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Course: Physiology

Class: DPT 4th semester.

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Q1) Write a paragraph on the short term and long term effects of exercise on Cardiovascular system.

Ans) SHORT TERM AND LONG TERM EFFECT OF EXERCISE ON CARDIOVASCULAR SYSTEM:

SHORT TERM EFFECTS:

Short-term effect on cardiovascular system would be increased.

1) **HEART RATE:**

It will increase, because muscles are exposed to work and require more oxygen. Nervous system detects that and gives signal to heart to increase work performance by that pumping more blood.

2) **STROKE VOLUME:**

Because of exercise heart has not only to increase the speed but also to increase the capacity of blood pumped per one pump in to the system.

3) **CARTIAC OUTPUT:**

It will increase about approximately 10 times. From 5L/min (rest mode) to 40L/min (exercise mode). So it produces enough to run body systems and muscles to provide force (contractions)

4) BLOOD PH:

Blood PH (acidity) will be affected to more acidic than regular, because when muscles are exposed to exercise they produce waste products like carbon-dioxide which is acidic.

5) LONG TERM EFFECTS:

Long term effects would be decreased rate in rest mode, because of pressure of exercise rest mode for heart becomes easy and does not require that much of heart rate to supply enough oxygen nutrients to body systems. Also the heart becomes more efficient and less valuable to heart disease like, heart attack. Because hearts ability to deliver nutrients/oxygen is more effective it improves muscles ability to provide work.

Q2) During exercise which hormones are involved and how they respond to exercise?

Answer: Hormones are the chemical messengers employed by the body to carry specific signals to a particular organ or system.

HORMONES INVOLOVED IN EXERCISE AND THEIR RESPONSE:

TESTICULAR HORMONES EXERCISE:

TESTOSTERONE:

Testosterone is a steroid hormone produced by the Leydig cells of the testes in males and the ovaries of females, with small amounts produced by the adrenal glands of both genders. Testosterone is responsible for muscle protein resynthesize and the repair of muscle protiens damaged by exercise, and plays a significant role in helping grow skeletal muscle. Testosterone

works with specific receptor sights and is produced on response to exercise that damages muscle proteins.

ADRENAL CORTEX HORMONES AND EXERCISE:

CORTISOL:

Cortisol is a catabolic steroid hormone produced by the adrenal gland in response to stress, low blood sugar and exercise. It supports energy by facilitating the breakdown of triglyceride and protein to create the glucose necessary to help fuel exercise. Cortisol is released when the body experiences too much physical stress or is not sufficiently recovered from a previous workout. While cortisol helps promote fat metabolism, exercising for too long can elevate levels of cortisol to catabolize muscle protein for fuel instead of conserving it to be used to repair damage tissues.

ADRENAL MEDULLA HORMONES AND EXERCISE:

EPINEPHRINE AND NOREPINEPHRINE:

These amine hormones play an important role in helping the sympathetic nervous system (SNS) produce energy and in regulating the body's function during cardiorespiratory exercise. Classified as catecholamines, epinephrine and norepinephrine are separate but related hormones. Epinephrine, often referred to as adrenaline because it is produced by the adrenal gland, elevates cardiac output, increases blood sugar (to help fuel exercise), promotes the breakdown of glycogen for energy and supports fat metabolism. Norepinephrine performs a number of the same functions as epinephrine, while also constricting blood vessels in parts of the body not involved in exercise.

OTHER HORMONES AND EXERCISE:

INSULIN-LIKE GROWTH FACTOR:

Insulin-like growth factor (IGF) has a similar molecular structure to insulin and is stimulated by the same mechanisms that produce HGH. IGF is a peptide hormone produced in the liver and supports the function of HGH to repair protein damaged during exercise, which makes it an important hormone for promoting muscle growth.

BRAIN-DERIVED NEUROTROPHIC FACTOR:

Brain-derived neurotrophic factor (BDNF) is a neurotransmitter that helps stimulate the production of new cells in the brain. The production of BDNF is closely related to the production of HGH and IGF—the same exercises that elevate levels of those hormones also increase amounts of BDNF. High-intensity exercise can stimulate anabolic hormones for muscle growth while elevating levels of BDNF, which can help improve cognitive function.

ANTERIOR PITUTAY HORMONES AND EXERCISE:

HUMAN GROWTH HORMONE:

Human growth hormone (HGH) is an anabolic peptide hormone secreted by the anterior pituitary gland that stimulates cellular growth. Like all hormones, HGH works with specific receptor sites and can produce a number of responses, including increasing muscle protein synthesis responsible for muscle growth, increasing bone mineralization, supporting immune system function and promoting lipolysis, or fat metabolism. The body produces HGH during the REM cycles of sleep and is stimulated by high-intensity exercise such as heavy strength training, explosive power training or cardiorespiratory exercise at or above the onset of blood lactate (OBLA. the second ventilatory threshold).

PANCREATIC HORMONES AND EXERCISE:

GLUCAGON:

Released in response to low levels of blood sugar, glucagon is produced by the pancreas to stimulate the release of free fatty acids (FFAs) from adipose tissue and increase blood glucose levels, both of which are important for fueling exercise activity. As glycogen levels are depleted during exercise, glucagon releases additional glycogen stored in the liver.

INSULIN:

A peptide hormone produced by the pancreas, insulin regulates carbohydrate and fat metabolism. When blood sugar is elevated, insulin is released to promote the storage and absorption of glycogen and glucose. Insulin helps reduce levels of glucose in the blood by promoting its absorption from the bloodstream to skeletal muscles or fat tissues. It is important to know that insulin can cause fat to be stored in adipose tissue instead of being used to fuel muscle activity. When exercise starts, the sympathetic nervous system suppresses the release of insulin.