

We are personal trainers, not dietitians. We don't develop meal plans for clients, and we don't do medical nutrition therapy. That being said, we can do things like help our clients to understand food labels, what certain nutrients do in the body, etc.

Also, we can use the dietary guidelines developed by the government and the recommendations from myplate.gov. If there is a question about what you can legally do as a personal trainer, nutrition wise, the answer most often will have to do with the US Dietary Guidelines or myplate.gov.

It won't be uncommon for a question to come up where the best thing for you to do would be to refer the client to a registered dietitian. For example, if a client has diabetes and they want to lose weight, even if it's something that you could help them with, the correct thing to do would be to refer them to a dietitian.

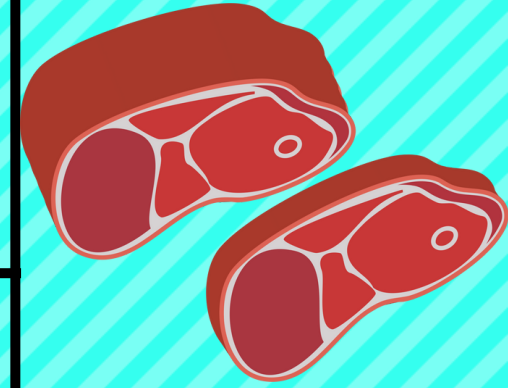
One thing you need to memorize is...



1 gram of protein = 4 calories

1 gram of carbohydrate = 4 calories

1 gram of fat = 9 calories



Micronutrients: Vitamins, minerals, and phytonutrients.

Complete Protein: Provides all essential amino acids. Animal and dairy proteins fall into this category.

Incomplete Protein: Missing one or more amino acids. Plant proteins fall into this category.

Macronutrient RDA's

Protein: .8 grams per kg of body weight for sedentary adults (higher for other populations)

Carbs: 3-5 grams per kg of body weight for lightly active adults (higher for other populations)

Fat: 20% to 35% of total calories. Saturated fats should only make up 10%, or less of total cals.

There is 3,500 calories in a pound of fat.

A 500 calorie daily deficit would get you roughly a pound of fat loss every week.



**Monounsaturated Fats: Heart Healthy.
(olive oil, avocado, peanuts)**

**Polyunsaturated Fats Omega 3: Heart
Healthy. (fish, flaxseed, some dairy)**

**Polyunsaturated Fats Omega 6:
Essential for growth/development.
(vegetable oil, nuts, seeds)**

**Saturated Fats: Health benefits
unclear. Limit consumption.
(animal fat, full fat dairy, coconut)**

Trans fats: Artificial (usually), bad



Fat Soluble Vitamins: A,D,E,K

Water Soluble Vitamins: C, B vitamins

Major Minerals: Calcium, phosphorus, magnesium, sodium, potassium, chloride, sulfur

Monosaccharides: They're simple and can't be broken down more (glucose, fructose, galactose)

Disaccharides: Two monosaccharides joined together (sucrose, maltose, galactose)

Polysaccharides: Long chains of glucose units. (glycogen, fiber, starch)

IT'S A TRACE MINERAL! IRON,
ZINC AND COPPER ARE ALL
EXAMPLES OF TRACE
MINERALS. DON'T BOTHER
MEMORIZING THEM, I WOULD
ONLY TRY TO REMEMBER
THE MAJOR MINERALS.



Hydration

Before Exercise: 16oz the morning of the event or evening before. 13-20oz right before event.

During Exercise: 12-16oz every 10 to 15 mins. A sports drink is recommended for over 90 mins.

After Exercise: Drink 1.25 times the amount of weight lost. Consume sodium/electrolytes.

Random Stuff Worth Knowing!



BMI or Body Mass Index

Metric Units	$\text{BMI} = \text{Weight}(\text{kg}) / [\text{Height}(\text{m})]^2$
English Units	$\text{BMI} = 703 \times \text{Weight}(\text{lbs}) / [\text{Height}(\text{in})]^2$
Conversion factor for lbs/in ² to kg/m ²	
Vertex42.com	

A BMI over 25 means you're overweight and one over 30 means you're obese.

