Introduction

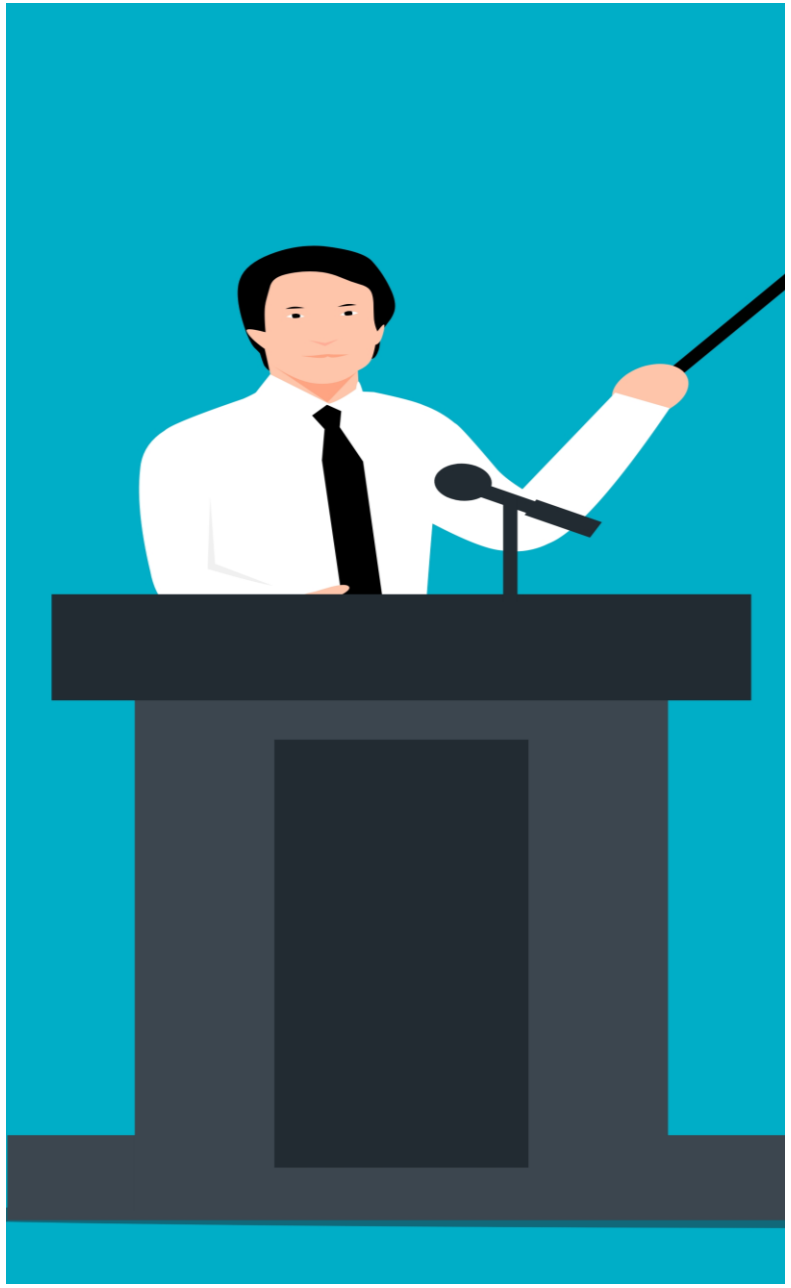
Presented by John Fang, L.Ac., DAOM

The Double Yang Festival

This month is for the senior

September is

Healthy Aging Month



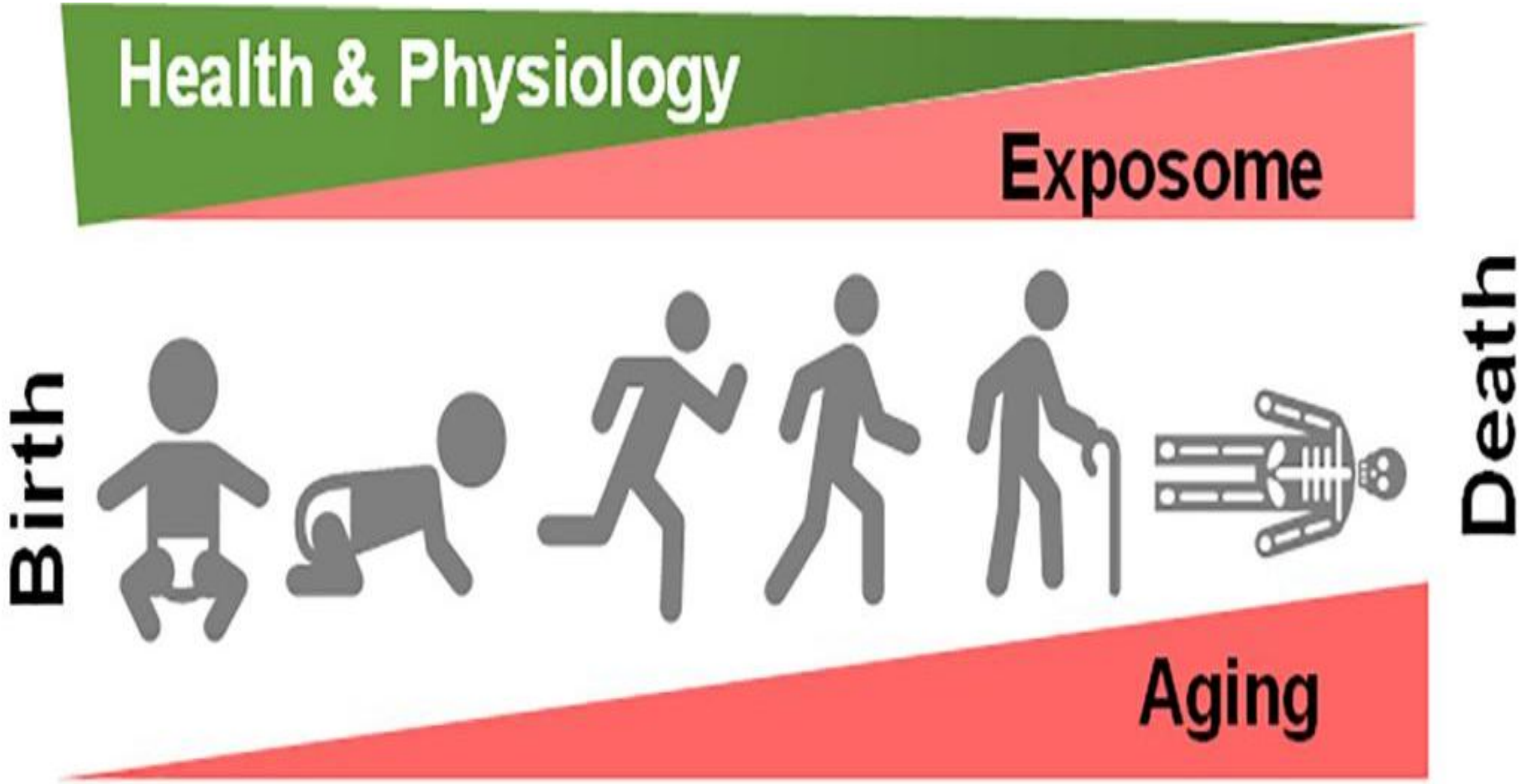
Hello, SBUEAA members:

Welcome to the CE class today! I am honored to do the presentation. Please be advised:

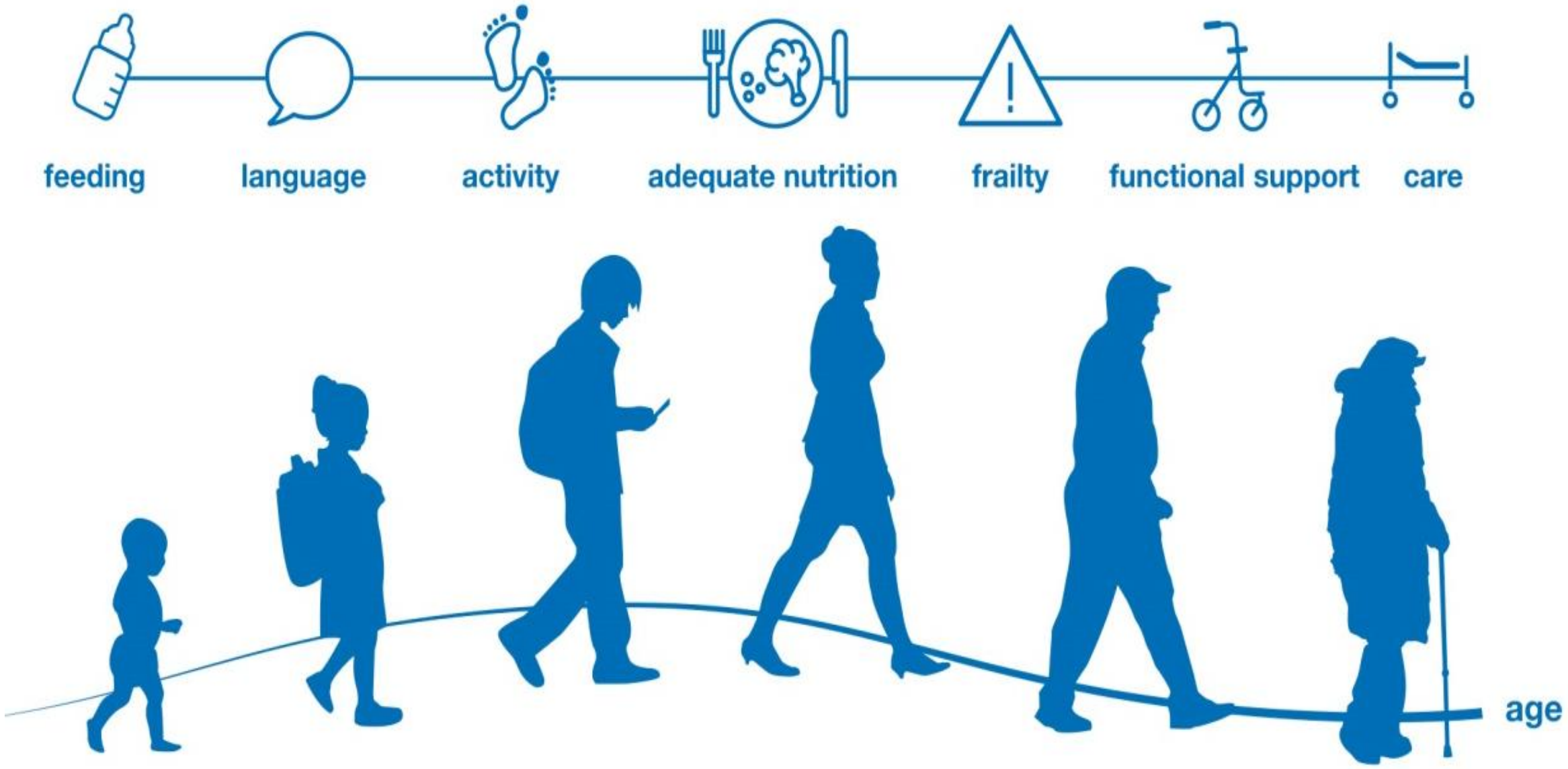
- The handout is composed of the slides with source of information that I quote.
- I hope the evidence-based information will provide you with opportunities for further reading and patient education.
- The slides without source of information are made up of my personal input, edits, or preferred treatment options, which will be shown during my presentation but are not included in the handout.

Ageing
At a Glance

Riddle of the Sphinx – the answer is…



The life cycle



The WHO overview

- Every country in the world is experiencing growth in both the size and the proportion of older persons in the population.
- By 2030, 1 in 6 people in the world will be aged 60 years or over. By 2050, the world's population of people aged 60 years and older will double (2.1 billion).
- The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 million.

Source: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

Brainteasing about ageing

- What's the best part of old age?
  => It doesn't last very long.

Source: online version of Reader's Digest (founded "1922")

Despite joking, the fact is…

- Aging is a gradual and irreversible pathophysiological process. It presents with declines in tissue and cell functions and significant increases in the risks of various aging-related diseases, including neurodegenerative, cardiovascular, metabolic, musculoskeletal, and immune system diseases.
- Many older patients experience multiple comorbidities as the age advances.

Source: https://pubmed.ncbi.nlm.nih.gov/36522308/

Ageing theories

- One category is comprised of concepts holding that aging is programmed and caused by the accumulation of damage. Another group suggests various sources and targets of the damage.
- In addition to damage itself, the rate of accumulation is also of concern, which results from overall metabolic activity.
- Aging could vary across different species, and programmed senescence can accelerate the buildup of damage or decrease the capacity for repair.

Source: https://pubmed.ncbi.nlm.nih.gov/25926998

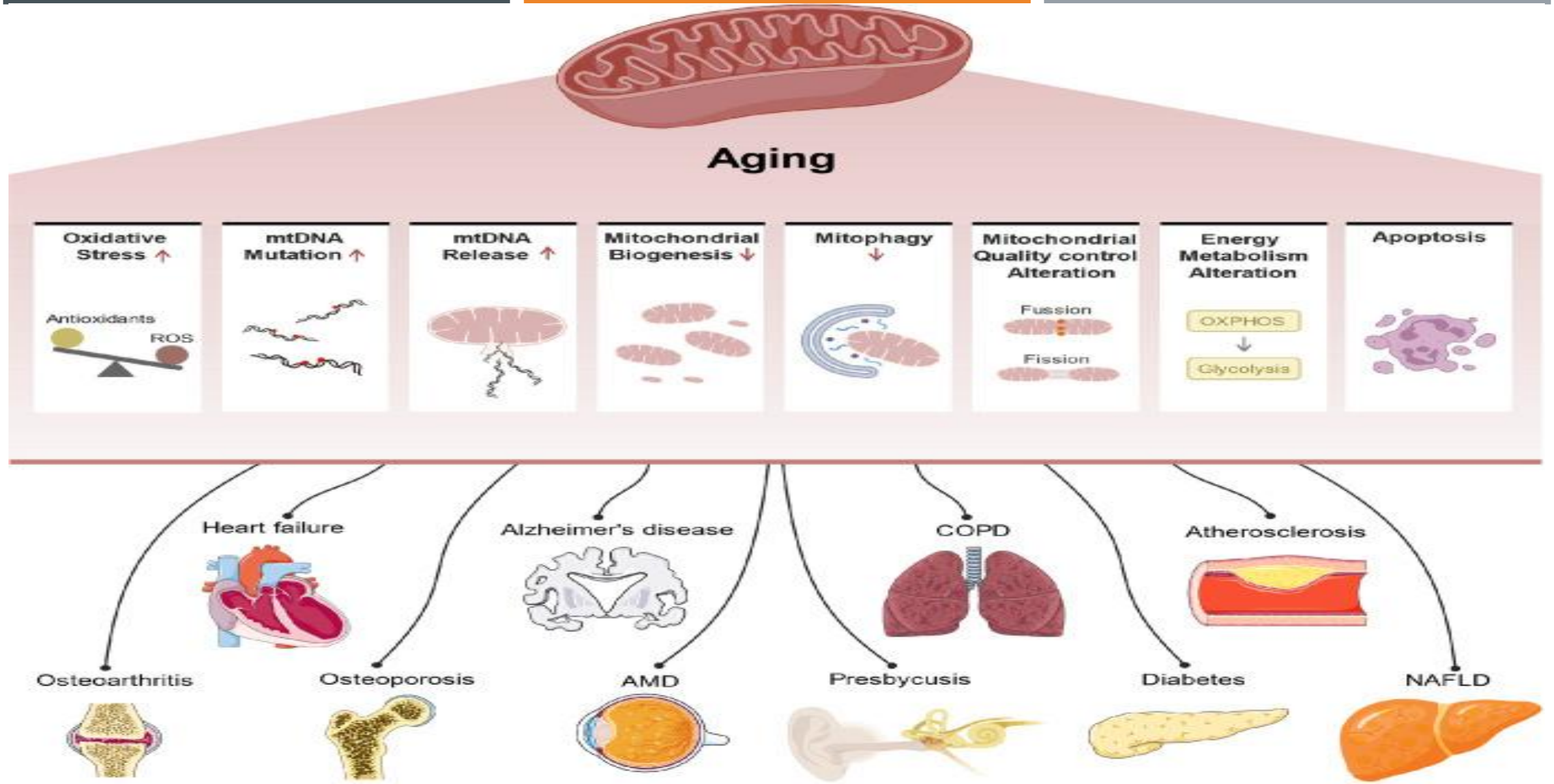
Current biomedical research

In regulating ageing, the current focus is on elucidating endogenous and exogenous stresses, such as:

- ✓ genomic instability
- ✓ telomere dysfunction
- ✓ epigenetic alterations
- ✓ loss of proteostasis
- ✓ compromise of autophagy
- ✓ mitochondrial dysfunction
- ✓ cellular senescence
- ✓ stem cell exhaustion
- ✓ altered intercellular communication
- ✓ deregulated nutrient sensing

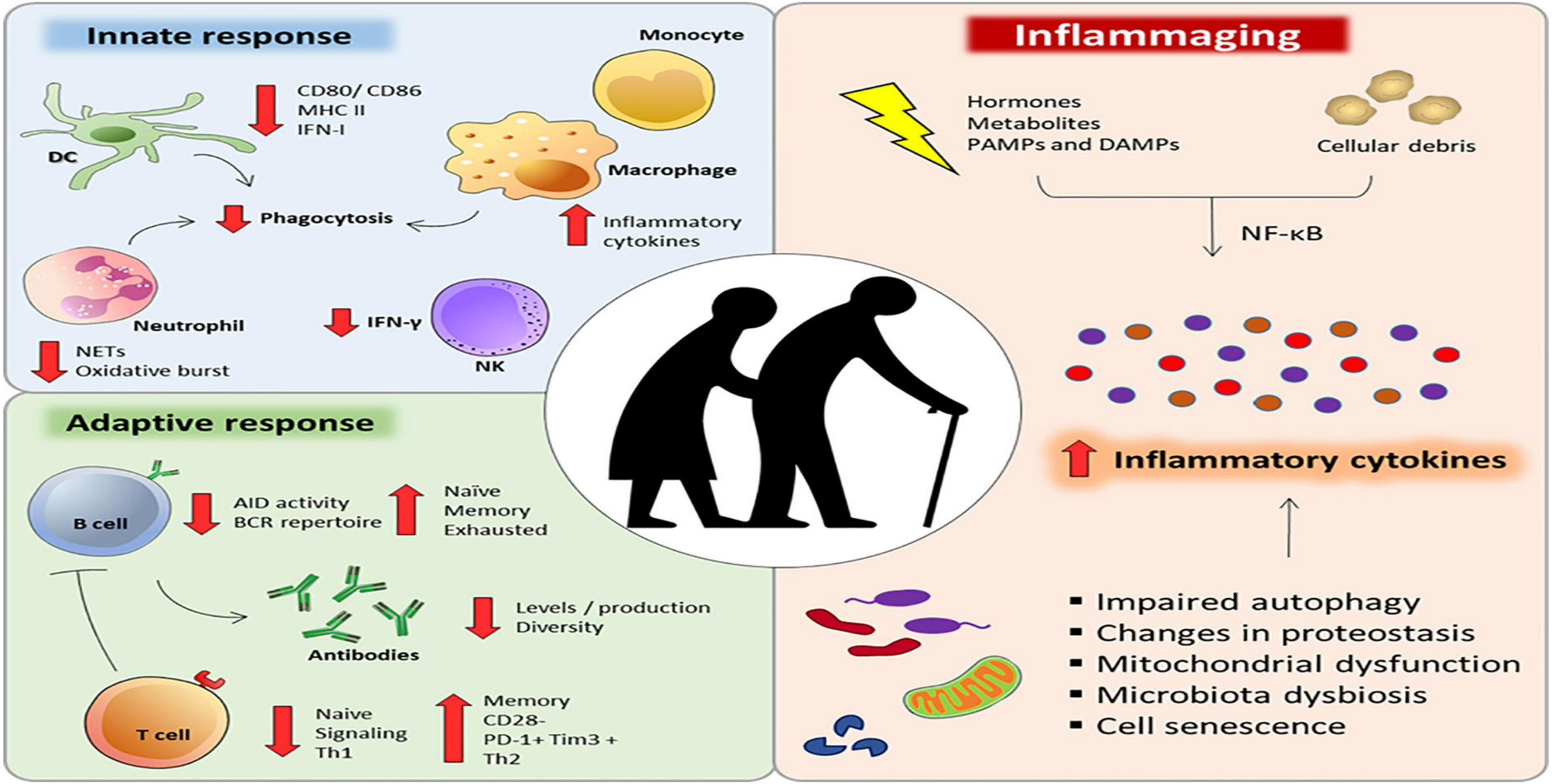
Source: https://pubmed.ncbi.nlm.nih.gov/36522308/

Mitochondrial dysfunction contributing to diverse aging-related diseases

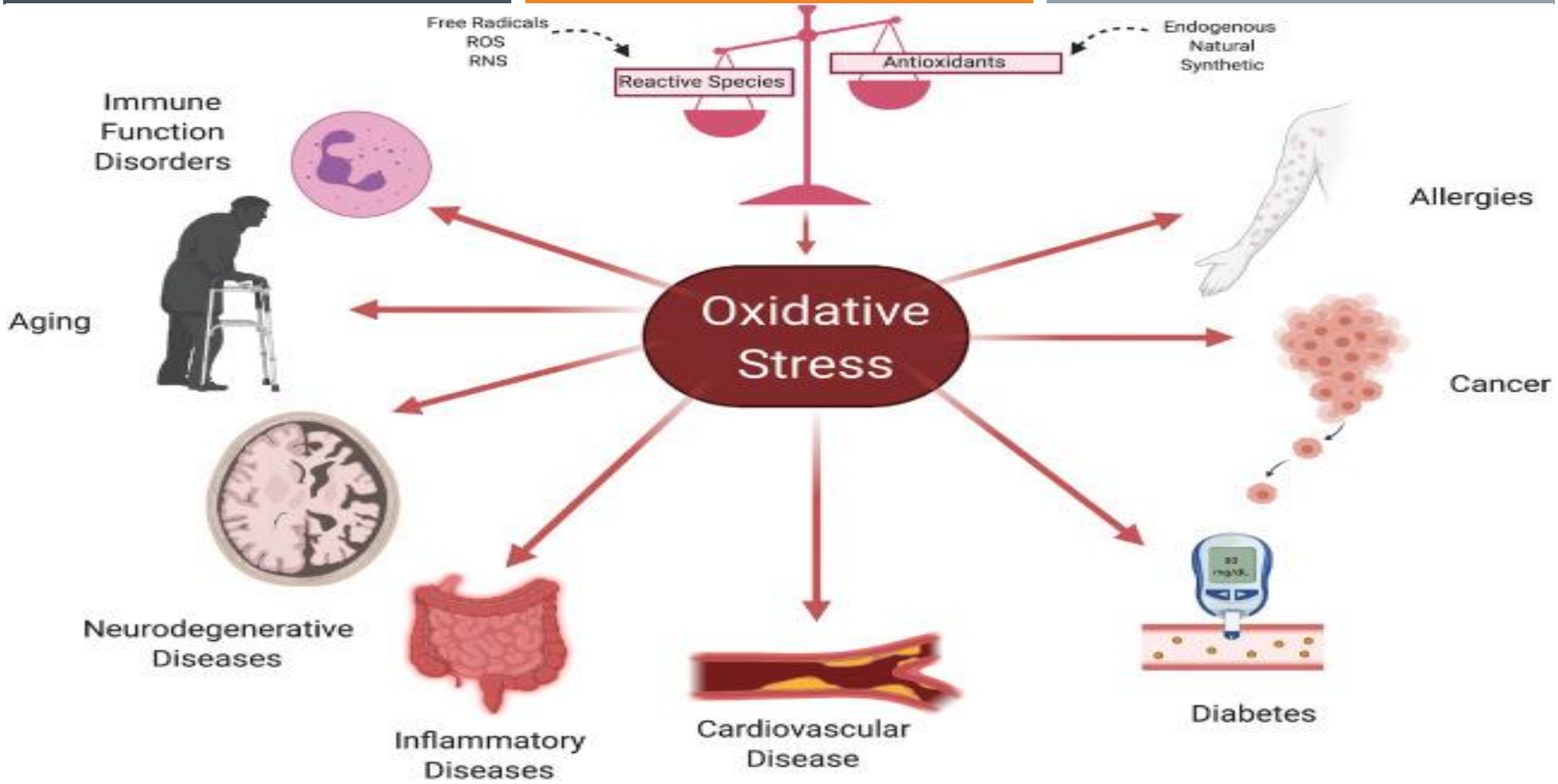


https://pubmed.ncbi.nlm.nih.gov/36522308/

Inflammaging and ageing



Oxidative stress and chronic diseases



https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/oxidative-stress

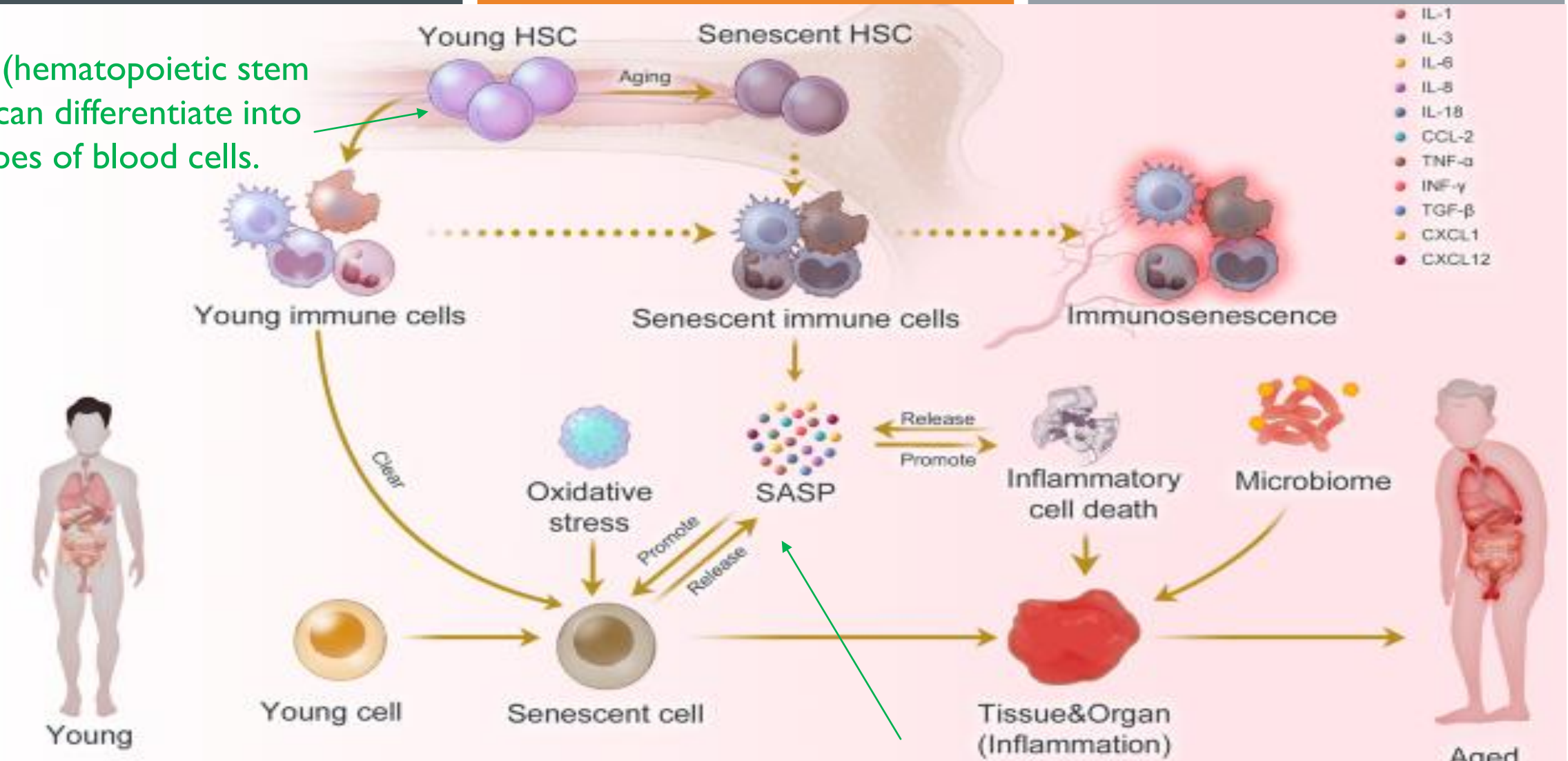
Inflammageing or chronic inflammation: the accomplice behind the scene

- Inflammageing, defined as an age-related increase in the levels of pro-inflammatory markers in blood and tissues, which are often detected in older individuals and predict the risk of cardiovascular diseases, frailty, multimorbidity, and decline of physical and cognitive function.
- In individuals with obesity, visceral fat produces pro-inflammatory and chemotactic compounds and is infiltrated by senescent cells with a senescence-associated secretory phenotype that contributes to inflammageing.
- Inflammageing can complicate the clinical features of cardiovascular disease in older individuals by causing an energetic imbalance towards catabolism and interfering with homeostatic signaling, leading to frailty. Clinical trials suggest that modulating inflammation prevents cardiovascular diseases.
- Inflammation interferes with the maintenance and repair that constantly occur in all tissues, leading to accumulation of damage that contributes to frailty.

Source: https://pubmed.ncbi.nlm.nih.gov/30065258/

Inflammaging at the molecular and cellular levels

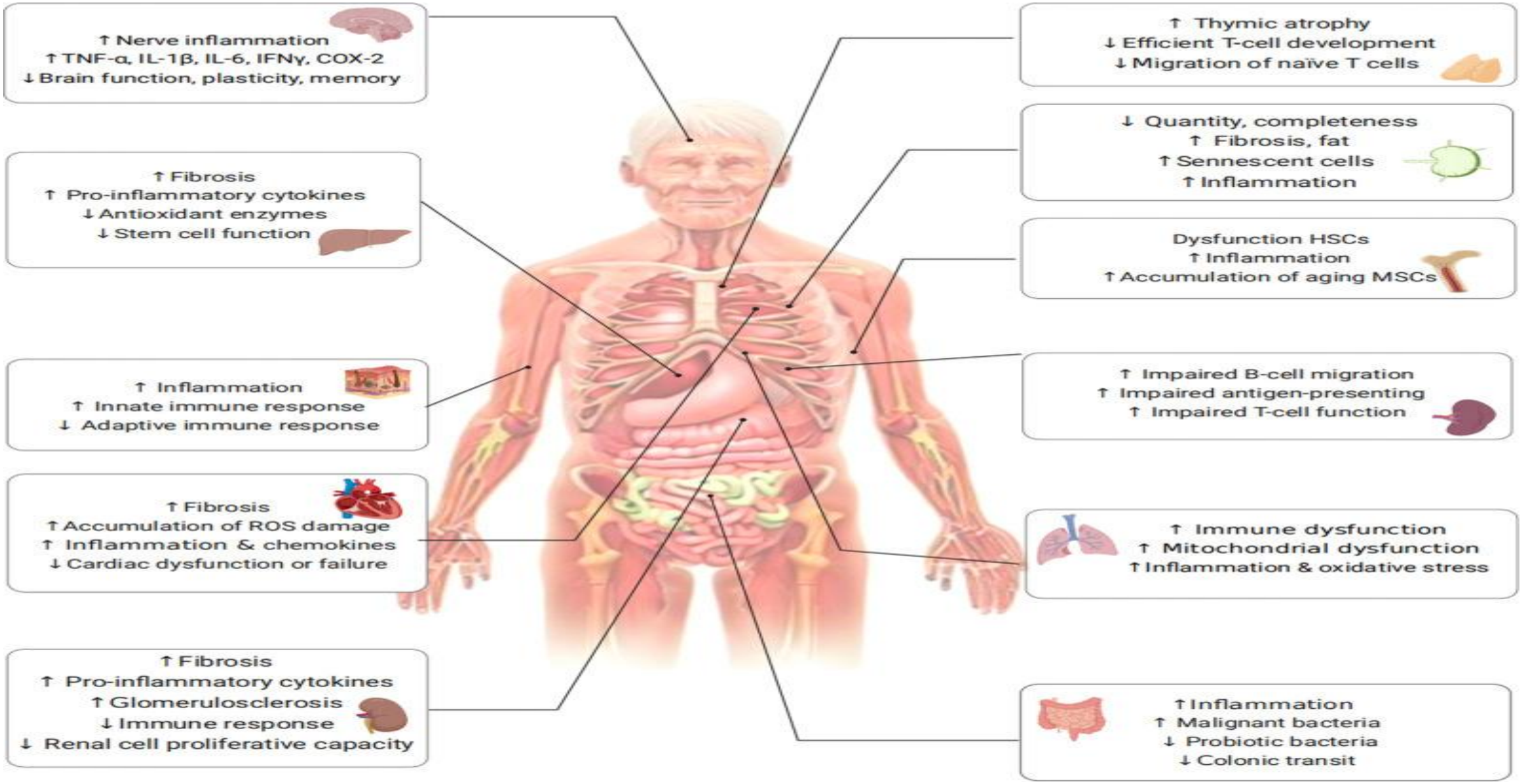
HSC (hematopoietic stem cell) can differentiate into all types of blood cells.



SASP (senescence-associated secretory phenotype) refers to the complex mix of pro-inflammatory signals, growth factors, and proteases secreted by senescent (aging) cells.

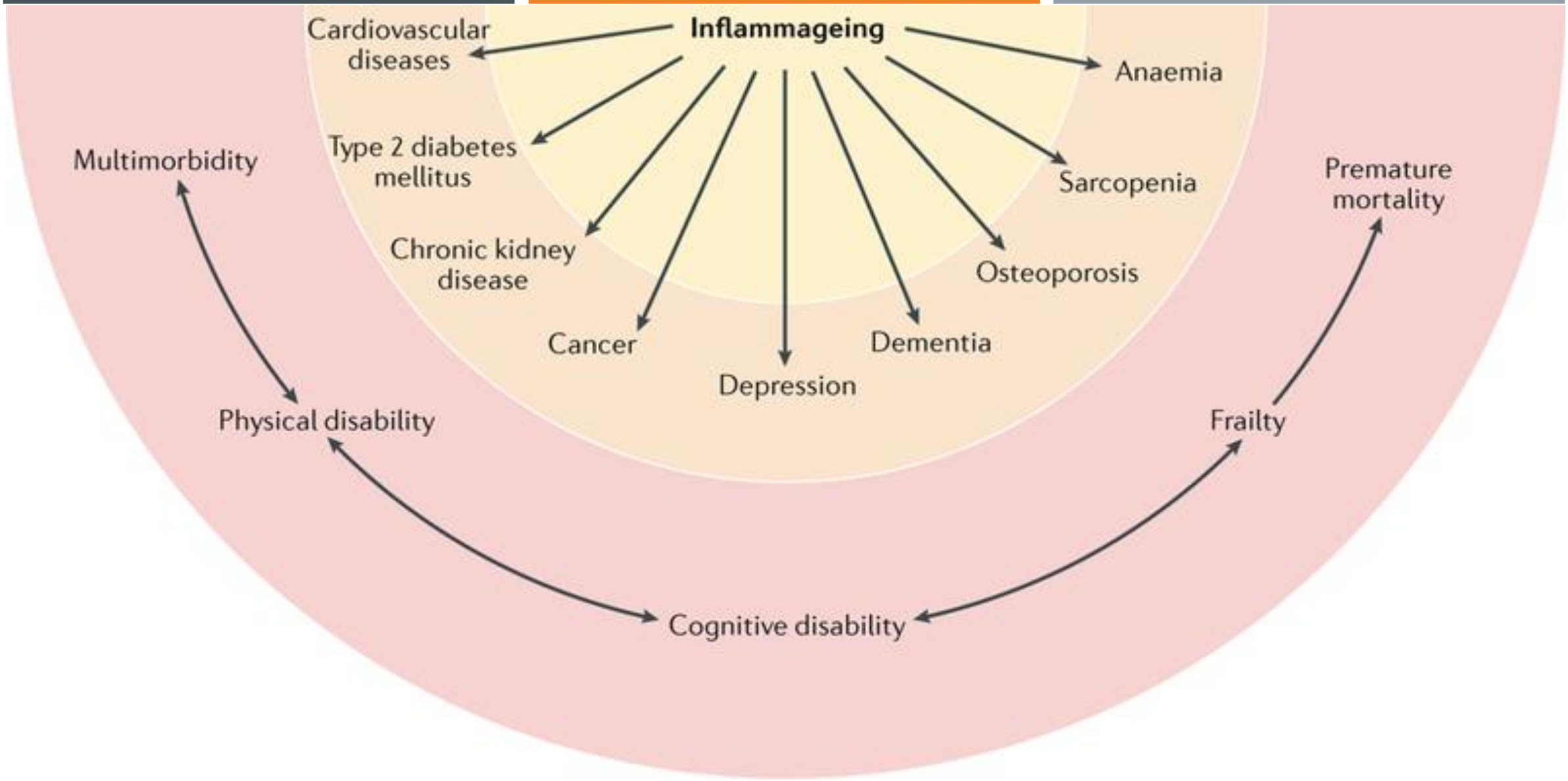
https://pubmed.ncbi.nlm.nih.gov/37291105/

Inflammaging at the organ level



https://pubmed.ncbi.nlm.nih.gov/37291105/

Inflammageing as a risk factor for multiple chronic diseases



Source: https://pubmed.ncbi.nlm.nih.gov/30065258/

Exposome: measuring all exposures of an individual in the lifetime

- A study by Columbia University revealed that most chronic diseases such as diabetes, heart disease, Alzheimer's, etc. are rare or largely absent in the indigenous populations, meaning that even when young indigenous people present profiles that look like those of older adults in industrialized regions, these profiles do not lead to pathological consequences.
- The finding suggested that immune-aging processes can be heavily influenced by the totality of environmental, lifestyle, and infectious exposures.

