The macrominerals

What They Do:

- Maintain the proper balance of water in the body – Sodium, Chloride, Potassium

- Important for healthy bones – Calcium, Phosphorous, Magnesium

- Stabilize protein structures (Hair, Skin, Nails) – Sulfur

- ***Needed in larger amounts and stored in the body

Calcium

- The most abundant mineral in your body
  - 99% is stored in the bones
- Known for bone health

- How much do you need?
  - Males 19-50 years old: 1,000 mg / day
  - Females 19-50 years old: 1,000 mg / day

Calcium & Foods

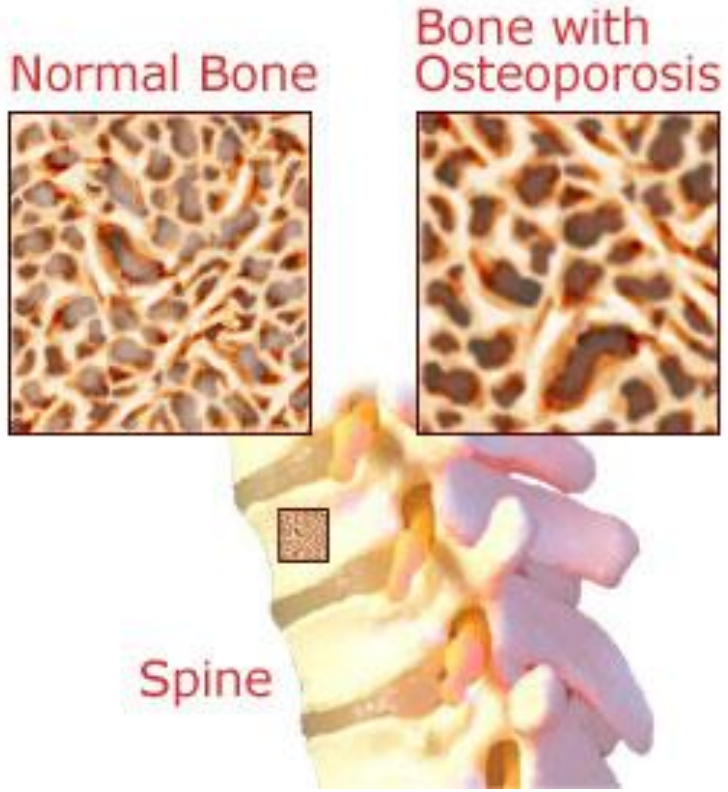
- Dairy products, fortified juices, sardines

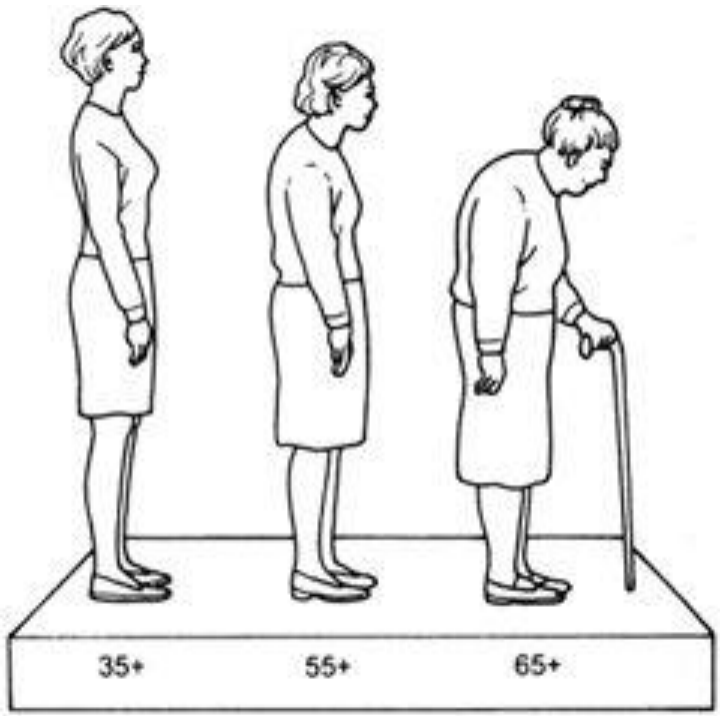
Food	Calcium
Yoghurt, plain (low-fat) Yoghurt, flavored (low-fat)	1 cup - 415 mg 1 cup – 345 mg
Milk, skim Milk, 1-2%	1 cup – 302 mg 1 cup – 300 mg
Ice cream	½ cup – 88 mg
Broccoli, cooked	½ cup – 68 mg
Salmon, canned	3 oz – 165 mg
Orange juice	8 oz – 300 mg