BMI

FORMULAS

METRIC UNITS

$$\text{BMI} = \frac{\text{weight [kg]}}{\text{height}^2 \text{ [m}^2\text{]}}$$

IMPERIAL UNITS

$$\text{BMI} = \frac{\text{weight [lb]}}{\text{height}^2 \text{ [in}^2\text{]}} \times 703$$

**Bioelectrical Impedance or BIA
Determines body composition based on
the rate at which an electrical current
travels through the body. Bodyfat (adipose
tissue) causes greater resistance
(impedance) than fat-free mass and slows
the rate at which the current travels. It
requires specific testing arrangements.**

The nervous system has two main components: the somatic nervous system and the autonomous nervous system. The somatic nervous system is mostly under our control. It mostly involves skeletal muscles and things like that. The autonomous nervous system is automatic as the name would imply meaning it is not under our control.

The autonomous nervous system is split into two parts.

The sympathetic nervous system which controls our fight and flight response, and the parasympathetic nervous system, which has to do with resting and digesting.



Type one muscle fibers are slow twitch meaning they have better endurance but produce lower power. Type two muscle fibers are fast twitch they generate more power but have less than deterrence capabilities.

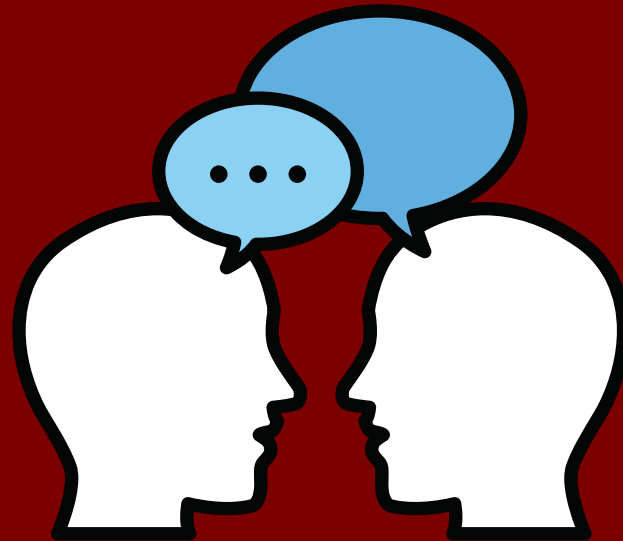


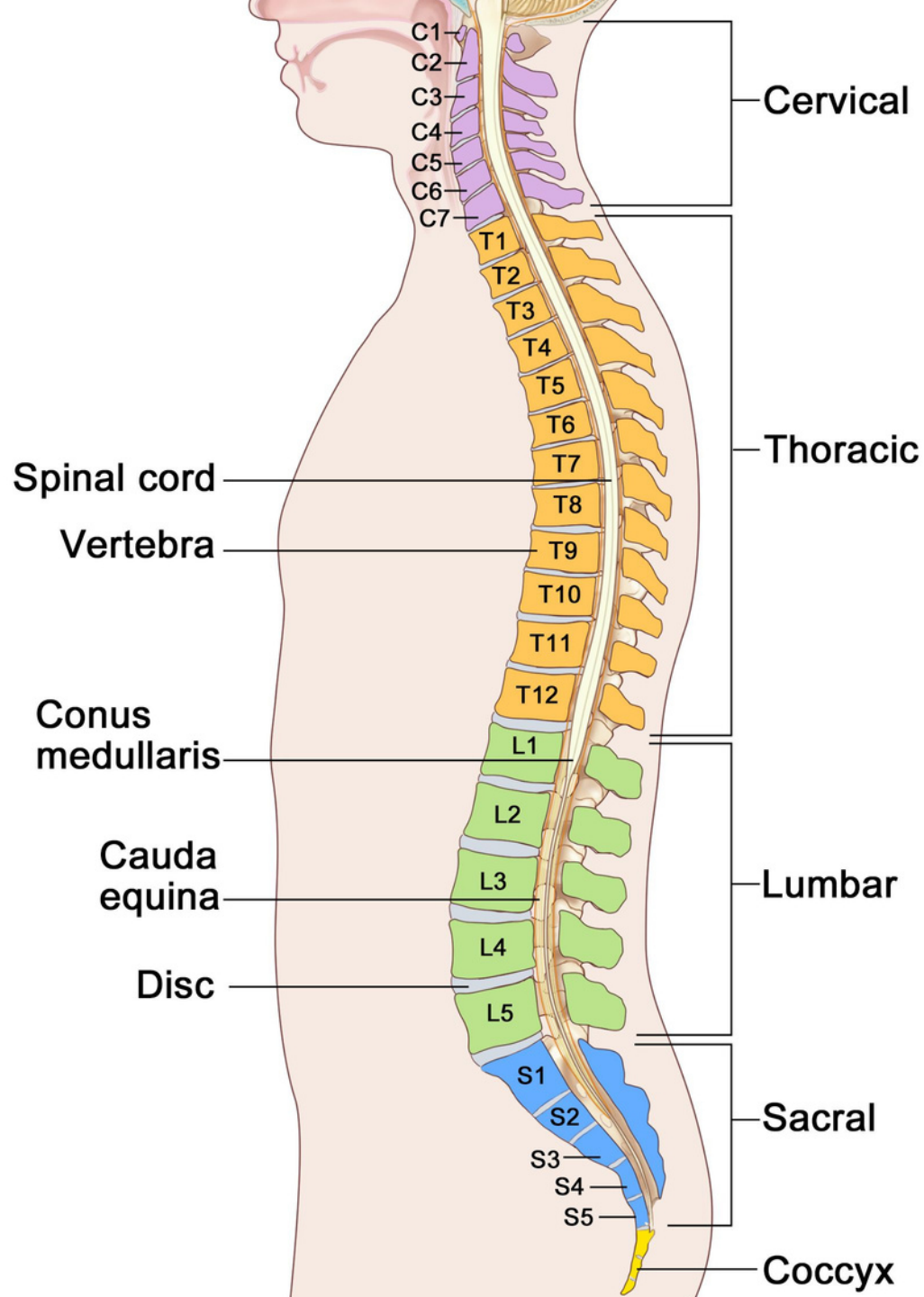
Static Stretching: Holding a stretch for roughly 30s

