DECEMBER 19TH 2024

LOG BOOK

How does music affect the heart? / Musical heart beat

Notable effects

The processing of sound begins at the brain stem which controls heart beat and breathing/ respiration

BRAIN STEM

The brainstem is the lowest part of the brain and is made up of the mid - brain and controls things like blood pressure , heart rate and the muscles used in hearing , walking, talking and eating.

MUSIC TRANSPORTED TO THE BRAIN.

Music starts with sound waves entering the ear and is later then transformed into electric signals and these signals are transported by sensory nerves to the brain stem.

The part of the brain that primarily controls heart beat is located

in the medulla oblongataThe medulla oblongata is the brain section responsible for conscious thought and the regulation of involuntary action such as the heart beat. It lies on the brain stem

edge, in the front of the cerebellum.

THE CARDIAC CENTER

<u>The cardiac center regulates heart rate and blood vessel diameter. The cardiac centre, or cardiovascular center, is also part of the medulla oblongata of the <u>brain stem</u>. Normally, the heart beats without nervous control. In some situations, such as <u>exercise</u>, and <u>major</u> trauma, the cardiovascular centre is responsible for altering heart rate</u>

The cardiovascular centre affects changes to the heart rate by sending a nerve impulse to the cardiac pacemaker via two sets of nerves namely:

- sympathetic fibres, part of the autonomic nervous system, to make heart rate faster.
- the vagus nerve, part of the parasympathetic branch of the autonomic nervous system, to lower heart rate.

THE AUTONOMIC NERVOUS SYSTEM

Your autonomic nervous system is a network of nerves throughout your body that control unconscious processes. These are things that happen without you thinking about them, like breathing and your heart beat. Your autonomic nervous system is always active, even when you're asleep, and it's key to your continued survival. Your autonomic nervous system is a part of your overall <u>nervous system</u> that basiclly controls the automatic functions of your body

DECEMBER 28TH 2024 SYMPATHETIC NERVOUS SYSTEM

Your sympathetic nervous system is part of your autonomic nervous system. It could be called your "automatic" nervous system, as it is responsible for many functions that you don't have to think about to control. This can include control of your heart rate, blood pressure, digestion, urination and sweating, among other functions.

Your sympathetic nervous system is best known for its role in responding to dangerous or stressful situations. In these situations, your sympathetic nervous system activates to speed up your heart rate, deliver more blood to areas of your body that need more oxygen or other responses to help your get out of danger.

Without your sympathetic nervous system you could experience a condition called hypoxia .Hypoxia is a condition in which the body or a region of the body is deprived of adequate oxygen supply at the tissue level. Hypoxia may be classified as either generalized, affecting the whole body, or local, affecting a region of the body though hypoxia is often a pathological condition, variations in arterial oxygen concentrations can be part of the normal physiology, for example, during physical exercise.

PARASYMPATHETIC NERVOUS SYSTEM

Your parasympathetic nervous system just like your sympathetic nervous system is also part of your autonomic nervous system and could also be called your "automatic" nervous system, as it's responsible for the functions that you don't have to think about to control. This can include control of your heart rate, blood pressure, digestion, urination and sweating, among other functions.

WHAT IS THE DIFFERENCE

Your sympathetic and parasympathetic nervous systems have opposite but complementary roles. Your sympathetic nervous system carries signals that put your body's systems on alert, and your parasympathetic carries signals that return those systems to their standard activity levels.

Your sympathetic nervous system takes the lead when your safety and survival are at risk, but that system's actions can strain body systems when it's active for too long. Because these two systems offset each other, they help maintain balance in your body.

Your parasympathetic nervous system also manages the activity in organs throughout your body when you feel calm and safe. These functions don't involve risk or danger but are still key in keeping you alive and healthy

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THE VAGUS NERVE

The vagus nerve, also known as the vagal nerves, are the main nerves of your parasympathetic nervous system. Your left and right vagal nerves contain 75% of your parasympathetic nervous system's nerve fibers. These fibers send information between your brain, heart and <u>digestive</u> <u>system</u>.

The vagus nerves are the 10th of 12 cranial nerves

HEART RATE REGULATION

This nerve delivers inhibitory signals to the slnoatrial node slowing down heart rate and maintaining a steady rhythm

WHAT IS THE SINOATRIAL NODE

The sinoatrial node, better known as the sinoatrial or SA node is the key structure responsible for the generation of a regular heartbeat and is therefore often referred to as the pacemaker of the heart. It is the first component of the <u>cardiac conduction system</u> and is composed of specialized <u>cardiac muscle cells</u>, which are bundled together into a node within the right atrium. These cells have the ability of self-excitation, so that the heart is able to contract independently of any extrinsic innervation.

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VAGAL TONE

_High vagal tone is associated with lower heart rate and reduced blood pressure and low vagal to being the vise verser

Music affects the heart through a combination of sensory input, neural processing, hormonal release, and direct cardiovascular changes. The ears, brain, nervous system, endocrine system, lungs, blood vessels, and muscles all work together to modulate heart function in response to music's rhythm, melody, and emotional impact.

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THE END