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Effect of exercise on cardiovascular system

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Abstract

Purpose of this study is to find out the results of exercises on cardiovascular system. This system play an important role in our body. It delivers all nutrients and O₂ from digestive track and lungs to the tissues of our various organ and waste product excrete throughout the body. Good blood circulation in our body may provide long standing positive effects to our body. It is finding that 3-6 days in a week give work out to our body at least 1 hour for achieve optimal performance to our body. Regular exercises affect the circulatory system positively. It may be short term and long term.

Resting HR ↓se. it shows that athlete heart is more efficient then non athlete. Continue exercise reduces the risk of heart disorder. Blood delivers all nutrients & O₂ more easily. Blood circulation occurs in a systematic way. It involves heart, arteries, capillaries, veins, arterioles, venules etc.

Keywords: Heart, Artries, Veins, Capillaries, Venules, Arterioles, Aerobic, Anaerobic, blood

Introduction

Our body has many systems. Cardiovascular System is one of them which plays an important role in our body.

Cardiovascular system is a systematic series of vessels that transport blood to the tissues from the heart & back to the heart.

Systematic Blood Circulation

Left ventricle of the heart → Aorta → Arteries → Artrioles → Capillaries → Venules → Veins → Inferior & Superior Venacava → Right Atrium of the Heart.

It carries Oxygenated blood from heart to body 7 back deoxygenated blood to the heart.

Pulmonary Blood Circulation

Right ventricle of the heart → Pulmonary Artery → Arterioles → Capillaries + Alveoli → Venules → Pulmonary Vein → Left atrium of the heart.

It transports oxygenated blood from heart to lungs & back oxygenated blood to the heart.

Cardiac Circulation

Heart's muscle itself via coronary Artery.

Key Concept

Heart: The hollow muscular organ that is the center of the circulatory system.

Myocardium: Cardiac Muscle.

Arteries: Blood vessels that transports blood away from the heart.

Arterioles: Smallest Arteries that transport blood Arteries to capillaries.

Capillaries: Smallest vessels between Arterioles & venules.

It is the actual site of exchange of gas between the blood & tissue.

Venules: Vessels that transport blood from capillaries to veins.

Veins: Blood vessels that transport blood from capillaries to veins.

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Venacava: Largest vein.

Blood: It is fluid in human body that delivers necessary substances (O₂ & Nutrients) to the body & waste product away from the body.

Aerobic: Activities in the presence of O₂

Anaerobic: Activit This ies in the absence of O₂

Methods: research paper is based on researcher’s personal observation & critical thinking after the observation of several international books & consern Wikipedia related with cardio vascular fitness & exercises.

Effects of Exercise on Cardio Vascular System

Short term effects

1. Effects on blood flow

Table 1: Distribution of blood at rest & maximal exercise.

Blood supply to organ	Rest	Extreme Exercise
Digestive track	20-25%	4-5%
Cardiac muscle	4-5%	4-5%
Kidneys	20%	3-4%
Bones	3-5%	0.4-1%
Brain	15%	3-4%
Skin	4-5%	6-20%
Skeletal Muscle	15-20%	65-85%

Note: This table is based on personal view of researcher by observation of several books.

2. ↓se viscosity of blood:

Viscosity of blood is approximately 2-5 time more than water. When athlete perform physical activity the thickness of blood is reduce & it flows very fast.

↑se Dilatation of Blood Vessels

Body temperature ↑se is directly proportional to the Blood Vessels size.

3. ↑se in stroke volume

It is the amount of blood exerted by left ventricle in one beat. It is approximately 70ml/ beat at rest of international athlete.

4. ↑se Cardiac output

Stroke volume X beat/minute Average stroke V (70×72) 5 ltr approximately at resting position.

During exercise it ↑se 200×200 = 40 ltr/ minute for a world class athlete.

5. ↑se Heart Rate: During exercise heart rate ↑se normally 72 to 180+ during un aerobic activities.

6. ↑se the temprature of blood

Normally the temp. of blood is 38 °C & during the strenuous exercise in increases 1 °C to 3 °C.

7. Heart working hard during exercise

Long term Effect

1. Hypertrophy of the left ventricle: it is ensure that endurance exercise mainly increase the of left ventricle only but a little effect on the total heart (Cardiac muscle). Anaerobic activities are responsible for the thickness of the layer of the heart.

- ↑se the number of Capillaries: Mainly the aerobic activities are responsible for increasing the number of capillaries.
- Dilatation elasticity ↑se blood vessel for long time causes blood flow easily.
- Reduces the risk of heart disorder: Coronary vessels works more efficient after continuous exercise for long time.
- Resting Heart Rate ↓se: It is noted that world class athlete’s resting HR is approximately 38.
- ↑se the number of blood cells.
- Lowering high blood pressure at rest. It is inversely proportional to the fitness level.
- ↑se the number of myoglobin in the myocardium: myoglobin carries oxygen from the cell membrain to the mitochondria.
- The blood capacity to circulate more O₂.
- ↓se blood lipids.
- Fewer varicose veins
- Diminishes stress related hormones from circulating in the blood.
- Heart works easily.
- Quicker heart recovery rate.

Conclusion

The results of the continuous exercises positively and long term on cardiovascular system. Athlete’s heart is more efficient to work then the untrained heart. Blood delivers all nutrients & O₂ to the tissues and carries out the waste products. If a sports person wants to achieve high & higher level in sports then he/ she must exercised his/her body. To achieve an optimal level of fitness it must be ensure that circulation of blood should be in good condition. Fitness & circulation of blood is directly proportional to each other. Our sports performance depends on our fitness level. If we will do continue exercise then we improve the efficiency of our cardiovascular system. Exercise is part of key components of achieving high level of performance in sports.

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