

# THE 6 MAJOR BODY SYSTEMS

And how they interact with each other to keep the “body machine” alive and working well.

## CIRCULATORY SYSTEM / CARDIOVASCULAR SYSTEM

PRIMARY PURPOSE: transport blood throughout the body by circulating

PRIMARY ORGANS/PARTS: Heart, blood vessels (arteries, veins, capillaries)

- (1) Transports/carries nutrients and oxygen through the blood to most parts of the body
- (2) Transports/carries waste in cells and carbon-dioxide (CO<sub>2</sub>) away from the parts:
  - (a) Cell waste goes to the kidneys for filter and disposal
  - (b) Carbon-dioxide (CO<sub>2</sub>) goes to the lungs to exhale (breathe out)

Kidneys and Lungs have a close relationship with Cardiovascular system

Kidneys: filter through blood to take out the waste and get it eventually out of the body

Lungs: breathes in oxygen and gives it to the blood for Circulatory system to carry throughout the body; and takes unneeded carbon-dioxide (CO<sub>2</sub>) from the blood and breathes that out.

Circulatory/Cardiovascular System through the blood to most parts of the body provides nutrients and oxygen which is needed for our bodies to have ENERGY!

## RESPIRATORY SYSTEM

PRIMARY PURPOSE: Breathing - taking in Oxygen, pushing out Carbon-Dioxide (CO<sub>2</sub>)

PRIMARY ORGANS: Lungs, trachea (tube going from lungs to nose/mouth)

- (1) Inhales (breathes in) Oxygen - good for the body - gives it to the Circulatory System to be transported throughout the body through the blood.
- (2) Exhales (breathes out) Carbon-Dioxide (CO<sub>2</sub>) - lungs get this gas from the blood (Circ. Sys.) and pushes it out of the body

## DIGESTIVE SYSTEM

PRIMARY PURPOSE: take in food; break down food into nutrients (good) and waste (unneeded)

PRIMARY ORGANS: Stomach, large and small intestines, esophagus (tube from stomach to mouth)

- (1) Digestive System gets nutrients (good) from food and hands it over to the blood and Circulatory System then carries those nutrients where they need to go.
- (2) Filters out waste from food and pushes it through intestines and out the body (and you know how and where it gets out).

## NERVOUS SYSTEM

PRIMARY PURPOSE: Control Center: transports messages to/from the Brain!

PRIMARY ORGANS: Brain, nerves, neurons, spinal cord (main connection coming out of the brain to the rest of the body's nerves)

- (1) Sends messages to the entire body from the Brain.
  - (a) Involuntary messages/signals tell the body parts to do regular actions for body to work; We don't think about these actions; like breathing, heart-pumping, digestion, etc
  - (b) Voluntary messages/signals tell the body parts to do something particular; We think about these actions; LIKE: We decide to raise our arms; We choose words to speak; We choose to look in a certain direction; etc.
- (2) Receives messages from the 5 senses (hearing, touch, taste, seeing, smelling) takes those to the Brain and the brain processes the new information - and how to react if necessary.

Reflex actions are quick signals through the Nervous System that instantly tell the Muscular System to react - usually for protection, like reflex response pulling away your hand from a hot surface; jumping away from startling noise or motion.

## MUSCULAR SYSTEM

PRIMARY PURPOSE: gives body movement

PRIMARY ORGANS: Muscles

- (1) Muscles attached to bones (Skeletal Sys.) give the body movement
- (2) Internal (inside - deeper smooth) muscles work with certain organs to help them do their jobs - like pushing material (usually broken-down food) through organs of the Digestive System: pushes stuff into and out of stomach; pushes material through the intestines; pushes food down the esophagus.

Muscles need Oxygen (handed over from the Circulatory Sys.) for energy!

## SKELETAL SYSTEM

PRIMARY PURPOSE: gives body Shape, Support, Protection

PRIMARY ORGANS: Bones (skull, ribs, vertebrae, femur, pelvis, etc.)

- (1) Protects most internal organs (that are soft and vulnerable)
- (2) Provides movement for the body together with Muscles
- (3) Makes new red blood cells (from the bone marrow - deep inside bones)

ALL body systems interact with every other in either big or small ways for our bodies to operate and survive. Not one can survive without the others. And the body cannot operate or survive without one of the systems and their important connections to each other.

Here are a few connections or relationships between these 6 major body systems that are important to remember:

CARDIOVASCULAR / CIRCULATORY SYSTEM works with

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|---------------------|---|
| DIGESTIVE SYSTEM:   | (1) blood takes nutrients from the broken-down food and transport to where it needs to go   |
| RESPIRATORY SYSTEM: | (1) lungs give oxygen to blood to be carried through the body<br>(2) blood gives carbon-dioxide (CO <sub>2</sub> ) to lungs to be exhaled out of the body |
| NERVOUS SYSTEM:     | (1) the brain needs blood for nutrients   |
| MUSCULAR SYSTEM:    | (1) providing muscles with oxygen for energy<br>(2) Heart is a muscle that pumps the blood  |
| SKELETAL SYSTEM:    | (1) bones produce/make new red blood cells  |

DIGESTIVE SYSTEM works with

- |                 |  |
|-----------------|--|
| CIRCULATORY SYS | (1) blood takes nutrients from the broken-down food and transport to where it needs to go  |
| MUSCULAR SYS    | (1) smooth internal (inside) muscles push food and broken-down food through the Digestive System organs (esophagus, stomach, intestines) |

\*Without Digestive System taking in food, breaking it down - the rest of the body systems would not have NUTRIENTS needed to operate!

RESPIRATORY SYSTEM works with

CIRCULATORY SYS

(1) lungs give oxygen to blood to be carried through the body

(2) blood gives carbon-dioxide (CO<sub>2</sub>) to lungs to be exhaled out of the body

MUSCULAR SYSTEM

(1) muscles need Oxygen for energy

NERVOUS SYSTEM works with

CIRCULATORY SYS (1) the brain needs blood for nutrients

MUSCULAR SYS

(1) the brain sends messages/signals through spinal cord and nerves to muscles to react and act (move)