Source: https://www.publichealth.columbia.edu/news/aging-related-inflammation-not-universal-across-human-populations

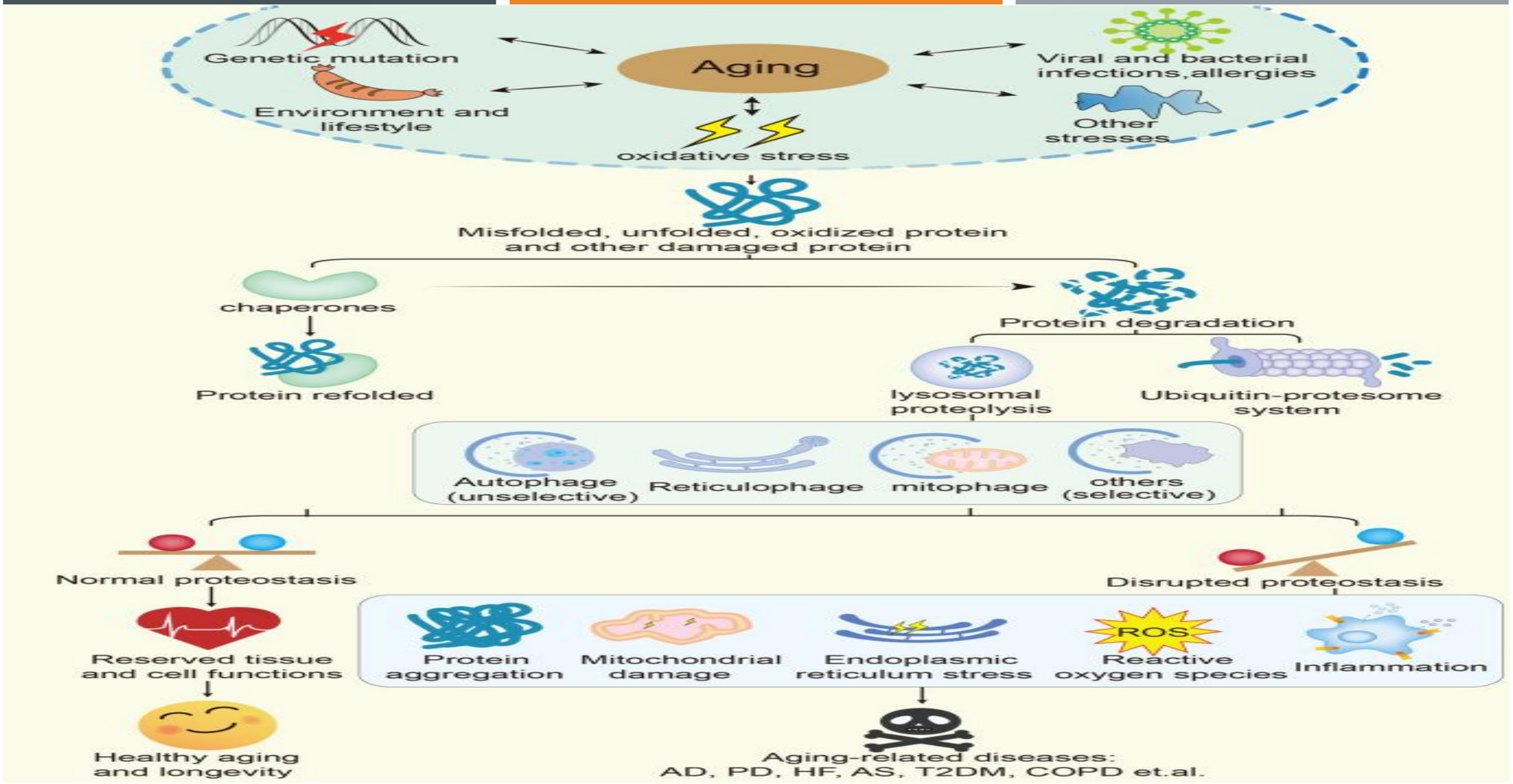
Exposome and ageing

Defining healthy ageing from the public health perspective

- Healthy aging is the process of maintaining good physical, mental, and social health and well-being as we grow older.
- Healthy aging starts early on in life.
- It means adopting healthy habits and making positive lifestyle choices that contribute to overall well-being as we age.
- Starting early is important to avoid many health complications that may arise in later life.
- It is never too late to adopt healthy habits for positive change.

Source: https://www.cdc.gov/healthy-aging/about/index.html

Healthy ageing with balance from the cellular perspective



https://pubmed.ncbi.nlm.nih.gov/36522308/

Healthy Ageing with TCM

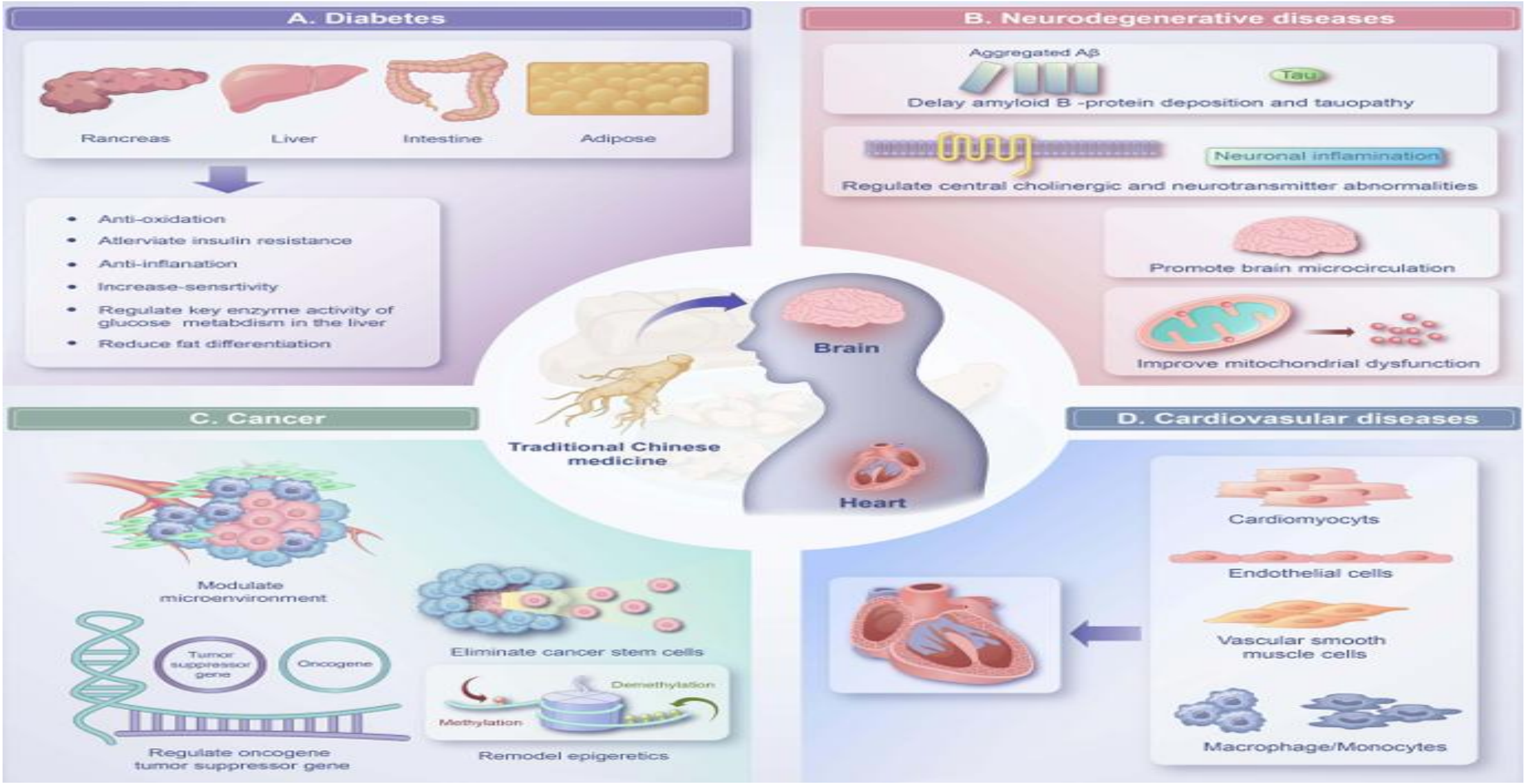
TCM Strategies for Ageing Related Disorders

2-year Trends of chronic conditions in % among US adults >= 65 years, 2013~2023

Current asthma	8.3	8.3	8.5	8.2	8.6	9.3
Arthritis	52.7	51.5	50.2	49.8	50.7	51.3
High cholesterol	55.6	54.4	51.7	51.2	53.6	55.1
High blood pressure	63.0	61.7	60.7	60.1	60.6	61.4
Depression	14.7	15.1	16.0	14.8	14.6	14.7
Diabetes	22.4	22.9	22.8	23.1	22.6	23.5
COPD	12.2	12.5	12.7	12.9	12.4	12.4
CKD	5.7	5.8	6.8	6.9	7.1	8.6
Cancer	17.7	17.6	17.8	17.8	17.6	20.1
Heart disease	18.4	17.4	16.9	16.2	15.6	15.7
Stroke	7.6	7.7	7.6	7.9	7.7	7.4
Obesity	26.5	27.5	28.5	29.2	29.9	30.3

https://www.cdc.gov/pcd/issues/2025/24_0539a.htm#2

TCM mechanisms in the improvement of common conditions associated with aging



Source: https://pubmed.ncbi.nlm.nih.gov/38706635/

TCM effects in improving common conditions associated with aging

- The mechanism of TCM in the treatment of diabetes is related to anti-oxidation, alleviate insulin resistance, anti-inflammation, increase insulin sensitivity, regulate key enzyme activity of glucose metabolism in the liver, reduce fat differentiation.
- TCM can delay amyloid β-protein deposition and tauopathy, regulate central cholinergic and other neurotransmitter abnormalities, promote brain microcirculation, improve mitochondrial dysfunction.
- Application of TCM in cancer therapy based on regulate genes (oncogenes and tumor suppressor genes), epigenetic modification (DNA and histone modification), the microenvironment, and cancer stem cells.
- TCM has a protective effect on cardiovascular diseases by attenuating damage in cardiomyocytes, endothelial cells, vascular smooth muscle cells and macrophages/monocytes.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC11070163/

For the Peace of Lung and Heart

Presented by John Fang, L.Ac., DAOM

Lung Disorders in Old Adults

Types of Chronic Lung Disease from biomedical perspective

- Restrictive lung diseases

  When the lung tissues become inflamed, stiff, or scarred, the lungs cannot fully expand, making it harder to inhale air. Examples: pulmonary fibrosis, work-related lung diseases

- Obstructive or airway lung diseases

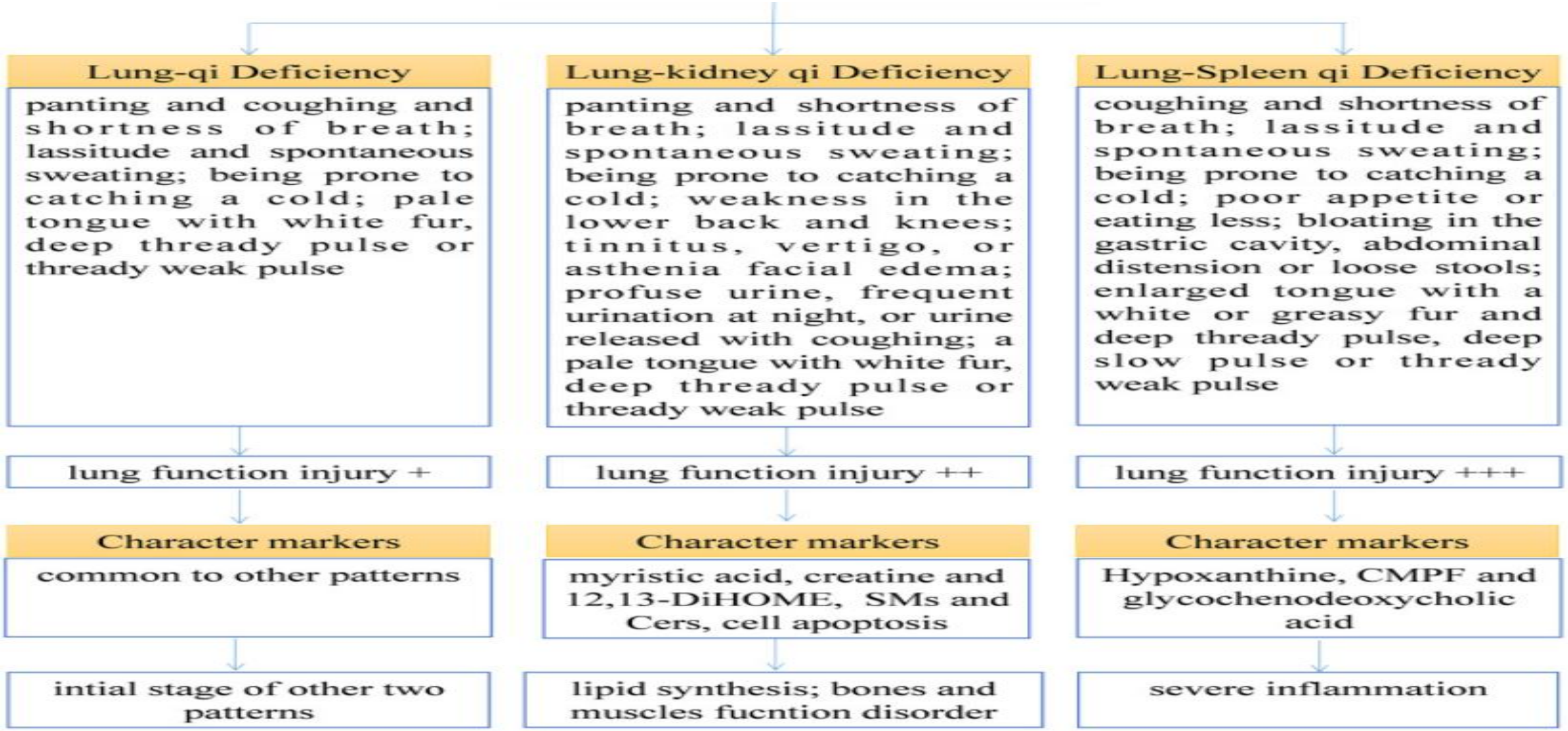
  When the airways are blocked or obstructed, it is harder to breathe out all the air in the lungs, making the airways inflamed, thick mucus being built up, and the walls of the air sacs becoming damaged. Examples: asthma and COPD

- Pulmonary vascular lung diseases

  When the blood vessels in the lungs are pathologically affected, the heart and lungs have a hard time working together to circulate oxygenated blood throughout the body. Examples: Pulmonary hypertension and pulmonary embolism

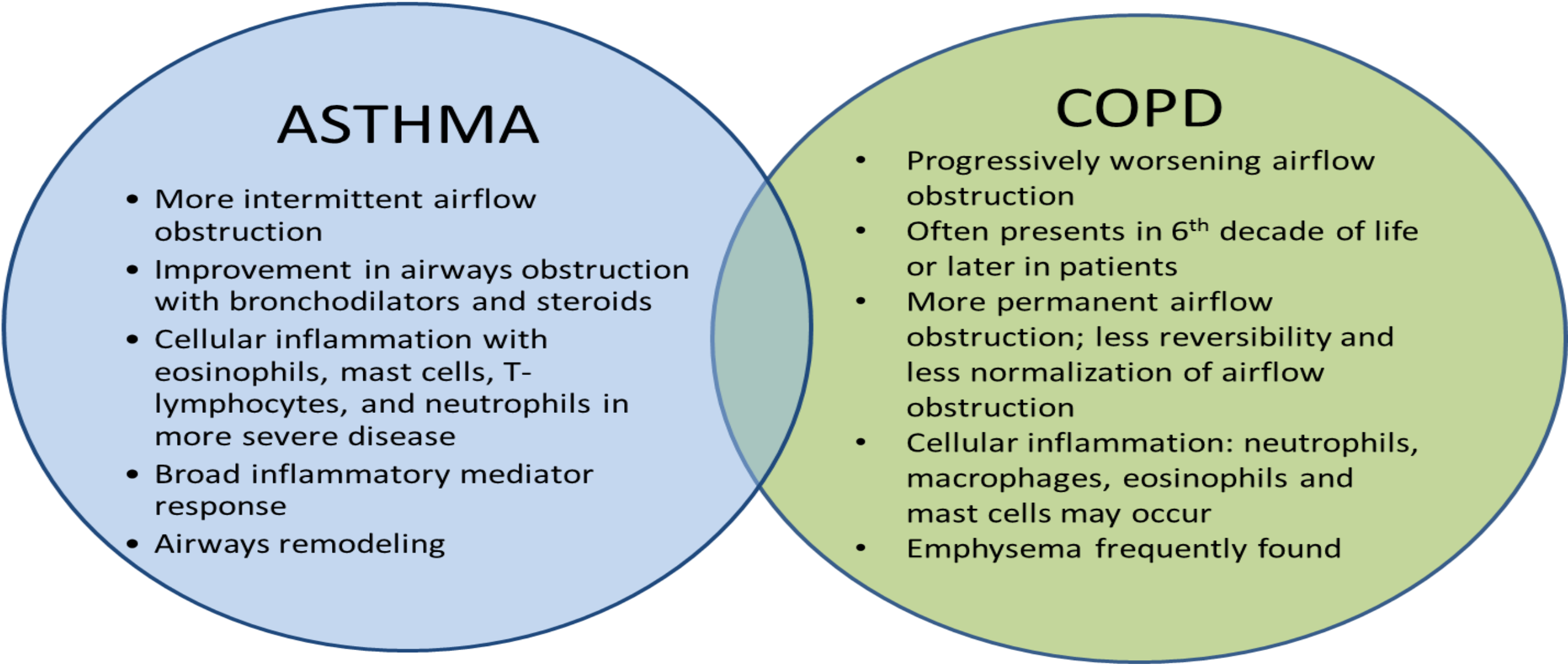
Source: https://www.lung.org/lung-health-diseases/lung-disease-lookup/chronic-lung-disease

TCM diagnosis, metabolic markers, and biological characteristics of different patterns in COPD



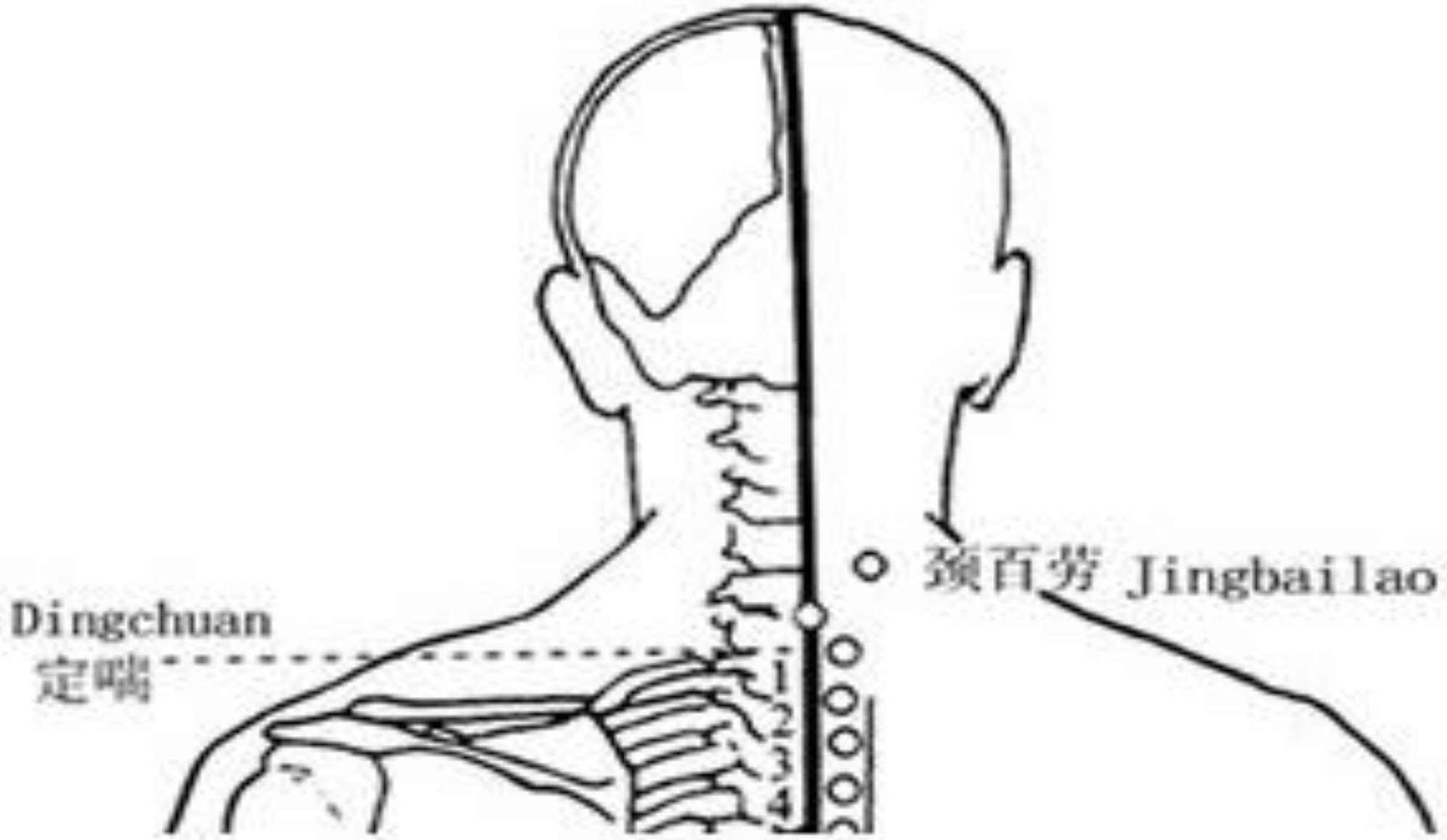
Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC10363632/

Biomedical characteristics of asthma and COPD



Source: COPD Clinical Perspectives, Open Access, https://www.intechopen.com/chapters/46612

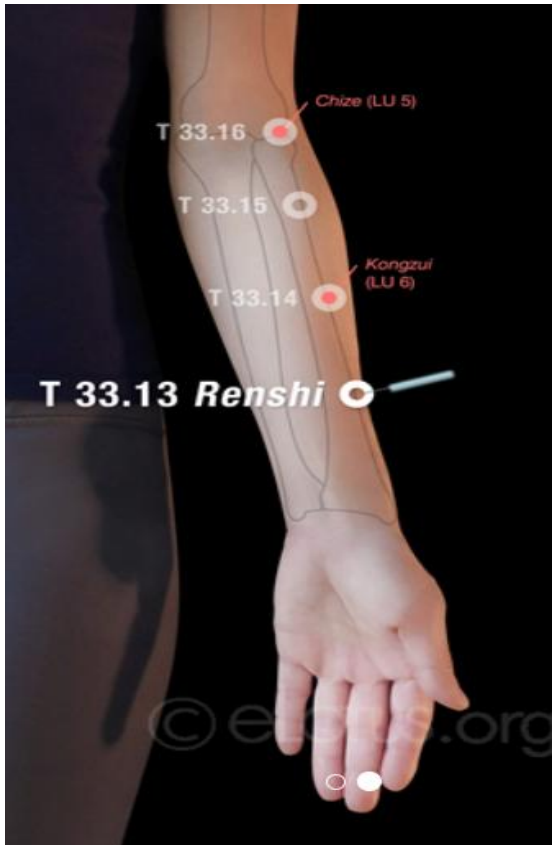
Extra acupuncture points for asthma

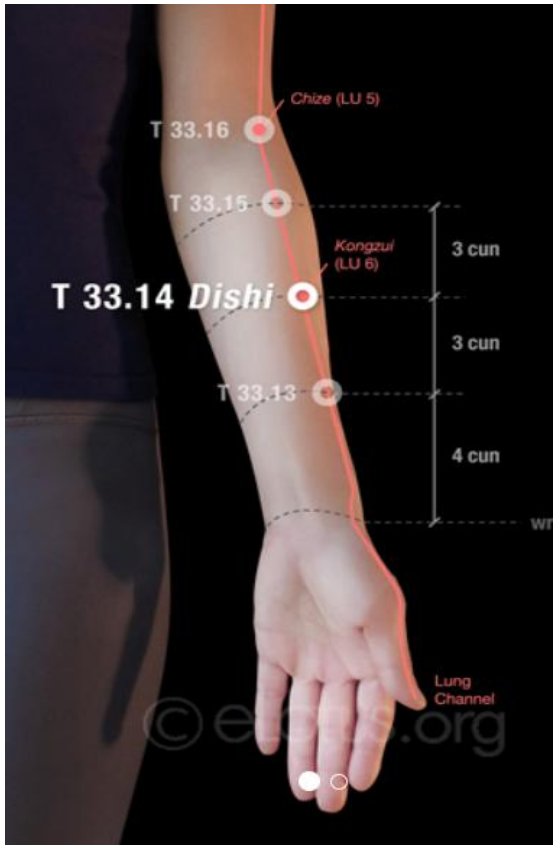


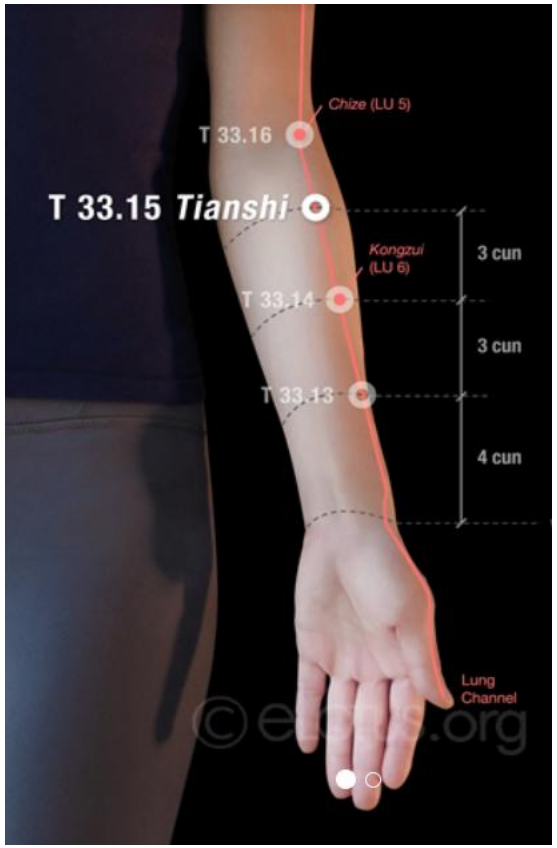
Source: https://www.meso.it/old.tcmwiki.com/wiki/dingchuan.html

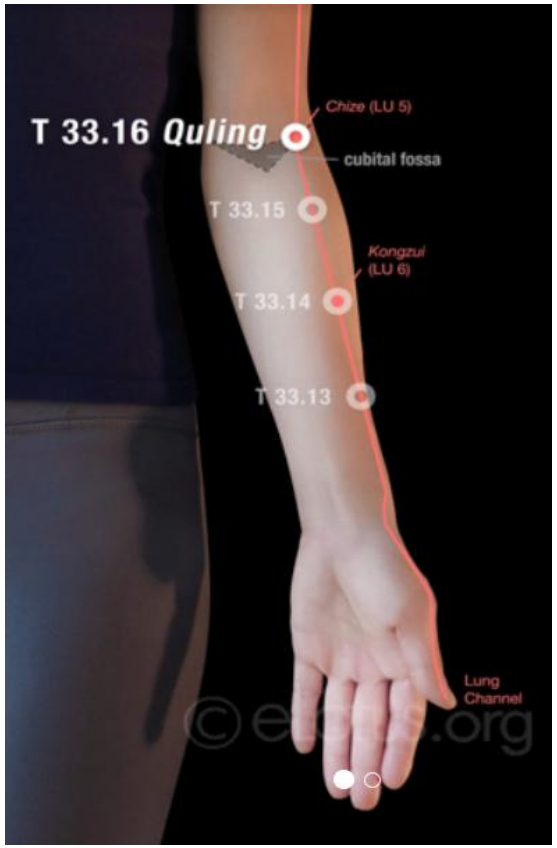
Master Tung's acupuncture for asthma

Renshi (T33.13), often paired with Dishi (T33.14), Tian Shi (T33.15), and Qu Ling (T33.16, overlapping L5) located between the Lung and Pericardium channels, can carry out protective functions for Lung disorders.





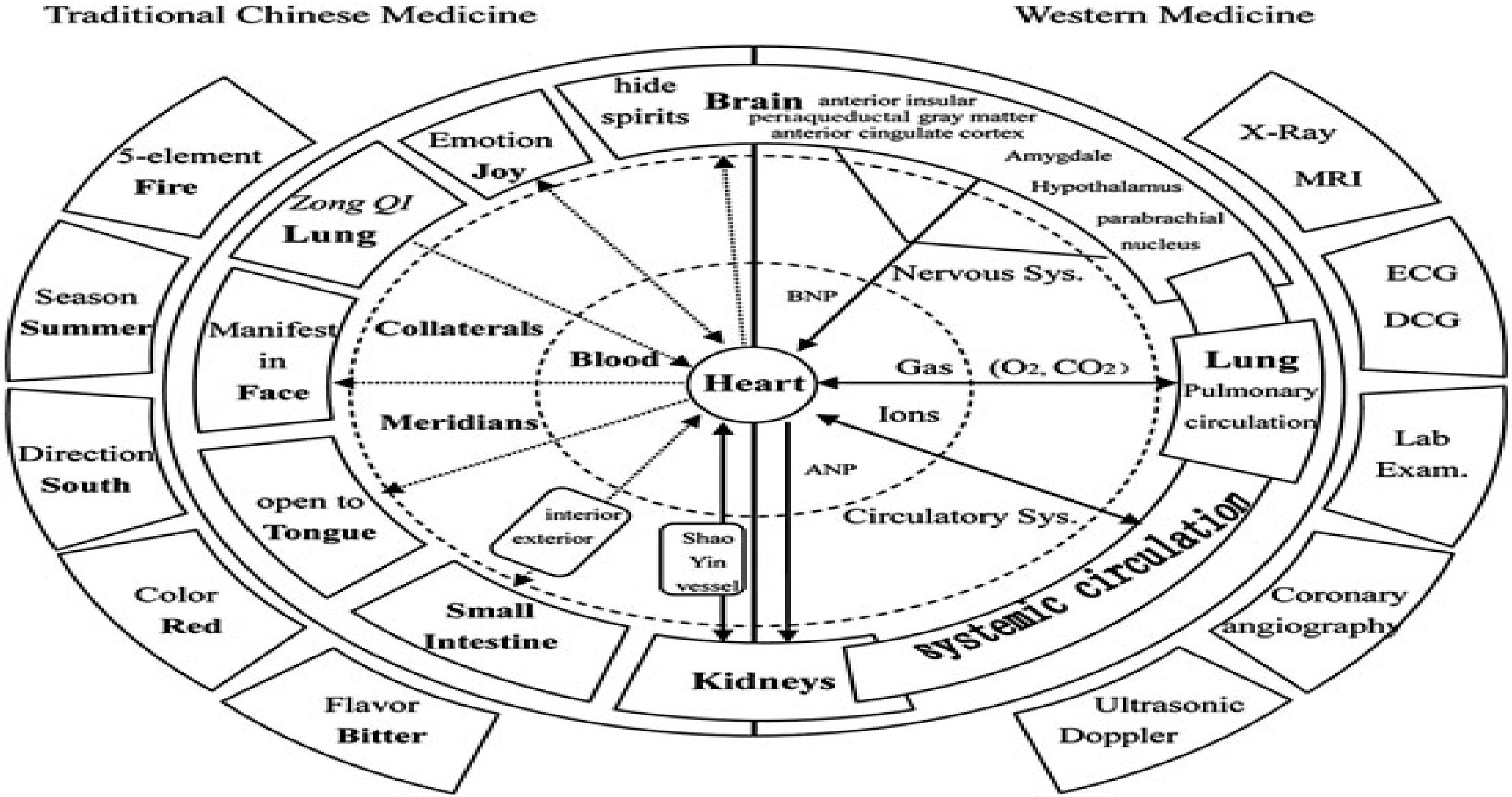




https://www.mastertungacupuncture.org/acupuncture/tung/points/quling-t-3316

Heart Disorders in Old Adults

Integrative views of the Heart in TCM and western medicine



Source: Integrative Medicine International. 2017;4(1-2):46-51.

Heart diseases in western medicine

- Coronary artery disease (CAD, or coronary heart disease) is the most common type of heart disease, in which when the plaque builds up in the arteries, narrows blood flow to the heart muscle, and lead to other heart problems, such as angina, heart attacks, heart failure, or arrhythmia.
- Possible causes include lifestyle, genetics, infections, medicines, and other diseases. The risk of heart disease goes up as a person gets older.
- Unhealthy lifestyle habits such as eating a diet high in saturated fats, refined carbohydrates, and salt; not getting enough physical activities, drinking too much alcohol, smoking or exposure to secondhand smoke, and too much stress
- Other medical conditions such as high blood pressure, high cholesterol levels, diabetes, obesity, inflammatory diseases from autoimmune, and chronic kidney disease.
- Heart diseases prevention includes heart-healthy lifestyle changes and management of existing medical conditions.

Source: https://medlineplus.gov/heartdiseases.html

Integrative care for heart diseases

- For many heart-related diseases, western medicine does well in examination and early diagnosis with the modern medical technology, while TCM is good at conservative treatment.
- Cardiac surgery in symptomatic, severe coronary heart disease leads to significantly better functional capacity and prolonged survival.
- TCM gets increasing attention because of its definite effect, low risk of side effects, and convenient and economical nature.

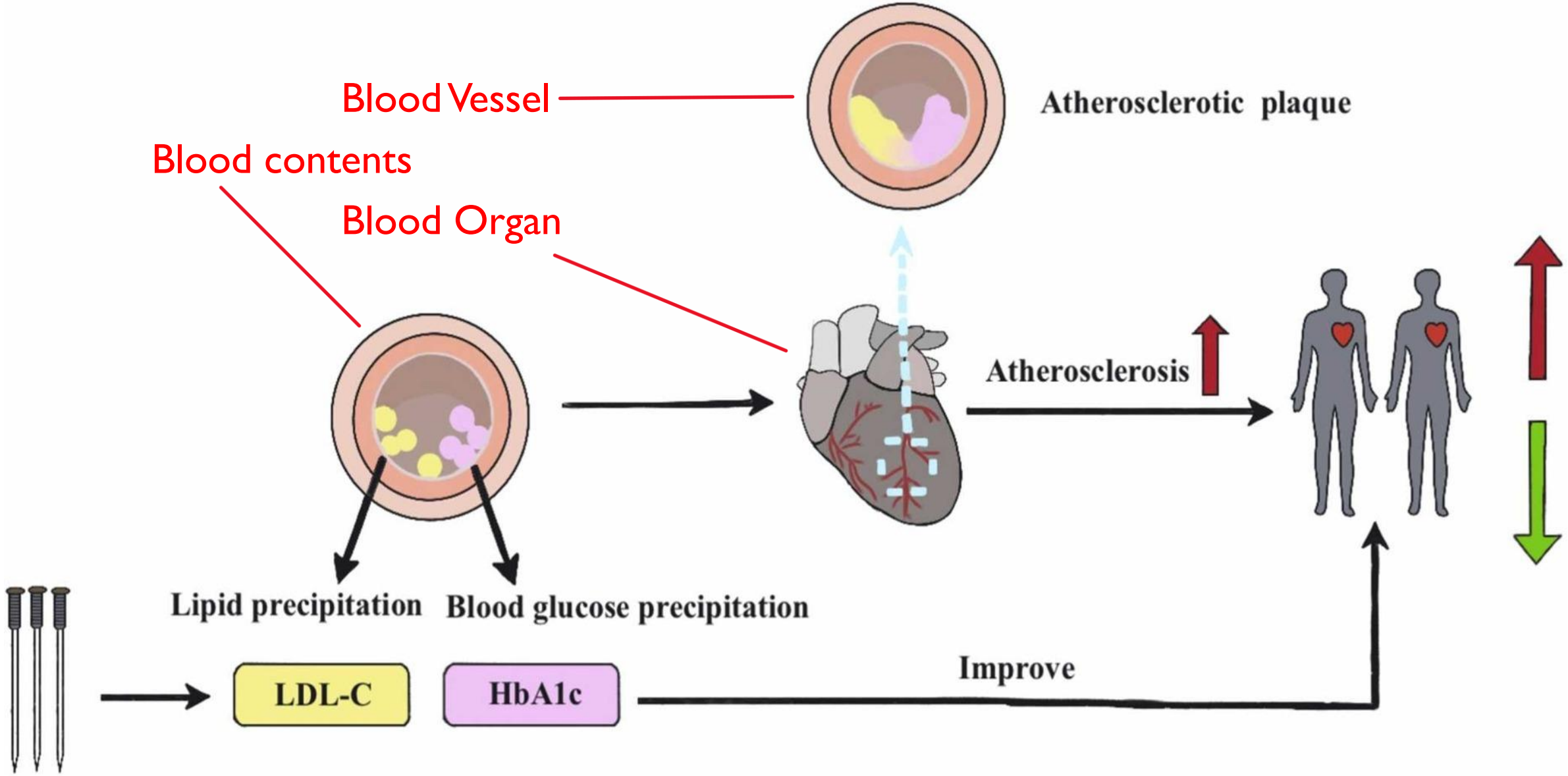
Source: Integrative Medicine International. 2017;4(1-2):46-51.

