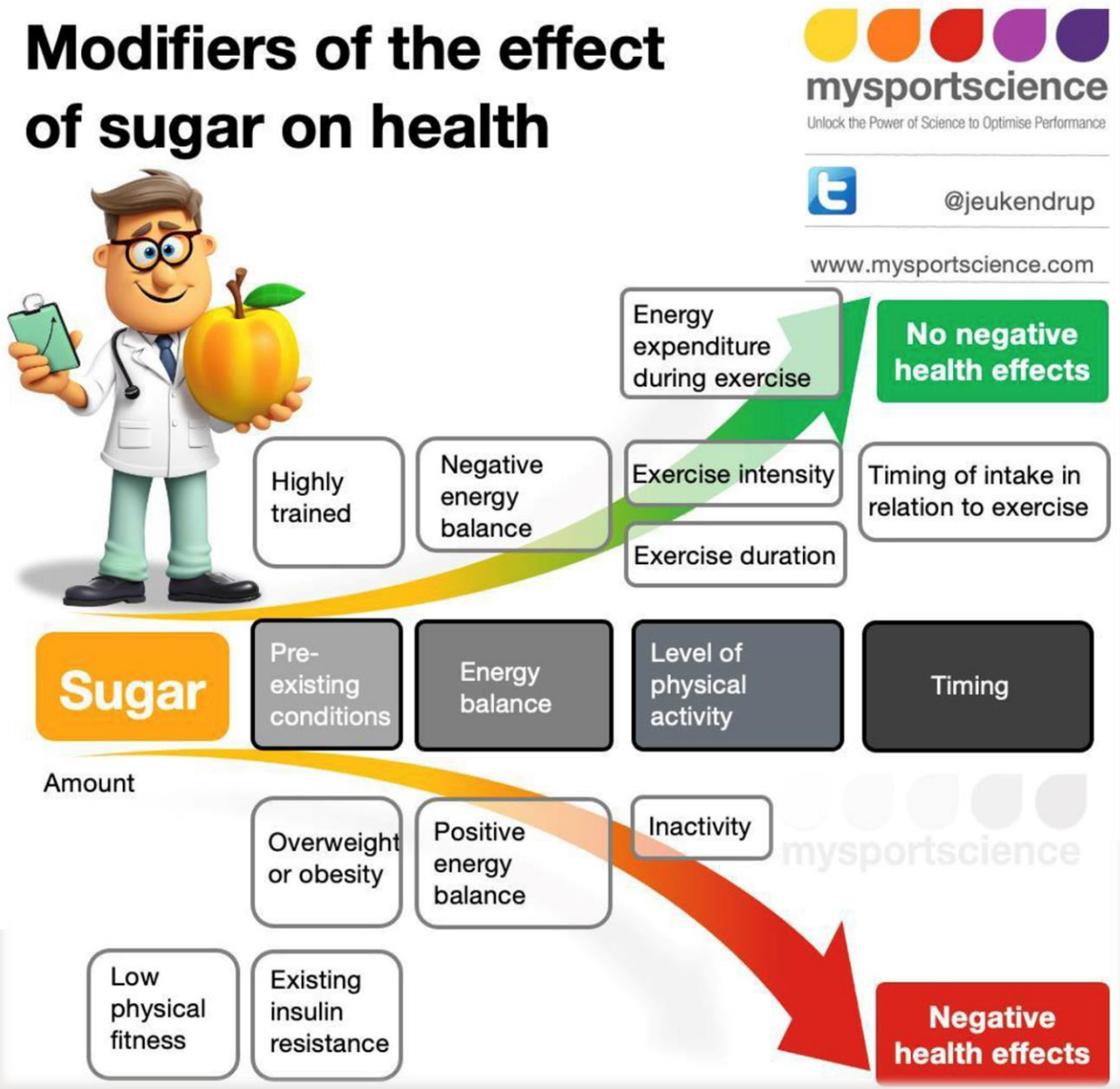
LET'S DO THE MATH!



Energy Availability:
matching energy intake with energy demand

- Matched energy demand will result in supporting life processes
- Insufficient energy intake will not meet demand for life processes
- Excessive training load will reduce availability for life processes

- **Key to success:** meet energy needs in balance for life process needs then match energy needed for training or activity load for the day



What about added SUGAR?

where it fits in fueling practice:

PROS:

- During activity
- To help with energy balance
- High intensity activity or long duration (greater than an hour)
- Close to or during an activity

CONS:

- Inactive
- Insulin resistance (glycemic index to consider)

