Cardiovascular System

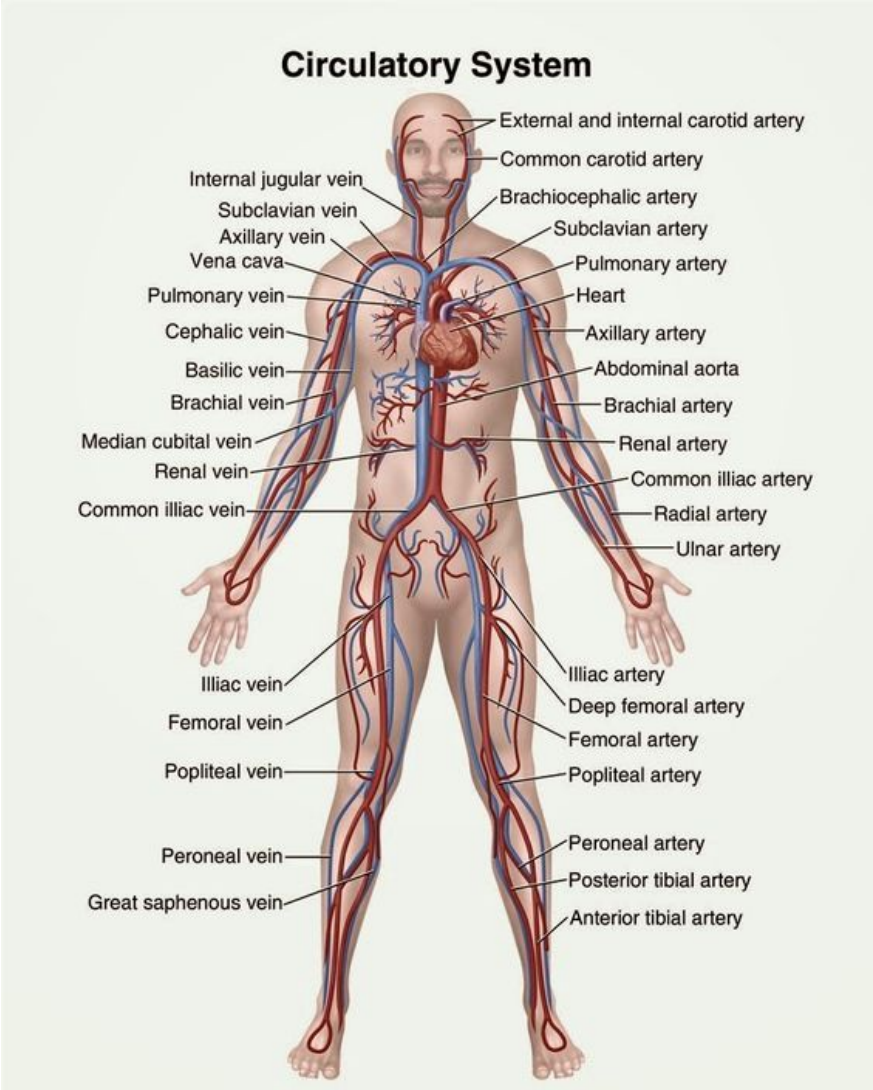
Role of the Cardiovascular System

The Cardiovascular System, also known as the Circulatory System and Vascular System is responsible for bringing life to all organs and keeping us moving, literally!

It does this by:

- ***Transporting*** nutrients, oxygen, and hormones to cells throughout the body and removal of metabolic wastes (ex: carbon dioxide, nitrogenous wastes).
- ***Protecting*** the body with white blood cells, antibodies, and complement proteins that circulate in the blood and defend the body against foreign microbes and toxins.
    - Clotting is also a tool of protection from blood loss after injuries.
- ***Regulating*** body temperature, fluid pH, and water content of cells.

Parts of the Cardiovascular System



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How the Cardiovascular System Works

The cardiovascular system consists of the heart, blood vessels, and blood.

- **Heart:** a muscular organ the size of your fist located left of center on your chest. It is divided into the right + left side, the division separates the mixing of oxygen rich and oxygen poor blood. The heart acts like a pump pushing blood to organs, tissues, and cells of your body.
- **Blood cells:**
- is made up of about 45% solids (cells) and 55% fluids (plasma). The plasma is largely water, containing proteins, nutrients, hormones, antibodies, and dissolved waste products.
    - **Erythrocytes** (red cells) are small red disk shaped cells containing hemoglobin, which combines with oxygen in the lungs and is then transported to the body's cells as well as returns carbon dioxide waste to the lungs. Formed in the bone marrow in the knobby ends of bones.
    - **Leukocytes** (white cells) help the body fight bacteria and infection increases when the body is experiencing infection. Formed in the small ends of bones.
    - **Thrombocytes** (platelets) aid the formation of blood clots by releasing various protein substances into the bloodstream causing a chemical reaction that "catches" other blood cells which form the clot, preventing further loss of blood.
- **Arteries:** thick hollow tubes which are highly elastic which allows them to dilate (widen) and constrict (narrow) as blood is forced down them by the heart carry oxygenated blood away from the heart.
- **Capillaries:** extremely thin, the walls are only one cell thick and connect the arterioles (a small branch of an artery leading into capillaries) with the venules (very small veins). distribute the nutrients and oxygen to the body's tissues and remove deoxygenated blood and waste.
- **Venules:** very small veins merge into veins which carry blood back to the heart. The vein walls are similar to arteries but thinner and less elastic. Veins carry deoxygenated blood towards the lungs where oxygen is received via the pulmonary capillaries, which carries this oxygenated blood back to the heart.
- **Spleen:** a multifunctional organ of incredible support to the cardiovascular system:
    - Destroys and removes old or defective red blood cells and cell debris or bacteria from the bloodstream
    - Produces red blood cells when required, as well as lymphocytes, plasma cells, and antibodies
    - Stores stem cells and mature blood cells, which it will release into the blood circulation when the body requires it (e.g. to fight infections)
    - Acts as a filtration system to purify blood