Evidence-based research on TCM for heart diseases

- A 2024 systematic review on 55 published RCTs involving a total of 36,261 patients revealed that TCM (patent medicine and acupuncture) has been associated with significant improvements in hypertension, coronary heart disease, stroke, and heart failure. The endpoints of these conditions were effectively reduced during the follow-up period.
- The risk of adverse effects was not significantly increased, suggesting the potential of TCM as an alternative approach for prevention of coronary artery disease.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC11649660/

Mechanisms of acupuncture benefitting patients with coronary heart disease



https://pubmed.ncbi.nlm.nih.gov/39615634/

The effectiveness of acupuncture on glycolipid metabolism in patients with coronary heart disease

- A systematic review and meta-analysis demonstrated that acupuncture can effectively improve the glycolipid level of simple coronary heart disease and have a preventive effect on its elevation.
- The article showed that acupuncture combined with standard therapy plays a good adjuvant therapeutic role in improving coronary heart disease glycolipid metabolism, and compared with therapy alone, acupuncture can effectively reduce the levels of LDL-C, HbA1c, TC, TG, etc.

Source: https://pubmed.ncbi.nlm.nih.gov/39615634/

Shen Disturbance in Old Adults

Depression from the biomedicine perspective

- Depression is a complex condition with multifactorial pathogenesis and etiology, involving physiological changes in the body and environmental factors. Effective treatments are not yet established.
- There are several hypotheses regarding the pathogenesis of depression or closely related to the onset of depression:
  - abnormal expression of neurotransmitters and their receptors
  - plasticity of hippocampal neurons
  - changes in related cellular pathways
  - disorders in the regulation of the hypothalamic-pituitary-adrenal axis (HPA axis)
  - secretion of inflammatory factors and oxidative stress
  - dysregulation of intestinal microorganisms
  - disorders of energy metabolism in mitochondria
- TCM classifies depression into liver Qi stagnation, liver depression and spleen deficiency type, deficiency of both heart and spleen, etc.

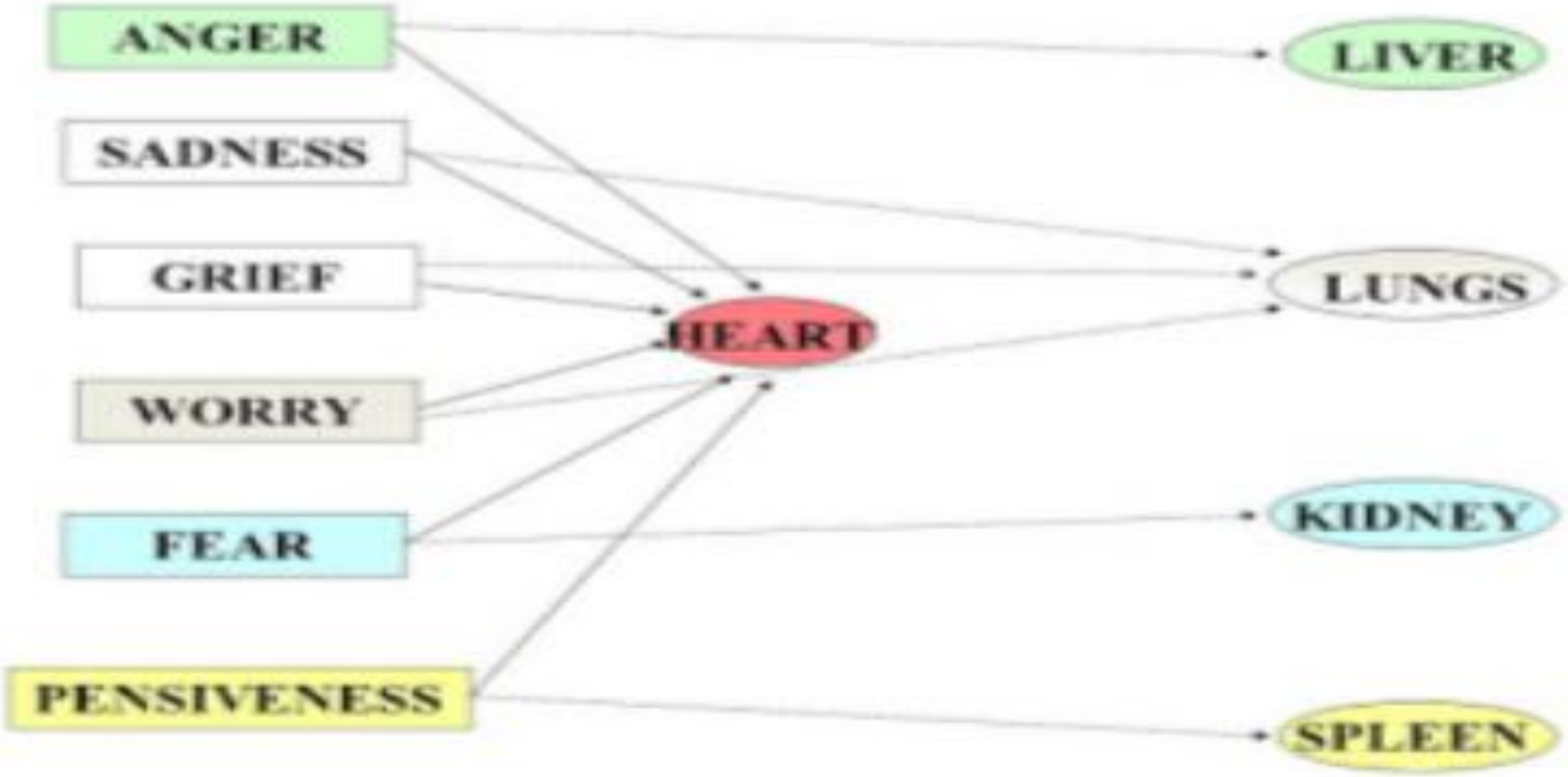
Source: https://www.sciencedirect.com/science/article/pii/S2405844024110018

The Heart is the house of the Shen

- "Shen" indicates the activity of thinking, consciousness, self, insight, emotional life, memory, and volition, all of which depend on the Heart. It also indicates the complex of all five mental-spiritual aspects of a human being, i.e. the Shen itself, the Hun, the Po, the Yi, and the Zhi.
- Thinking (or cognition) depends on the Shen. If the Shen is strong, thinking will be clear. If the Shen is weak or disturbed, thinking will be slow and dull.
- Memory has two different meanings. Explicit memory consists in remembering facts and past events. This depends on the Shen and therefore the Heart, although also on the Spleen (Yi) and Kidneys (Zhi). Implicit memory consists in muscle memory, i.e. remembering how to ride a bicycle, to dance or to knit, etc.
- The Shen of the Heart is also responsible for hearing, sight, taste, smell, and emotional life.

Source: https://giovanni-maciocia.com/shen-and-hun-psyche-in-chinese-medicine/

The sovereign official – the Heart



Source: https://giovanni-maciocia.com/shen-and-hun-psyche-in-chinese-medicine/

TCM diagnoses and pathogenesis of senile anxiety

- Patterns corresponding to anxiety
  - Jing Ji – fear and palpitations
  - Zheng Chong – panic throbbing
  - Fan Zao – mental restlessness
  - Zang Zao – agitation
- Huang Di Nei Jing stated:
  - Fear leads to loss of Jing which then results in obstruction of the Upper Burner, consequently leading to return of Qi and distension in the Lower Burner".
  - Surplus of Blood leads to rage while insufficiency of Blood results in fear.
  - Excessive fear leads to subjugation of Kidney by Spleen Qi.

Source: https://giovanni-maciocia.com/fear-and-anxiety/

When western medicine meets TCM in the subject of depression

- Research has demonstrated that individuals diagnosed with depression exhibit an increased susceptibility to cardiovascular disease.
- Patients with cardiovascular disease tend to experience comorbid depression.
- These two conditions are mutually causative and exert reciprocal effects on one another.
- This phenomenon is clinically referred to as cardiovascular disease with depression diseases.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC9099051/pdf/fcvm-09-890329.pdf

TCM herbal medicine efficacies and mechanisms for depression

- A research which reviewed 51 studies on six TCM decoctions and patent formulas demonstrated their clinical efficacy for treating depression and examined their mechanisms of action.
- The research revealed that TCM plays a role in the management of depression by enhancing the therapeutic effects and alleviating the side effects of antidepressant chemicals. The anti-depressive effects are related to the following mechanisms:
  - ✓ increased monoamine neurotransmitter levels
  - ✓ inhibiting hyperactivity of the hypothalamic-pituitary-adrenal axis
  - ✓ regulating hippocampal neurons and neurotrophic factors
  - ✓ regulating immune cytokines
  - ✓ counteracting excitatory amino acid toxicity
  - ✓ regulating microbe-gut-brain axis function

Source: https://www.sciencedirect.com/science/article/abs/pii/S037887412300140X

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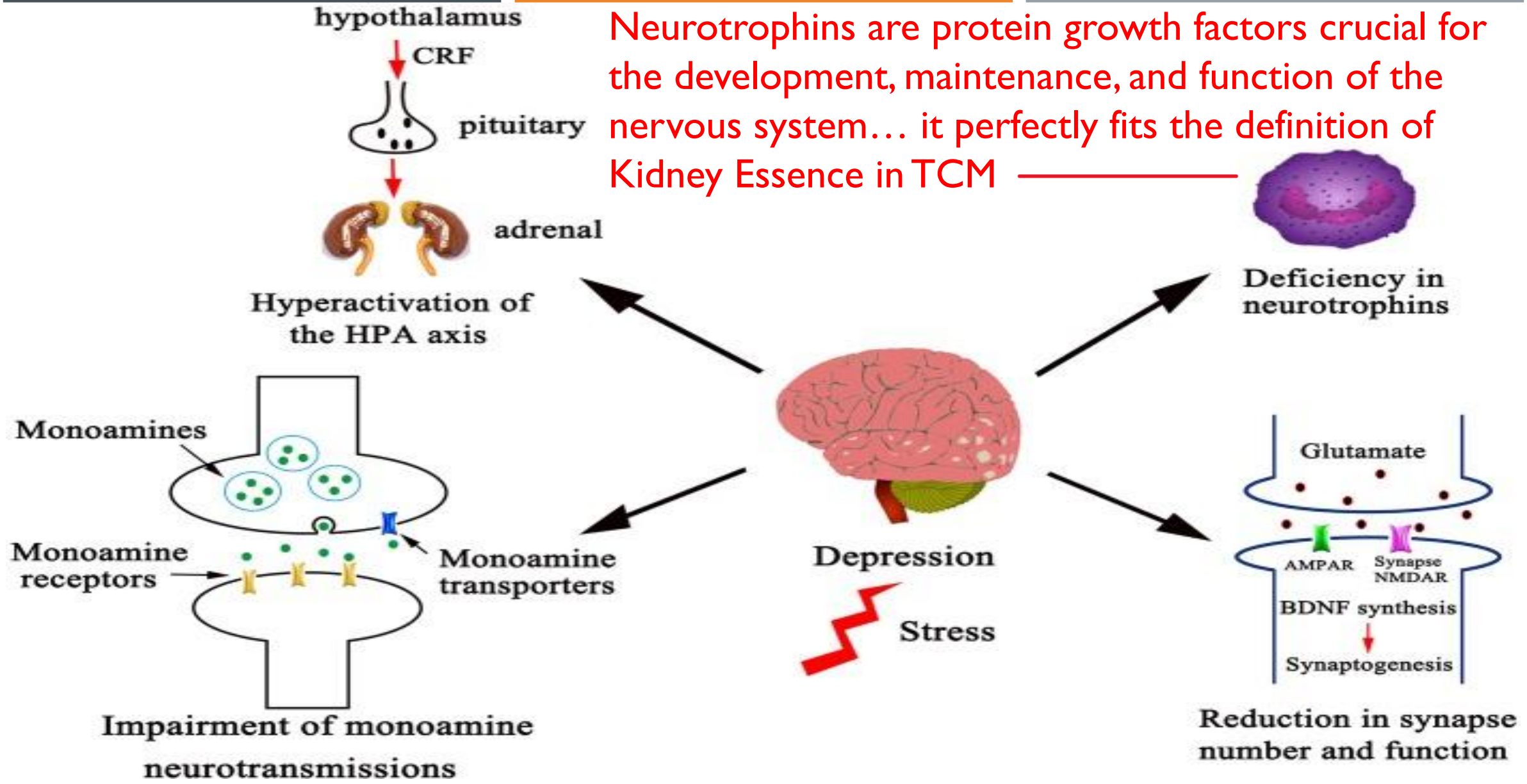
Source: https://www.sciencedirect.com/science/article/abs/pii/S037887412300140X

Pathophysiology of depression interpreted at the molecular level

Neurotrophins are protein growth factors crucial for the development, maintenance, and function of the nervous system… it perfectly fits the definition of Kidney Essence in TCM



https://pmc.ncbi.nlm.nih.gov/articles/PMC7221138/

Commonly prescribed TCM herbal formulas for depression

- Although TCM formulas have been shown to work more efficiently than single constituents or herbs in clinical practice, single molecules or herbs are often used for interpreting the mechanism of action at the molecular level due to the constituent complexity and drug–drug interactions of TCM formulas.
- The representative TCM formulas in depression treatment are, but no limited to, Xiao Yao San and Chai Hu Jia Long Gu Mu Li Tang, among other patent formulas.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC7221138/

Prescription pattern of Chinese herbal medicine for depressive disorders

- A nationwide population-based study in Taiwan examined 1806 patients who had only a diagnosis of depressive disorder and used Chinese herbal medicine.
- The most common formula was Gan Mai Da Zao Tang, while Suan Zao Ren was the most prescribed single herb.
- The core pattern of prescriptions consisted of a combination of:
  - ✓ Gan Mai Da Zao Tang
  - ✓ Jia Wei Xiao Yao San
  - ✓ Chai Hu Jia Long Gu Mu Li Tang
  - ✓ He Huan Pi
  - ✓ Yuan Zhi
  - ✓ Shi Chang Pu

Source: https://www.sciencedirect.com/science/article/pii/S2213422020303449

Acupuncture points for senile insomnia

- A systematic review on qualified 94 literatures for acupuncture points used in senile insomnia showed that there were 90 acupoints related to treatment.
- The highest frequency of use were H7, Sp6, Du20, St36, PC6, UB15, K3, UB23, Si Shen Cong, and An Mian.
- The most frequently used meridians were UB, Du, and Stomach meridians.
- The most frequent specific points are the five transport points and source points.
- The most frequently used combinations are "H7 + Sp6", "H7 + Du20", and "H7 + PC6".
- The acupuncture points with the highest confidence were H7, PC6, and Sp6.
- The core acupuncture points for the treatment of senile insomnia were Sp6, St36, and H7.

Source: https://pubmed.ncbi.nlm.nih.gov/39096556/

The core pattern of Chinese herbal formulas and drug–herb concurrent usage in patients with dementia

- A large-scale survey analyzed 3471 newly diagnosed dementia patients who received Chinese herbal formulas for mental and nervous system diseases. The frequency and proportion of combined use were calculated to identify drug-herb concurrent usage and determine core prescription patterns.
- Chinese medicine prescription patterns changed as dementia progressed. During the first 3 years after the diagnosis of dementia, Jia Wei Xiao Yao San, Gan Mai Da Zao Tang, and Ban Xia Bai Zhu Tian Ma Tang were the core prescription for mental and nervous system disorders.
- During the later stages of dementia, Suan Zao Ren Tang, Gui Pi Tang, Jia Wei Xiao Yao San, and Wen Dan Tang were the core prescription.
- Benzodiazepines were the most common sedative drugs combined with TCM formulas.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC6358382/

Acupuncture and acupressure for dementia behavioral and psychological Symptoms

- A scoping review synthesizes research on acupuncture and acupressure for behavioral and psychological symptoms of dementia with 15 studies, of which 9 examined acupressure, 6 acupuncture, and a total of 8 randomized controlled trials.
- The studies demonstrated statistically significant improvements in symptoms of activities of daily living, agitation, anxiety, depression, mood, neuropsychological disturbances, and sleep disturbances.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC7272277/

Acupuncture for Alzheimer's disease

- In TCM, Alzheimer's disease (AD) is characterized by acquired cognitive deficit and impaired daily activity. Several factors like asthenia, phlegm, and blood stasis can disturb the body's Yin-Yang and are closely related to the onset of AD.
- In clinical practice, acupuncture therapy has been demonstrated to ameliorate the progress of dementia. The treatment mainly focuses on modulating the imbalanced Yin and Yang.

Source: https://anatomypubs.onlinelibrary.wiley.com/doi/full/10.1002/ar.24780

The potential mechanisms of acupuncture for Alzheimer's disease

- Downregulating amyloid-beta (Aβ) accumulation, which is thought to be responsible for neuron damage and loss, cognitive impairments, and brain dysfunction
- Downregulating tau phosphorylation, which forms neurofibrillary tangles and lead to neuronal damage and cognitive decline
- Reducing neuroinflammation, which plays a harmful role of "combustion improver" of Aβ and phosphorylated tau
- Decreasing neuron apoptosis, which is subjected toward normal neuron cells under the impairment of amyloid plaque, tau phosphorylation, and inflammatory factors
- Improving mitochondrial activity disturbed by Aβ and tau tangles that can cause accumulation of defective mitochondria in the neurons
- Enhancing synaptic plasticity, which is strongly related to memory
- Restoring the blood–brain barrier resulted from the progressive deterioration around the hippocampus and advanced glycation end products with Aβ deposition.

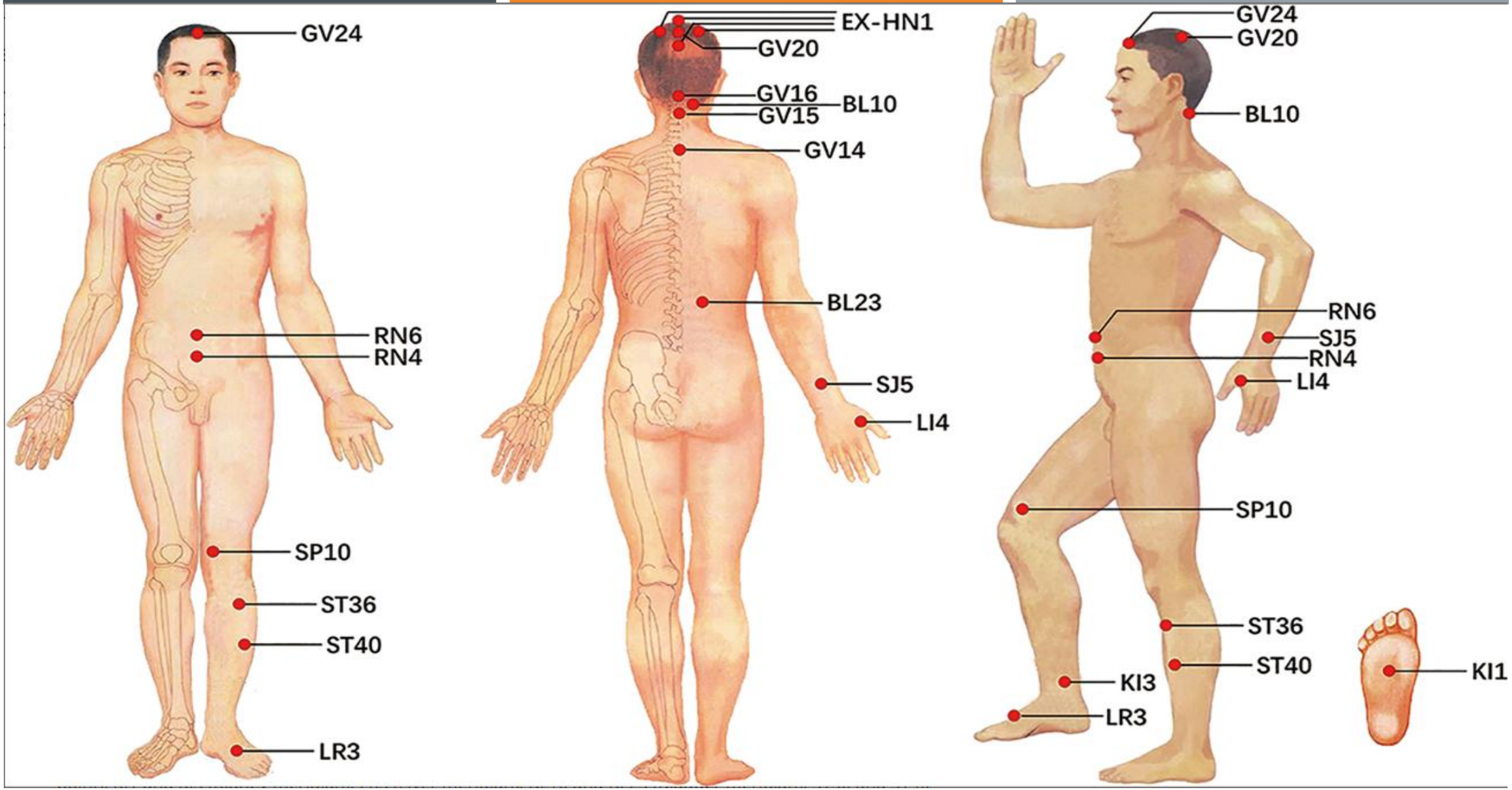
Source: https://anatomypubs.onlinelibrary.wiley.com/doi/full/10.1002/ar.24780

Frequently used acupoints in treatment of Alzheimer's disease

- Du meridian: Du24, Du20, Du16, Du15, and Du14
- Ren meridian: Ren6 and Ren4
- Extraordinary point: EX-HN1 (Si Shen Cong)
- Kidney meridian: K1 and K3
- Liver meridian: Liv3
- Bladder meridian: UB10 and UB23
- Stomach meridian: St36 and St40
- Spleen meridian: Sp10
- Large Intestine meridian: LI4
- Sanjiao meridian: SJ5

Source: https://anatomypubs.onlinelibrary.wiley.com/doi/full/10.1002/ar.24780

Acupuncture point selection for Alzheimer's disease

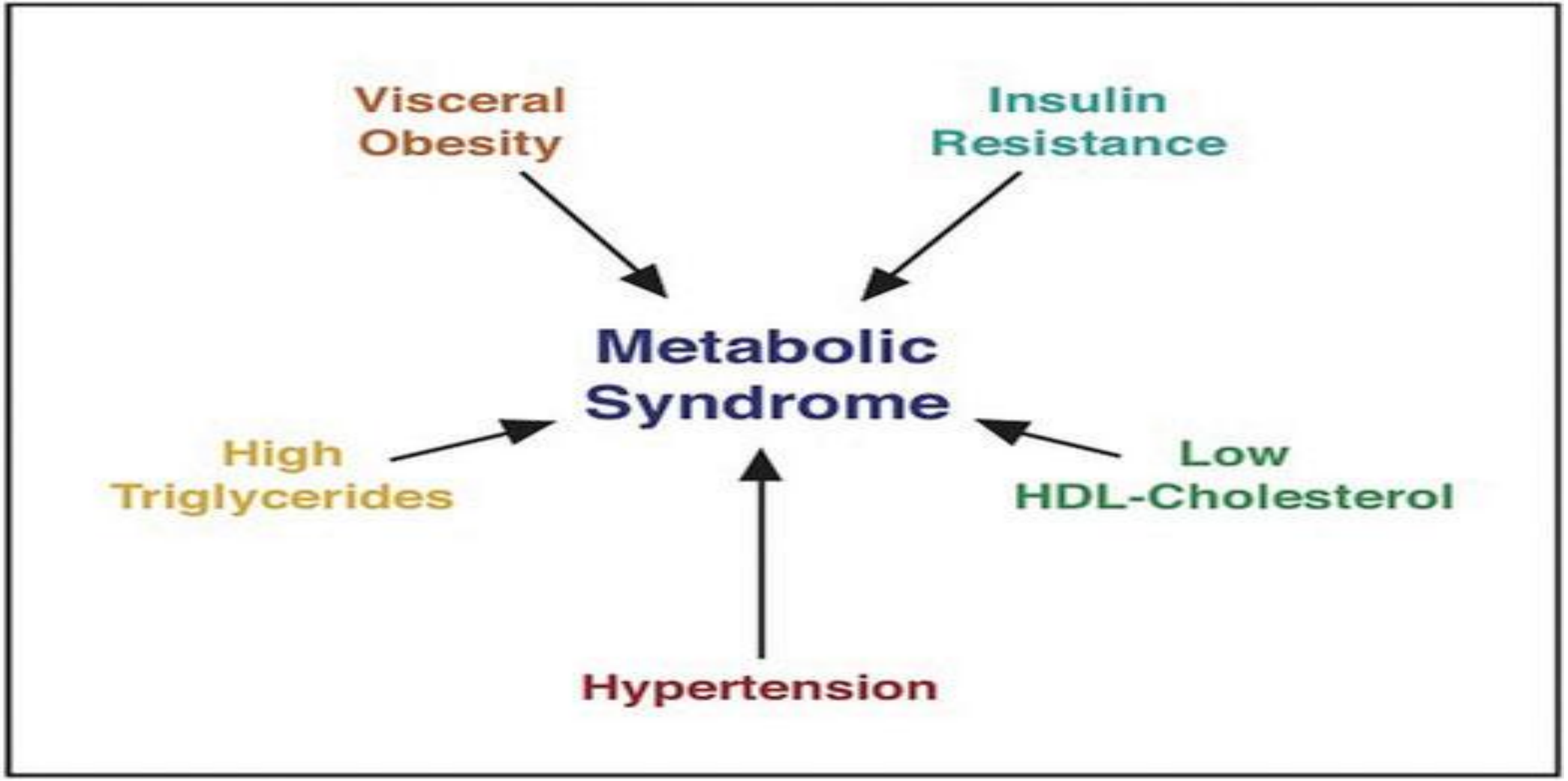


Source: https://anatomypubs.onlinelibrary.wiley.com/doi/10.1002/ar.24780

Dealing with the Silent Killers

Presented by John Fang, L.Ac., DAOM

Contributing factors of metabolic syndrome



Definition of metabolic syndrome

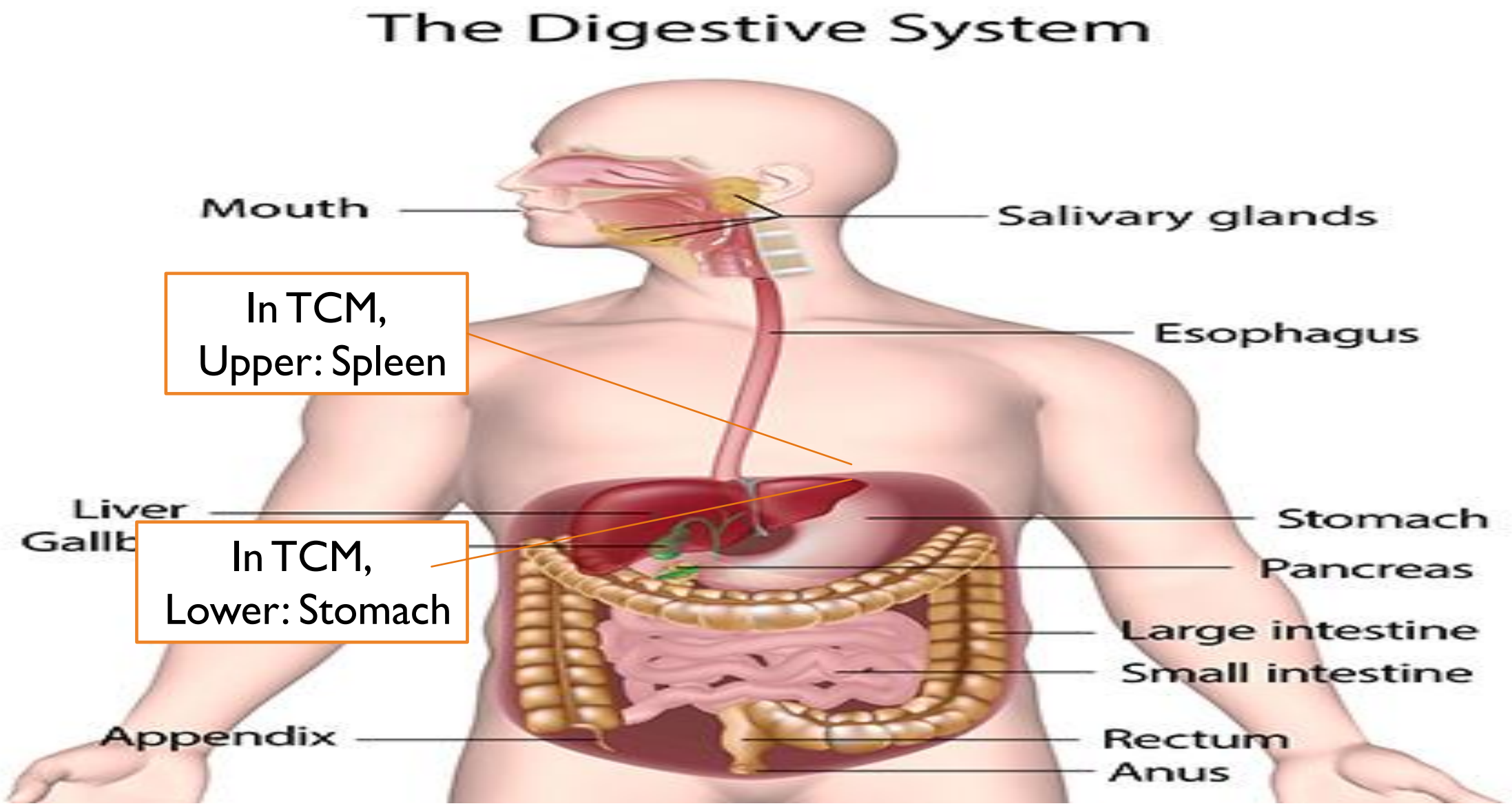
- The standards set by the National Cholesterol Education Program (NCEP) is widely used to diagnose metabolic syndrome, in which 3 or more of the parameters are found abnormal.
  - HDL-C: <1.0 mmol/L (40 mg/dL) in men and <1.3 mmol/L (50 mg/dL) in women, or individuals receiving pharmaceutical treatment for low HDL-C.
  - Triglycerides: ≥1.7 mmol/L (150 mg/dL) or individuals receiving pharmaceutical treatment for elevated triglycerides.
  - Glucose: ≥5.6 mmol/L (100 mg/dL), or individuals on pharmaceutical treatment for elevated blood glucose.
  - Obesity: Waist circumference ≥102 cm in men and 88 cm in women.
  - Blood pressure: ≥130/85 mm Hg, or individuals on pharmaceutical treatment for hypertension.

Source: https://www.ncbi.nlm.nih.gov/books/NBK542294/

The prevalence of metabolic syndrome

- About 1 in 3 American adults have metabolic syndrome, which is also called insulin resistance syndrome.
- Metabolic syndrome is a group of conditions that together raise the risk of coronary heart disease, DM, stroke, and other serious health problems.
- Knowing the risk factors and making healthy lifestyle changes can help lower the chances of developing metabolic syndrome or the health problems it can cause.
- The primary prevention recommendations for adults aged 40 to 75 with an LDL-C level of 70 to 189 mg/dL focus on managing high LDL-C and low HDL-C levels, which are risk factors for coronary heart disease.

Source:
https://www.nhlbi.nih.gov/health/metabolic-syndrome, National Heart, Lung, and Blood Institute (NHLBI)
https://www.ncbi.nlm.nih.gov/books/NBK542294/



Source: National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

The digestive process

TCM San Jiao functions

TCM Spleen & Stomach functions

Organ	Movement	Digestive Juices Added	Food Particles Broken Down
Mouth	Chewing	Saliva	Starches, a type of carbohydrate
Esophagus	Peristalsis	None	None
Stomach	Upper muscle in stomach relaxes to let food enter, and lower muscle mixes food with digestive juice	Stomach acid and digestive enzymes	Proteins
Small intestine	Peristalsis	Small intestine digestive juice	Starches, proteins, and carbohydrates
Pancreas	None	Pancreatic juice	Carbohydrates, fats, and proteins
Liver	None	Bile	Fats
Large intestine	Peristalsis	None	Bacteria in the large intestine can also break down food.

Source: National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

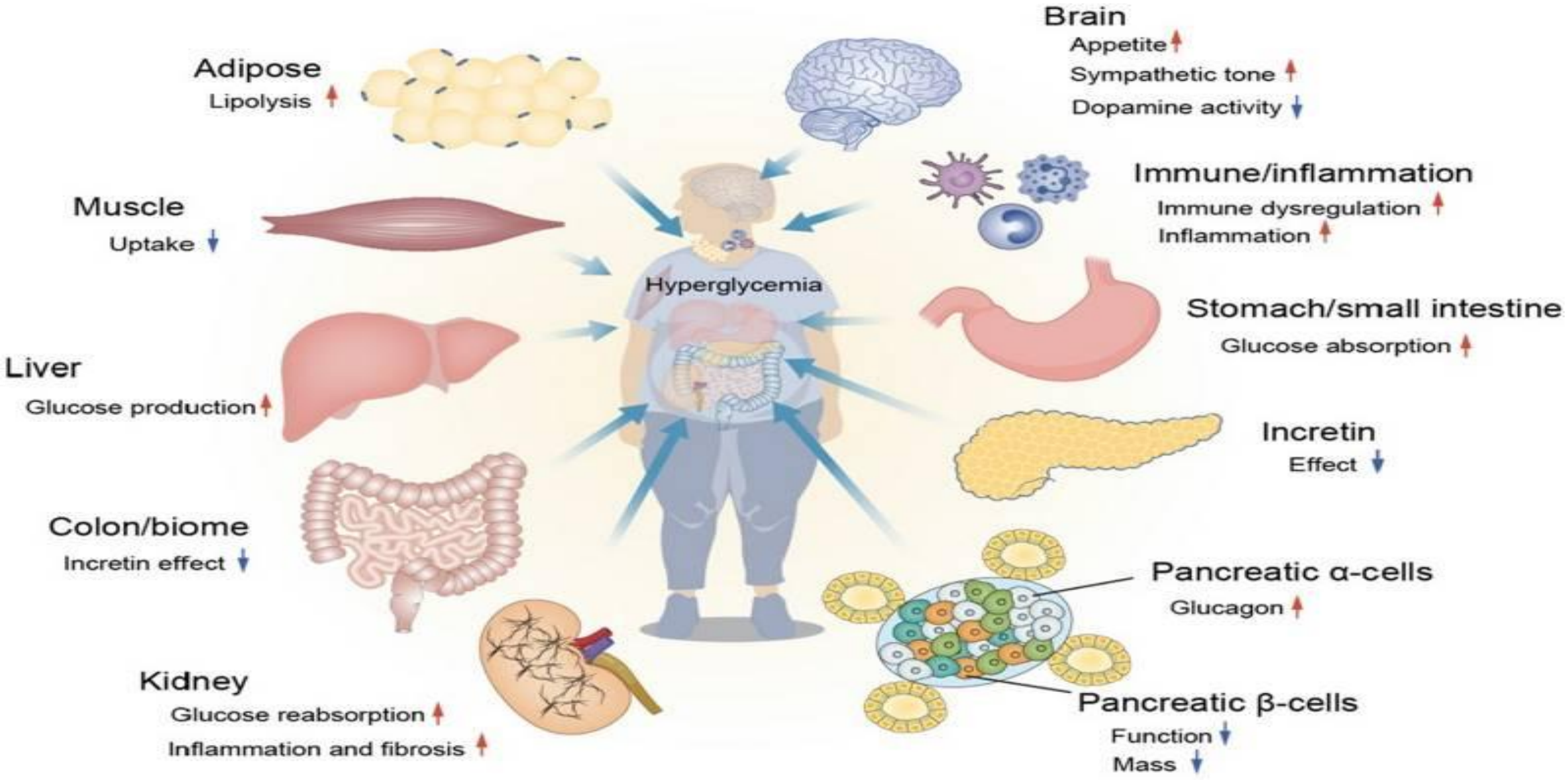
Diabetes Mellitus

A glance on diabetes mellitus (DM)

- Diabetes mellitus (DM) is a disease of inadequate control of blood levels of glucose.
- The term is taken from the Greek word diabetes, meaning "siphon" – to pass through, and the Latin word mellitus meaning "sweet".
- In 1889, Mering and Minkowski discovered the role of the pancreas in the pathogenesis of diabetes.
- In 1922, Banting, Best, and Collip purified the hormone insulin from the pancreas of cows at the University of Toronto, leading to the availability of an effective treatment for diabetes in 1922.
- Today, DM is one of the most common chronic diseases worldwide. In the US, it remains as the seventh leading cause of death.