Dynamic Stretching: Movement pattern designed to mimic the workout

**Ballistic Stretching: Repeated bouncing or swinging to stretch muscle group.
Avoid this one.**

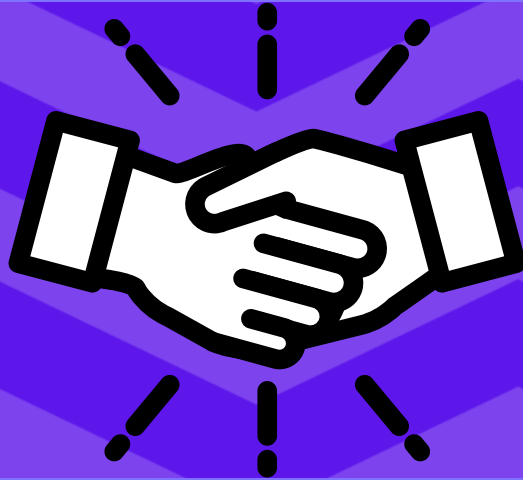
If something questionable comes up in a session, like your client sharing too much information about their divorce, the correct thing to do would be to redirect the focus of the conversation back to the workout.





Remember breakfast (7 cervical) lunch (12 thoracic) and dinner (5 lumbar) for vertebrae. You also have 5 fused sacral vertebrae.

Sole proprietorship: Business is owned by an individual. No protection for the owner.

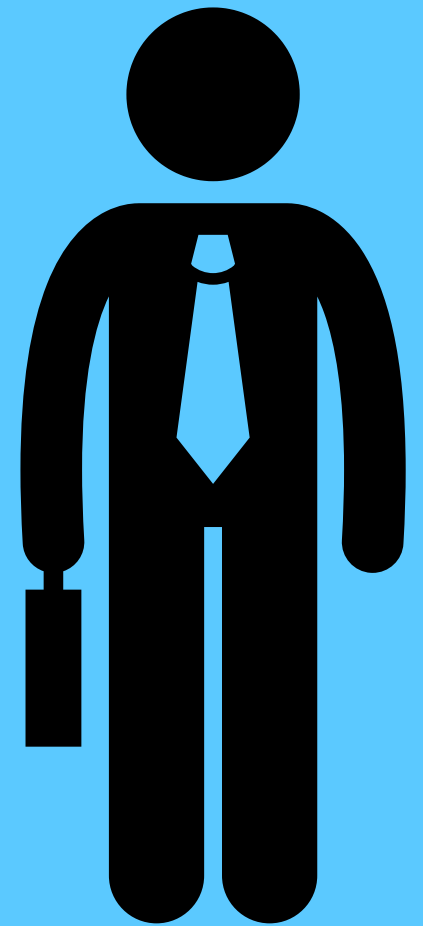


LLC: Provides protection. Forms are required but they are relatively simple (compared to S-Corp)

Independent contractor: A self-employed person or entity contracted to perform work for—or provide services to—another entity as a non-employee. As a result, independent contractors must pay their own social security and medicare taxes.