Cardiovascular System

Decoding Medical Language

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CARDIO-	heart	echocardiogram = sound wave image of the heart.
CYTE-	cell	thrombocyte = clot forming cell.
HAEM-	blood	haematoma - a tumour or swelling filled with blood.
THROMB-	clot, lump	thrombocytopenia = deficiency of thrombocytes in the blood
ETHRO-	red	erythrocyte = red blood cell
LEUKO-	white	leukocytes = white blood cell
SEP, SEPTIV-	toxicity due to microorganis	septicaemia
VAS-	vessel / duct	cerebrovascular = blood vessels of the cerebrum of the brain.
HYPER-	excessive	hyperglycemia = excessive levels of glucose in blood.
HYPO-	deficient / below	hypoglycaemia = abnormally low glucose blood levels.
-PENIA	deficiency	neutropenia = low levels of neutrophilic leukocytes.
-EMIA	condition of blood	anaemia = abnormally low levels of red blood cells.

Nourishing the Cardiovascular System

Our Cardiovascular System works effortlessly to bring us breath and movement every millisecond of every day. We can come to different therapies to nourish our blood, promote proper function of organs, and protect our hearts.

Methods, techniques and therapies for nourishing the Cardiovascular System through a holistic and intersectional lens:

- Center fruits + vegetables in your diet [Their vitamins, minerals, antioxidants and other compounds protect against heart disease.]
- Eating high omega 3 foods, such as fish, fish oil, nuts
- Consuming healthier oils, such as olive, peanut, avocado oils
- Exercise! [Physical movement strengthens all muscles, including the heart! Include: stretching, high intensity interval training, long distance cardio, strength training, integrative core movement]
- Connecting with loving your life [Reducing levels of stress is key!]

Cardiovascular System

- Herbal medicine!!!
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Herbal Actions for the Cardiovascular System

- **Cardiac Tonics:** support normal cardiac function. They can work on the cardiovascular system, or several other organs in the body that deal with fluid transport.
- **Blood thinners:** anticoagulant herbs that prevent blood clotting. They contain substances that contain coumarin, salicylate, or antiplatelet properties. There have been no documented case reports of herbal interactions with the medication warfarin, nevertheless, it is important to be careful.
- **Circulatory Stimulants:** cause vasodilatation. They can aid in bringing herbs and blood to certain areas of the body.
- **Hemostats:** reduce or stop bleeding or hemorrhage.
- **Hypotensives:** help to lower blood pressure.
- **Rubefacients:** encourage circulation externally through vasodilatation. They can draw congestion from other areas of the body.
- **Vasodilators** help to widen blood vessels. They often act by relaxing smooth muscle cells within the vessel walls, particularly in the large veins, large arteries, and smaller arterioles.
- **Vasoconstrictors** help to constrict blood vessels, which can increase blood pressure. Although we rarely think on these terms, low blood pressure is also a problem as it is can cause transport problems to the cells and fainting and dizziness.
- **Diaphoretics** promote sweating. They can be helpful for a fever, or for people that under-use their skin as an eliminatory organ (i.e. don't sweat enough).
- **Diuretics** increase the flow of urine – they make you urinate.

Cardiovascular System

Angelica
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Actions: digestive, antispasmodic, expectorant, carminative, stimulant, diaphoretic, stomachic, tonic, emmenagogue, sedative, mild abortive

Spiritual Medicine:	**Physical Medicine**
- Aids us with feeling the fire of our solar plexus - Offers her protective warrior energies of protection - Encourages us to dance in our power - Connection to life + death	- Intestinal inflammation - Promotes production of digestive acids - Supports indigestion, heartburn - Stimulating blood flow, promoting anti clogging + wound healing - Strengthens heart - Aids menstrual cramps, promotes menstruation - Bronchial congestion, coughs, flu, breaks fever - Promote breast milk flow - Encourages a higher libido, treating early ejaculation

Gingko
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Gingko, Maidenhair tree

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Actions: Energy enhancer, cognitive enhancer, neuroprotective, relaxant, anti-inflammatory, astringent, anti-allergenic, anti-asthmatic, brain flow blood enhancer, circulatory stimulant & tonic, peripheral vasodilator, anti-platelet, antioxidant, bitter, nutritive, uterine stimulant, tissue perfusion enhancing, antispasmodic, anti-thrombotic

Spiritual Medicine:	**Physical Medicine**
- Ancient tree of life - Bringer of hope + peace - Rooting us in our strength + longevity - Balancer of light + darkness within + externally *Avoid using raw, may cause GI discomfort, dizziness; from the fruit/nut: erythema, edema, vesicles, severe GI irritation. **Interactions: With MAOIs, blood thinners, NSAIDs, SSRIs, thiazide diuretics	- Improves brain metabolism of glucose and oxygen and usage of Ach - Promotes blood flow to the brain to improve memory and concentration, cognitive & brain function - Supports Alzheimer's, can serve to enhance cerebral circulation, promote memory and cognition, act as an anticoagulant and anti-oxidant - Strong antioxidant effects can increase energy and be used in allergic inflammatory reactions - Useful in peripheral vascular disease and restricted blood flow for any reason - Can inhibit platelet aggregation - Relaxes blood vessels + improves their tone, and can be used topically as an anti-inflammatory