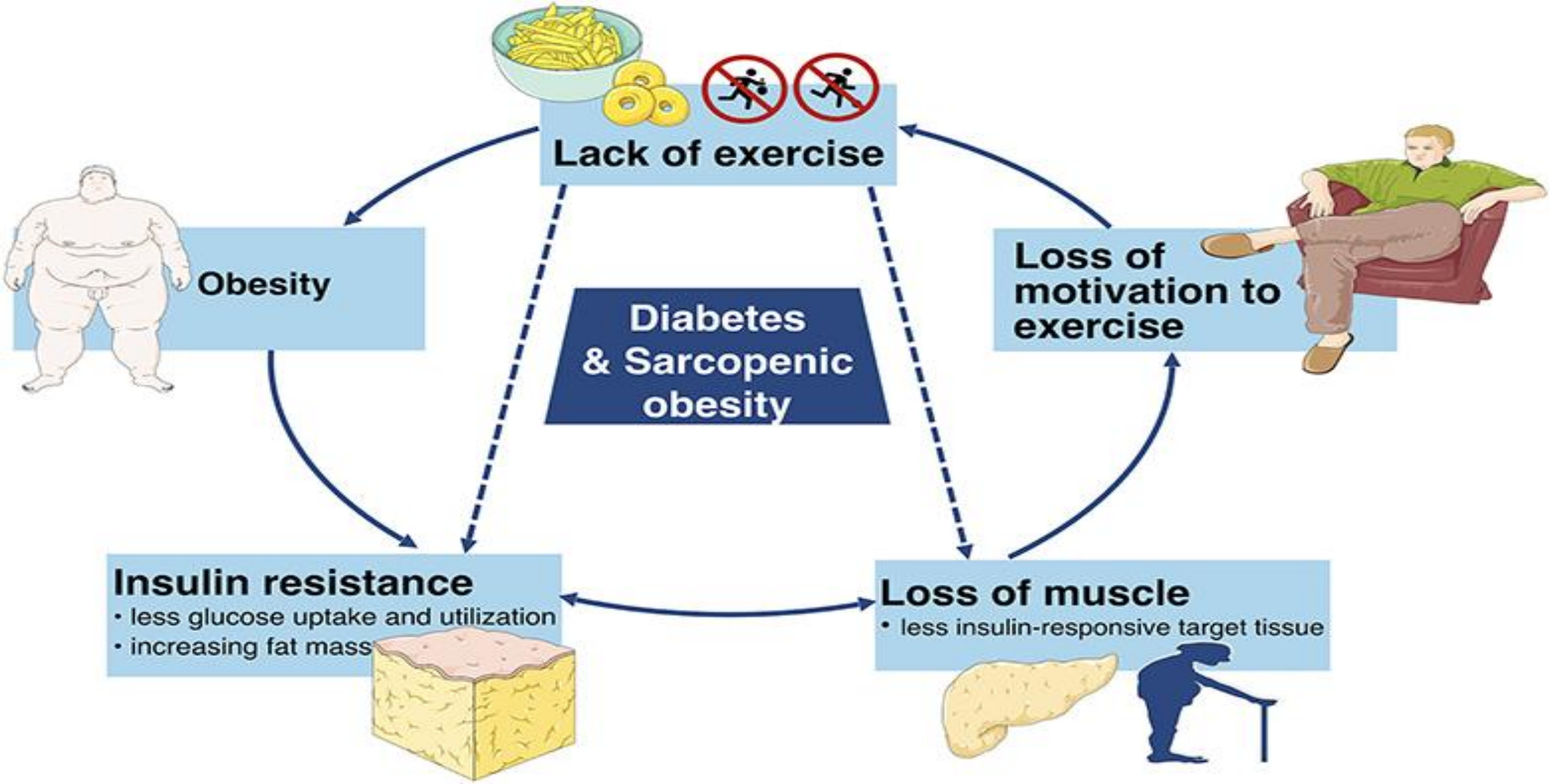
Source: https://www.ncbi.nlm.nih.gov/books/NBK551501/

Defects contributing to hyperglycemia



https://pmc.ncbi.nlm.nih.gov/articles/PMC10644617/figure/Fig1/

A vicious cycle of unhealthy lifestyle leading to DM and sarcopenic obesity



https://pubmed.ncbi.nlm.nih.gov/32982969/

Diagnostic and treatment principles of Xiao Ke syndrome

Source of the information and images: https://pubmed.ncbi.nlm.nih.gov/32648463/

International traditional Chinese medicine guideline for diagnostic and treatment principles of diabetes

DM from the TCM perspective – Xiao Ke (1)

- DM falls under the category of, but is not exactly equivalent to, Xiao Ke syndrome.
- Xiao Ke was first named in Huang Di Nei Jing. The character pattern and meaning of Xiao Ke indicate that the disease is closely related to water metabolism, manifesting wasting and thirst signs and symptoms.
- Xiao Ke syndrome develops gradually and is a mixed health issue with stages of Excess and Deficiency. In the beginning, prolonged excessive food intake can lead to Qi and Blood stagnation, while in the long run defective or degenerative Qi/Blood transforming and transportation functions (insulin resistance/insensitivity) can lead to three "Xiao" conditions: thirst (Upper Xiao), hunger and weigh loss (middle Xiao), frequent urination (Lower Xiao), etc.
- As a disease closely related to water metabolism in TCM, Xiao Ke syndrome is an ailment to the detriment of Spleen and Kidney functions.

DM from the TCM perspective – Xiao Ke (2)

- Traditionally, the pathological changes of vital substances such as Qi, Blood, and body fluids, which serve as the foundation for human life activities, play a crucial role in the development of Xiao Ke.
- Xiao Ke pathogenesis can be attributed to insufficient bodily fluids or impaired transportation and transformation. Bodily fluid metabolism is closely linked with all internal organs; dysfunction in any one organ may result in abnormal metabolism and subsequent complications.
- Qi and Blood originate from the five organs and serve as a power source for all internal physiological functions. In Xiao Ke pathogenesis, Yin deficiency is fundamental while dryness-heat is incidental.
- Overconsumption of Qi can deplete Yin and negatively impact organ function. If left untreated for an extended period, this condition may result in a deficiency of Qi and blood, as well as impaired organ function, ultimately impacting the circulation of Qi and blood, and eventually undermine Yin and Yang.

DM from the TCM perspective – Xiao Ke (3)

- Presently, the Guidelines for Clinical Evidence-Based Practice of TCM in Diabetes classify T2DM into three stages: pre-DM, DM, and DM complications.
- The "stage-syndrome differentiation" method is commonly employed by scholars to categorize the stages and syndromes of DM.
- The modern TCM doctors divided DM into two categories:
  - Pi Dan (Spleen exhaust)

    Obesity-related DM (obesity-DM), which is common in patients with DM at this stage. The typical development process of obesity-DM follows an "overweight => Xiao Ke => DM complications" pathway.
  - Xiao Dan (Waste and exhaust)

    T1DM, emaciation with T2DM, or latent autoimmune diabetes in adults (LADA), and certain cases of T2DM diagnosed by modern medicine. The pathogenesis is characterized by "Xiao (consumption) => Xiao Ke => DM complications".

Tongue appearance at different stages of DM

Stagnation stage

(dusky body; white coating)

Heat stage

(reddish body; yellowish coating)

Deficiency stage

(narrow body; thin coating)

Injuring stage

(sublingual vein protrusion)

TCM pattern differentiation for Xiao Ke – stagnation stage

- The early stage of DM. Most patients with prediabetes are at this stage.
  - Symptoms and signs
    - ✓ Obesity, fatigue, increased appetite, abdominal fullness, frequent belching, flatulence, excessive stool, and elevated blood sugar
    - ✓ Depressive states with frequent sighing, nervousness, fullness in the chest and flank
    - ✓ Catching a cold easily
    - ✓ A dusky tongue body and a slippery and tight pulse
  - Patterns
    - ✓ Spleen and Stomach congestion
    - ✓ Liver Qi stagnation

TCM treatment for Xiao Ke – the stagnation stage

- Treatment principles

  Resolving stagnation and clearing Heat

- Herbal formulas
  - ➢ Spleen and Stomach congestion
    - ✓ Modified Hou Po San Wu Tang (Three-substance Decoction with Magnolia Bark)
  - ➢ Liver Qi stagnation
    - ✓ Modified Xiao Yao San (Wondering Powder)

TCM pattern differentiation for Xiao Ke – the heat stage

- The early-to-mid period of Xiao Ke, indicating the attack of disease. Patients with obese-type DM mainly suffer from Excess Heat, while those with lean-type DM mainly suffer from Deficient Heat.
  - Symptoms and signs
    - ✓ Aversion to Heat, dry mouth, bad breath, increased appetite, extreme thirst, yellowish urine, constipation or sticky and stinking stool, excessive sweating, and hyperglycemia
    - ✓ Irritability, bad mood, and bitter taste, and dysphoria and Heat in chest
    - ✓ Skin conditions such as scabies, carbuncle, necrosis, and itching
    - ✓ A yellow thick coating and a rapid pulse

TCM treatment for Xiao Ke – the heat stage (1)

- Treatment principles per pattern
  - Heat accumulation in Stomach and Liver
    Resolving depression and clearing Heat
  - Phlegm-Heat accumulation
    Clearing Heat and eliminating phlegm
  - Intense Heat in Lung and Stomach
    Clearing Heat-Fire
  - Excess Heat in Stomach and Small Intestine
    Clearing the Excess Heat
  - Intestinal Damp-Heat
    Clearing Heat and promoting diuresis
  - Intense Heat-toxin
    Clearing Heat and detoxicating

TCM treatment for Xiao Ke – the heat stage (2)

- Herbal Formulas per pattern
  - Heat accumulation in Stomach and Liver: Da Chai Hu Tang (Major Bupleurum Decoction)
  - Phlegm-Heat accumulation: Modified Xiao Xian Xiong Tang (Minor Decoction (for Pathogens) Stuck in the Chest Decoction)
  - Intense Heat in Lung and Stomach: Modified Bai Hu Tang (White Tiger Decoction)
  - Excess Heat in Stomach and Small Intestine:
    - ✓ Modified Da Huang Huang Lian Xie Xin Tang (Rhubarb and Coptis Decoction to Drain the Epigastrium)
    - ✓ Modified Xiao Cheng Qi Tang (Minor Order the Qi Decoction)
  - Intestinal Damp-Heat: Modified Ge Gen Huang Qin Huang Lian Tang (Kudzu, Scutellaria, and Coptis Decoction)
  - Intense Heat-toxin: San Huang Xie Xin Tang (Drain the Epigastrium Decoction) + Wu Wei Xiao Du Yin (Five-ingredient Decoction to Eliminate Toxin)

TCM pattern differentiation for Xiao Ke – the deficiency stage

- Equivalent to the middle and end periods of DM indicating the patient manifests many of those clinical symptoms and signs, and their syndromes are always complex with a mix of Excess and Deficiency.
  - Symptoms and signs
    - ✓ Emaciation and significant fatigue with cold limbs
    - ✓ Dry mouth, thirst, excessive sweating, watery or dry stool, and frequent urination
    - ✓ Gastric stuffiness, vomiting, nausea, anorexia, and burning upper abdomen
    - ✓ Bad mood, bitter taste, dysphoria in chest, irritation, and insomnia with dreams
    - ✓ A yellow dry coating and a weak pulse

TCM treatment for Xiao Ke – the deficiency stage (1)

- Treatment principles per patterns
  - Heat injuring body fluid

    Clearing Heat, supplementing Qi, and promoting body fluid reproduction
  - Yin Deficiency and Fire intense

    Nourishing Yin and decreasing Fire
  - Qi and Yin Deficiency

    Supplementing Qi, nourishing Yin, and clearing Heat
  - Spleen Insufficiency and Stomach stagnation

    Opening with acrid herbs and down-bearing with bitter herbs
  - Upper Heat and Lower Cold

    Clearing the Upper and warming the Lower

TCM treatment for Xiao Ke – the deficiency stage (2)

- Herbal formulas per patterns
  - Heat injuring body fluid

    Modified Bai Hu Jia Ren Shen Tang (White Tiger plus Ginseng Decoction)
  - Yin Deficiency and Fire intense

    Modified Zhi Bai Di Huang Wan (Anemarrhena, Phellodendron and Rehmannia Pill)
  - Qi and Yin Deficiency

    Modified Sheng Mai San (Generate the Pulse Powder) + Zeng Ye Tang (Increase the Fluids Decoction)
  - Spleen Insufficiency and Stomach stagnation

    Modified Ban Xia Xie Xin Tang (Pinellia Decoction to Drain the Epigastrium)
  - Upper Heat and Lower Cold

    Modified Wu Mei Wan (Mume Pill)

TCM pattern differentiation for Xiao Ke – the injuring stage

- T2 DM can lead to Liver-Kidney Yin Deficiency or Yin-Yang Deficiency, indicating the end-stage of DM or the period of DM complications.
- There are a variety of chronic complications, and it can be life-threatening. The main pathological changes in this stage include microvascular and macrovascular lesions, which gradually induce organ damage.
- Symptoms and signs
  - All symptoms that patients with DM complications may manifest, in addition to hyperglycemia and sunk and thin pulse
  - Dry mouth and throat, dry ear, dry skin, darkish complexion, frequent and turbid urine, edema of lower limbs
  - Blurred vision, dizziness, tinnitus, dreaminess, seminal emission, fatigue, eye floaters, night blindness or blindness, skin itchiness, soreness and weakness of waist and knees, erectile disorder
  - Aversion to cold, cold limbs, frequent long urination, dysuria, watery stool, edema

TCM treatment for Xiao Ke – the injuring stage

- Treatment principles and herbal medicine per pattern
  - Liver-Kidney Yin Deficiency => Nourishing Liver and Kidney

    Qi Ju Di Huang Wan (Lyceum Fruit, Chrysanthemum and Rehmannia Pill)
  - Yin-Yang Deficiency => Nourishing Yin and tonifying Yang

    Jin Gui Shen Qi Wan (Kidney Qi Pills from the Golden Cabinet)
  - Spleen-Kidney Yang Deficiency => Tonifying Spleen and Kidney

    Fu Zi Li Zhong Wan (Prepared Aconite Pill to Regulate the Middle)

TCM pattern differentiation for Xiao Ke – concurrent patterns

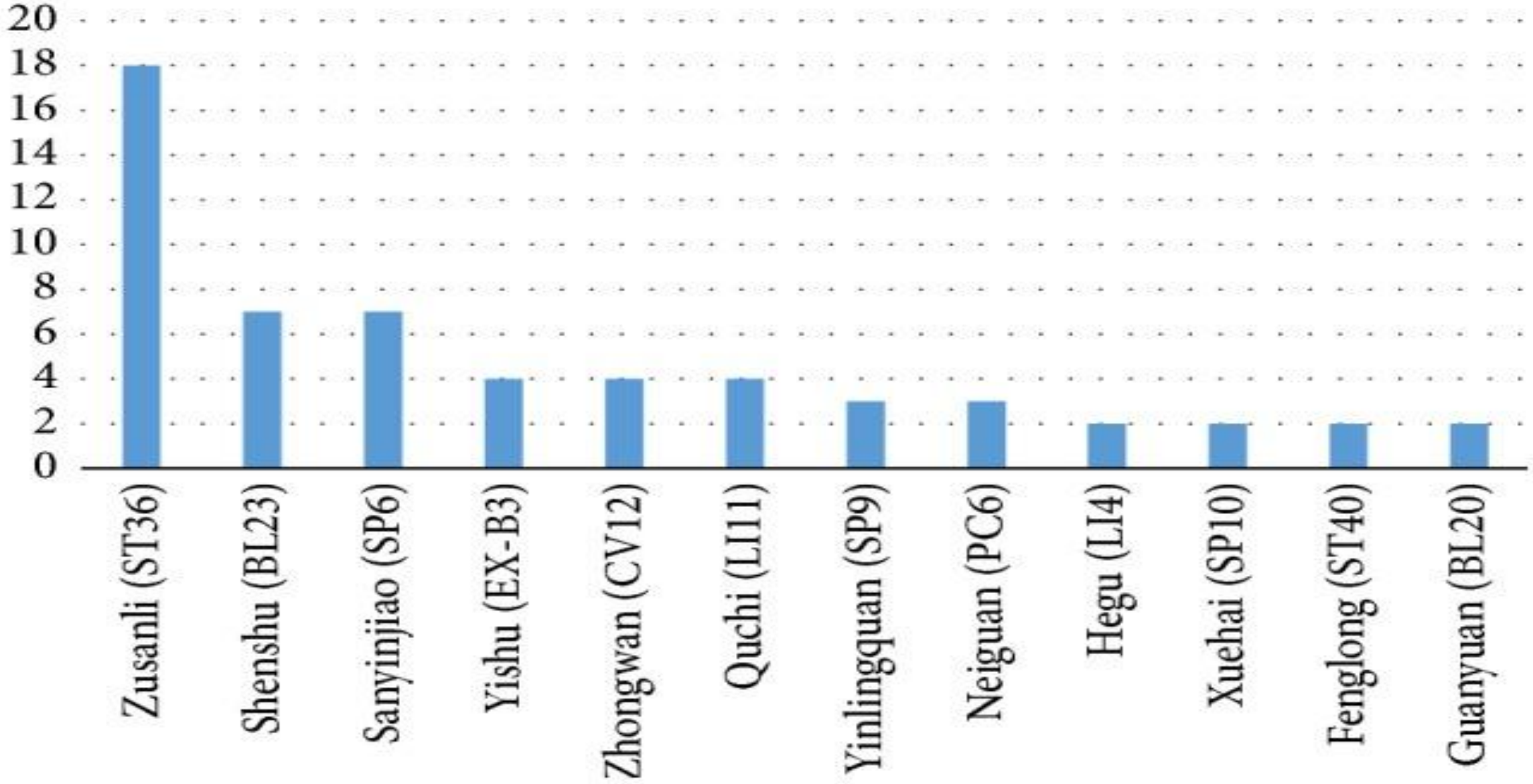
- Treatment principles and herbal formulas per pattern
  - Concurrent Phlegm with obesity => Activating Qi and eliminating phlegm

    Modified Er Chen Tang (Decoction of Two Old (Cured) Drugs)
  - Concurrent Dampness with diabetic gastrointestinal lesions => Drying Dampness and strengthening Spleen

    Modified Ping Wei San (Calm the Stomach Powder)
  - Concurrent Turbidity with hyperlipidemia => Clearing turbidity
    - ✓ Yin Deficiency: Liu Wei Di Huang Wan (Six-ingredient Pills with Rehmannia)
    - ✓ Yin & Yang Deficiency: Ba Wei Di Huang Wan (Eight-ingredient Pills with Rehmannia, Kidney Qi Pills from Golden Cabinet)
  - Concurrent Stasis with diabetic vascular disease => Invigorating blood circulation

    Modified Tao Hong Si Wu Tang (Four Substance Decoction with Safflower and Peach Pit)

Acupuncture point selection for DM

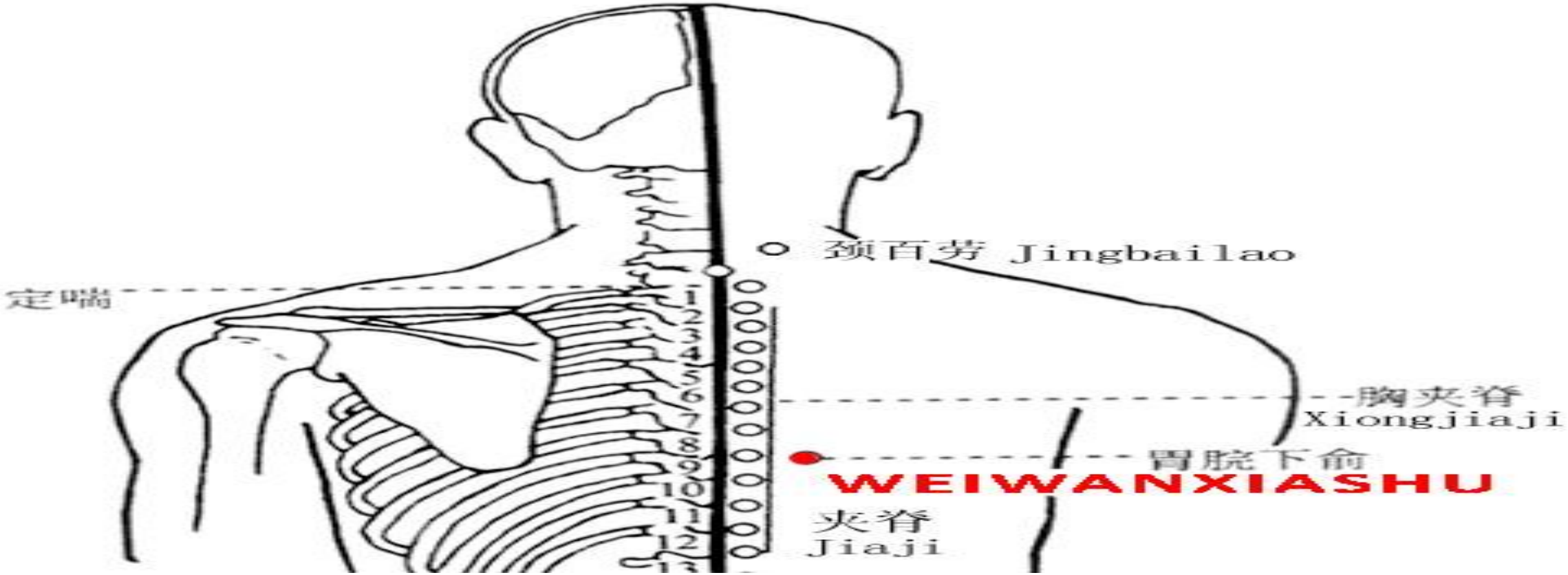


Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6217896/

Extra acupuncture point for DM

Yi Shu (Pancreas Shu) (aka Wei Guan Xia Xu, "Stomach Controller Lower Shu")

- Indications: Wasting and thirsting, etc.
- Location: 1.5 cun lateral to the lower border of the spinous process of the eighth thoracic vertebra (T8)



Source: online image search

Auricular acupuncture point for DM

Li-Chun Huang Auricular Medicine

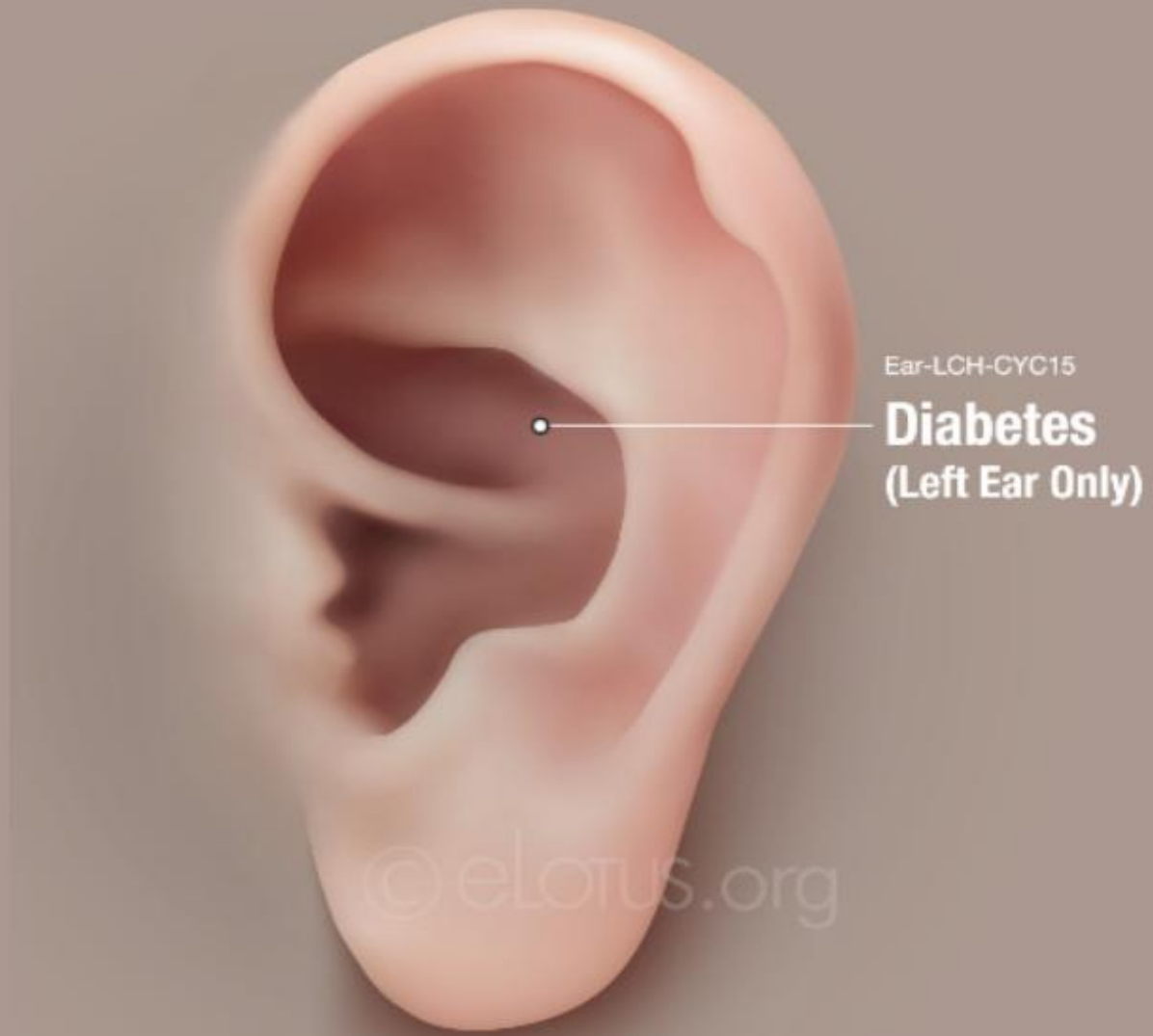
Ear-LCH-CYC15

Diabetes

糖尿病點

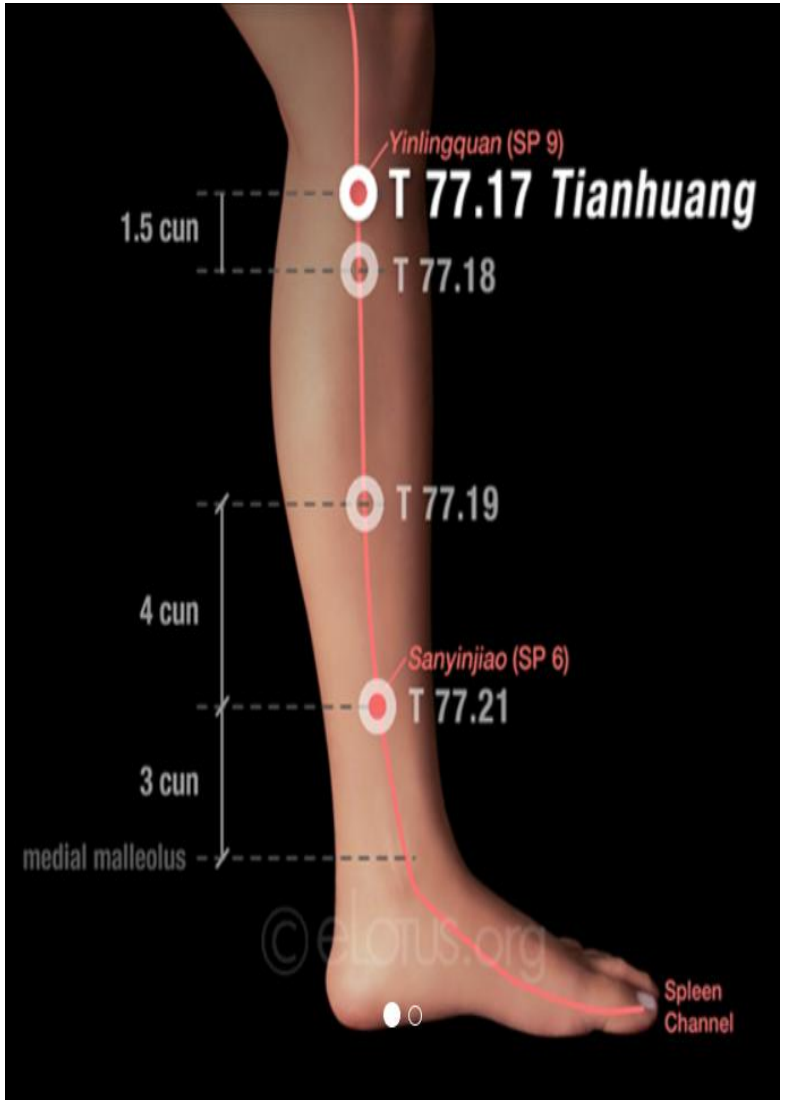
Endocrine / Metabolic

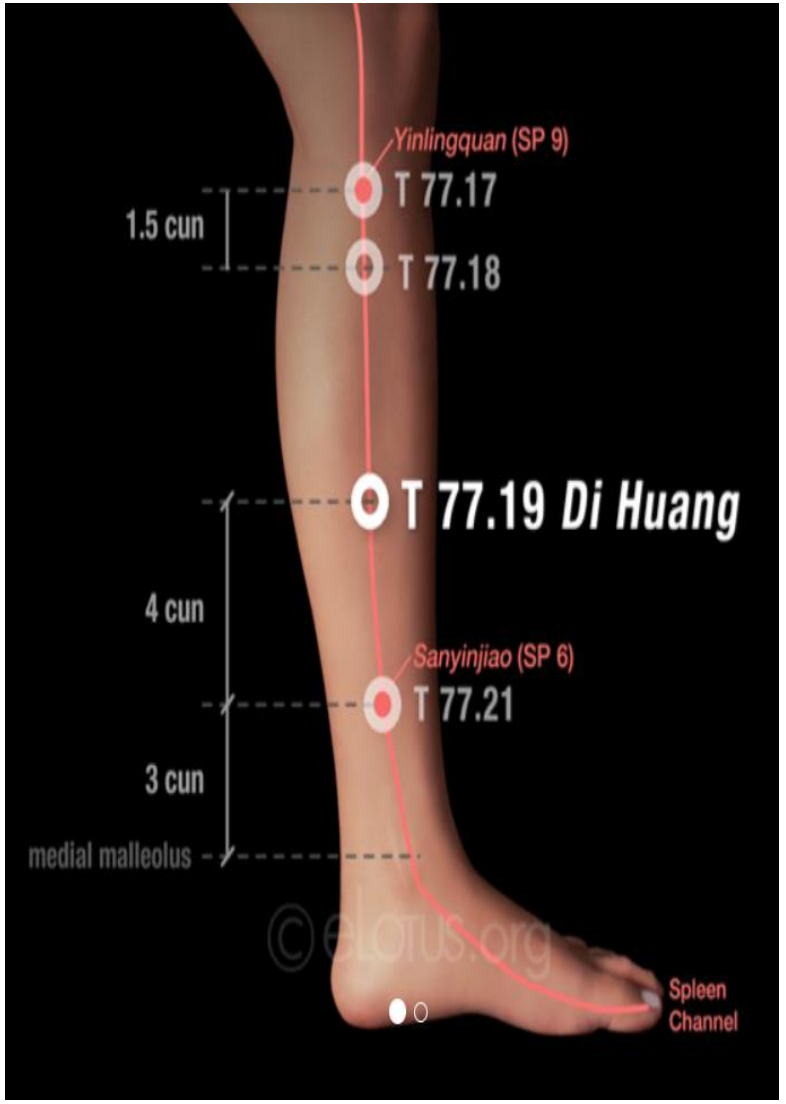
Cymba Concha (left ear only)

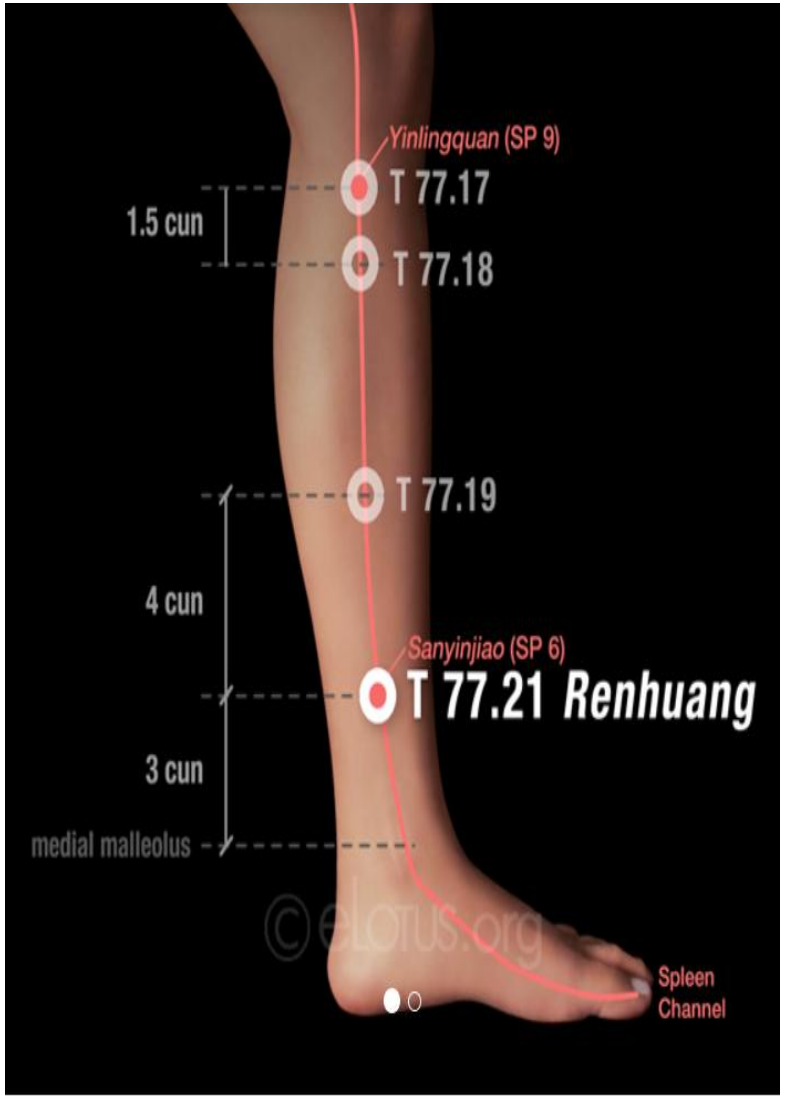


Source: https://www.mastertungacupuncture.org/acupuncture/auricular/lch/points/diabetes

Master Tung's acupuncture for DM







https://www.mastertungacupuncture.org/acupuncture/tung/points/

An integrative medicine case report on diabetic foot treatment (1)

- Chief complaints
  A 70-year-old Chinese woman came to the hospital in March 2022 to manage her DM and bilateral lower limb edema with toe breakdown.
- History of present illness
  The patient was diagnosed with T2DM 10 years ago and has been receiving subcutaneous insulin and oral "acarbose and metformin" with good glycemic control. Two months prior to her visit to the hospital, she presented with localized ulcers in the second and third toes of the left foot with no obvious cause, and the wound has been gradually enlarging recently. The TCM intake information showed that the patient had a dark red tongue with normal tongue shape, thin white coating and a sunken delayed pulse.
- History of past illness
  There was no previous history of vasculitis. She had a cerebral infarction in 2019 and was treated with clopidogrel, aspirin, and atorvastatin followed by symptom relief. There was no history of diabetic neuropathy.

An integrative medicine case report on diabetic foot treatment (2)

- Personal and family history
  She has a brother with T2DM, and she is a non-smoker and non-drinker. There is no family history of gangrene, major diseases, or infectious diseases.
- Physical examination upon admission
  Physical examination revealed decreased skin temperature in both lower limbs and dark red skin color with local deepening in both feet. There was an ulcer approximately 1 cm × 1 cm in size on both second and third toes of the left foot, with a small amount of purulent discharge. The patient's femoral arteries were palpable bilaterally, the right anterior tibial artery was occasionally palpable, and the remaining lower limb arterial pulsations were not palpable. In addition, The patient's body temperature, blood pressure were 36.3 °C and 138/76 mmHg, respectively.
- Laboratory examinations
  (details skipped)

An integrative medicine case report on diabetic foot treatment (3)

- Imaging examinations

  Color Doppler ultrasonography revealed that the patient had bilateral atherosclerosis of the lower limbs with multiple plaque formation, occlusion of the left anterior tibial artery and bilateral dorsalis pedis arteries, and possible occlusion of the left posterior tibial artery. Computed tomography angiography (CTA) suggests reduced blood flow to the lower limbs and arterial occlusion.

- Diagnosis

  The patient is an elderly female with DM for 10 years, effective on oral hypoglycemic medication, and without ketosis. The Western medical diagnosis is diabetic foot from T2DM. Combined with the patient's tongue and pulse, the TCM diagnosis is Qi and Yin Deficiency and Blood stagnation of the collaterals.

Essential Hypertension

A glance on Hypertension (HTN)

- Hypertension is among the most common chronic medical condition characterized by a persistent elevation in arterial pressure. Most cases are asymptomatic and are diagnosed incidentally on blood pressure recording or measurement.
- The current definition of hypertension is systolic blood pressure (SBP) values of 130 mmHg or more and/or diastolic blood pressure (DBP) of more than 80 mmHg. The consensus in biomedicine is, persistent BP readings of 140/90 mmHg or more should undergo treatment with the therapeutic target of 130/80 mmHg or less.
- Hypertension has been among the most studied topics of the previous century and has been one of the most significant comorbidities contributing to the development of stroke, myocardial infarction, heart failure, and renal failure.
- Most cases are asymptomatic and are diagnosed incidentally on blood pressure recording or measurement. Some cases may present with symptoms of organ damage as stroke-like symptoms, chest pain, shortness of breath, and acute pulmonary edema.

Source: https://www.ncbi.nlm.nih.gov/books/NBK539859/

Hypertension from the biomedical perspective

- Most cases of hypertension are idiopathic, also known as essential hypertension. An increase in salt intake can increase the risk of developing hypertension, associated with the patient's genetic ability to salt response. About 50% to 60% of the patients are salt sensitive and therefore tend to develop hypertension.
- Increased salt absorption resulting in volume expansion, an impaired response of the renin-angiotensin-aldosterone system (RAAS), and increased activation of the sympathetic nervous system. These changes lead to the development of increased total peripheral resistance and increased afterload, which in turn leads to the development of hypertension.
- The causative reason of secondary hypertension should always be sought for, especially in the patients at extremes of age (young or older).