A worker is an employee when the business has the right to direct and control the work performed by the worker. This includes hours worked, uniforms, etc.

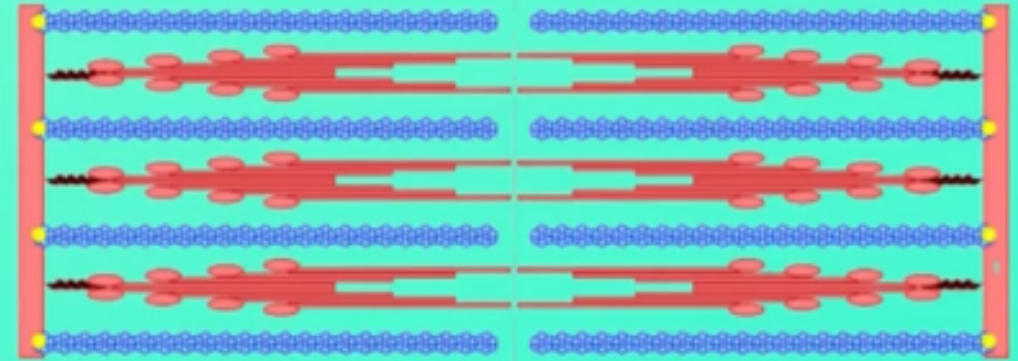


SLIDING FILAMENT THEORY

Step 1: A sarcomere (functional unit of a muscle) shortens as a result of Z lines moving closer together.

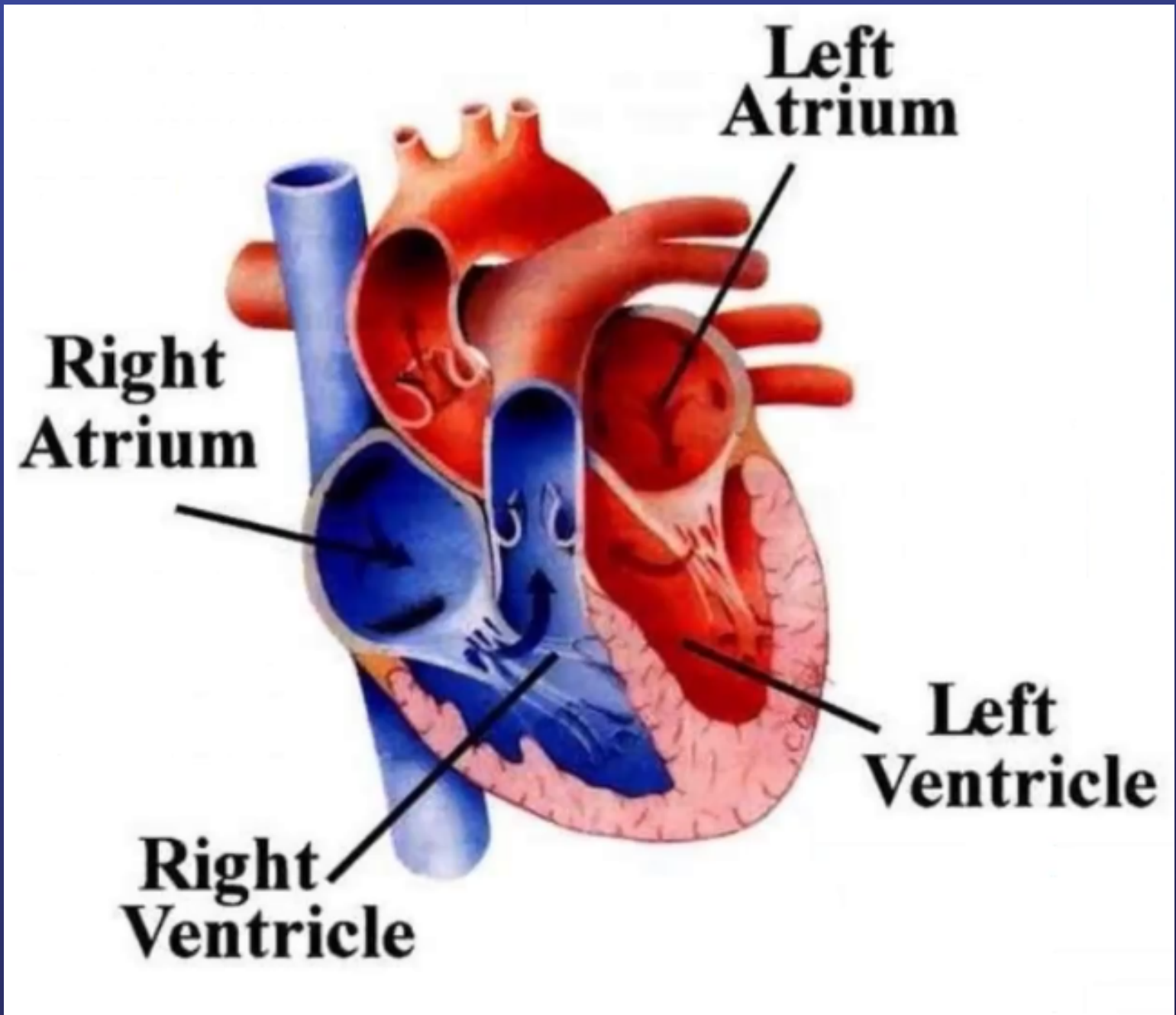
Step 2: The Z lines converge as the result of myosin heads attaching to the actin filament and asynchronously pulling the actin filament across the myosin, resulting in shortening of the muscle fiber.