Calcium & Phosphorus

- Food Sources:
  - Dairy Products: milk and its products, seafood, green leafy vegetables, almond, broccoli, cabbage, fig, oat, soybean, turnip, pepper, chamomile, fennel, fenugreek, mint, rosehip
- Function in the Body:
  - Helps build and maintain healthy bones and teeth.
  - Helps heart, nerves, and muscles work properly.
- Deficiency (lack) of calcium & phosphorus leads to osteoporosis.
  - joint pain, breakage of nails, increased blood cholesterol, hypertension, palpitations, irritability, muscle cramps, tooth decay, difficulty in concentration, depression

Calcium





Calcium (Ca)

Function: major component of bones and teeth and essential in blood coagulation, nerve and muscle function and milk and egg production.

Deficiency signs: retarded growth, deformed bones in young people (rickets), and osteoporosis in elders.

Sources: milk, oyster shells and limestone.

Calcium

- 99% is structural
- ~25% absorption
- Vitamin D aids absorption
- ***75% is obtained from dairy products***
- Many products are fortified with it
- Built in youth, lost in maturity

!Very hard for vegans to get enough calcium

Sodium

- What does sodium do for you?
  - Helps maintain fluid balance
  - Helps transmit nerve impulses
  - Influences contraction and relaxation of muscles

Sodium

- Food sources
  - Processed & prepared foods:
    - Canned vegetables, soups, pickles, lunch meats, ham, bacon, sausage, hotdogs, and frozen foods. Salt/sodium is used to preserve food and improve the taste and texture of food.
  - Condiments:
    - Table salt, soy sauce, ketchup, mustard, BBQ sauce, steak sauce…
  - Natural sources:
    - Some meats, poultry, dairy products (esp. cheeses) and vegetables.

The main sources of sodium in the average U.S. diet.

Sodium

- Function in the Body:
  - Helps maintain the right balance of fluids in your body.
  - Helps transmit nerve impulses.
  - Influences the contraction and relaxation of muscles.

- Excess sodium can lead to hypertension (high blood pressure), a condition that can lead to cardiovascular and kidney diseases.

Sodium chloride

Considered together because of a close biochemical relationship and are provided as common salt (NaCl)

Function: required for the formation and retention, concentration and pH of body fluids, such as protoplasm, blood. Important in the formation of digestive juices and functions in nerve and muscle activity.

Deficiency signs: poor condition and depressed appetite.

Sources: salt supplements and injectable products.

Sodium & Health

- Too much sodium
  - Causes high blood pressure
  - May lead to fluid retention

  - Deficiency causes;
    - **Fatigue, muscle cramps**

Sodium & Food

- On food labels:
  - Monosodium glutamate (MSG)
  - Baking soda
  - Baking powder
  - Disodium phosphate
  - Sodium alginate
  - Sodium nitrate or nitrite

Reducing sodium in your diet

- Eat more fresh foods
- Eat less processed foods
- Look for low-sodium products
- Limit the salt you add to foods
- Experiment with other seasonings
- Use salt substitutes with caution

Magnesium (Mg)

Function: similar to calcium and phosphorus.

Deficiency signs: irritable emotional case, irregular heart beat and there is severe kidney damage.

Sources: mineral supplements, cereals, nuts and green leafy vegetables.

Phosphorus (P)

Function: essential for the formation of bones, teeth, and body fluids. Required for metabolism, cell respiration and normal reproduction.

Deficiency signs: similar to calcium deficiency, lack of appetite, leads to osteoporosis, teeth decay.

Sources: Meat, fish, poultry, eggs, cereals, walnuts, legumes and green vegetables are found.

Potassium (K)

Function: retention and formation of body fluids, pH concentration of body fluid and rumen digestion.

Deficiency : cause muscle paralysis
Excessive: cause cardiac arrest

Sources: roughages. Grains are less than roughages. Dairy products, meat, fish, poultry, legumes, vegetables and fruits, apricots, avocados, bananas, figs, potatoes, dates, grapes, brewer's yeast, garlic

Manganese (Mn)

Function: Fetal development, milk production and skeleton development.

Deficiency signs: Abortions, reduced fertility, deformed young and poor growth.

Sources: Most use trace mineralized salt.