Source: https://www.ncbi.nlm.nih.gov/books/NBK539859/

Blood pressure categories by American Heart Association

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (top/upper number)	and/or	DIASTOLIC mm Hg (bottom/lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
STAGE 1 HYPERTENSION (High Blood Pressure)	130 – 139	or	80 – 89
STAGE 2 HYPERTENSION (High Blood Pressure)	140 OR HIGHER	or	90 OR HIGHER
SEVERE HYPERTENSION (If you don't have symptoms*, call your health care professional.)	HIGHER THAN 180	and/or	HIGHER THAN 120
HYPERTENSIVE EMERGENCY (If you have any of these symptoms*, call 911.)	HIGHER THAN 180	and/or	HIGHER THAN 120

*symptoms: chest pain, shortness of breath, back pain, numbness, weakness, change in vision or difficulty speaking

Source: https://www.heart.org/en/health-topics/high-blood-pressure/understanding-blood-pressure-readings

Hypertension from the WHO viewpoint

- Hypertension (high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher).
- Blood pressure goal is less than 130/80 for cardiovascular disease (heart disease or stroke), diabetes, chronic kidney disease, and high risk for cardiovascular disease.
- Factors that increase the risk of having high blood pressure include older age, genetics, being overweight or obese, not being physically active, high-salt diet, and drinking too much alcohol.
- Hypertension can cause serious damage to the heart such as heart attack, which occurs when the blood supply to the heart is blocked, and heart muscle cells die from lack of oxygen; heart failure, which occurs when the heart cannot pump enough blood and oxygen to other vital body organs; irregular heartbeat, which can lead to a sudden death; stroke, caused by burst or blocked arteries that supply blood and oxygen to the brain; and kidney failure, the damage of kidney.

Source: https://www.who.int/news-room/fact-sheets/detail/hypertension

Systolic-diastolic hypertension versus isolated systolic hypertension and incident heart failure in older adults

- Isolated systolic hypertension (ISH) refers to an elevated systolic blood pressure (SBP) with a normal or low diastolic blood pressure (DBP), which is the more common type of hypertension among older adults and has been shown to be associated with a higher risk of incident heart failure (HF).
- In contrast, hypertension due to elevation of both SBP and DBP is less common in older adults, and relatively less is known about the impact of systolic-diastolic hypertension (SDH) on incident HF and other cardiovascular outcomes in the seniors. Even less in know about the association of SDH with other cardiovascular events in this population.
- Among 3495 qualified older adults with hypertension in the Cardiovascular Health Study (CHS) conducted from 1989 to 1993 on community-dwelling adults ≥65 years, both SDH and ISH have similar associations with incident HF and cardiovascular mortality.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC6454896/

TCM syndromes of hypertension

- A literature review in China analyzed 13,272 patients, who were included in all clinical literature and retrospective studies of hypertension syndromes published from 2003 to 2013. The statistics calculated frequencies and percentages of each syndrome.
- The findings indicated the clinical features of hypertension could be attributed to 11 syndromes, among which 7 were Excess and 4 were Deficiency with roughly 1/3 single-factor syndromes and 2/3 two-factor syndromes.
- The syndrome targets were mainly in Liver and related to Kidney and Spleen.
- The review concluded that Excess syndrome factors of hypertension patients include Yang hyperactivity, blood stasis, phlegm turbidity, internal dampness, and internal fire. Deficiency syndrome factors of hypertension patients are Yin deficiency and Yang deficiency. Yin deficiency with Yang hyperactivity, phlegm-dampness retention, and deficiency of Yin and Yang were the 3 most common syndromes in clinical combination.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC3934631/

Efficacy of acupuncture for hypertension

- According to a 2018 Cochrane review on 22 RCTs with 1744 people, the authors' conclusions that there was no evidence for the sustained blood pressure lowering effect of acupuncture that is required for the management of chronically elevated blood pressure.

Source: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD008821.pub2/full

Efficacy of acupuncture for hypertension in the elderly

- A systematic review and meta-analysis of 12 RCTs with 1,466 subjects evaluated the effect of acupuncture alone or in combination with antihypertensive drugs on the efficiency of reducing blood pressure and controlling blood pressure in elderly patients with hypertension.
- The results revealed that the acupuncture-only treatment has the same efficiency and antihypertensive effect compared to drug therapy, and acupuncture plus drugs outperforms drugs-only treatment. If the patients receive therapy with less frequency per week and longer duration, there will be a more obvious antihypertensive effect.

Source: https://pubmed.ncbi.nlm.nih.gov/38162142/

Auricular therapy for hypertension

- 44 RCTs involving 5,022 patients were systematically reviewed in China in 2018. The result revealed that auricular acupressure plus antihypertensive drugs might be more effective than antihypertensive drugs alone in reducing systolic blood pressure value and decreasing diastolic blood pressure.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC6927068/

- Four hundred participants were recruited and randomized to receive auricular acupuncture abdominal electroacupuncture. The findings demonstrated that a significant time dependent improvement for 6 weeks was observed in the systolic blood pressure measurements in the abdominal intervention group, and auricular acupuncture had a short-term adverse effect on both SBP and DBP.

Source: https://pubmed.ncbi.nlm.nih.gov/28434467/

Hyperlipidemia

The standard lipid levels

- Fasting triglyceride levels
  - Normal: Less than 150 mg/dL
  - Hypertriglyceridemia: 150 to 499 mg/dL
  - Very high or severe hypertriglyceridemia: Greater than 500 mg/dL
- LDL-C levels
  - Optimal: Less than 100 mg/dL
  - Near optimal/above optimal: 100 to 129 mg/dL
  - Borderline high: 130 to 159 mg/dL
  - High: 160 to 189 mg/dL
  - Very high: Greater than 190 mg/dL
- HDL-C levels
  - Low: Less than 40 mg/dL
  - High: Greater than or equal to 60 mg/dL

https://www.ncbi.nlm.nih.gov/books/NBK542294/

TCM in the care of hyperlipidemia

- Existing data show that the lipid-regulating effects of TCM may be related to:
  - inhibiting intestinal absorption of lipids
  - reducing endogenous cholesterol synthesis
  - regulating cholesterol transport
  - promoting the excretion of cholesterol in the liver
  - regulating transcription factors related to lipid metabolism

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC5446491/

TCM herbal medicine for hyperlipidemia

- A population-based study in Taiwan examined the medical records from the National Health Insurance Research Database between 2003 and 2009 for outpatient visits with hyperlipidemia diagnosis. From the qualified 30,784 outpatient visits randomly recruited, the findings revealed:
  - The most prescribed herbal formula for hyperlipidemia treatment was Xue Fu Zhu Yu Tang.
  - The most prescribed single herb was Shan Zha.
  - The most prescribed combination of an herbal formula and a single herb was Xue Fu Zhu Yu Tang and Dan Shen
  - The most prescribed combination of single herbs was Dan Shen and Shan Zha.

Source:
https://www.sciencedirect.com/science/article/abs/pii/S0378874115001993?via%3Dihub

In Search of Water

Presented by John Fang, L.Ac., DAOM

Kidney from the perspective of NIDDK (National Institute of Diabetes and Digestive and Kidney Diseases)

- Kidneys (two of them) filter extra water and wastes out of the blood and make urine.
- Kidney disease means the kidneys are damaged and can't filter blood the way they should.
- People are at greater risk for kidney disease with diabetes or high blood pressure.
- In kidney failure, treatments include kidney transplant or dialysis.
- Kidney problems include acute kidney injury, kidney cysts, kidney stones, and kidney infections.

Source: https://www.niddk.nih.gov/health-information/kidney-disease

Warning signs of kidney failure

Source: https://my.clevelandclinic.org/health/diseases/17689-kidney-failure

Kidney in terms of TCM

- Kidney is a functional concept regulating water metabolism, which was closely related to the urinary system, reproductive system, nervous system, endocrine, skeleton, hearing, metabolism, immunity, etc.
- Kidney in TCM plays an important regulatory role in the processes of growth, development, aging, and reproduction.
- "Kidney Governing Bone" means the functions of Kidney in TCM are responsible for bone health. A literature review discovered that the functions of Kidney in TCM are closely associated with the hypothalamic-pituitary-gonadal (HPG) axis in modern science. The physiological mechanism of the "Kidney Governing Bone" is regulated by sex hormones and their receptors.

Source: Biological Deciphering of the "Kidney Governing Bones" Theory in Traditional Chinese Medicine. https://onlinelibrary.wiley.com/doi/10.1155/2022/1685052

Long (Oliguria) – Bi (Anuria) Syndrome

Painful Urinary Syndromes (Lin Syndromes)

Acupuncture prescription for urination disturbance (CAM textbook)

- Fundamental points: UB28, Ren3, SP9, plus
  - ✓ Dysuria caused by calculi: UB39
  - ✓ Dysuria caused by Qi dysfunction: Liv2
  - ✓ Painful urination with Blood: SP6, SP10
  - ✓ Dysuria with milky urine: UB23, K6
  - ✓ Dysuria caused by overstrain: Du20, Ren6, ST36

Urinary Incontinence (Enuresis)

On the Motion of Animals

Presented by John Fang, L.Ac., DAOM

Bi (Painful Obstruction) Syndrome

A glance on Bi syndrome

- "Bi" evokes the idea of "obstruction". In Chinese medicine it means pain, soreness or numbness due to obstruction in the circulation of Qi and Blood in the channels caused by invasion of exterior Wind, Cold or Dampness.
- The invasion of external climatic factors is due to a pre-existing and temporary deficiency of the body's Qi and Blood which allows the Wind, Cold and Dampness to penetrate.

Source: https://giovanni-maciocia.com/wp-content/uploads/2021/09/bi-syndrome.pdf

A case to the point – frozen shoulder

- Adhesive capsulitis (or frozen shoulder) is a painful and debilitating condition characterized by progressive stiffness and loss of active and passive shoulder motion.
- There are 3 stages including the painful, freezing, and the thawing phases, and can last for months to years.
- While the exact pathophysiology remains unclear, inflammation, fibrosis, and contracture of the shoulder joint capsule play a key role.
- Risk factors include diabetes, thyroid disorders, prolonged immobilization, and previous shoulder injuries.

Source: https://www.ncbi.nlm.nih.gov/books/NBK532955/

A case to the point – arthritis

- Disorders that affect the joints are called arthritis. Most types of arthritis can cause joint pain and inflammation (swelling), leading to severely damaged joints over time.
- Pain, redness, warmth, and joint inflammation are common arthritis symptoms. Less commonly seen symptoms could include inability to move the joint as it should, fever, weight loss, breathing difficulties, or a rash may be present.
- The symptoms often get worse with ageing.
- Treatment depends on the type of arthritis including medicine or surgery, with the goal to improve the symptoms and quality of life.
- A few natural ways to help manage the symptoms include:
  - Hot or cold packs
  - Relaxation techniques
  - Use of splints, braces, and/or assistive devices

Source: https://medlineplus.gov/arthritis.html

Wei (Atrophy) Syndrome

A glance on Wei syndrome

- Wei syndrome refers to a group of disorders with symptoms of flaccidity, weakness in the sinews and muscles, and diminished muscle mass.
- According to TCM, Wei syndrome is often caused by injuries to the internal organs, especially insufficient Jing and Blood, and Yin Deficiency with Excessive Fire; therefore, symptoms pertaining to Heat or Deficiency are common.
- Muscular atrophy may be localized or systemic. The lower extremities are often most affected resulting in weakness and difficulty ambulating.

Source: https://www.americandragon.com/conditions/WeiSyndrome.html

A case to the point – Sarcopenia

- The biomedically defined disease sarcopenia is a gradually advancing systemic disorder affecting skeletal muscles, primarily distinguished by diminished muscle mass and functional decline.
- Both men and women naturally start losing muscle mass as they get older. For most people, it's a gradual decline of about 3% to 5% each decade, starting at age 30.
- A universally accepted diagnostic criterion for sarcopenia has yet to be established.
- Getting older is an unavoidable cause of muscle loss, with other factors being inactivity, obesity, insulin resistance, malnutrition, and inadequate protein intake.
- From TCM perspective, constitutional Yin Deficiency is believed to have a significant correlation with the development of sarcopenia.

Sources:

https://pmc.ncbi.nlm.nih.gov/articles/PMC11304350/
https://www.health.harvard.edu/staying-healthy/a-guide-to-combatting-sarcopenia-and-preserving-muscle-mass-as-you-get-older

Exercise, nutrition, and combination for physical functions

- A systematic review and network meta-analysis on older adults with sarcopenia, provides evidence that resistance exercise with or without nutrition and the combination of resistance exercise with aerobic and balance training were the most effective interventions for improving quality of life.
- Adding nutritional interventions to exercise had a larger effect on handgrip strength than exercise alone while showing a similar effect on other physical function measures.

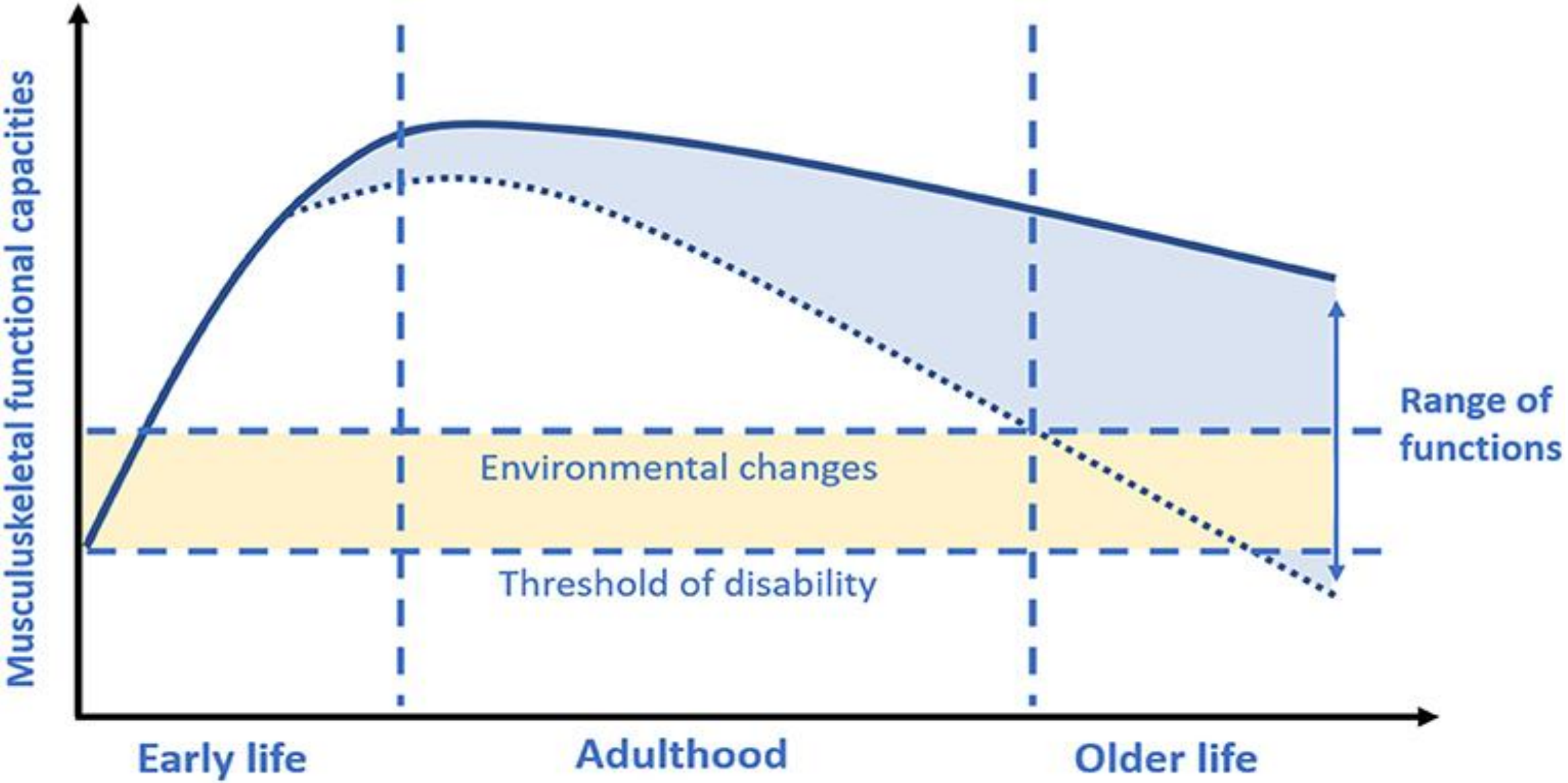
Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC10235889/

Osteopenia & Osteoporosis

Pathogenic factors of osteoporosis

https://pmc.ncbi.nlm.nih.gov/articles/PMC11019011/figure/F1/

Musculoskeletal decline across the lifespan



Source: https://www.frontiersin.org/journals/medicine/articles/10.3389/fmed.2021.697954/full

Efficacy of acupuncture in improving the symptoms of osteoporosis

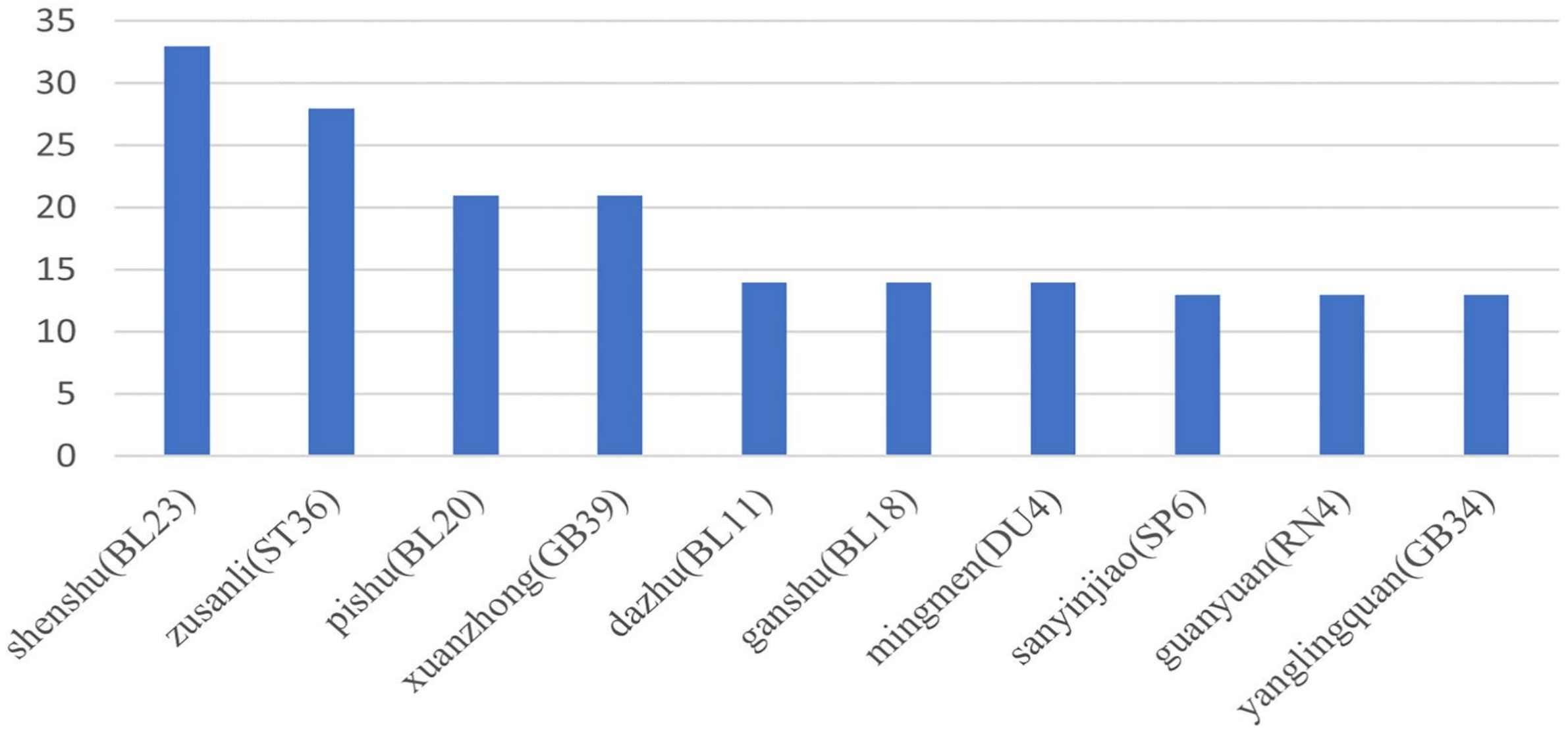
- A systematic review and meta-analysis of randomized controlled trials on forty eligible articles with 2654 participants found that acupuncture effectively increased bone mineral density. The review found UB23, ST36, and UB20 were the top three commonly used acupoints.
- A systematic review and meta-analysis of randomized controlled trials examined on 28 studies with a total of 2,758 patients uncovered 49 acupoints distributed across 10 meridians for the clinical trials. UB meridian was the most frequently utilized meridian, followed by GB, DU, and REN meridians. The top frequently used acupuncture points were: UB23, UB20, ST36, GB39, and DU4.

Source:

https://pmc.ncbi.nlm.nih.gov/articles/PMC12098033/

https://pmc.ncbi.nlm.nih.gov/articles/PMC11786478/

Commonly used acupoints in osteoporosis treatment



Source: https://pubmed.ncbi.nlm.nih.gov/39891296/

Nutrition and lifestyle change for prevention of musculoskeletal decline across the lifespan

- Nutrition and physical exercise remain a mainstay of prevention and intervention for sarcopenia and osteoporosis, as they are for many other conditions such as heart disease, diabetes, and COPD.
- Implementing preventive strategies from early life can timely address both the muscle and skeletal decline seen with aging. Maximizing the musculoskeletal peak through adequate nutrition and physical activity at a young age and maintaining the peak in adulthood can counteract the consequent rate of decline seen in older life.
- Preventing the excess of body fat throughout the lifespan is also pivotal, given the negative effects on musculoskeletal health and preventing the onset of some chronic conditions later in life.
- Implementing a holistic approach to prevention may pave the way to better understand and modify the health trajectories of the individual.

Source: https://www.frontiersin.org/journals/medicine/articles/10.3389/fmed.2021.697954/full

Taking Charge of Selfcare with Activities

Presented by John Fang, L.Ac., DAOM

Exercise & Lifestyle for Metabolic Syndrome

Lifestyle with exercise for glycemic control in T2DM

- Exercise is a first-line therapy recommended for patients with T2DM. Although moderate to vigorous exercise (e.g. 150 min/wk) is often advised alongside diet and/or behavior modification, exercise is an independent treatment that can prevent, delay or reverse T2DM.
- Habitual exercise, consisting of aerobic, resistance, or combination, improves short- and long-term glycemic control. Habitual aerobic exercise helps manage blood glucose. Resistance exercise benefits insulin sensitivity.
- Movement throughout the day by breaking up sitting time benefits blood glucose and insulin. Physical activity after meals reduces blood glucose. Performing exercise later in the day can benefit glycemic control and insulin sensitivity.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC6908414/

Aerobic and anaerobic exercise for glycemic control in T2DM

- Aerobic exercise involves repeated and continuous movement of large muscle groups. Activities such as walking, cycling, jogging, and swimming rely primarily on aerobic energy-producing systems.
- Aerobic training increases insulin sensitivity, oxidative enzymes, compliance and reactivity of blood vessels, lung function, immune function, and cardiac output. Moderate to high volumes of aerobic activity can lower cardiovascular mortality risks.
- Any physical activity performed at an intensity that does not allow sufficient oxygen delivery to muscles is anaerobic. Anaerobic exercise helps the body use insulin more efficiently, decreases fat mass, increases muscle mass, and improves strength.
- Both aerobic and anaerobic exercises burn calories and improve cardiovascular health, insulin sensitivity, and blood glucose management.

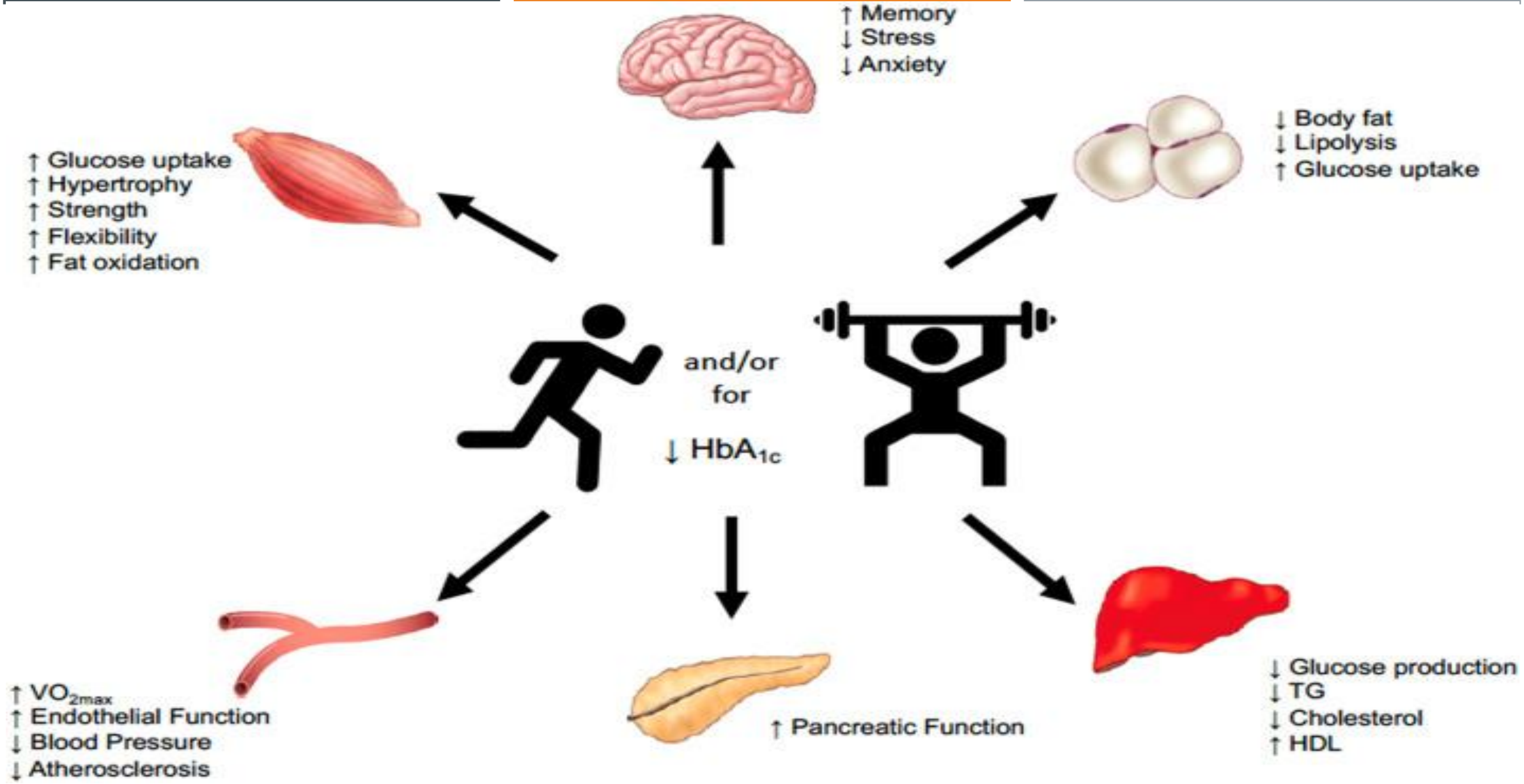
Source: https://diabetes.org/health-wellness/fitness/anaerobic-exercise-diabetes

Flexibility, balance, and resistance for glycemic control in T2DM

- Limited joint mobility is frequently present, resulting in part from the formation of advanced glycation end products, which accumulate during normal aging and are accelerated by hyperglycemia.
- Resistance (strength) training includes exercises with free weights, weight machines, body weight, or elastic resistance bands.
- Flexibility exercises improve range of motion around joints. Balance exercises benefit gait and prevent falls.
- Flexibility and balance exercises are important for older adults with diabetes.
- Tai Chi and yoga combine flexibility, balance, and resistance activities.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC6908414/

Benefits of exercise for T2DM



https://pmc.ncbi.nlm.nih.gov/articles/PMC11256236/

High-Intensity Interval Training (HIIT)

- High-intensity interval training (HIIT) is a workout style that alternates between intervals of intense effort and recovery. The goal of HIIT is to push the body hard during the high-intensity intervals and allow it to recover during intervals of low- to moderate-intensity activity.
- A HIIT workout consists of four essential parts:
  - a warm-up of lower-intensity movements targeting the same muscles as the main workout
  - high-intensity activities with increased speed, resistance, or incline to maximize the efforts
  - recovery intervals equal in length or slightly longer than high intensity intervals with brief rest or low-intensity exercise
  - a cool-down with light activity like walking or marching

Source: https://www.health.harvard.edu/exercise-and-fitness/hiit-workouts-for-older-adults-a-guide-to-safe-and-effective-high-intensity-interval-training

Benefits of High-Intensity Interval Training (HIIT)

- Improves aerobic fitness: to increase oxygen the body consumes while exercising
- Benefits heart health: to strengthen the heart muscle, improve cardiovascular health, and promote more efficient oxygen use
- Boosts metabolic function: to improve the function of mitochondria
- Builds muscle: to increase fat-free mass, particularly for older adults who begin to lose muscle at increased rates during the ageing process.
- Preserves muscle power: to help maintaining fast-twitch muscle fibers for quick, explosive movements, which naturally decline with age
- Fast results: to lead to fitness benefits faster than traditional, steady-state workouts

Source: https://www.health.harvard.edu/exercise-and-fitness/hiit-workouts-for-older-adults-a-guide-to-safe-and-effective-high-intensity-interval-training

Aerobic, Resistance, Balance and Flexibility Exercises

American Diabetes Association.
Connected for Life

Aerobic Exercises

Start by choosing an aerobic activity that you can do almost daily, such as taking 5-minute walks throughout the day or parking farther away so you will take more steps. You don't even have to break a sweat or change clothes.

Seated March

- ☐ Start by sitting upright and marching your feet in place.
- ☐ Lift right foot up; place right foot down. Lift left foot up; place left foot down.
- ☐ Swing your arms back and forth with your elbows bent while you march.
- ☐ March for about 1 minute.

Seated Foot Drill

- ☐ Sit upright and pick up the pace by tapping your feet faster.
- ☐ Keep tapping for 45 seconds.

Aerobic Exercises

Seated Arm Curls

- ☐ Start with your fists beside your legs.
- ☐ Move your fists up toward your shoulders.
- ☐ Bring your fists back down to your legs.
- ☐ Repeat the arm curls for 30 seconds (about 30 arm curls).

Seated Overhead Punches

- ☐ Start with our fists in front of our shoulders.
- ☐ Punch your right fist up overhead and bring it back down.
- ☐ Then punch your left fist up overhead and bring it down.
- ☐ Switch from right- to left-side punches for 45 seconds (about 20 times for each arm).

Standing March

- ☐ If you are able to stand up, march in place for 45 seconds.
- ☐ It's fine to stay seated if you need to.

Balance Exercises

Start your balance training by holding on to something stable and trying to stand on one leg at a time several times per day. Add in some other exercises along the way to help you get more balance and avoid falls.

Single Leg Balance

- ☐ Stand with a chair in front of you to hold on to for balance, if needed.
- ☐ Raise your right foot off the ground.
- ☐ Hold it there for 10 to 20 seconds.
- ☐ Put your right foot back on the ground.
- ☐ Raise your left foot.
- ☐ Hold it up for 10 to 20 seconds.
- ☐ Repeat for one minute.

Toe Raise

- ☐ Rock back on your heels while standing up.
- ☐ Repeat this 20 times.

Balance Exercises

Forward Lean

- ☐ Stand in front of a wall for the with your hands on your hips.
- ☐ Lean forward.
- ☐ Hold 10 to 15 seconds.

Three-way Leg Swing

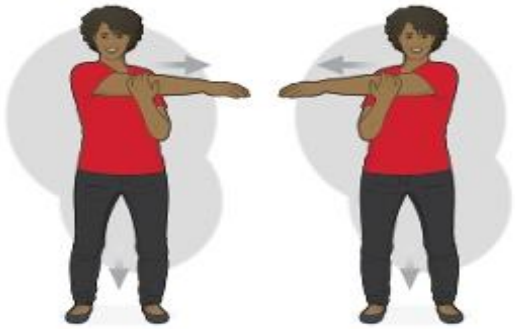
- ☐ Stand on one foot, with your hands on your hips or, if you need to, hold a chair or wall.
- ☐ Keeping your leg straight, move your raised foot forward and hold it there for 5 seconds.
- ☐ Put your foot back on the ground.
- ☐ Repeat the forward lift 10 times.
- ☐ Now lift it sideways 10 times.
- ☐ And finally, backwards 10 times.
- ☐ Repeat with other foot.

Flexibility Exercises

Stretch 2 to 3 days per week as well. Break up periods of sitting with easy stretches. This is a great way to work stretching into your day, and you will feel better.

Neck Stretch

- ☐ Stand with your feet apart and your knees slightly bent (or sit in a chair with your back straight and your feet on the floor).
- ☐ Relax your shoulders and gently bend your head toward your right shoulder.
- ☐ Hold it there for 5 seconds.
- ☐ Repeat on the left side and hold it for 5 seconds.
- ☐ Now tip your head forward toward your chest and hold it for 5 seconds.
- ☐ Then tilt your head back, looking up toward the ceiling for 5 seconds.



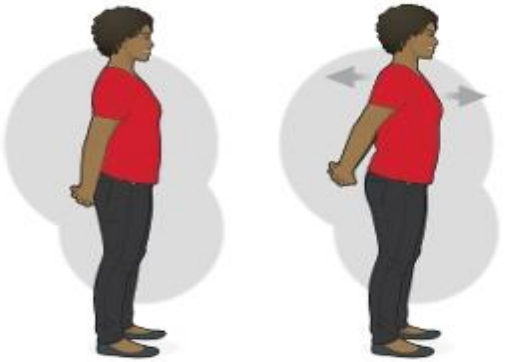
Shoulder/Upper-Back Stretch

- ☐ Stand with your feet apart and your knees slightly bent (or sit in a chair with your back straight and your feet on the floor).
- ☐ Relax your shoulders and stretch your right arm across your chest by pulling your right elbow with your left hand.
- ☐ Hold the stretch for 10 seconds.
- ☐ Repeat with your left arm and hold the stretch for 10 seconds.

Flexibility Exercises

Chest/Shoulder Stretch

- ☐ Bend your knees slightly, tense your stomach muscles, and relax your shoulders. If you need to sit, sit forward in your chair so your arms can go slightly behind you.
- ☐ Move your hands behind your back as close as you can behind you, holding them together if you can.
- ☐ Now bring your shoulders back and push your chest forward.
- ☐ Hold the stretch for about 10 seconds.



Upper-Back/Back of Arm Stretch

- ☐ Stand with your feet a little apart. You can also do this exercise while seated in a chair.
- ☐ Your stomach muscles should be slightly tensed and, if standing, your knees should be slightly bent.
- ☐ Relax your shoulders and stretch your right arm up reaching behind you by pulling to your right elbow up with your left hand.
- ☐ Hold the stretch for 10 seconds.
- ☐ Repeat with your left arm and hold the stretch for 10 seconds.

Flexibility Exercises

Back of Upper-Leg Stretch

- ☐ Stand behind a chair with your legs straight.
- ☐ Hold the back of the chair with both hands.
- ☐ Bend forward from your hips, keeping your legs and back straight.
- ☐ Hold this position for 10 seconds, relax, and repeat the stretch again.

Calf Stretch

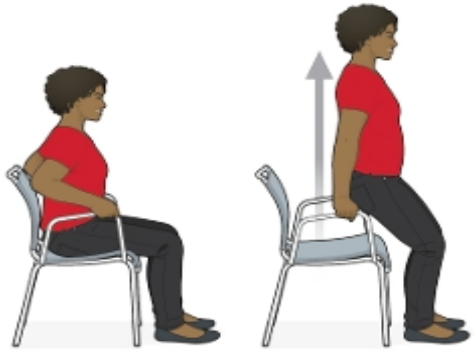
- ☐ With straight arms, put your hands on the wall in front of you.
- ☐ Place your feet shoulder-width apart.
- ☐ Move your right foot back from the wall about 12 inches while bending your left knee and holding your back and right knee straight.
- ☐ Bend your elbows slightly and lean in a few inches toward the wall to stretch your right calf.
- ☐ Hold the stretch for about 10 seconds.
- ☐ Repeat this stretch with the other leg.

Resistance Exercises

To build some strength and muscle, add some resistance training at least 2 days per week. It is fine to start with wall push-ups and other easy activities that you can do during work breaks, at your desk or at home using household items.

Sit to Stand

- ☐ Push the back of a chair against a wall for stability.
- ☐ Sit toward the front of our chair.
- ☐ Keep your back and shoulders straight and lean forward slightly. Practice using only your legs to stand up slowly and to sit back down.
- ☐ Repeat 15 to 20 times.

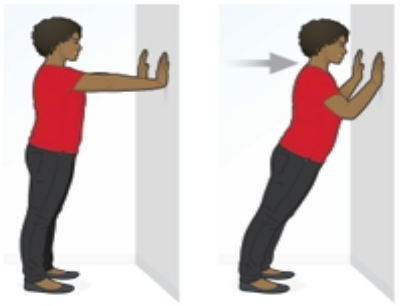


Chair Push-Ups

- ☐ Push the back of a chair against a wall for stability.
- ☐ Next, let's use your hands and grasp the arms of your chair.
- ☐ Slowly push your body as far as you can up off the chair.
- ☐ Hold your weight and then slowly lower yourself back down.
- ☐ Repeat 15 to 20 times.