Common Protein Sources

Food	Serving Size	Leucine per Serving	Protein per serving
Meat	3 oz. chicken breast	1.3 g	
	3 oz. steak	2.4 g	26 g
	3 oz. salmon	1.5 g	22 g
	3 oz. ground turkey	2.0 g	17 g
	1 egg	0.5 g	6 g
Dairy	6 oz. Greek yogurt	0.9 g	18 g
	1/2 c cottage cheese	0.8 g	12 g
	8 oz. milk	0.7 g	8 g
	1 oz. cheese	0.5 g	7 g
Beans, Legumes, Nuts, & Seeds	1 c chickpeas	1.0 g	
	1 c cooked lentils	1.3 g	18 g
	1/2 c shelled edamame	0.6 g	13 g
	1 oz. nuts (or 2 T nut butter)	0.5 g	7 g
	3 oz. tofu	1.2 g	7 g
	3 oz. tempeh	1.2 g	16 g
Other	1 scoop whey protein powder	2.3 g	
	1 scoop pea protein powder	1.7 g	20 g
	1 protein bar	1.6 g	20 g
	1 energy bar	0.6 g	11 g

- High quality protein is important to support muscle maintenance and growth.
- L-Leucine is important to include enough of every day

PROTEIN is necessary to:

- Build and repair tissues (bone, muscle, tendons, ligaments)
- Facilitate chemical reactions via enzymes
- Coordinate bodily functions via hormones
- Transport nutrients throughout the body

PROTEIN needs:

Activity Level	Protein Needs g/kg/day	150lb (68 kg) Athlete	180lb (82 kg) Athlete
Average, Non-Athlete	0.8 - 1.0	54 - 68 g	66 - 82 g
Endurance Athlete	1.2 - 1.4	82 - 95 g	102 - 115 g
Power Athlete	1.5 - 1.8	102 - 116 g	123 - 140 g
Injured or Weight Loss Athlete	1.8 - 2.2	122 - 150 g	148 - 180 g

What about PROTEIN POWDERS AND other SUPPLEMENTS?