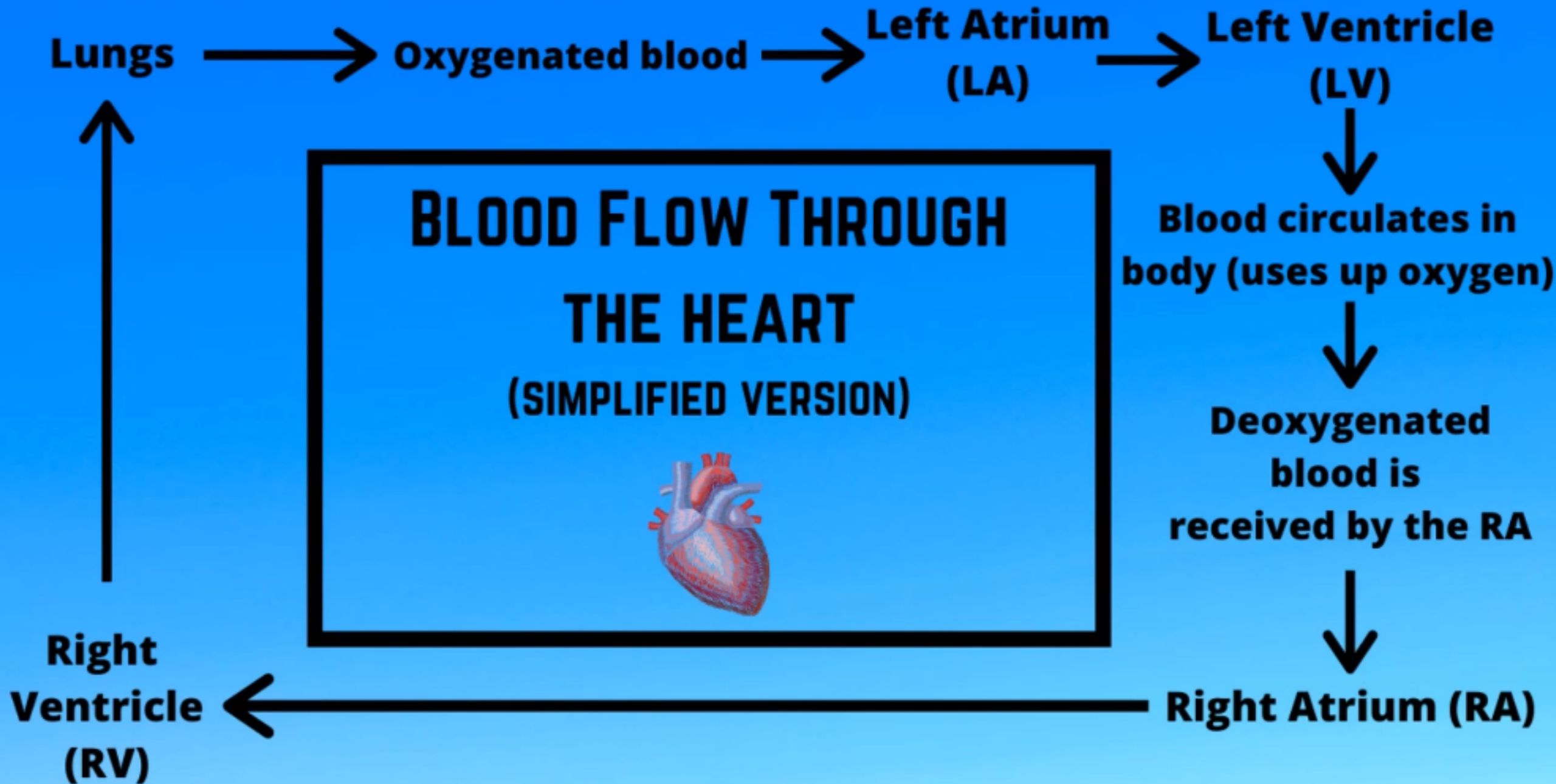
RELAXED MUSCLE



CONTRACTED MUSCLE

BLOOD FLOW THROUGH THE HEART





GENERAL AEROBIC ACTIVITY RECOMMENDATIONS

**PEOPLE SHOULD GET 150 MINUTES OF MODERATE INTENSITY
CARDIO FIVE DAYS A WEEK.**

**OR THEY SHOULD GET 75 MINUTES OF VIGOROUS INTENSITY
CARDIO THREE DAYS A WEEK.**



PROPRIOCEPTIVELY CHALLENGING SCALE

**Less
Challenging**

**More
Challenging**



Floor

Balance Beam

Half Foam Roll

Foam Pad

Balance Disc

Wobble Board

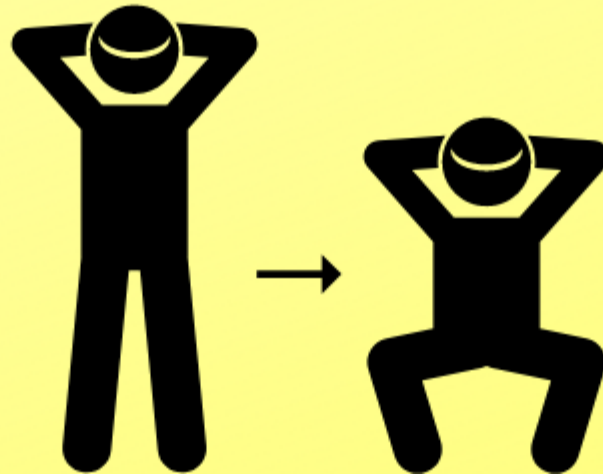
Bosu Ball

THREE PARTS OF A PLYOMETRIC EXERCISE

Part 1: Eccentric Phase

THE DECELERATION OR LOADING PHASE.

MUSCLES ARE LENGTHENING.



THREE PARTS OF A PLYOMETRIC EXERCISE

Part 2: Amortization Phase

**THE TRANSITION PHASE. THE DELAY BETWEEN
THE ECCENTRIC AND CONCENTRIC PHASE.**



THREE PARTS OF A PLYOMETRIC EXERCISE

Part 3: Concentric Phase

**SHORTENING PHASE. ENERGY IS RELEASED
(EX. LIFT OFF IN A JUMP)**