Note: If you don't have a chair with arms, you can hold on to the sides of your chair.

Resistance Exercises

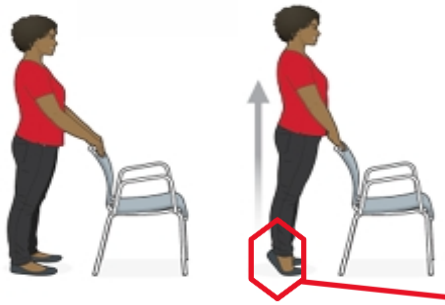


Wall Push-Ups

- ☐ Stand about 2 feet from a wall and place your hands on it about shoulder-width apart.
- ☐ Keep your body in a straight line and start to bend your elbows, bringing your head and shoulders toward the wall while keeping your back and legs straight.
- ☐ Now push your body back from the wall.
- ☐ Repeat these 20 times.

Standing Leg Curls

- ☐ Place your hands on the back of a chair.
- ☐ Keep your knees close together and bend your knee, lifting your right heel up toward your bottom.
- ☐ Hold your heel as close to your bottom as you can lift it for a few seconds before returning your foot slowly to the floor.
- ☐ Repeat 15 times.
- ☐ Now switch to your left leg and repeat 15 times.



Standing Calf Raises

- ☐ Stand behind a chair with your feet about shoulder-width apart.
- ☐ Keep your fingertips on the chair for support as you slowly raise your heels off the ground.
- ☐ Then, slowly lower your heels back to the ground.
- ☐ Repeat 20 times.

Soleus push-up

Resistance training for glycemic control, muscular strength, and body mass

- Type II diabetes (T2D) in elderly patients is associated with accelerated loss of skeletal muscle mass and strength. A meta-analysis review investigated the effects of resistance training (RT) on glycemic control and skeletal muscle in patients according to the inclusion criteria: type II diabetes patients at least 60 years old, fasting plasma glucose of at least 7.0, and at least 8 weeks of resistance training.
- It was concluded that RT improves glycemic control and muscle strength in elderly patients with T2D.

Source: https://pubmed.ncbi.nlm.nih.gov/28382531/

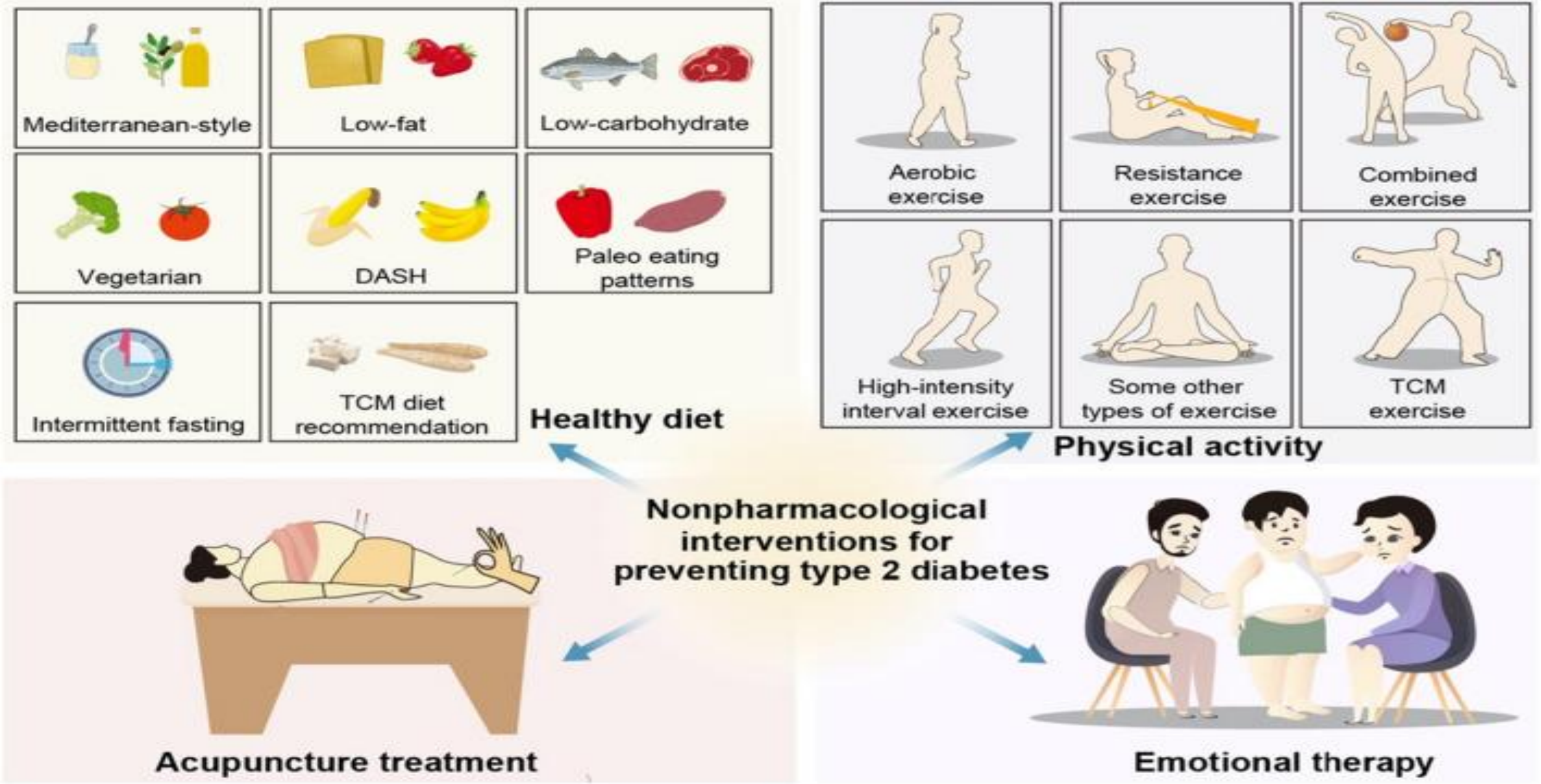
Exercise Guidelines for Beginner Individuals with T2MD

Training parameter	Aerobic training	HIIT	Resistance training	Flexibility training
Frequency	3–7 d per week	2–3 d per week	2–3 d per week (nonconsecutive days)	2–3 d per week
Intensity	40–59% VO_2R or RPE 11–12	Work intervals: 2–4 min (80–90% VO_2R, RPE 15–16) Recovery intervals: 1–3 min (50–60% VO_2R, RPE 11–13)	40–69% of 1-RM	Slight discomfort
Duration	30–60 min per session 150 min per week	20–30 min per session (incl. warm-up and cooldown) Series per session: 4–6 times	30–60 min per session 8–10 multijoint exercises 1–3 sets, 10–15 reps to near fatigue per set	20–30 min per session Hold static stretch 10–30 s, 2–4 reps of each exercise
Mode	Walking, running. Cycling, stair climbing, elliptical, rowing, or swimming	Walking, running, cycling, stair climbing, elliptical, rowing, or swimming	Pneumatic, hydraulic, plate-loaded, or selectorized machines, free weights, resistance bands and/or body weight	Static, dynamic, PNF, and/or yoga
Progression	A gradual progression of not more than a 5–10% increase per week in exercise intensity (60–79% VO_2R or RPE 14–15) or duration (5–10 min)	Gradually increase duration and/or intensity per week	Gradually increase intensity by executing 2 more reps on the final set in 2 consecutive sessions. Loads should be adjusted so clients can only perform 8–10 reps for 3 sets at 70–80% of 1-RM	Gradually increase duration of each exercise

1-RM = 1-repetition maximum; HIIT = high-intensity interval training; PNF = proprioceptive neuromuscular facilitation; reps = repetitions; RPE = rating of perceived exertion; VO_2R = oxygen consumption reserve (3,13,27,38,39,47).

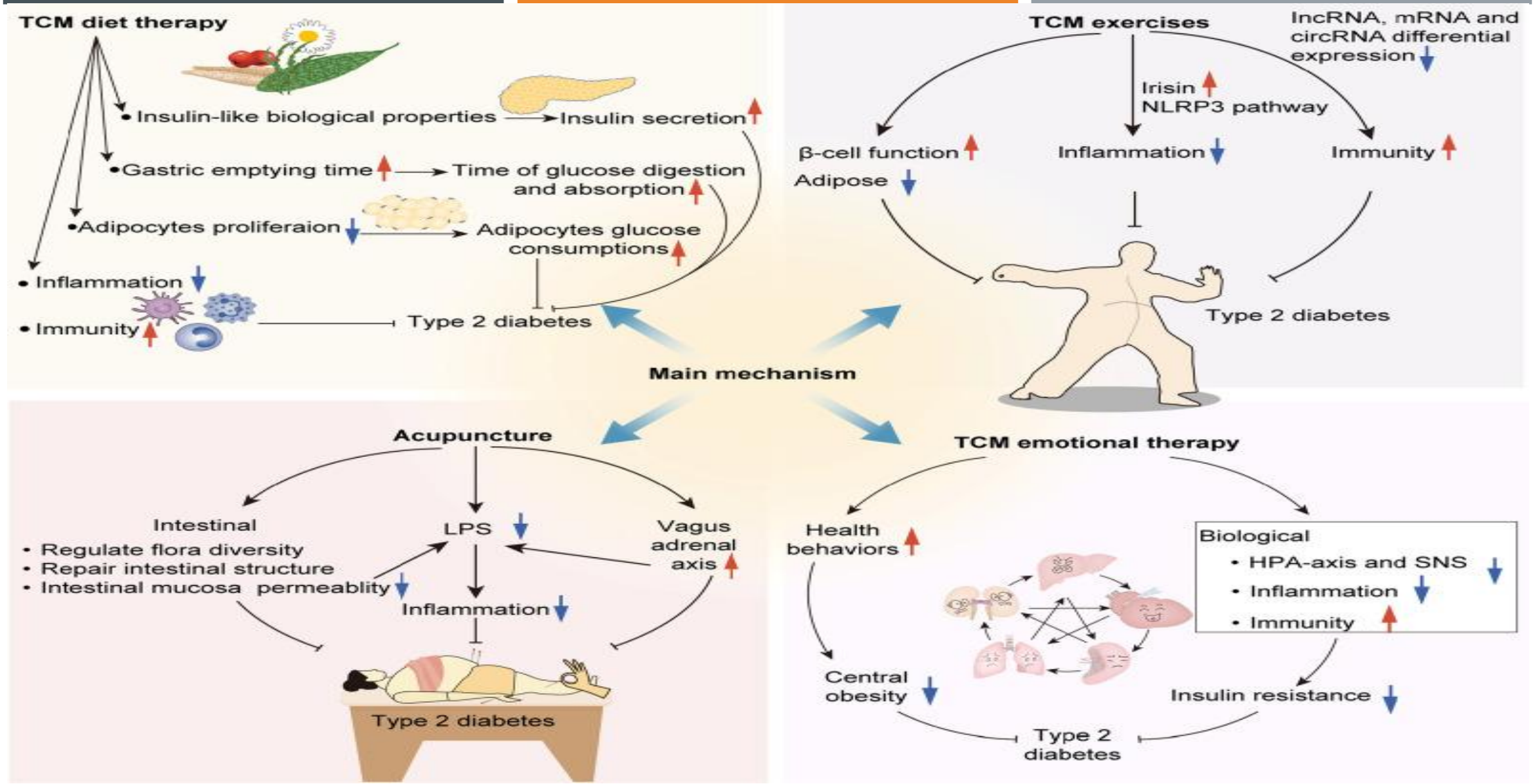
Source: https://www.researchgate.net/publication/361046827/

Non-drug interventions for preventing T2DM



https://pmc.ncbi.nlm.nih.gov/articles/PMC10644617/figure/Fig2/

Possible mechanisms of non-drug TCM interventions



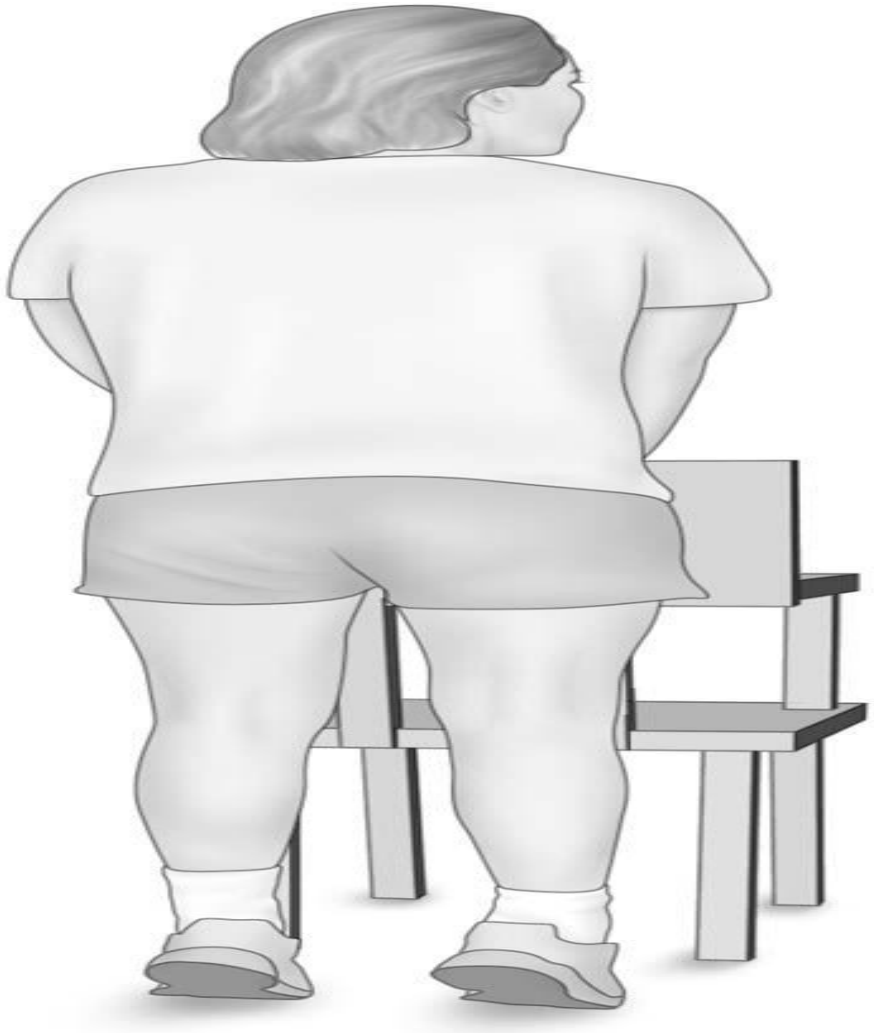
https://pmc.ncbi.nlm.nih.gov/articles/PMC10644617/figure/Fig4/

Exercise for
Bi and Wei Syndromes

Workouts to tighten the abs (for Spleen/Stomach), strengthen the back (for Kidney), and improve balance (for Yin & Yang)

Source: https://www.health.harvard.edu/staying-healthy/a-guide-to-combatting-sarcopenia-and-preserving-muscle-mass-as-you-get-older

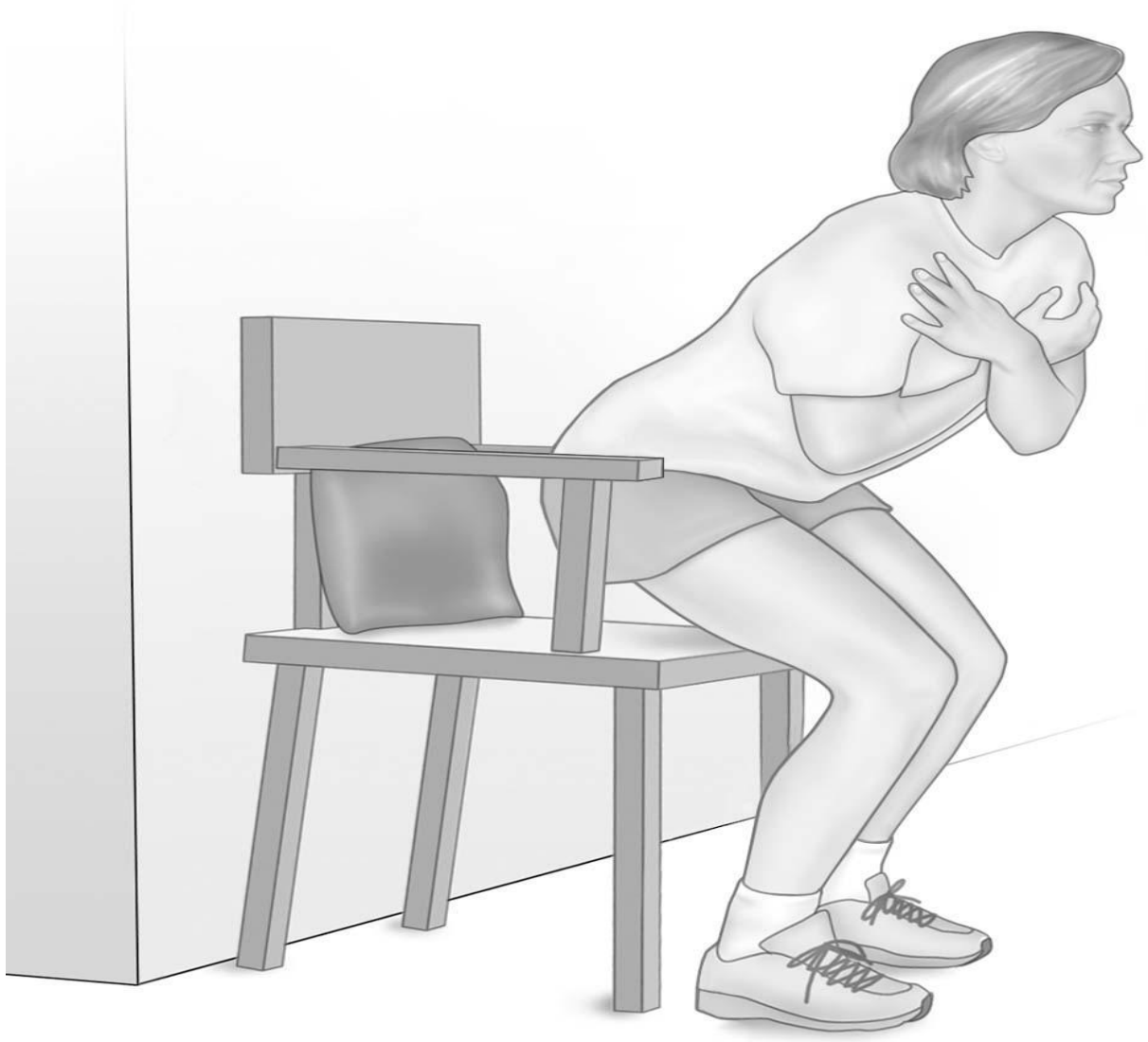
Standing calf raise to exercise the calf muscles



- Stand with the feet flat on the floor.
- Hold on to the back of a chair for balance.
- Raise the body up on the balls of the feet.
- Hold briefly, then lower the body.
- Do 8 to 12 repetitions.
- Rest and repeat the set.

Chair stand to exercise the muscles of the abdomen, hips, front thighs, and buttocks

- Place a small pillow at the back of the chair and position the chair resting against a wall.
- Sit at the front of the chair, knees bent, feet flat on the floor and slightly apart.
- Lean back on the pillow in a half-reclining position with the arms crossed and hands on shoulders.
- While keeping the back and shoulders straight, raise the upper body forward until sitting upright.
- Stand up slowly, using the hands as little as possible, and slowly sit back down.
- Do 8 to 12 repetitions. Rest and repeat the set.

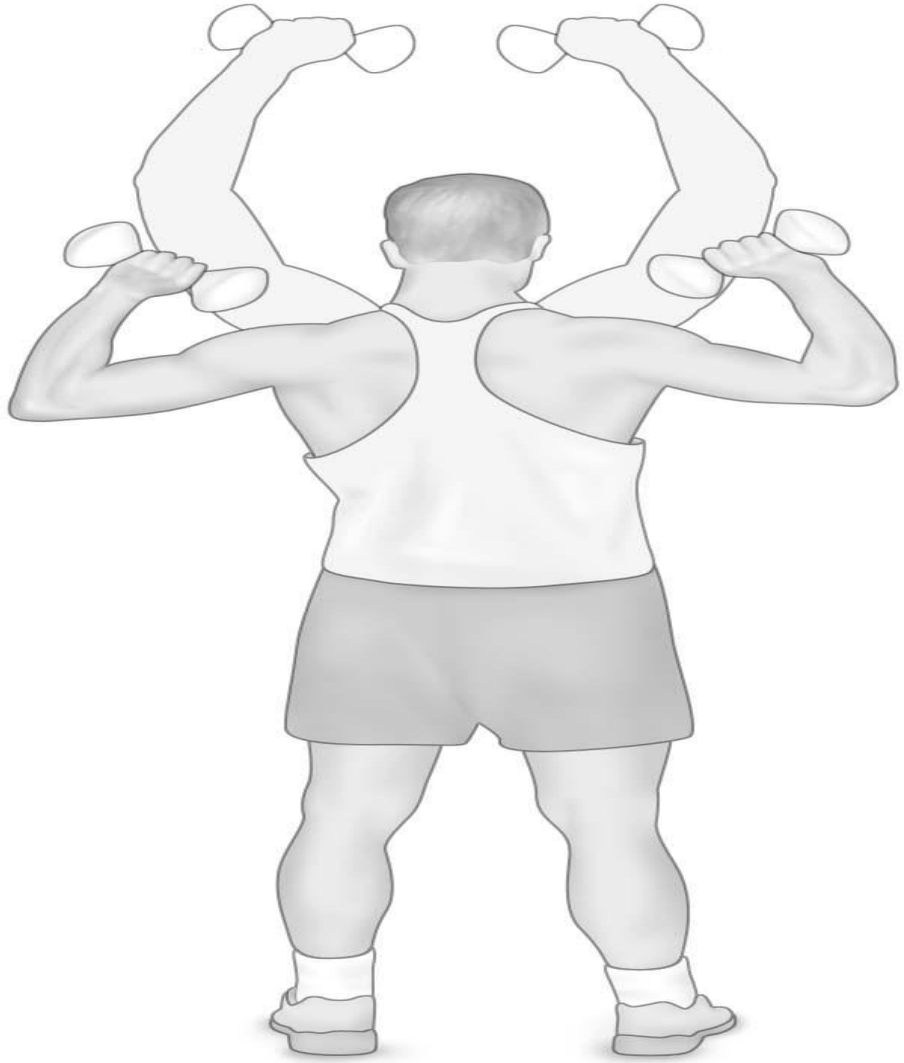


Reverse fly to exercise the muscles of the shoulders and upper back

- Sit in a chair holding weights about 12 inches in front of the chest. The elbows should be up and slightly bent, and palms should be facing each other (as if the arms are wrapped around a large beach ball).
- Lean forward slightly in the chair, bending from the hips and keeping the back straight.
- Pull the weights apart while trying to bring the shoulder blades as close together as possible. Let the movement pull the elbows back as far as possible.
- Pause. Return to the starting position.
- Do 8 to 12 repetitions. Rest and repeat the set.

Overhead press to exercise the muscles of the shoulders, upper back, and back upper arms

- Stand with the feet slightly apart.
- Hold a dumbbell in each hand at shoulder height (the elbows should be bent, and the weights should be by the shoulders).
- Hold the weights so the palms are facing forward. Slowly press the weights straight up until the arms are fully extended.
- Pause. Slowly lower the dumbbells to shoulder level.
- Do 8 to 12 repetitions. Rest and repeat the set.



Evidence-based Practice

Walking or body weight squat increases dietary amino acid utilization

- Prolonged sitting can impair postprandial glycemia, lipidemia, and insulin sensitivity regardless of previous health status.
- 12 participants completed three 7.5-h trials consisting of prolonged sitting, or sitting with intermittent walking every 30 minutes, or body weight squatting.
- The result indicated that minimizing sedentary time is important for improving the postprandial metabolism of macronutrients. Interrupting prolonged sitting with brief periods of activity, such as body weight squats or short bouts of walking, improves the efficiency of dietary amino acid utilizations for muscle contractile protein synthesis.

Source: https://pubmed.ncbi.nlm.nih.gov/35952344/

Enhanced muscle activity during interrupted sitting improves glycemic control

- Eighteen (18) overweight and obese men were recruited for a randomized study to examine the effects of interrupting prolonged sitting time with different muscle activity patterns on continuously monitored postprandial glycemic response.
- The result revealed that short, frequent walking or squatting breaks effectively enhance glycemic control in overweight and obese men compared to a single bout of walking within prolonged sitting. These superior benefits seem to be associated with increased muscle activity intensity in the targeted muscle groups during frequent transitions from sitting to activity.

Source: https://pubmed.ncbi.nlm.nih.gov/38629807/

Leisure-time running reduces all-cause and cardiovascular mortality risk

- A study examined the associations of running with all-cause and cardiovascular mortality risks in 55,137 adults, aged 18 to 100 years. Running was assessed on the medical history questionnaire by leisure-time activity.
- During a mean follow-up of 15 years, 3,413 all-cause and 1,217 cardiovascular deaths occurred, which is approximately 24% of the participated population. Compared with non-runners, runners had 30% and 45% lower adjusted risks of all-cause and cardiovascular mortality, respectively, with a 3-year life expectancy benefit.
- In the analyses of change in running behaviors and mortality, persistent runners compared with never-runners had the most significant benefits with 29% and 50% lower risks of all-cause and cardiovascular mortality, respectively.
- The study concluded that running, even 5-10 minutes per day and slow speeds <6 mph, is associated with markedly reduced risks of death from all causes and cardiovascular disease.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC4131752/

Effects of Tai Chi exercise on cardiovascular disease risk factors

- A meta-analysis evaluated the effects of Tai Chi exercise on the risk factors for cardiovascular disease (including blood pressure, blood glucose, and lipid profiles) and quality of life in adults with essential hypertension and analyzed the short-term and long-term effects of each outcome indicator.
- The findings showed Tai Chi lowers blood pressure, total cholesterol, triglycerides, and blood glucose and significantly increases the quality of life in adults with essential hypertension. It reduced high-density lipoprotein cholesterol but has no significant effect on high-density lipoprotein cholesterol. Also, there was strong evidence for the short-term efficacy of Tai Chi exercises.

Source: https://pubmed.ncbi.nlm.nih.gov/32171586/

The benefits of Tai Chi Chuan on blood pressure, lipid profile, and anxiety

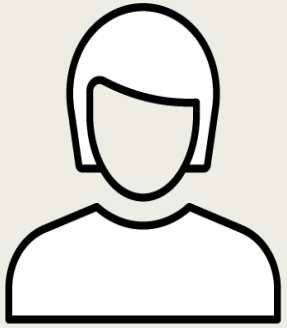
- In a randomized controlled study, 76 healthy adults with blood pressure at high-normal or stage I hypertension were recruited.
- After 12 weeks of Tai Chi training, the treatment group showed significant decrease in systolic and diastolic blood pressure. The serum total cholesterol level decreased, and high-density lipoprotein cholesterol increased. The anxiety conditions were decreased, too.

Source: https://pubmed.ncbi.nlm.nih.gov/14629852/

Effect of Tai Chi vs aerobic exercise on blood pressure

POPULATION

166 Men, 176 Women



Adults with prehypertension

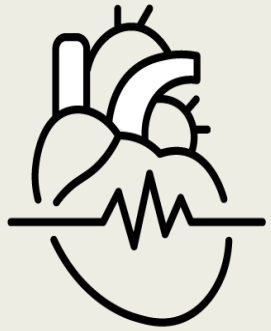
Mean age, 49.3 y

INTERVENTION

342 Patients randomized

173 Tai Chi training

Tai Chi sessions with a 10-min warm-up, 40 min of core training, and 10-min cool-down 4 times/wk

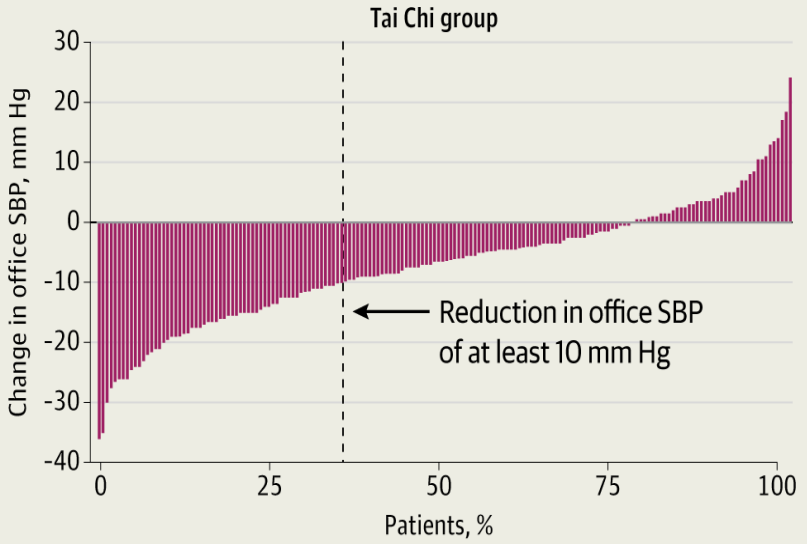


169 Aerobic exercise training

Aerobic exercise with a 10-min warm-up, 40 min of core training, and 10-min cool-down 4 times/wk

FINDINGS

The mean decrease in office SBP from baseline to 12 mo was significantly greater in the Tai Chi group compared with the aerobic exercise group



Change in office SBP

Tai Chi group: mean (SD), -7.01 (10.12) mm Hg; *P* < .001

Aerobic exercise group: mean (SD), -4.61 (8.47) mm Hg; *P* < .001

Between-group difference: -2.40 mm Hg (95% CI, -4.39 to -0.41); *P* = .02

SETTINGS / LOCATIONS

2 Hospitals in Beijing, China

PRIMARY OUTCOME

Change in office systolic blood pressure (SBP) from baseline to 12 mo

Li X, Chang P, Wu M, et al. Effect of Tai Chi vs aerobic exercise on blood pressure in patients with prehypertension: a randomized clinical trial. *JAMA Netw Open.* 2024;7(2):e2354937. doi:10.1001/jamanetworkopen.2023.54937

Source: https://pubmed.ncbi.nlm.nih.gov/38335001/

The effect of yoga and walking on glycemic control for T2DM management

- A systematic review and meta-analysis on sixteen studies with 1820 participants, between 17-75 years of age, allocated to interventions of yoga, walking, and none of any regular exercise. The comparison was made on fasting blood glucose, postprandial blood glucose, HbAlc level, fasting insulin, and insulin resistance.
- The research concluded that yoga or walking with oral antihyperglycemic drugs has positive effects on glycemic control.
- For the management of type 2 diabetes, yoga has relatively more significant effects on glycemic control than walking.

Source: https://pubmed.ncbi.nlm.nih.gov/38045671/

Tai Chi improves blood lipid levels in patients with cardiovascular diseases

- A systematic review and meta-analysis on data from eight digital archives were searched, and blood lipid indexes were analyzed with a total of 1,312 patients from 28 trials.
- The results of the meta-analysis showed a significant positive effect of lipids in the Tai Chi group compared to the non-exercise group for total cholesterol, triglycerides, and low-density lipoprotein cholesterol. The effect on high-density lipoprotein was not statistically significant in comparison with the other exercise groups.
- The literature concluded that Tai Chi is effective in improving lipid levels in patients with cardiovascular disease, especially in diabetic patients and hypertensive patients.

Source: Ann Appl Sport Sci 2023, 11(3): 0-0

The effect of yoga on the lipid profile

- A Systematic Review and Meta-Analysis of Randomized Clinical Trials evaluated the available randomized controlled trials on the effects of yoga-based programs and lipid profiles.
- Fifty-three studies were included in the analysis with a total sample size of 13,191. There was a striking association between yoga and total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, triglycerides, and very low-density lipoprotein.
- The findings suggested that yoga interventions seems to have a substantial effect on lipid profiles.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC9329825/

Meditation to reduce blood pressure

- A review paper evaluated the use of meditation for reducing blood pressure in pre-hypertensive and hypertensive individuals.
- Meditation techniques appear to produce small yet meaningful reductions in blood pressure either as monotherapy or in conjunction with traditional pharmacotherapy. Transcendental meditation and mindfulness-based stress reduction may produce clinically significant reductions in systolic and diastolic blood pressure.
- Based on available evidence, meditation has become a promising construct in complementary and alternative medicines. There is a strong possibility that mindfulness could become a component of effective interventions designed to prevent hypertension and lower suboptimal blood pressure.

Source: https://pubmed.ncbi.nlm.nih.gov/22518287/

Effects of mindfulness meditation interventions on depression in older adults

- A meta-analysis on 19 studies including 1076 participants of an age of 72 ± 5 showed mindfulness meditation interventions (MMIs) significantly improved depression.
- Less than 5 weeks of MMIs showed greater improvement in depression than longer periods. MMIs with guided meditation reduced depression more than MMIs without guided meditation.
- The meta-analysis concluded that MMIs might be used as adjunctive or alternative to conventional treatment for depressed older adults.

Source: https://pubmed.ncbi.nlm.nih.gov/32666805/

Emotional nursing

- Under normal circumstances, seven emotional activities paly a role of coordinating the physiological functions of the five Zang organs. Excessive emotions beyond the scope of the body's self-adjustment can cause disturbance of visceral Qi and Blood, and diseases occur consequently. The emotion-regulating methods include:
  - Abstaining from anger
  - Venting depression
  - Straightening out depression
  - Diverting directionality of thoughts
  - Exercises
  - Suggestion
  - Visual effects of colors for calming, exciting, happiness, sadness, etc.
  - Checking one emotion with another according to the five-element theory

Source: Life Cultivation and rehabilitation of Traditional Chinese Medicine, 2003. Shanghai University of Traditional Chinese Medicine.

Evidence-based practice of emotional nursing for anxiety and depression in elderly patients

- TCM emotional nursing improves a patient's psychological state by the connection between emotions and organ functions, aiming to balance emotions that are linked to specific organs.
- The nursing approach uses empathy, reasoning, and tailored guidance to help patients manage negative emotions, improve their mental state, and ultimately support the overall healing process. Techniques include psychological counseling based on TCM theories, distraction through music or activities, and utilizing specific herbs for pillows to promote a calm mind.
- The results of a meta-analysis of 39 literatures and 40 studies, including 4,425 patients showed that TCM emotional nursing could improve the anxiety and depression symptoms of the elderly patients with a significant large effect.

Source: https://pubmed.ncbi.nlm.nih.gov/40612994/

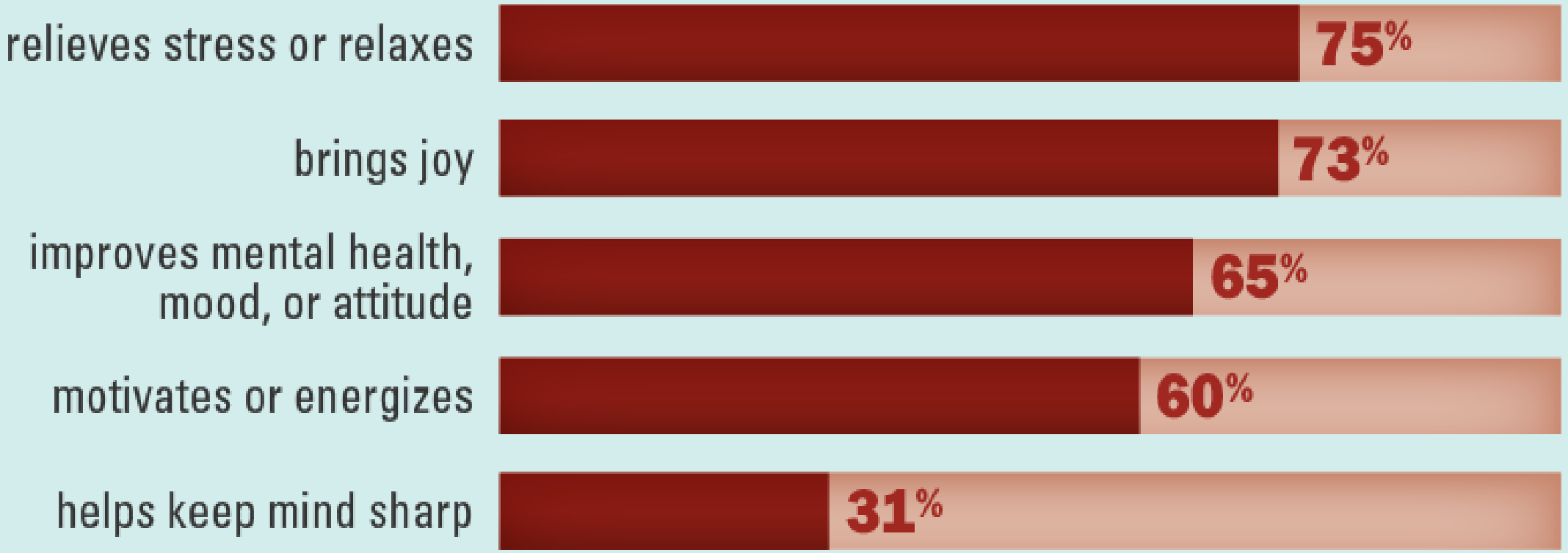
The Effect of classical music on heart rate, blood pressure, and mood

- A study used a five-questionnaire mood survey to evaluate the participant's response to Beethoven's Symphony of Fate (a fast song) and Beethoven's Moonlight Sonata (a slow song). A total of 100 participants with the mean age of 39.8 years old were enrolled in the study.
- The study suggested classical music has a positive impact on the cardiovascular system and potential emotional benefits.
- Music affects the cardiovascular system through multiple potential mechanisms including the autonomic nervous system and the vagus nerve which responds to musical vibrations by triggering the body to relax. Music also affects other parts of the brain, which in turn affects the mood through the release of neurotransmitters such as dopamine and contributes to the study findings which found that 83% of subjects found fast music uplifting. Nearly all subjects believe music can help manage stress.