Isolate protein

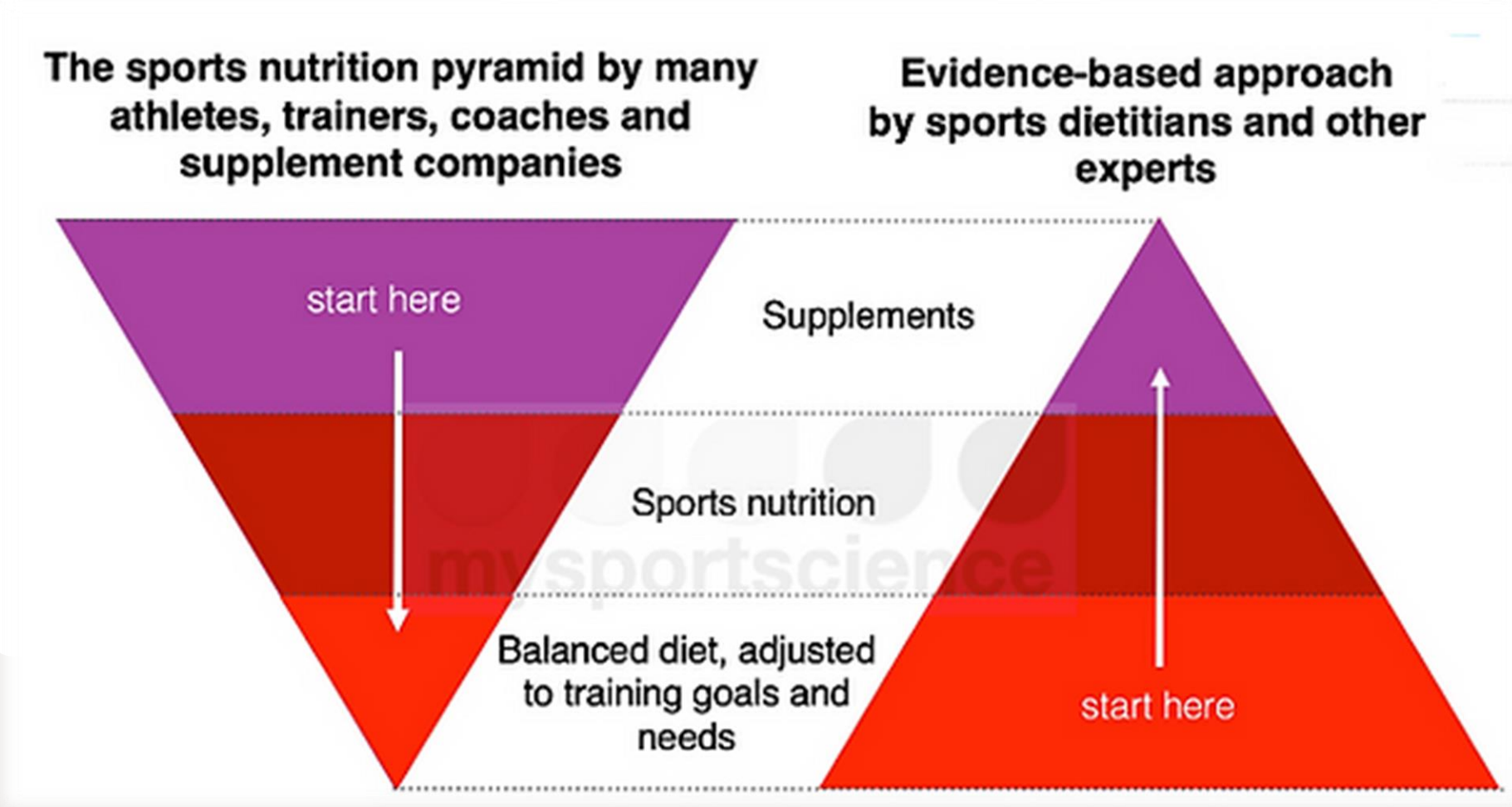
Plant based or whey

Total food based

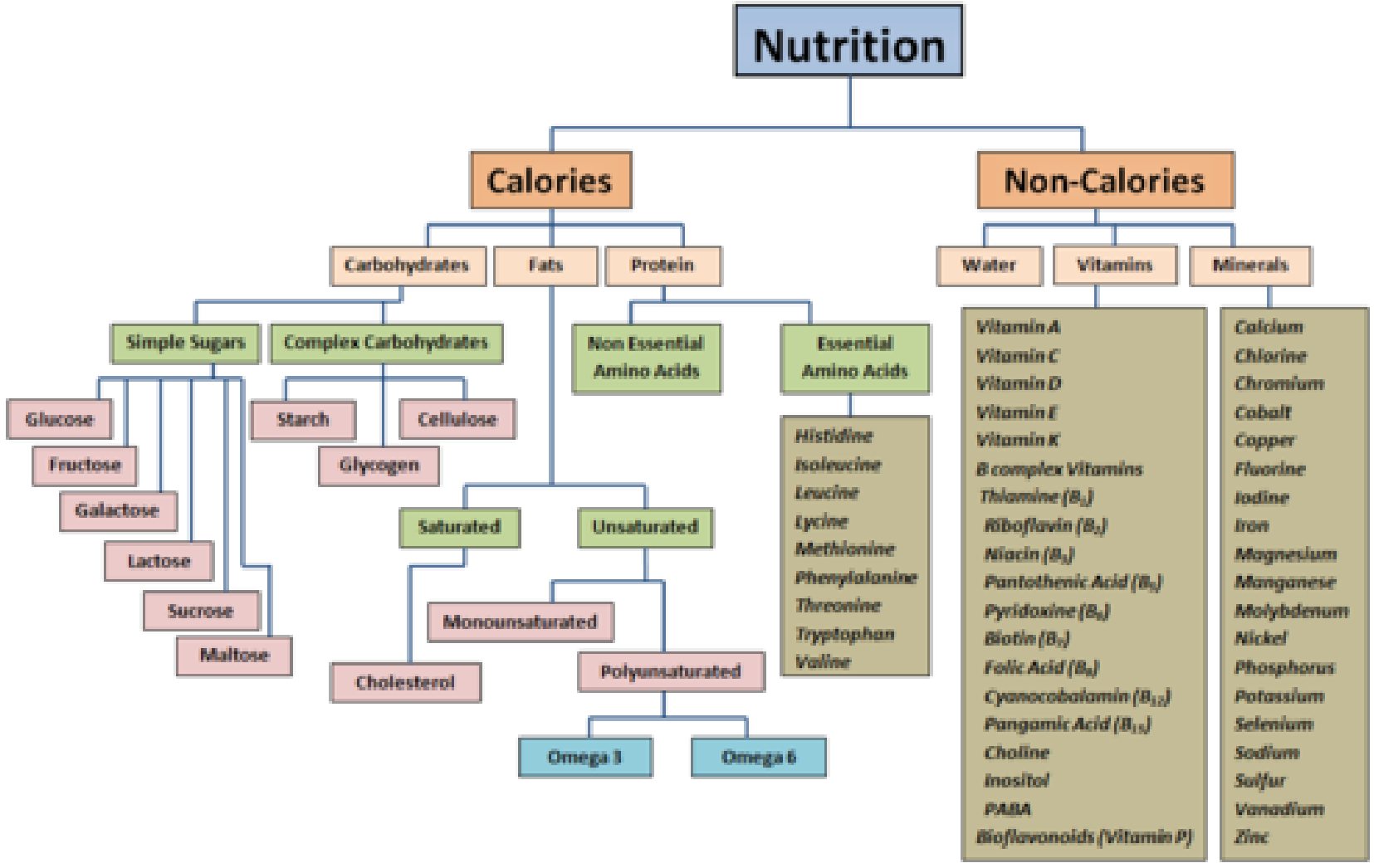
Probiotics

Adaptogens

Creatine

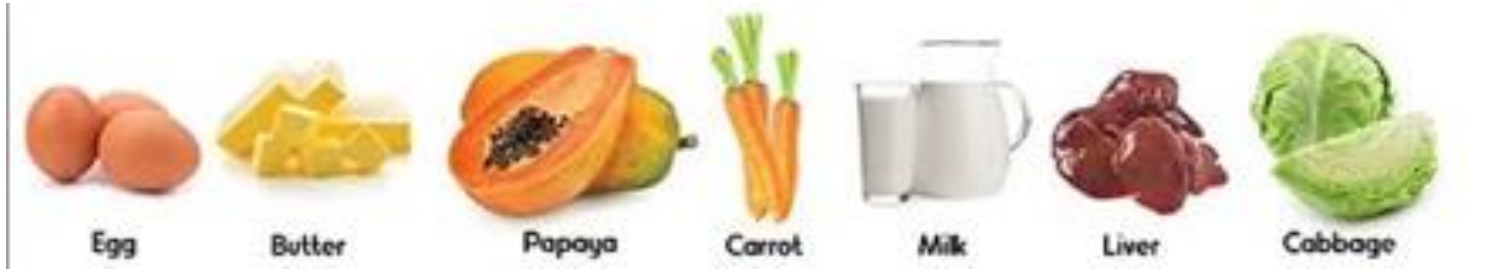


Why the level of processing of food matters



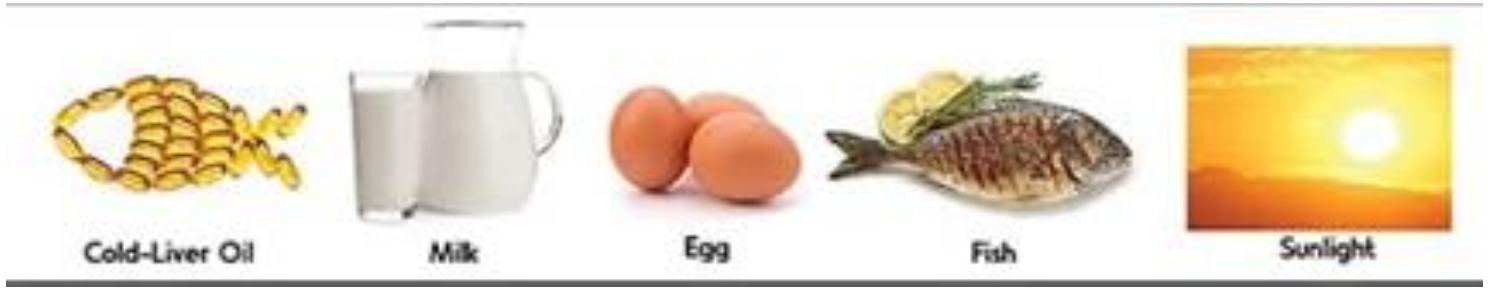
Fat soluble vitamins

A



The best dietary sources of vitamin A include liver and fish oil. Sufficient amounts can also be derived from provitamin A carotenoids, like beta-carotene, which are found in vegetables.

D



Few foods naturally contain vitamin D. The best dietary sources are fatty fish and fish oil, but mushrooms that have been exposed to ultraviolet light may also contain significant amounts.

E

The best sources of vitamin E are certain vegetable oils, nuts, and seeds.

K

Vitamin K is a family of compounds. The main dietary forms are vitamin K1, found in plant foods, and vitamin K2, found in animal-derived foods and fermented soy products.

Non-Starchy Vegetables and low carb fruits

(3-5 servings per day
1 cup raw, ½ cup cooked)

Artichokes
Arugula
Asparagus
Bell peppers (yellow, green, red, orange)