THE THREE STAGES OF GENERAL ADAPTATION SYNDROME



#1. Alarm Reaction



***YOUR INITIAL REACTION TO A
STRESSOR. FIGHT OR FLIGHT RESPONSE
(EX. INCREASED HEART RATE, ADRENALINE)***

THE THREE STAGES OF GENERAL ADAPTATION SYNDROME



#2. Resistance Development



**YOUR BODY INCREASES IT'S FUNCTIONAL
CAPACITY TO ADAPT TO THE STRESSOR.**

THE THREE STAGES OF GENERAL ADAPTATION SYNDROME



#3. Exhaustion



**IF THE STRESSOR IS INTOLERABLE AND
CONTINUOUS, EVENTUALLY THIS WILL LEAD TO
BREAKDOWN AND INJURY.**

THE SAID PRINCIPLE

***THE BODY WILL ADAPT TO THE
SPECIFIC DEMANDS PLACED ON IT.***





Specific

Adaptation

Imposed

Demands



SINGLE SET SYSTEM	PERFORMING ONE SET OF EACH EXERCISE.
THE MULTIPLE SET SYSTEM	PERFORMING MULTIPLE NUMBER OF SETS FOR EACH EXERCISE.
THE PYRAMID	INCREASING OR DECREASING WEIGHT WITH EACH SET.
SUPERSETS	TWO EXERCISES COMPLETED BACK TO BACK WITH MINIMAL REST.