Source: https://pubmed.ncbi.nlm.nih.gov/36046316/

Health & Well-Being Benefits of Music

AMONG ADULTS AGE 50–80



Source: University of Michigan National Poll on Healthy Aging, February 2024

Museum-based art activities to stay young at heart

- In a randomized controlled trial that compared the changes in heart rate over a 3 month-period in older adults participating in art-based activities at the Montreal Museum of Fine Arts (MMFA) in Quebec, Canada, 60 participants agreed to record their heart rate.
- The mean heart rate per hour for the full day, including active and inactive hours, were recorded. The heart rate for full day and active hours were slower in the intervention group than in the control group. Decrease in mean heart rate for full day in the intervention group was higher than in the control group. The linear regression showed that MMFA-based art activities decreased full day heart rate.
- In conclusion, MMFA-based art activities significantly decreased full day heart rate, suggesting a health benefit in older community dwellers who participated in the RCT.

Source: https://pubmed.ncbi.nlm.nih.gov/38249982/

Outdoor cycling improves cognitive function and well-being in older adults

- A study investigated the effect of an outdoor cycling intervention on cognitive function and wellbeing in on 100 older adults for 8 weeks. The cycling participants are divided into 2 groups using conventional pedal cyclists and e-bikes and required to cycle at least 3 times a week for 30 minutes duration for each cycle ride.
- Cognitive function and well-being were measured before and after the intervention period. Cycling groups improved in accuracy of executive functions after the intervention compared to non-cycling control participants. E-bike participants improved in processing speed after the intervention and improved in the mental health score after the intervention compared to non-cycling controls as measured by the SF-36.
- The experiment showed a similar effect for the e-bike group compared to the pedal cyclists, suggesting that both increased physical activity and engagement with the outdoor environment have benefits.

Source: https://pubmed.ncbi.nlm.nih.gov/30785893/

Gardening for better cardiovascular health among older adults

- An analysis on the cross-sectional data of non-institutionalized US adults in the 2019 Behavioral Risk Factor Surveillance System (BRFSS) with a landline and cellular phone survey of 146,047 adults aged 65+ reporting any physical activity.
- The research examined fruit and vegetables intake, mental and physical health, and 10-year mortality risk among gardeners and exercisers compared to non-exercisers.
- Among adults aged 65+, gardening is associated with better CVD health status including lower odds of diabetes.

Source: https://pubmed.ncbi.nlm.nih.gov/36323395/

Bodily Movements
For Selfcare & FUN

Combing Hair

- Procedure:

a. Make the palms warm by robbing two hand

b. Comb the head from the front to the rear

- Potential benefits:

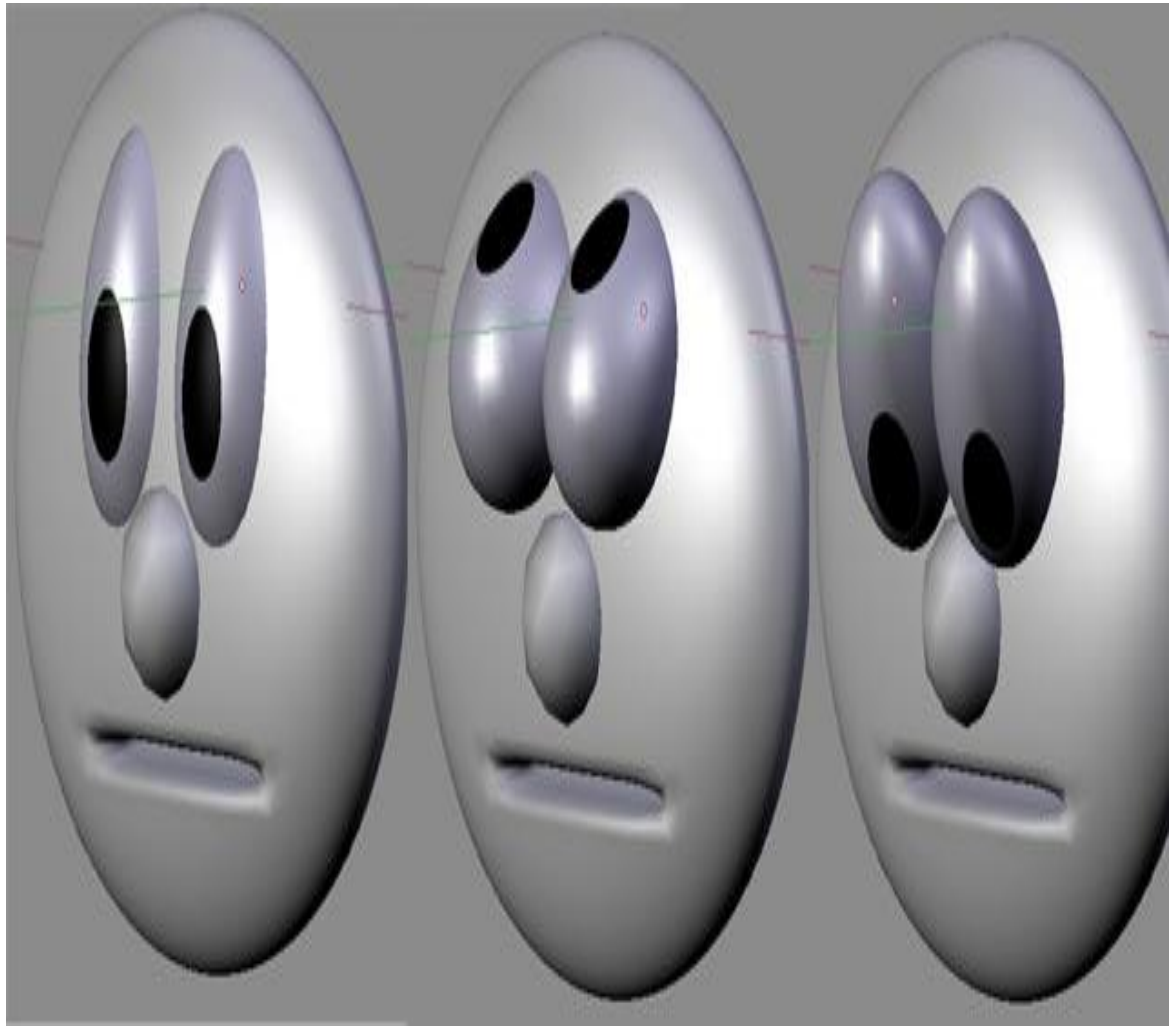
a. brightening eyes

b. expelling Wind

c. preventing headache, ear ringing, and grey hair

Image from internet search

Rolling Eyes



- Procedures:

a. Close eyes and then open forcefully; roll eyeballs to look left, up, right, and down

b. Rob palms until warm and cover eyes

- Potential benefits:

  Strengthening vision

Image from internet search

Clicking Teeth

- Procedure:
  With mouth closed, click teeth gently for 36 times
- Potential benefits:

a. Opening channels that travel in upper and lower jaws
b. Keeping the head clear
c. Promoting absorption
d. Preventing tooth decay and muscular degeneration

Image from internet search

Gargling with Saliva

- Procedure:

a. With mouth closed, stick out the tongue and rotate among the teeth counterclockwise from the top for 12 times

b. Do the same procedure clockwise

c. Swallow saliva

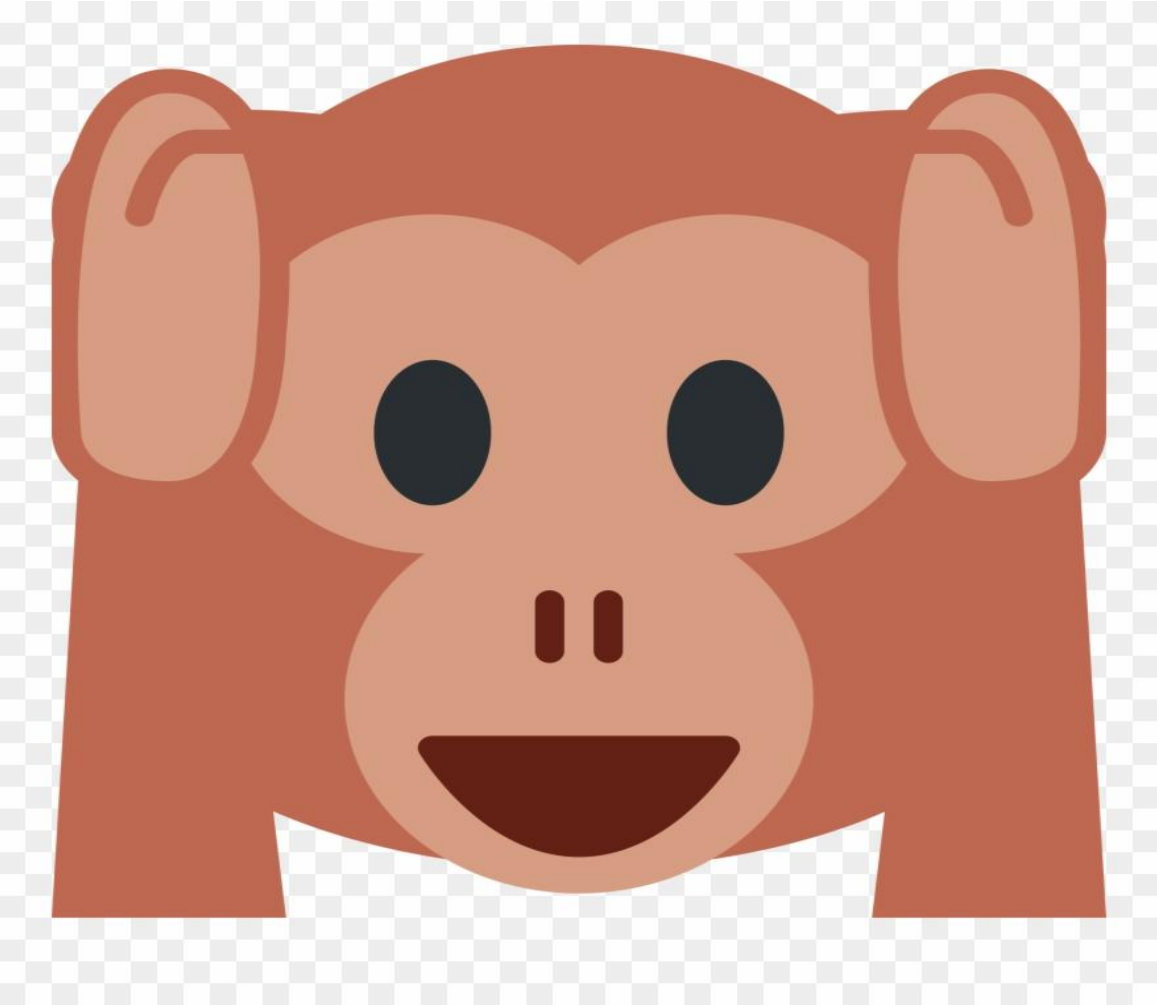
d. Repeat the above with the tongue inside the teeth

- Potential benefits:

  Strengthening digestion system

Image from internet search

Drumming Ears



- Procedure:

a. Cover ears with hands, push forcefully and suddenly release for 10 times

b. Fold ears towards the head with hands, and then fillip index and middle gingers to snap UB 20 for 10 times

- Potential benefits:
  Promote memory and hearing

Image from internet search

Washing Face

- Procedure:

a. Rub hands for 36 times to get warm and then scrub the face up and down

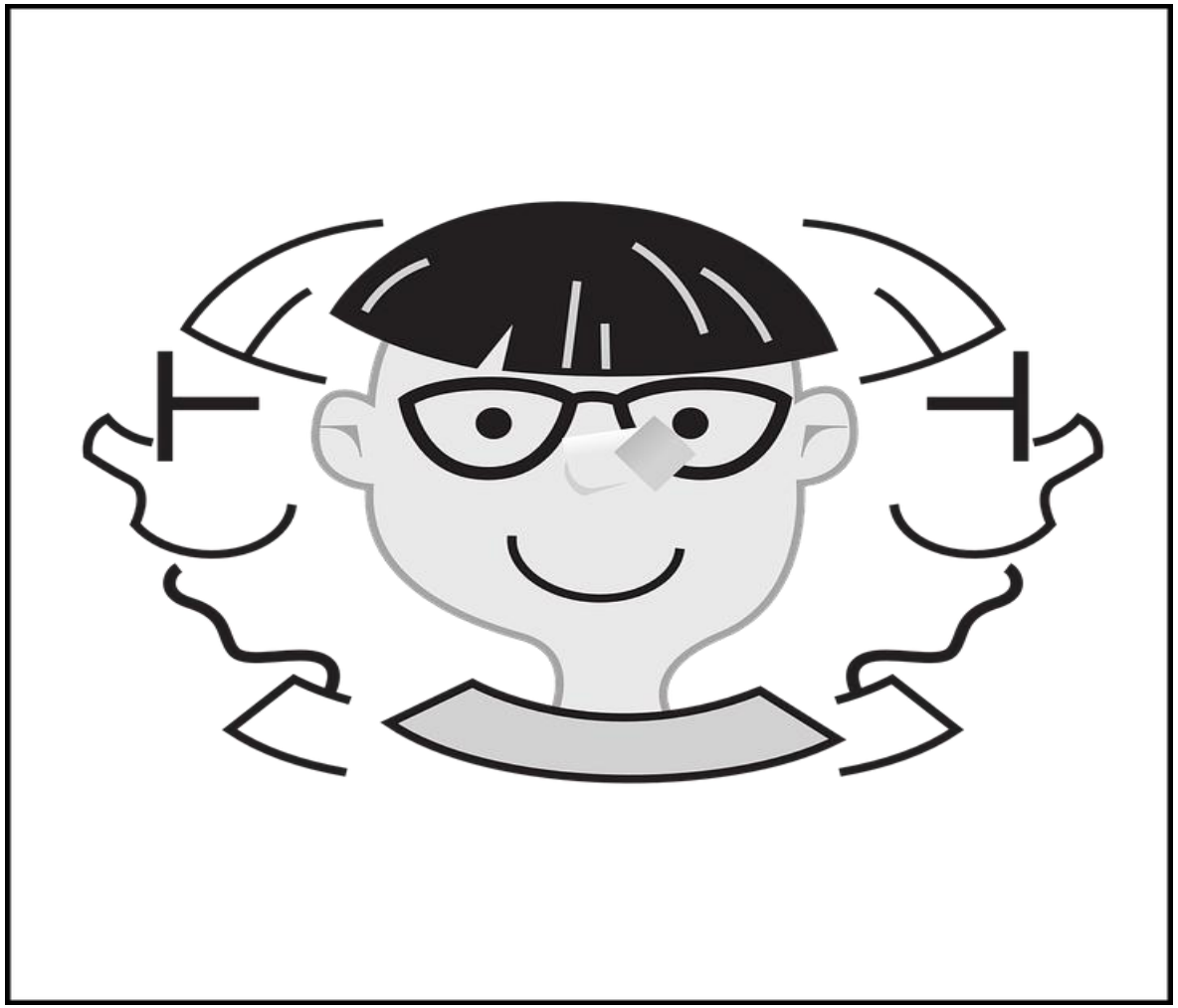
b. Rub hands for 36 times to get warm and then scrub the face outward

- Potential benefits:

  Brightening up the face and reducing wrinkles

Image from internet search

Shaking Head



- Procedure:

  With hands akimbo and eyes closed, nutate the head and turn to the left, turn back to the center, turn to the right, and back to the center for 6 times.

- Potential benefits:

a. Keeping the mind agile

b. Preventing cervical spondylosis

Image from internet search

Twisting Waist

Procedure:

a. Twist the torso to the left with the right hand in front and the left hand in back
b. Pat Ren 4/6 (Dantian) in front and DU4 (Mingmen) in back
c. Repeat the movement to the right

Potential benefits:

a. Strengthening Spleen and Kidney Qi
b. Preventing belly and lumber pain

Image from internet search

Rubbing Belly

Procedure:

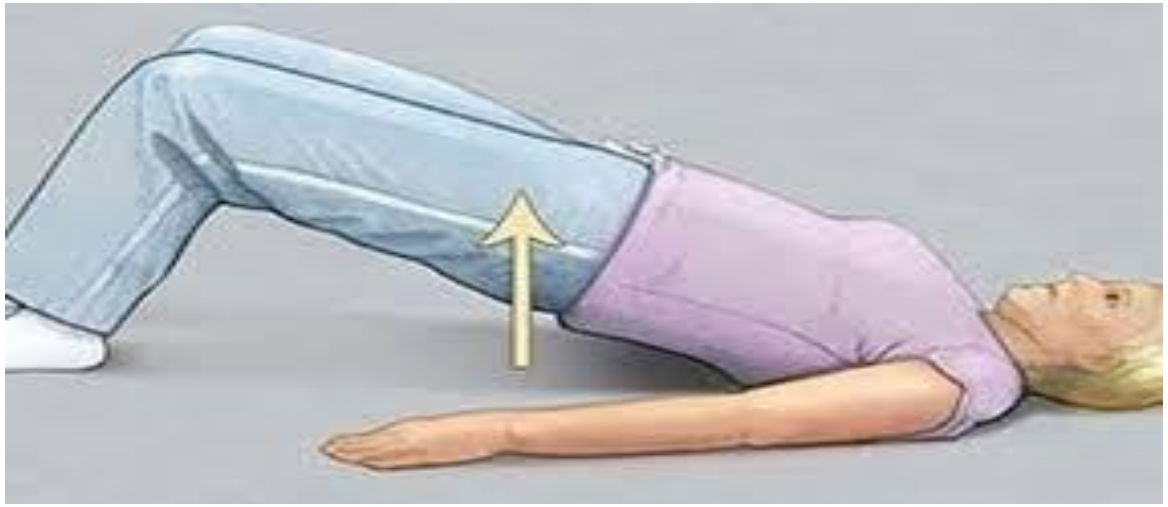
a. Rub hands 36 times and massage the belly clockwise, hand over hand for 36 times.
b. Make the circles bigger and bigger.

Potential benefits:

Improving digestion and relieving bloating

Image from internet search

Tightening Anus



Procedure:

a. Tighten up the muscles around the anus when inhaling, hold the air for a few seconds, and then exhale to relax.

b. Practice 36 times, day & night

Potential benefits:

Strengthening local muscles and circulation

Image from internet search

Circling Knees

Procedure:

a. Stand with feet side by side and knees joined.
b. Squat slightly, hold knees with hands, and rotate knee joints 36 circles clockwise and another 36 counterclockwise.

Potential benefits:

Strengthening knee joints

Image from internet search

Kneading Feet

Procedure:

a. Knead the left foot with the right hand and right foot with left hand, from the heel to the toes back and forth. Do 36 rounds.
b. Rub acupoint K-1 on each side for 100 times.

Potential benefits:

Relieving insomnia, hypertension, and headache

Strengthening internal organs through reflexology

Image from internet search

Taking a Walk

Taking a walk after meals makes you live to 99 years old.

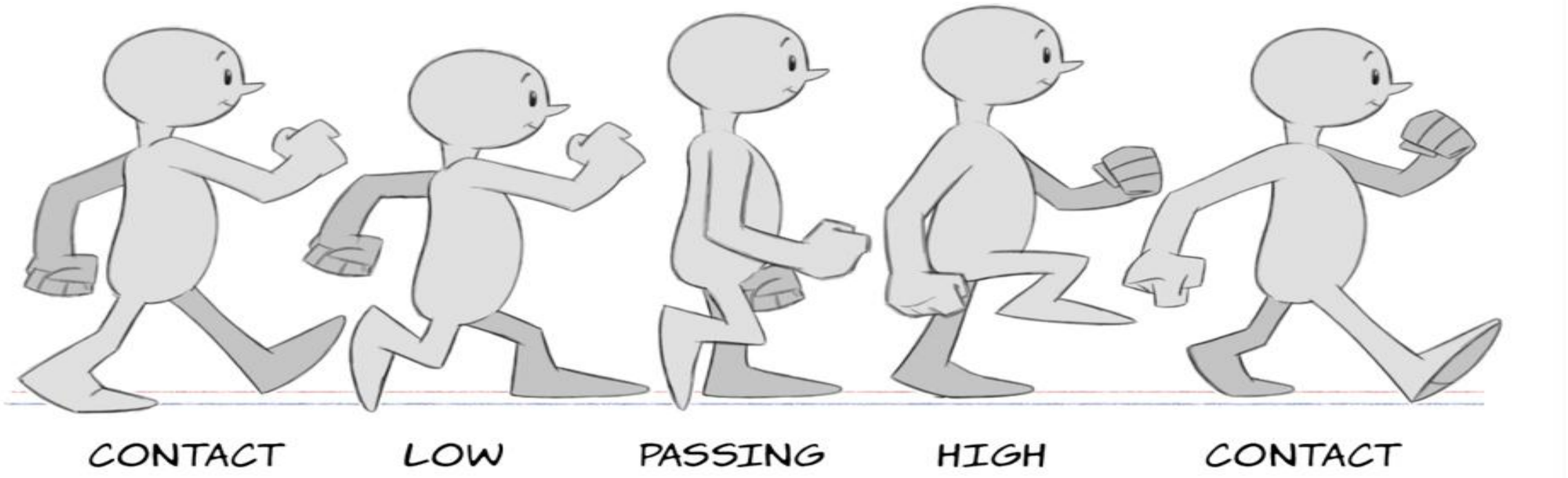
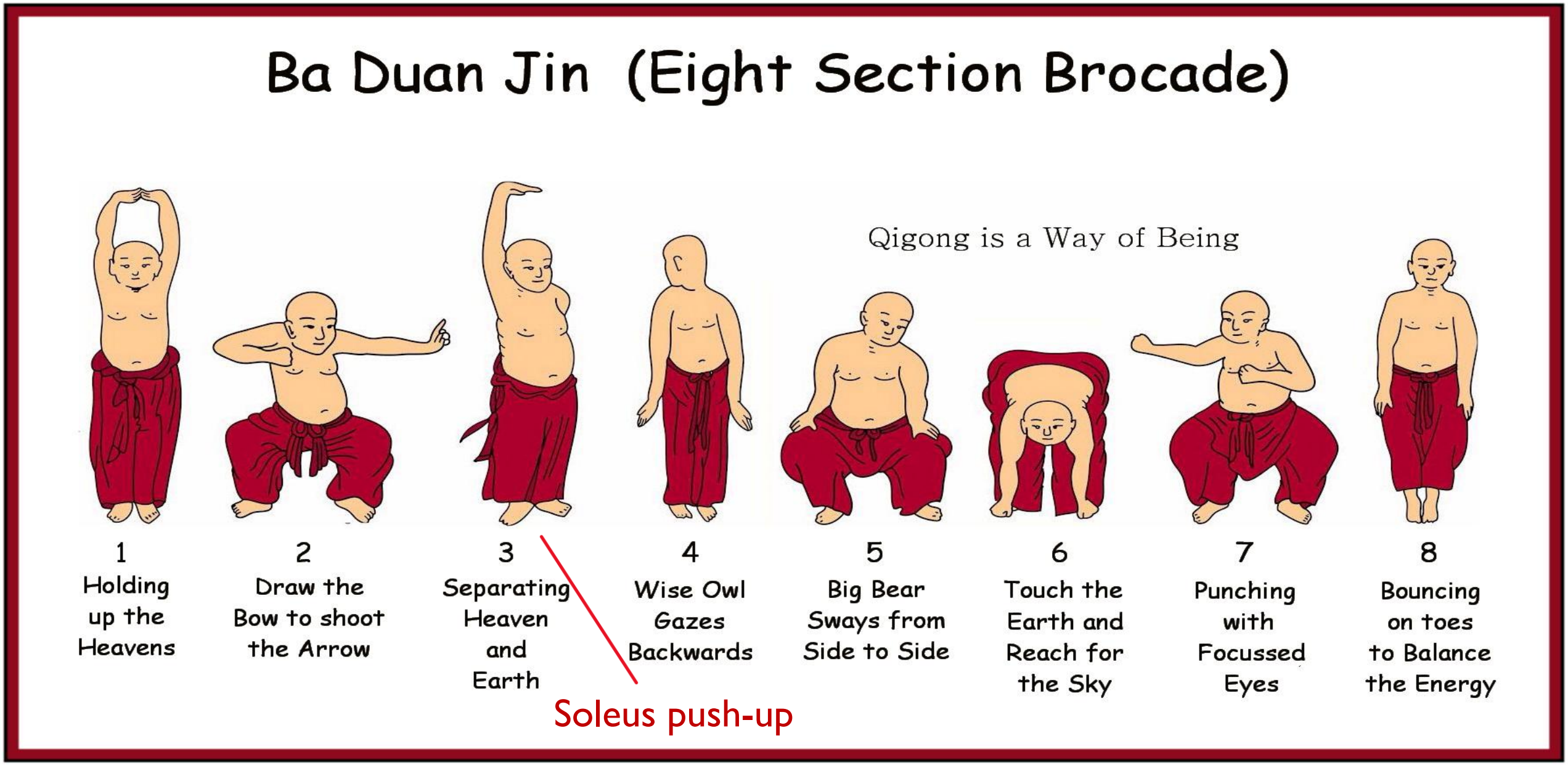


Image from internet search

Eight Treasures of Brocade



Source: Image from internet search

Taking Charge of Selfcare with Diet

Presented by John Fang, L.Ac., DAOM

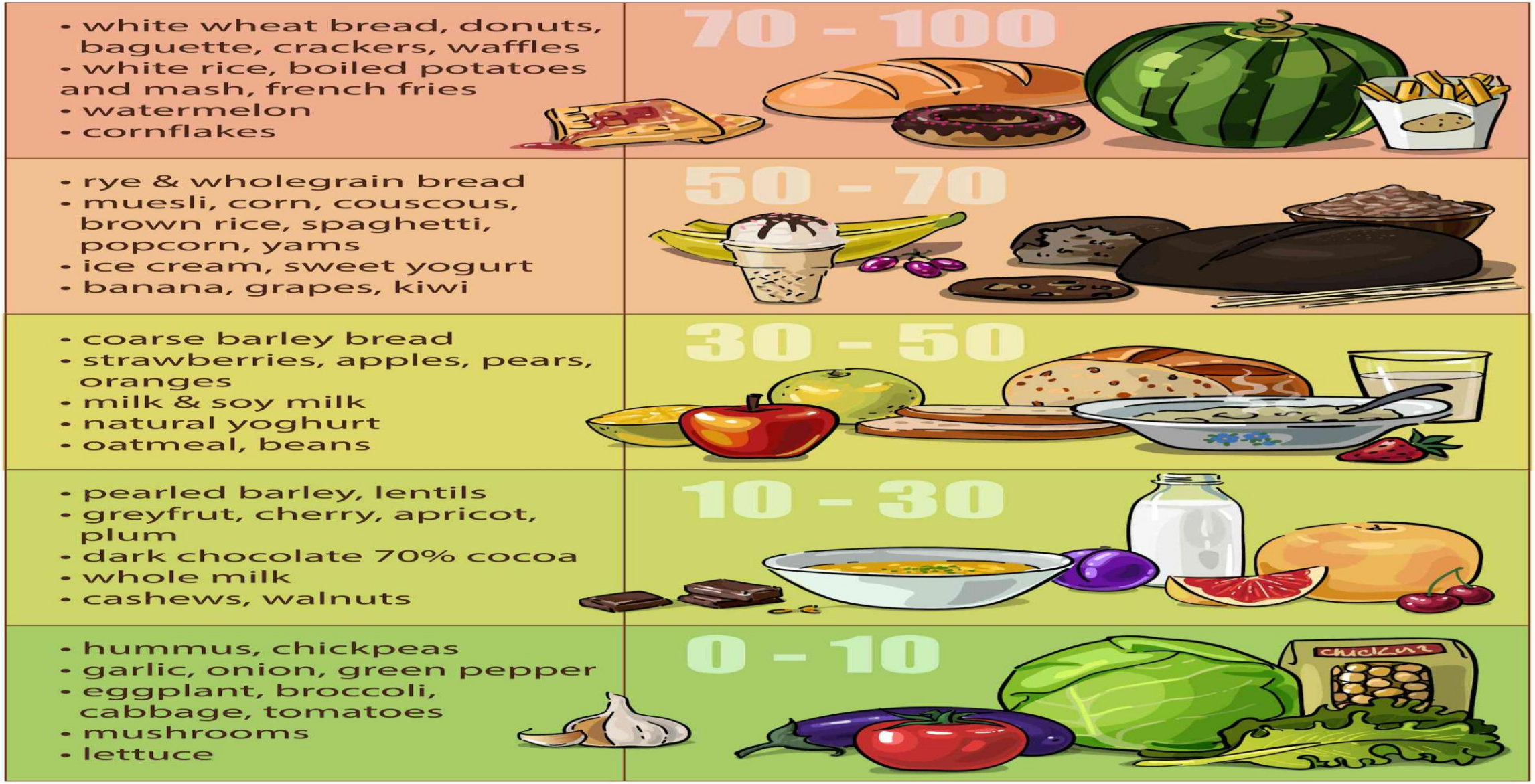
You are What You Eat

The reason to limit sugar intake

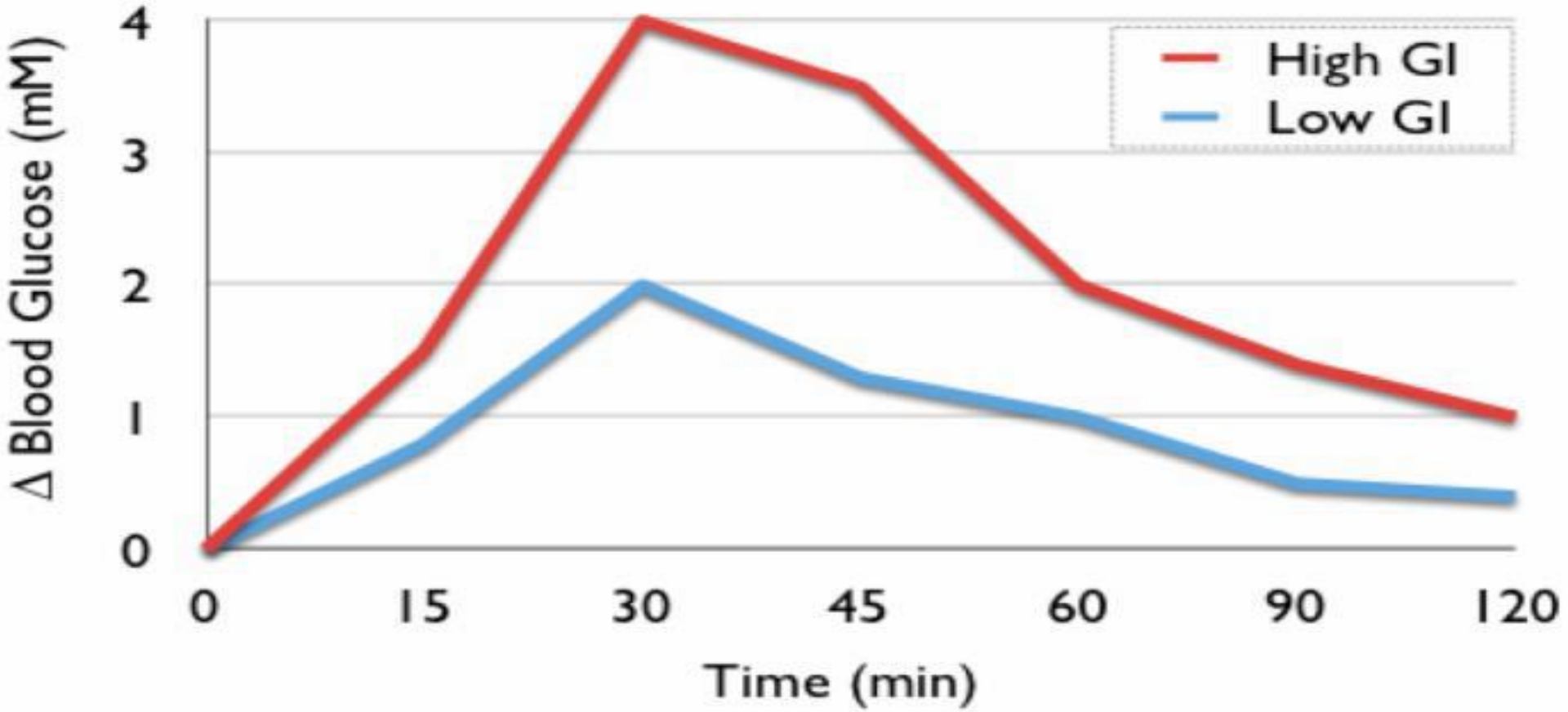
- Two systematic reviews were initially commissioned by WHO to assess the effects of increasing or decreasing intake of free sugars on excess weight gain and dental caries, type 2 diabetes, and cardiovascular disease, which were identified as critical in relation to free sugars intake. However, it was decided that excess weight gain and dental caries should be the key outcomes of concern in relation to free sugars intake. The risk of developing type 2 diabetes and cardiovascular disease is often mediated through the effects of overweight and obesity, among other risk factors.
- Therefore, measures aimed at reducing overweight and obesity are likely to also reduce the risk of developing type 2 diabetes and cardiovascular disease, and the complications associated with those diseases.
- Given the association between excess body weight and type 2 diabetes occurrence, there is rationale to promote a reduction of sugar intake related to type 2 diabetes occurrence.

Source: Geneva: World Health Organization; 2015. ISBN-13: 978-92-4-154902-8

GI examples



Glycemic Index (GI) effects



Disease prevention per GI/GL

- The consumption of high-GI and -GL diets for several years might result in higher postprandial blood glucose concentration and excessive insulin secretion, contributing to the loss of the insulin-secreting function of pancreatic β-cells and lead to irreversible type 2 diabetes.
- Studies have examined the relationship between dietary GI/GL and the incidence of cardiovascular events, especially coronary heart disease (CHD) and stroke.
- The effect of low-GI diets with high fiber content on serum lipid profile reported a significant reduction in total and LDL-cholesterol. High dietary GLs have been associated with increased concentrations of markers of systemic inflammation.
- The consumption of a Mediterranean-style, low-GL diet significantly reduced waist circumference, insulin resistance, systolic blood pressure, as well as plasma fasting insulin, triglycerides, and LDL-cholesterol in metabolic syndrome.
- Studies indicated a higher dietary GI and GL may be associated with increased risks of developing gallstones.

Source: https://lpi.oregonstate.edu/mic/food-beverages/glycemic-index-glycemic-load

Fermented Foods for Gut Health a

- Fermentation has been used as a food preservation process where sugars are broken down by bacteria and yeasts, making the food a great source of probiotics.
- Through the process of fermentation of dairy products, the bacteria help break down the lactose making fermented dairy foods such as kefir, yogurt, and cottage cheese acceptable for individuals with lactose intolerance.
- Pickling is a food preservation process using either an acid such as vinegar or a brine (salty water) to preserve the food. Only pickles fermented with salt, not vinegar, contain probiotics.
- When cooking with fermented foods, add them as a topping or mix them in at the end to avoid killing the beneficial probiotics with high heat.