Bok choy
Broccoli
Brussels sprouts
Cabbage
Cauliflower
Celery
Collard greens
Cucumbers
Unsweetened Cranberries
Eggplant
Green Snap pes
Green beans
Iceburg lettuce
Kale
Leaf Lettuce
Leeks
Lemons
Lettuce
Limes
Mushrooms
Mustard greens
Okra
Onions
Radish
Romaine Lettuce
Shiitake mushrooms
Spinach (cooked and raw)
Swiss chard
Summer Squash (yellow)
Tomatoes
Watercress
Zucchini

25% Healthy Lean Proteins: *(Wild or Grass-Fed, Hormone and Antibiotic-Free if possible) – (red meats and pork, highly fatty meats limit- processed meats not recommended)*

- Cheese (Parmesan, feta, goat, extra-sharp) (1svg per day)
  Nut butters (1 serving per day recommended)
- Tofu (organic), soy beans, tempeh
- Whole Eggs, preferably omega-3; low fat plain Greek yogurt, 2% or fat free cottage (1/4 cup)
- White meat chicken, turkey, no skin (check labels for ground varieties)
- Salmon (wild caught has lower levels of mercury, PCB and other toxins); Tuna
- other fatty fish: wild herring, mussels, anchovies, swordfish, sardines, mackerel, trout, Alaskan pollack

Healthy fat/oil/other

Healthy Oils

(eat sparingly-oil adds up quickly!)