COMPLEX TRAINING	A MULTI-JOINT AND HEAVY COMPOUND LIFT FOLLOWED BY AN EXPLOSIVE MOVE.
DROP SET	PERFORMING A SET TO FAILURE, THEN LOWERING THE WEIGHT AND CONTINUING ON.
GIANT SET	PERFORMING FOUR OR MORE EXERCISES IN A ROTATION WITH MINIMAL REST.
CIRCUIT TRAINING	A SERIES OF EXERCISES, BACK TO BACK, WITH MINIMAL REST.

SPLIT ROUTINES	TRAINING DIFFERENT PARTS OF THE BODY ON DIFFERENT DAYS.
VERTICAL LOADING	TRAINING STARTING WITH THE UPPER BODY, THEN WORKING YOUR WAY DOWN TO THE LOWER BODY.
HORIZONTAL LOADING	DOING ALL THE SETS OF AN EXERCISE OR BODY PART BEFORE MOVING TO THE NEXT ONE.
PERIPHERAL HEART ACTION SYSTEM	DESCRIPTION ON THE NEXT PAGE!

THE PERIPHERAL HEART ACTION SYSTEM IS AN EXAMPLE OF ONE OF THESE SYSTEMS.

It's a variation of circuit training.

**IN THIS SYSTEM YOU ALTERNATE BETWEEN
UPPER AND LOWER BODY EXERCISES.**



KIDS ARE ABLE TO PERFORM ENDURANCE TASKS PRETTY WELL.

That being said, they have decreased glycolytic enzymes compared to adults. This decreases their ability to do longer duration high intensity tasks.



**KIDS ALSO HAVE LESS RESISTANCE TO HEAT
AND HUMIDITY AND ENVIRONMENTAL
EXTREMES.**



THE FOUR P'S OF MARKETING

Product



Place



Price



Promotion



KNOW AND UNDERSTAND THEM!

THE LEFT TEST ASSESSES

Agility



**Neuromuscular
Control**



Acceleration

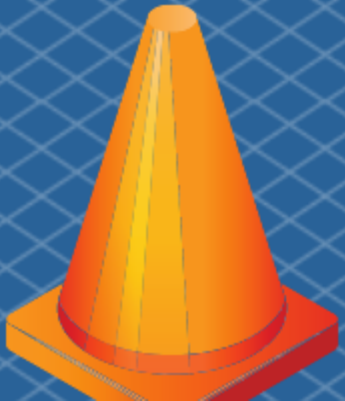


Deceleration



IN THE LEFT TEST

**You have clients sprint,
side shuffle, do carioca, and
backpedal between two cones.**



IN PHASE 1, THE STABILIZATION PHASE

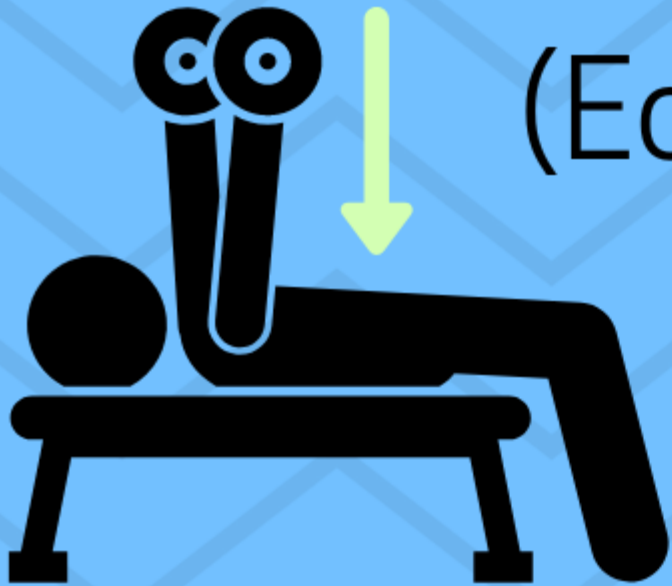
I should use a 4/2/1 tempo.



On a stability ball chest press this would mean I move the dumbbells down slowly to start.