Source: https://www.umassmed.edu/nutrition/blog/blog-posts/2019/6/fermented-foods-for-gut-health/

Fermented Foods for Gut Health b

- Examples of ethnic fermented foods
  - kefir
  - plain yogurt
  - dry curd cottage cheese, farmer's cheese, or fermented cottage cheese
  - fermented vegetables
  - fermented soyabean cake, tempeh (choose gluten free)
  - miso (refrigerated)
  - pickles (in salt, not vinegar)
  - kimchi
  - kombucha (no sugar)
  - probiotic drinks like apple cider

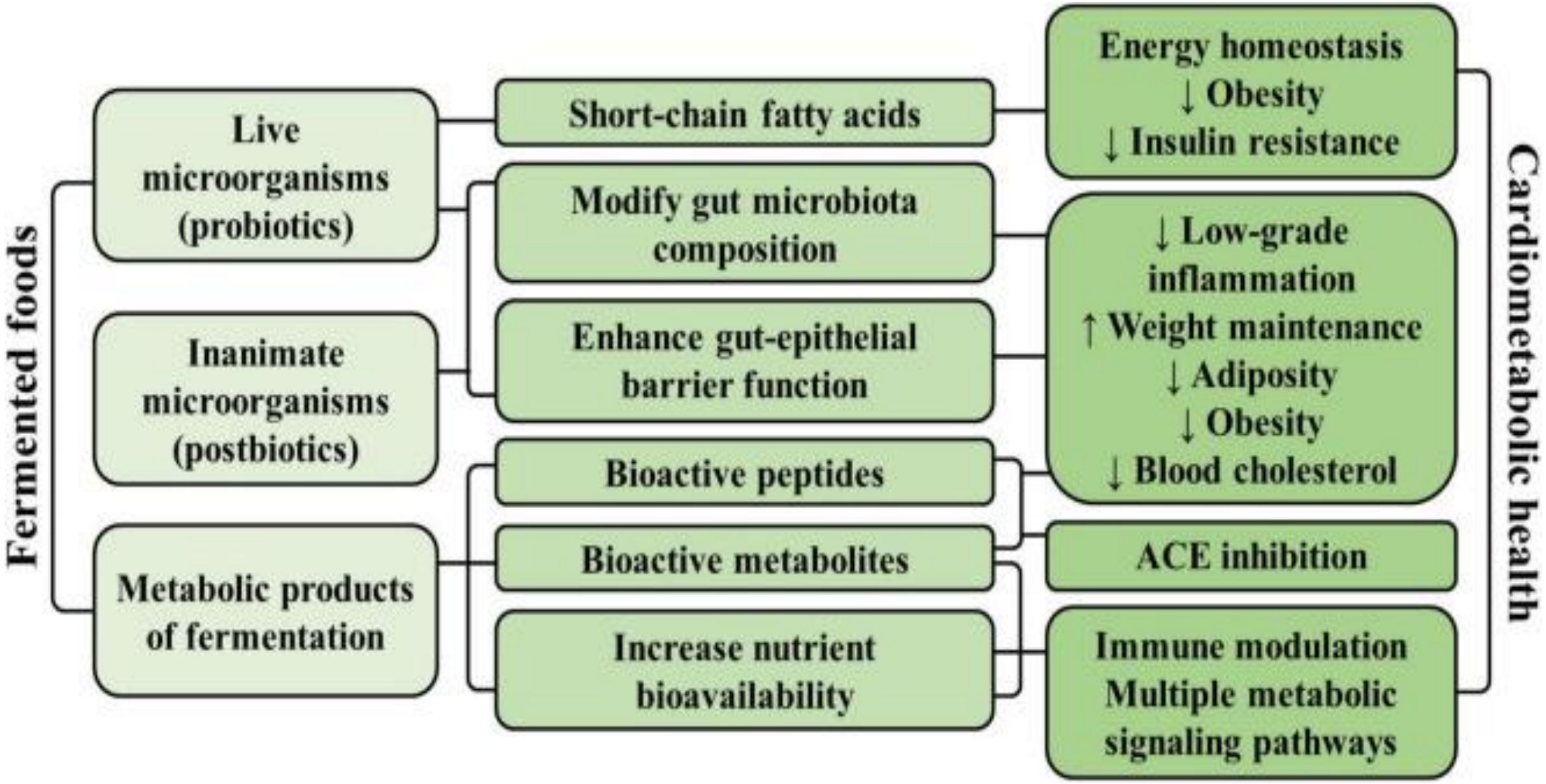
Source: https://www.umassmed.edu/nutrition/blog/blog-posts/2019/6/fermented-foods-for-gut-health/

The proposed mechanisms of fermented foods for cardiometabolic health a

- Recently, the consumption of fermented foods has emerged as an important dietary strategy for improving cardiometabolic health. As a source of live microorganisms, a source of fermentation-derived metabolites, and to enhance the nutritional quality of foods, consumption of fermented foods could benefit cardiometabolic health, yet the mechanisms and evidence are still unclear.
- A peer-reviewed article offered the possible mechanisms between the consumption of fermented foods and cardiometabolic health.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC9530890/

The proposed mechanisms of fermented foods for cardiometabolic health b



Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC9530890/

High consumption of salt-fermented vegetables and hypertension risk

- A12-year follow-up community-based cohort study in Korea began in 2001 investigated the causal relationship between high consumption of salt-fermented vegetables and hypertension risk in 5,932 participants.
- The final analysis indicated that high consumption of salt-fermented vegetables was not shown to be associated with increased risk of hypertension. The trend for increased risk of hypertension was significant only in obese men.

Source: https://pubmed.ncbi.nlm.nih.gov/28582822/

The Dietary Approaches to Stop Hypertension (DASH) diet 1

- In 1992, the National Institute of Health (NIH) started funding several research projects to see if specific dietary interventions were useful in treating hypertension. Subjects in the study were advised to follow the dietary interventions and not include any other lifestyle modifications to avoid confounding factors.
- The project found that the dietary intervention alone could decrease systolic blood pressure by about 6 to 11 mm Hg. This effect was seen both in hypertensive and normotensive people.
- Based on these results, in some instances, DASH has been advocated as the first-line pharmacologic therapy along with lifestyle modification.

Source: https://www.ncbi.nlm.nih.gov/books/NBK482514/

The Dietary Approaches to Stop Hypertension (DASH) diet 2

- DASH promotes the consumption of vegetables and fruits, lean meat and dairy products, and the inclusion of micronutrients in the menu. It also advocates the reduction of sodium in the diet to about 1500 mg/day.
- DASH emphasizes the consumption of minimally processed and fresh food. The DASH diet has many similarities to other dietary patterns promoted for cardiovascular health. A typical serving guide for a patient following the DASH diet is as follows:
  - Vegetables: about 5 servings per day
  - Fruits: about 5 meals per day
  - Carbohydrates: about 7 servings per day
  - Low-fat dairy products: about 2 servings per day
  - Lean meat products: about 2 or fewer servings per day
  - Nuts and seeds: 2 to 3 times per week

Source: https://www.ncbi.nlm.nih.gov/books/NBK482514/

The Mediterranean diet a

- Mediterranean diet is a generic term used to describe the dietary pattern of individuals living in the countries along the coast of the Mediterranean Sea, including Greece, Italy, southern France, Crete, Spain, and parts of the middle east. people would eat what was available to them based on their geography, creating a seasonal variability.
- The Mediterranean diet is primarily a plant-based diet with animal-based products like fish and poultry and a limited quantity of dairy products. While the modern version of the diet utilizes a higher proportion of red meat and processed foods, the diet's primary focus remains the same - plant-based with healthy fats.
- The food choices in the Mediterranean diet are comprised mainly of green leafy vegetables with a variety of legumes, nuts (e.g., walnuts, almonds, pistachios), fresh fruits, and whole grains.

Source: https://www.ncbi.nlm.nih.gov/books/NBK557733/

The Mediterranean diet b

- As a staple in the Mediterranean diet, olive oil is a monounsaturated fat containing alpha-linoleic acid, an omega-3 essential fatty acid, which has been indicated to provide a cardioprotective benefit. Fish and sea animals provide a great source of other omega fatty acids and are another predominant reason for the cardioprotective nature.
- Another important element to acknowledge is the consumption of wine in moderation (specifically red), which has been suggested to provide multiple metabolic benefits. The most reproducible benefit appears to be in lipid metabolism, believed to be attributable to ethanol, but its microconstituents also may play important roles in hemostasis and inflammation.

Source: https://www.ncbi.nlm.nih.gov/books/NBK557733/

The Mediterranean diet c

- The preventative benefits of the Mediterranean diet have been demonstrated throughout studies, suggesting a significantly decreased risk for and lower rates of cardiovascular disease overall, decreased risk for non-alcoholic fatty liver, hypercholesterolemia, and myocardial infarction.
- Given the above protective factors, it is likely the benefits of the Mediterranean diet can be extrapolated to include metabolic syndrome and reducing the development of other health issues, including osteoporosis, inflammatory bowel disease, macular degeneration, kidney stones, dry eye, cancers (breast and colorectal), neurocognitive disorders, and select patients with depression.

Source: https://www.ncbi.nlm.nih.gov/books/NBK557733/

The Mediterranean diet d

- It has become widely recognized that counseling on the importance of dietary changes should include a discussion of the Mediterranean diet. Recommendations from a registered dietician and routine aerobic exercise is likely to be beneficial.
- The specific requirements of a strict Mediterranean diet may be difficult to recommend. The following recommendations resulted in approximately 2200 calories per day with 37% total fat, 18% monounsaturated and 9% saturated, and 33g of fiber per day.
  - Three to nine servings of vegetables
  - One-half to two servings of fruit
  - One to 13 servings of cereals
  - Up to eight servings of olive oil daily
  - Red wine daily in moderation

Source: https://www.ncbi.nlm.nih.gov/books/NBK557733/

Planning cholesterol control with an American Heart Association form

American Heart Association.

Thoughtful Talks with My Health Care Professional:

My LDL Cholesterol Treatment Plan

Bring this sheet to your appointment and discuss the following questions.

Assess Your Risk

- The most recent guidelines from the American Heart Association and the American College of Cardiology recommend that when it comes to LDL (bad) cholesterol, "lower is better" to reduce your risk of a heart attack or stroke.

  If you're healthy, aim for an LDL below 100 mg/dL.

  If you have a history of heart attack or stroke and are already on a cholesterol-lowering medication, your health care professional may aim for your LDL to be 70 mg/dL or lower.

  Working closely with your health care professional can significantly reduce your risk of a heart attack or stroke.

  My LDL Number: _____
- What does my LDL number mean?
- How does my LDL affect my risk of a heart attack or stroke?
- How do I know if LDL cholesterol has caused plaque buildup in my arteries?
- Are additional tests needed?

Review Lifestyle Changes

- Lifestyle changes alone may not be sufficient to lower your LDL cholesterol, but they can certainly decrease your overall risk of heart disease. Discuss your lifestyle changes and goals with your health care professional. Record your goals and if you might need help making these changes.

Physical Activity: ☐ Interested in help

Weight: ☐ Interested in help

Healthy Eating: ☐ Interested in help

Not Using Tobacco Products: ☐ Interested in help

Other: ☐ Interested in help

- Ask your health care professional for information or materials for any "Interested in help" boxes you checked above.

Explore Treatments

- Statins may be right for you if:
  - ☐ your 10-year risk is high.
  - ☐ you've had a heart attack, stroke or blood clots.
  - ☐ you have very high LDL cholesterol levels.
  - ☐ you have diabetes.
- List potential statin side effects.
- Discuss the combination of statin and other medications if you're at high risk.
- If the cost of medicines is a concern, discuss potential out-of-pocket cost and medication assistance programs that may be available.
- **Next appointment date:** _____
- **Medication information**

  Medication name: _____

  Dosage: _____

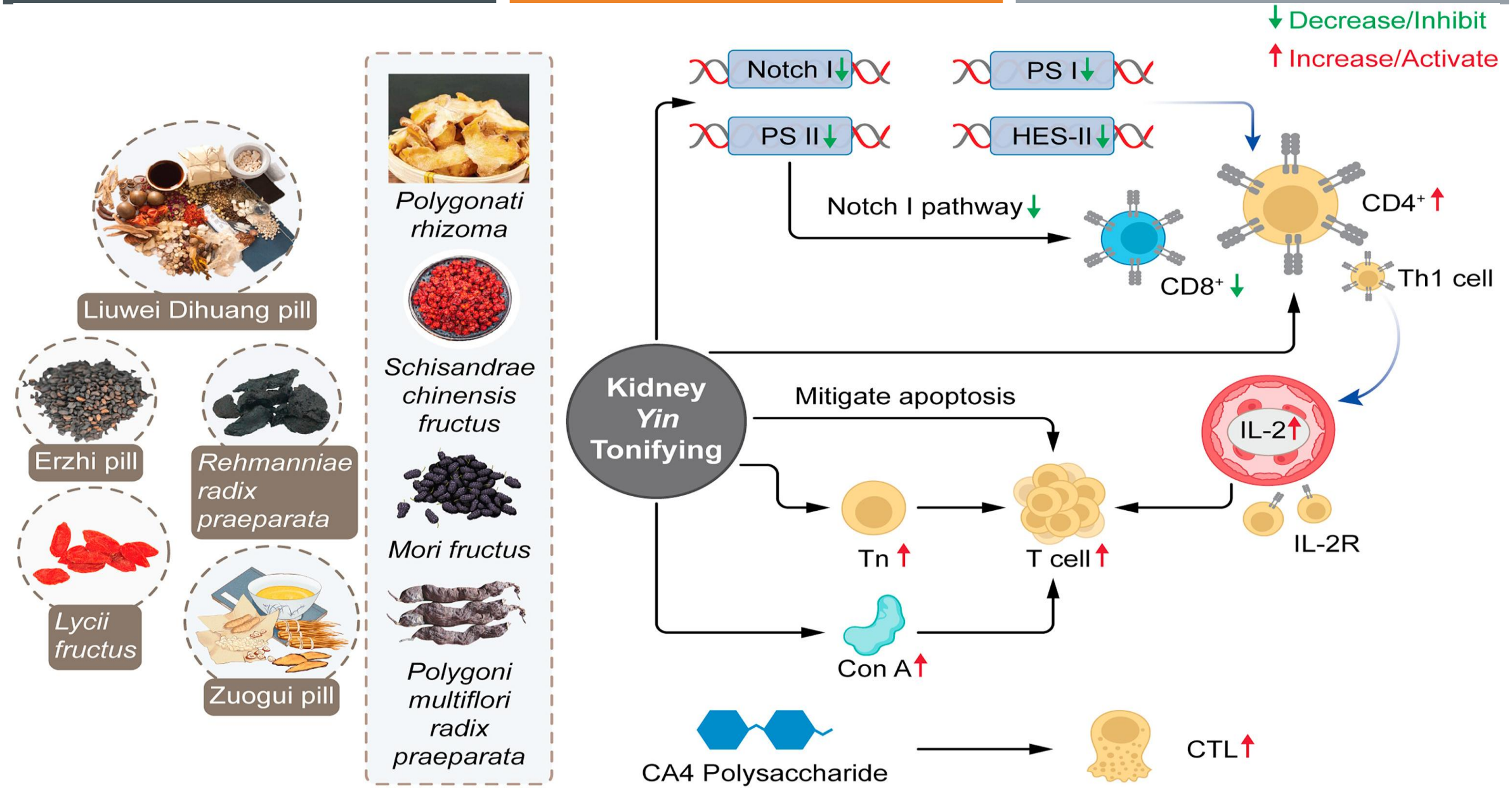
  Frequency: _____

Take the time to ask questions about the things you have discussed. **If you don't understand something, ask for clarification.**

Learn more at heart.org/cholesterol.

https://www.heart.org/-/media/Files/Health-Topics/Cholesterol/Thoughtful-talks-treatment.pdf?sc_lang=en

The anti-senescence immune paradigm: Kidney Yin-Yang equilibrium in TCM – Yin



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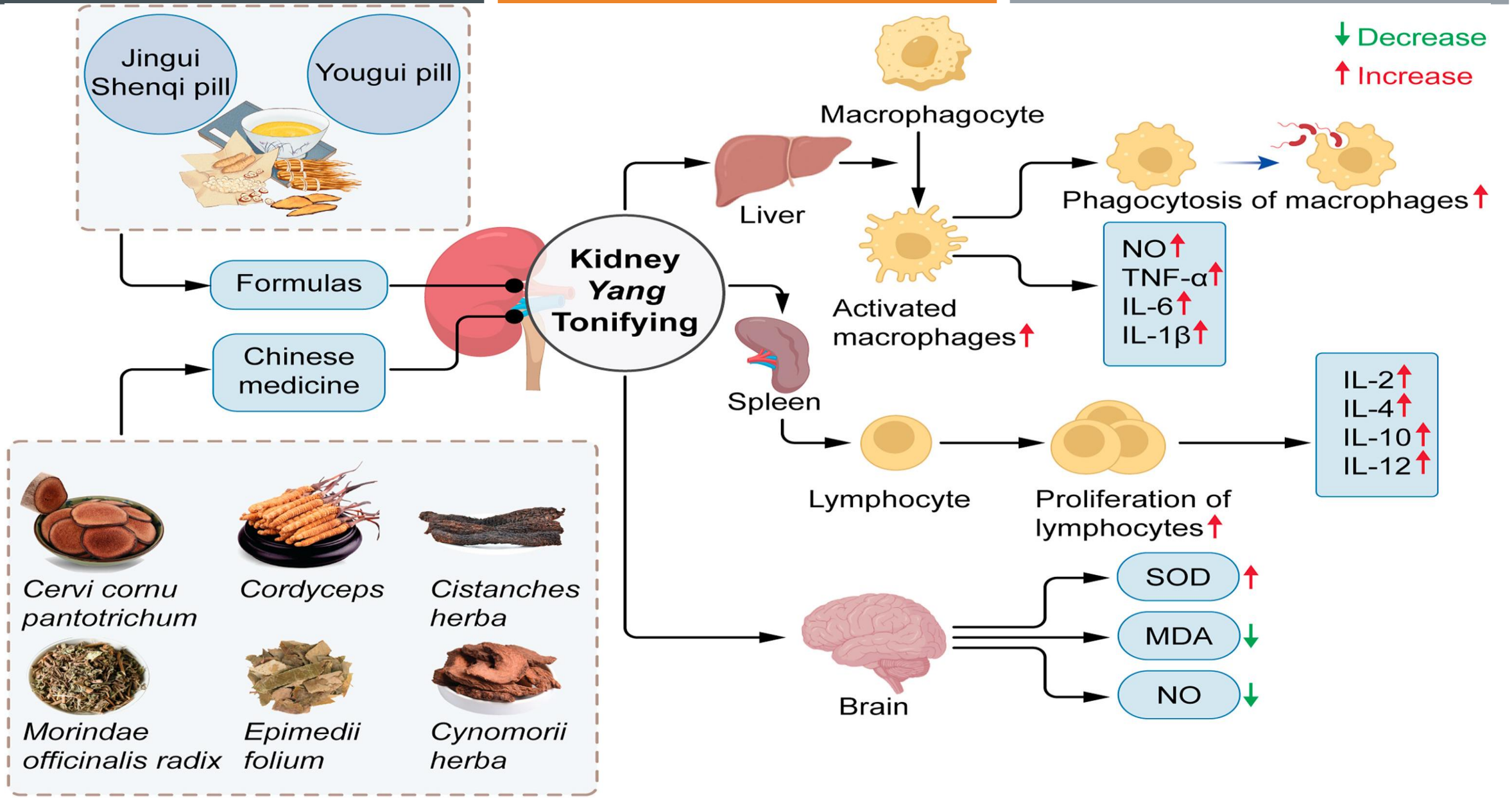
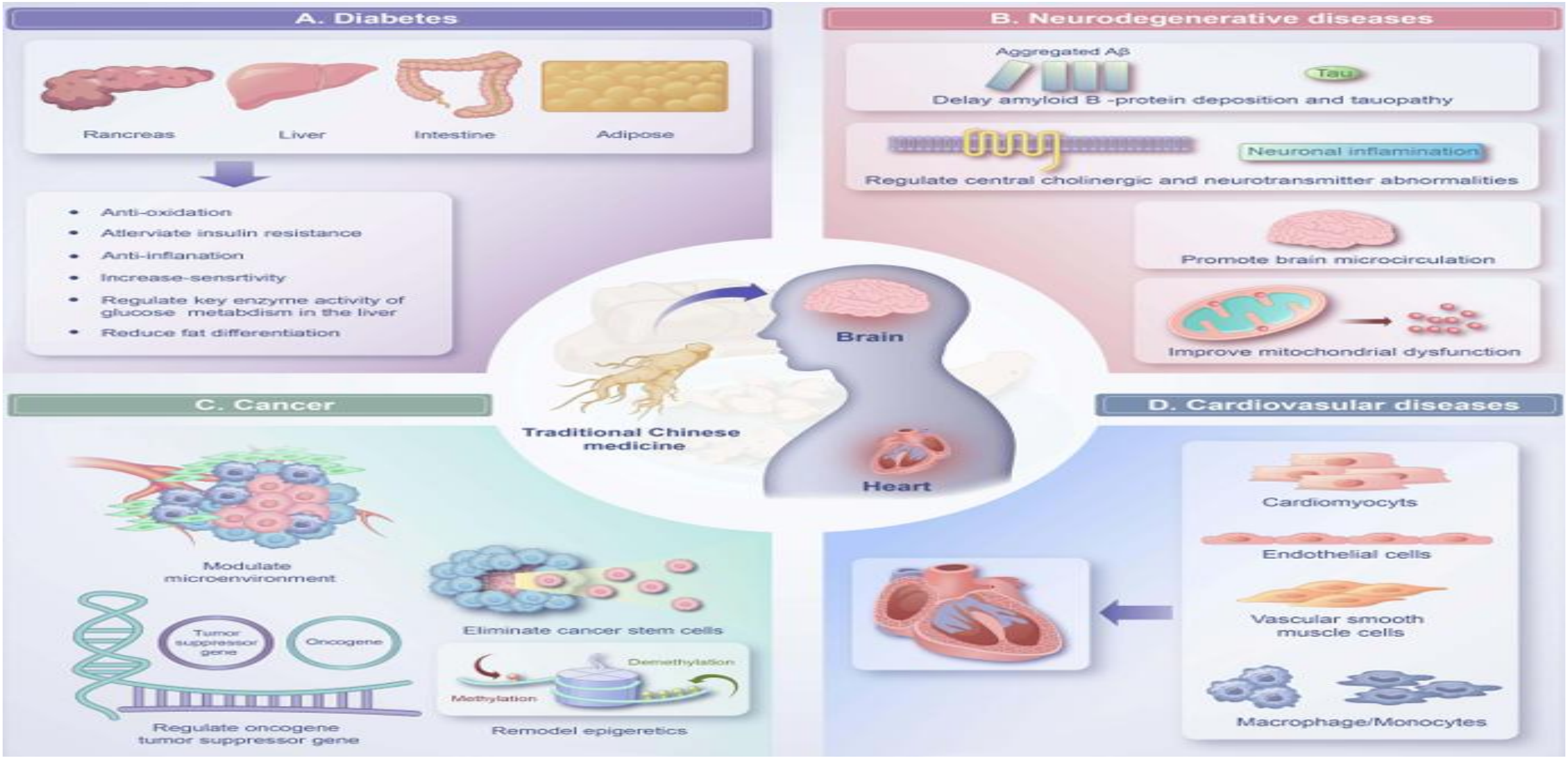
The anti-senescence immune paradigm: Kidney Yin-Yang equilibrium in TCM – Yang



https://www.sciencedirect.com/science/article/pii/S2707368824000232

TCM effects and mechanisms in the improvement of common conditions associated with aging



Source: https://pubmed.ncbi.nlm.nih.gov/38706635/

TCM effects in improving common conditions associated with aging

- The mechanism of TCM in the treatment of diabetes is related to anti-oxidation, alleviate insulin resistance, anti-inflammation, increase insulin sensitivity, regulate key enzyme activity of glucose metabolism in the liver, reduce fat differentiation.
- TCM can delay amyloid β-protein deposition and tauopathy, regulate central cholinergic and other neurotransmitter abnormalities, promote brain microcirculation, improve mitochondrial dysfunction.
- Application of TCM in cancer therapy based on regulate genes (oncogenes and tumor suppressor genes), epigenetic modification (DNA and histone modification), the microenvironment, and cancer stem cells.
- TCM has a protective effect on cardiovascular diseases by attenuating damage in cardiomyocytes, endothelial cells, vascular smooth muscle cells and macrophages/monocytes.

Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC11070163/

Chinese herbs for aging intervention, in terms of pharmacological effects

- *Ginseng* (Renshen) and *Astragalus membranaceus* (Huangqi) the most highly regarded Chinese herbs for invigorating Qi.
- *Ganoderma lucidum* (Lingzhi) for improving immunity.
- *H. cistanches* (Roucongrong) is a 'Yang-invigorating' tonic herb that has been used for chronic renal disease, impotence, female infertility, morbid leucorrhea, profuse menorrhagia and senile constipation.
- *Lycium barbarum* (Gouqi) and *Dendrobium* (Shihu) are described to nourish Yin.
- *Rhizoma coptidis* (Huanglian) and *Scutellaria baicalensis* (Huangqin) are the strongest herbs to clear heat, dry dampness, and eliminate toxins.
- *Panax notoginseng* (Sanqi) and *Ginkgo biloba leaves* (Yinxingye) are for promoting blood circulation to dissipate blood stasis and dredging collaterals to relieve pain.

Source: Source: https://pmc.ncbi.nlm.nih.gov/articles/PMC5758345/

Dietary Advice from The American Diabetes Association (ADA) 2024

https://www.ncbi.nlm.nih.gov/books/NBK279012/

The nutrition goals for those with diabetes

- To promote and support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, to improve overall health and achieve and maintain body weight goals; attain individualized glycemic, blood pressure, and lipid goals; and delay or prevent the complications of diabetes
- To address individual nutrition needs based on personal and cultural preferences, health literacy and numeracy, access to healthful foods, willingness and ability to make behavioral changes, and existing barriers to change
- To maintain the pleasure of eating by providing nonjudgmental messages about food choices while limiting food choices only when indicated by scientific evidence
- To provide an individual with diabetes the practical tools for developing healthy eating patterns rather than focusing on individual macronutrients, micronutrients, or single foods

The nutrition goals for those with diabetes – carbohydrate

- The type and total amount of carbohydrate consumed influences glycemia. The primary goal in the management of diabetes is to achieve as near normal regulation of blood glucose as possible.
- The ADA suggests that carbohydrate intake should emphasize nutrient-dense carbohydrate sources that are high in fiber (at least 14g fiber per 1,000 kcal) and minimally processed.
- Dietary guidelines for diabetes management from the European Association for the Study of Diabetes stress that a wide range of carbohydrate intakes can be appropriate. However, both very high and low intakes are associated with premature mortality.
- Higher intakes of dietary fiber are associated with reduced non-communicable disease and premature mortality occurrence and improvements in body weight, cholesterol concentrations, and blood pressure.
- Eating plans should emphasize non-starchy vegetables, fruits, legumes, and whole grains, as well as dairy products with minimal added sugars.

The nutrition goals for those with diabetes – dietary fiber

- The ADA suggests that adults with diabetes should consume high fiber foods, at least 14g fiber per 1,000 kcal.
- Current recommendations from the European Association for the Study of Diabetes are that adults with diabetes should consume at least 35g dietary fiber per day, or 16.7g per 1,000 kcal.
- Current WHO recommendations for the general population are at least 25g dietary fiber per day and obtaining naturally occurring dietary fiber as consumed in food.
- Higher intakes of dietary fiber are associated with lower all-cause mortality, heart disease, type 2 diabetes incidence, and colorectal cancer when compared with lower fiber intakes by reducing postprandial glycemia, competitive inhibition of saturated fat in the small intestine, and greater satiety leading to reduced subsequent intake, and modulation of the gut microbiota to increase branched and short chain fatty acids.

The nutrition goals for those with diabetes – dietary fats

- The ADA suggests replacing saturated and trans- fats in the diet with mono- and poly-unsaturated fats to lessen the increased risk of cardiovascular disease.
- The WHO recommends limiting the amount of dietary saturated and trans-fat intake, while the Academy of Nutrition and Dietetics recommends that 20% to 35% of total energy should come from fat for healthy individuals, and focus on fat quality and its sources rather than quantity, such as an eating plan emphasizing the Mediterranean eating pattern.
- The American Heart Association encourages replacing high trans-fat partially hydrogenated vegetable oils, animal fats, and tropical oils with healthier oils and foods higher in unsaturated fats, namely monounsaturated and polyunsaturated.
- Former dietary guidelines recommended avoiding or limiting consumption of foods high in cholesterol. Now that it is understood that saturated fat intake has a stronger influence on human cholesterol levels, recommendations focus on reducing saturated fat as the priority.

The nutrition goals for those with diabetes – dietary protein

- The ADA found no evidence that adjusting the daily level of protein intake will improve health in individuals without diabetic kidney disease, and research is inconclusive regarding the ideal amount of dietary protein to optimize either glycemic control or cardiovascular disease risk.
- The National Kidney Foundation recommends 0.8g protein/kg desirable body weight or 10-15% total energy for people with diabetes and chronic kidney disease as a means of reducing albuminuria and stabilizing kidney function. Reducing the amount of dietary protein below 10% total energy is not recommended as it places people at risk of protein inadequacy.
- The ADA recommends that ingested protein can increase insulin response without increasing plasma glucose concentrations for type 2 diabetics. There is emerging evidence to suggest that plant-sourced proteins may be superior for health than meats. Replacement of red meat in the diet with plant-based protein sources (such as beans and legumes) appears to produce health and environmental benefits and cheaper than meats.

Starch and Resistant Starches

- Starch comprises most of the carbohydrates consumed globally and is found in refined cereals, potatoes, legumes, and bananas. In their raw form, most starches are resistant to digestion by pancreatic amylase, but gelatinize in heat and water, permitting rapid digestion. For potatoes, the health effects are largely determined by the cooking method. Fried and salted potatoes were associated with higher incidence of type 2 diabetes and hypertension. Boiled and roasted potatoes were not associated with increased or decreased risk to health.
- The resistant starches are those escape digestion, either naturally or due to food processing, and enclosed within intact cell walls. Some examples of resistant starches are legumes, starch granules in raw potato, or high-amylose containing foods, which can avoid digestion in the small intestine and fermented in the colon by the microbiota. As such, they do not contribute to postprandial glycemia and diabetes risk.

Gluten sensitivity

- A gluten free diet is essential to treat people with celiac disease, which is an inflammatory condition in persons who are intolerant to gluten and suffer inflammatory and gastrointestinal side effects when gluten is consumed, leading to damage of the small intestine.
- It is noted that approximately 10% of people with type 1 diabetes also have celiac disease, which is significantly higher than the 1-2% in the general population. There seems to be no connection between celiac disease and type 2 diabetes, and there is no evidence of health benefits when avoiding gluten for those without celiac disease.
- The gluten free diet has recently grown in popularity in persons who identify as gluten sensitive, but don't have celiac disease.
- Common foods that do not contain gluten are white and sweet potatoes, brown and wild rice, corn, buckwheat, soy, quinoa, sorghum, and legumes, which can be used in place of gluten containing grains.

Vitamins and minerals

- Since type 2 diabetes is a state of increased oxidative stress, interest in recommending large doses of antioxidant vitamins has been high. Current studies demonstrate no benefit of carotene and Vitamins E and C in respect to improved glycemic control or treatment of complications.
- As for the general population, those with diabetes should limit sodium consumption to 2,300 mg/day. Most of the sodium consumed is from processed foods. For those with diabetes and hypertension, additional lifestyle modification beyond reducing sodium intake and nonpharmacological strategies may positively affect glycemia and lipid control.
- Some observational data suggested that higher dietary intake of magnesium may help prevent type 2 diabetes in the middle-aged population at higher risk for developing the disease.
- Several studies have demonstrated a potential role for chromium supplementation in the management of insulin resistance and type 2 diabetes.

Micronutrients and herbs

- There is no clear evidence that dietary supplementation with vitamins, minerals, herbs, or spices can improve outcomes in diabetes management where there are no underlying deficiencies. There is insufficient evidence for dietary supplements to be recommended for the purposes of improving glycemic control.
- People with diabetes should be aware of the necessity for meeting vitamin and mineral needs from natural food sources through intake of a balanced diet. Specific populations, such as older adults, vegetarians or vegans, and individuals on very low energy diets may benefit from a multivitamin mineral supplement.
- Excessive doses of certain vitamin or mineral supplements when there is no deficiency has been shown to be of no benefit and may even be harmful.
- There has been interest in the past several years on the effect of cinnamon, curcumin, and other herbs and spices in individuals with diabetes. The ADA recommendations conclude no enough clear data to substantiate recommending the use of herbs or spices as treatment for type 2 diabetes.

Intermittent Fasting

- There are many suggested types of intermittent fasts, with some involving eating only on specific days, or not eating for a specified number of hours, alternating by day or hours in which food consumption is allowed, restricting energy intake on some days but allowing a more normalized diet on other days, etc. There is no one specific intermittent fasting diet that has been proven to be beneficial.
- Overall, the simplicity of intermittent fasting and time-restricted eating may be useful for people with diabetes who are looking for practical eating management tools.
- For intermittent fasting, current ADA guidance considers time-restricted eating or shortening the eating window adaptable to any eating pattern for adults with type 1 or type 2 diabetes.
- However, for those on insulin or taking other anti-hyperglycemia medications, careful monitoring of blood glucose is required, and medication adjustment may be necessary, as intermittent fasting may lead to hypoglycemia that may become severe when medications are not adjusted down.

The starting-point guidelines

- The initial diabetes meal plan should be based on the individual's normal intake with respect to calories, food choices, and times of meals eaten.
- Monitor A1C, weight, lipids, blood pressure, and other clinical parameters, modifying the initial meal plan as necessary to meet goals.
- It is also important to educate those with diabetes on adjustment of prandial insulin considering premeal glucose levels, carbohydrate intake, and anticipated physical activity.
- For those with diabetes who are overweight and on insulin, counseling on nutrition, weight management, and monitoring blood glucose are equally important.
- Medical nutrition therapy is recommended with continued emphasis on making lifestyle changes to achieve a weight loss of 5% or more to reduce the risk of chronic complications associated with diabetes, CVD, and other risk factors that contribute to early mortality.

Additional information available in MyPlate of the US Department of Agriculture

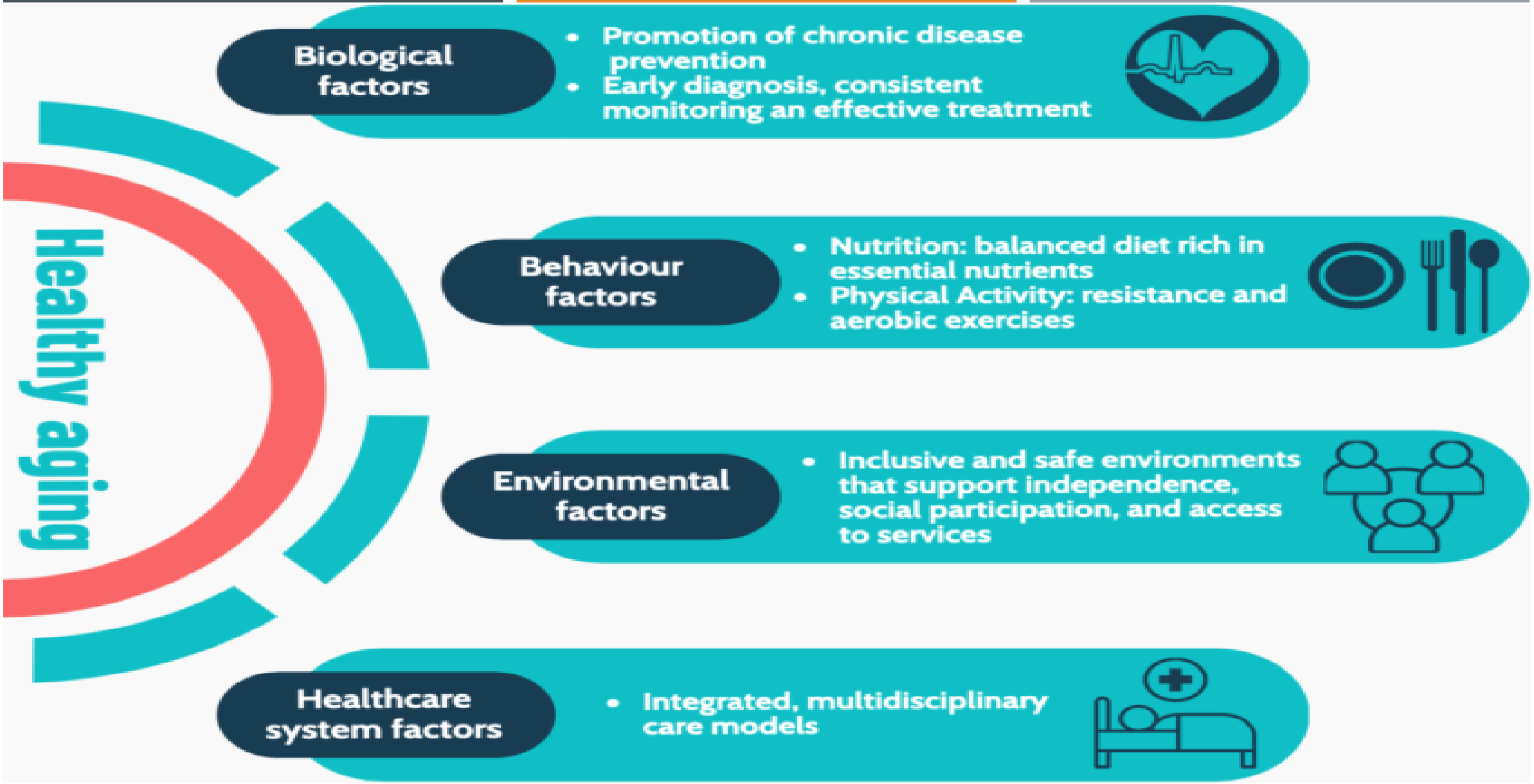
(recorded at least 2,000 years ago)

Source: https://www.myplate.gov/

Take-home notes:
Strategies for Healthy Ageing

Presented by John Fang, L.Ac., DAOM

The holistic health



Strategies to fight against oxidative stress

- Based on available evidence, long-lived individuals display less oxidative damage, particularly lower plasma lipid peroxidation biomarkers than the control groups.
- Synergistic antioxidants from food sources contribute to prevention of oxidative stress.

Sources: https://www.sciencedirect.com/science/article/abs/pii/S0891584919310925

Strategies to fight against chronic inflammation

- Eat to beat inflammation: Anti-inflammatory foods help suppress inflammation levels.
- Get moving: Aerobic exercise lowers inflammation levels.
- Manage weight: Abdominal fat produces pro-inflammatory chemicals.
- Get enough sleep: Inadequate sleep elevates inflammation and harms heart health.
- Stop smoking: It can result in a dramatic reduction in inflammation levels within a few weeks.
- Limit alcohol use: A little alcohol may be helpful but use over the line can provoke inflammation.
- Conquer chronic stress: Chronic stress can spark the development of inflammation and cause flare-ups of problems like rheumatoid arthritis, cardiovascular disease, depression and IBD.

Source: https://www.health.harvard.edu/promotions/harvard-health-publications/fighting-inflammation?utm_source=AdButler&utm_medium=web&utm_campaign=AdButlerFCI2