- Extra Virgin Olive oil
- Walnut oil
  Avocado oil
  Butter (do not buy butter's that come in a tub)
- Flaxseed oil

Healthy Nuts and Seeds

- Almond butter
- Almonds, raw
- Amaranth
- Brazil Nuts
- Buckwheat
- Cashews
- Chia
- Flax (ground)
- Pistachios
- Pumpkin seeds
- Sunflower seeds (tahini)
- Sesame seeds
- Teff
- Walnuts

(Under fruits) Avocado

25% Whole Grains or Starchy Vegetables

(to be eaten in moderation when reducing carbohydrates, which are the starchier and sweeter vegetables. If possible, soak seeds, legumes and grains overnight to improve digestion, absorption and assimilation)

Whole Grains

- Brown rice
- Bulgur (cracked wheat)
- Farro
- Millett
- Polenta
- Quinoa
- Sprouted grain bread/tortilla/100% whole wheat
- Oats (old fashion or steel cut)
- Organic cornmeal/corn tortillas
- sorghum

Pastas: (eat infrequently)

- Brown or black rice pasta
- Lentil/bean/chickpea Pasta
- Buckwheat, almond flour
- Quinoa, Squash or edamame and mung bean

Starchy Vegetables:

- Acorn squash*
- Beets*
- Butternut squash*
- Carrots
- Corn*
- Green Peas*
- Parsnips*
- Yellow, sweet or red potatoes*
- Pumpkin*
- Spaghetti squash*
- Turnips*
- Winter Squash*
- Yams/sweet potatoes*

Beans/Peas/Lentils (if canned, no salt added):

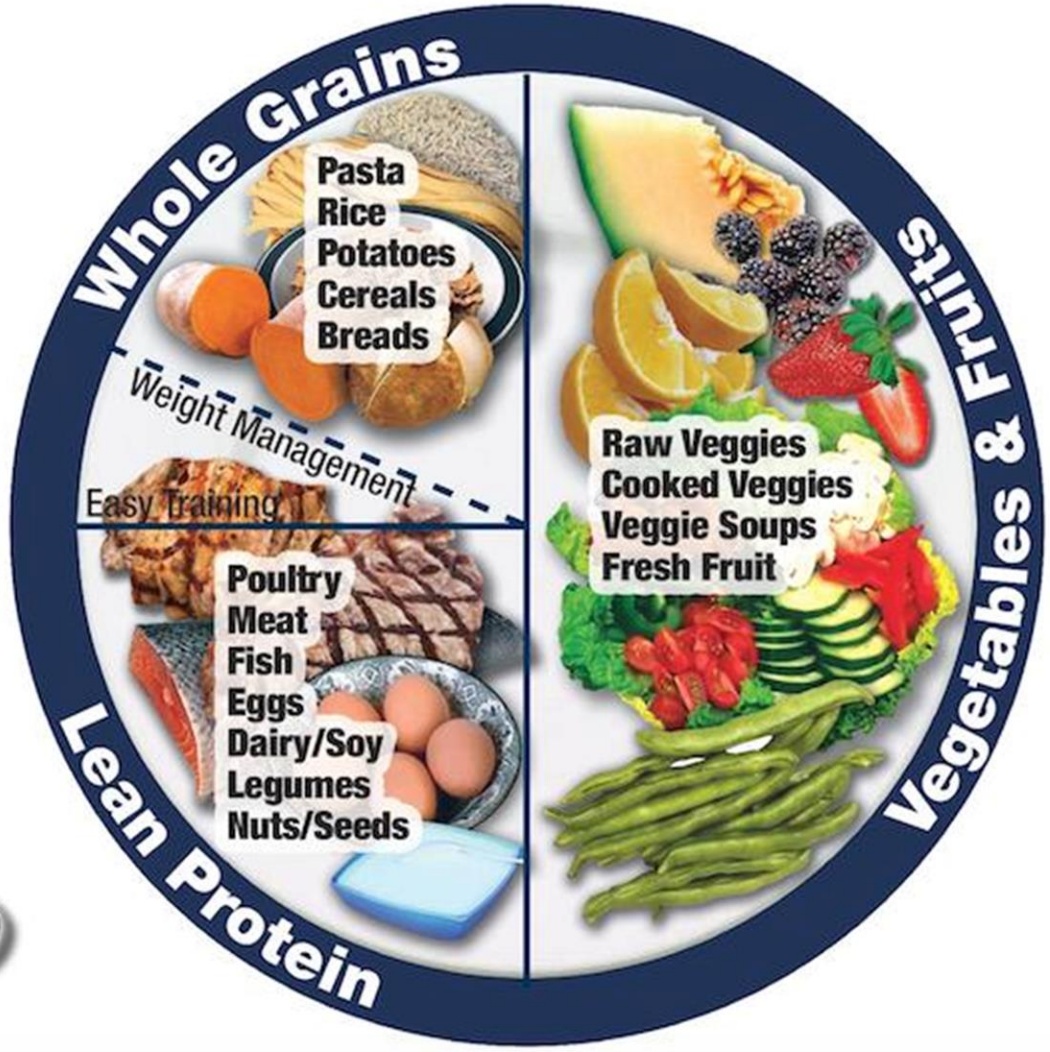
- Adzuki Beans
- Black, kidney, pinto, garbanzo, white beans
- Black-eyed peas, Fava beans
- Lentils
- Lima beans
- Navy beans
- Split peas