(4 seconds down)

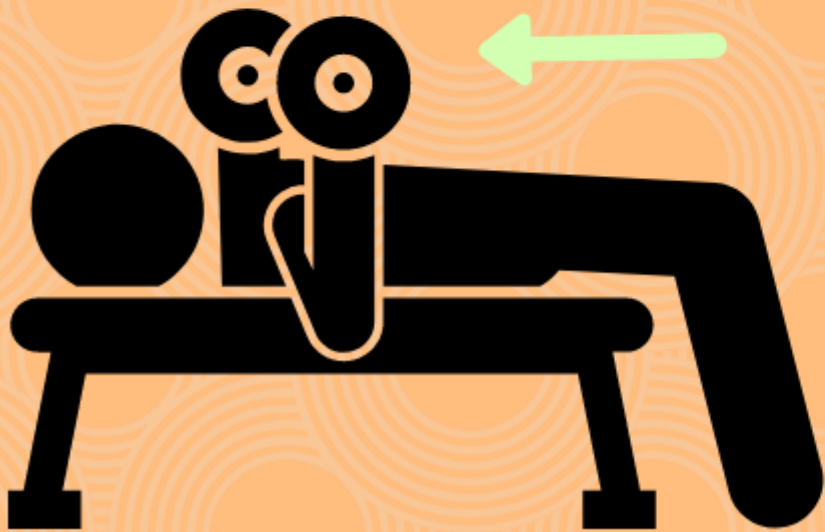
(Eccentric Contraction)



4/2/1

Then I would hold for 2 seconds at
the bottom of the lift.

(2 seconds at the bottom)
(Isometric Contraction)

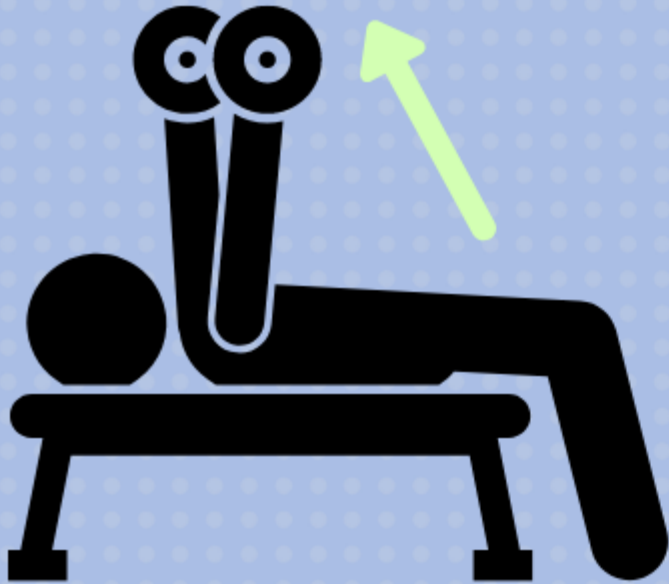


4/2/1

Then I would push the weight back
up in one second.

(1 second to push the weight up)

(concentric contraction)



4/2/1

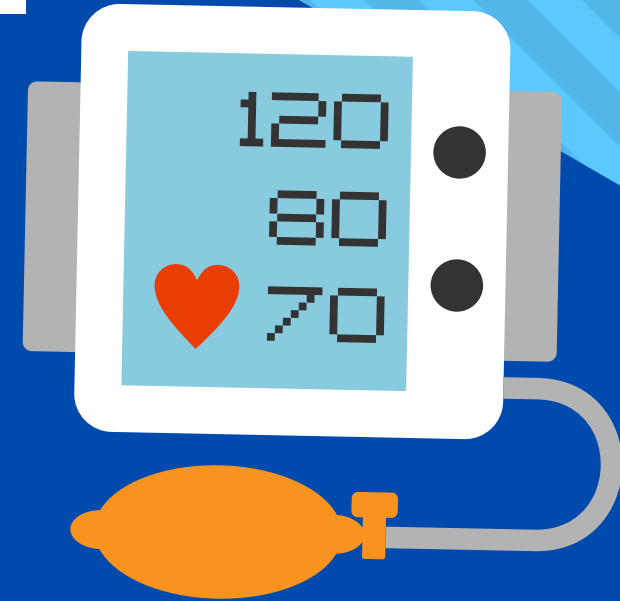
Blood Pressure In More Detail

Normal: <120 / <80

Elevated: 120-129 / <80

Stage 1: 130-139 or 80-89

Stage 2: ≥ 140 / ≥ 90



It's common to be asked about two kinds of blood pressure meds.

Beta blockers & Diuretics



Beta blockers: these lower your heart rate at rest and during exercise. A client's heart rate won't raise the same way during exercise when they're on a beta blocker.



Diuretics: increase the excretion of water from the body through the kidneys. This could increase the likelihood of dehydration.



Type 1 Diabetes: These people have to inject insulin, they are insulin dependent. People usually develop this early.



Type 2 Diabetes: These people are insulin resistant. This one usually comes from poor lifestyle choices. It's also more common.