EASY TRAINING / WEIGHT MANAGEMENT:

FATS

1-3 Teaspoon(s)

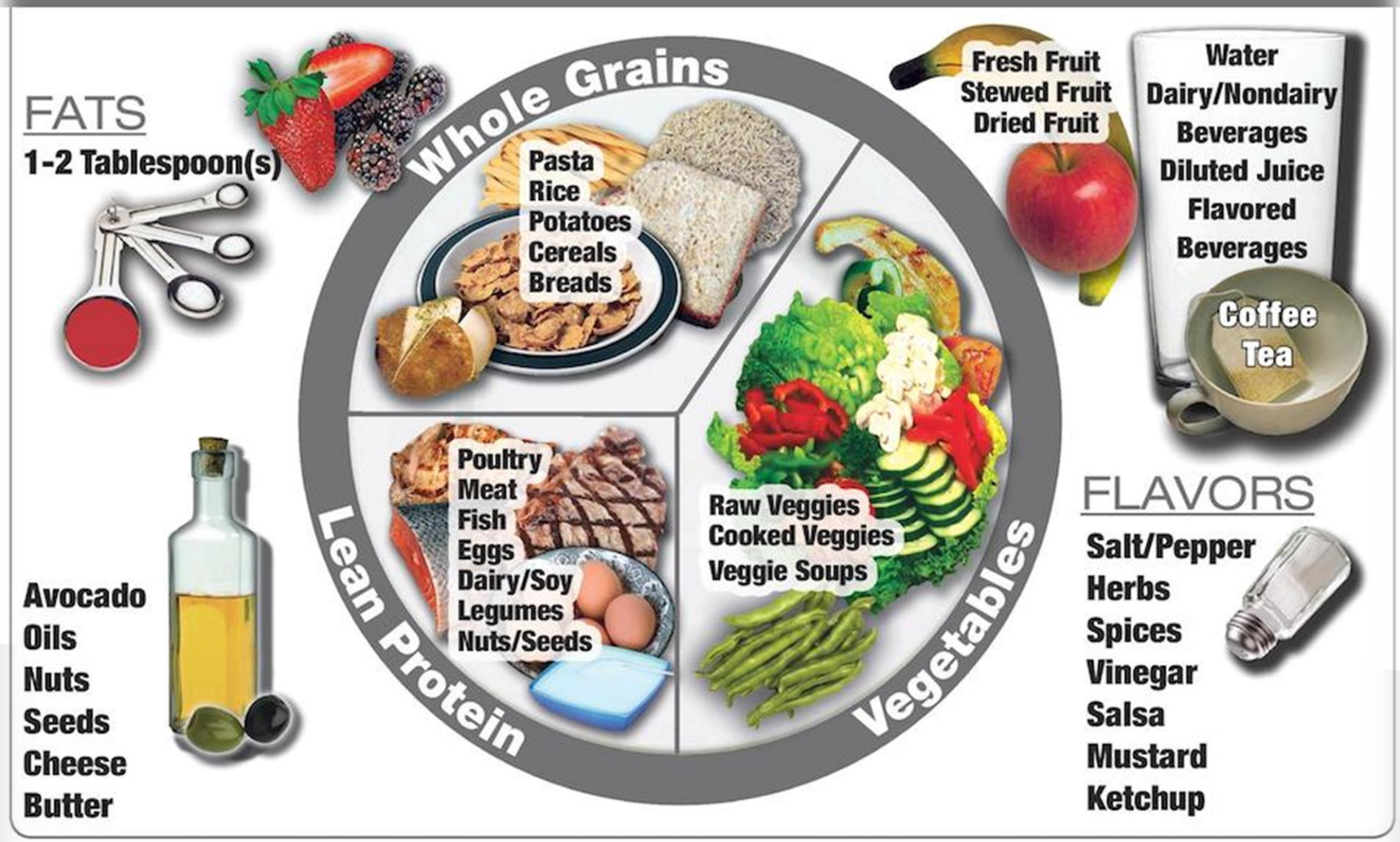
Avocado
Oils
Nuts
Seeds
Cheese
Butter



FLAVORS

Salt/Pepper
Herbs
Spices
Vinegar
Salsa
Mustard
Ketchup

MODERATE TRAINING:

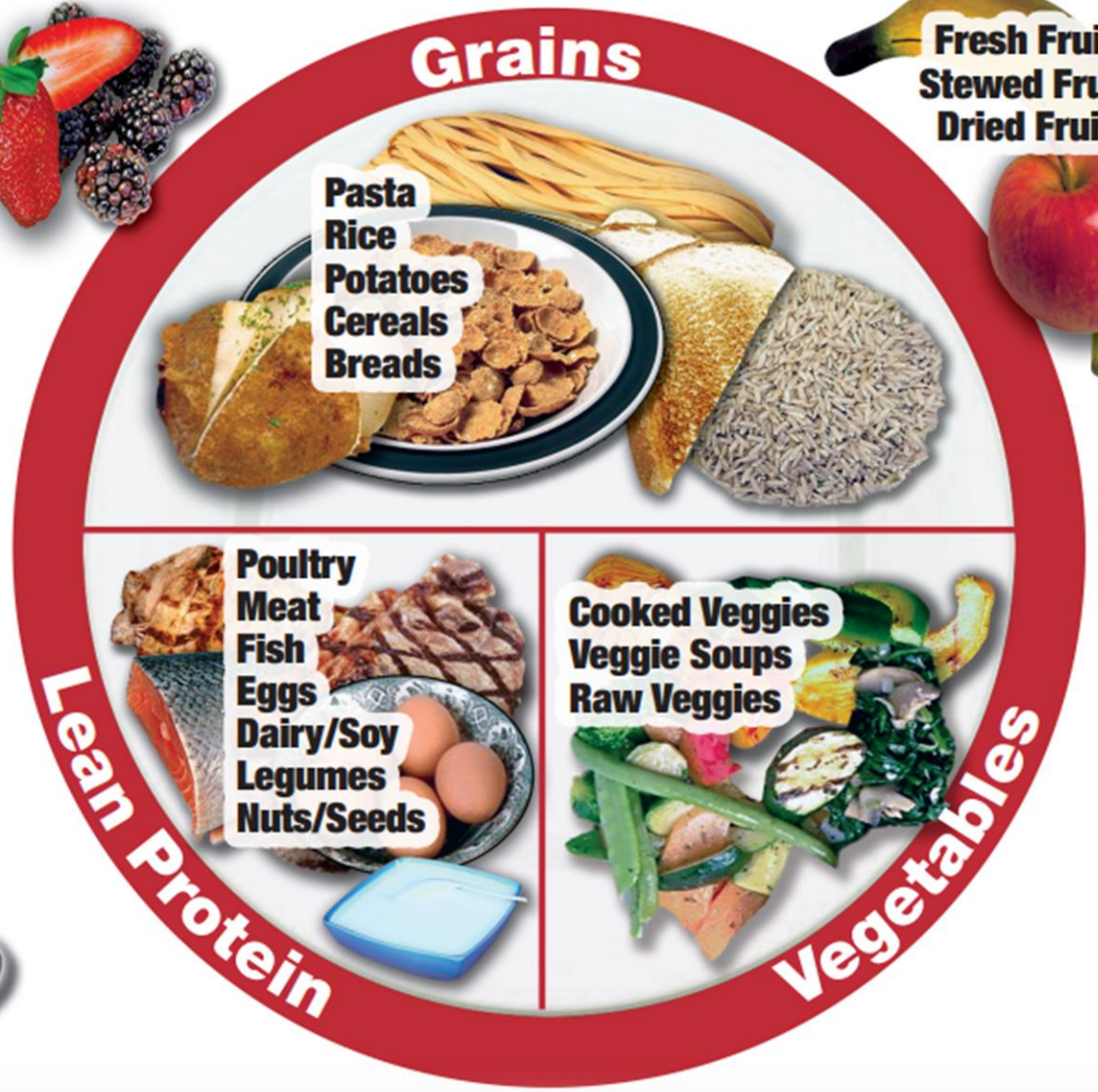


HARD TRAINING:

FATS

2-3 Tablespoons

Avocado
Oils
Nuts
Seeds
Cheese
Butter



Fresh Fruit
Stewed Fruit
Dried Fruit

Water
Dairy/Nondairy
Beverages
Diluted Juice
Flavored
Beverages

Coffee
Tea

FLAVORS

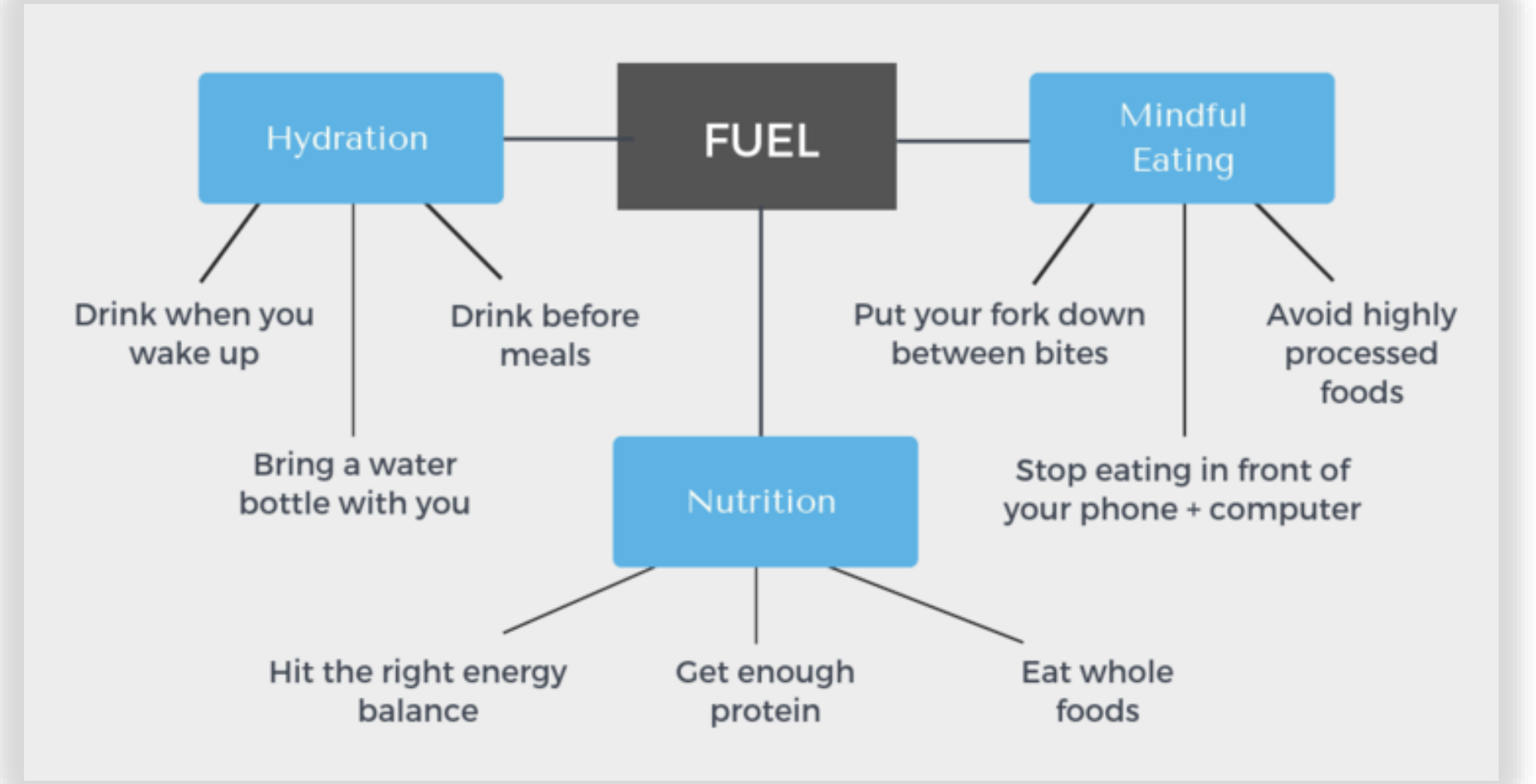
Salt/Pepper
Herbs
Spices
Vinegar
Salsa
Mustard
Ketchup

What research says:
“High Caloric intake at breakfast vs. dinner differentially influences weight loss of overweight and obese women”

- Study design: Overweight and obese women (BMI 32.4 ± 1.8 kg/m^2) with metabolic syndrome were randomized into two isocaloric (~1400 kcal) weight loss groups, a breakfast (BF) (700 kcal breakfast, 500 kcal lunch, 200 kcal dinner) or a dinner (D) group (200 kcal breakfast, 500 kcal lunch, 700 kcal dinner) for 12 weeks.

- High-calorie breakfast with reduced intake at dinner is beneficial and might be a useful alternative for the management of obesity and metabolic syndrome.
- In response to meal challenges, the overall daily glucose, insulin, ghrelin, and mean hunger scores were significantly lower, whereas mean satiety scores were significantly higher in the High-calorie breakfast group.

Keys to fueling optimally



"Your body is a finely tuned vehicle; give it good fuel and it will take you places"

Here are some ways in which fueling a body is like fueling a car:

1. Quality of fuel matters
2. Consistency is key
3. Over-fueling can cause problems
4. Maintenance is important
5. Different bodies have different needs

Thank you for joining!

DOW

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