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 than 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: exercise, cardiovascular system, blood circulation

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 → Arterioles → Capillaries → Venules → Veins → Inferior & Superior Venacava → Right Atrium of the Heart.
It carries Oxygenated blood from heart to body & 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 etc.

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

Introduction
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.
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 & concern Wikipedia related with cardiovascular fitness & exercises.

Effects of Exercise on Cardio Vascular System
Short term effects
1. Effects on blood flow
Distribution of blood at rest & maximal exercise.

<table>
<thead>
<tr>
<th>Blood supply to organ</th>
<th>Rest</th>
<th>Extreme Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestive track</td>
<td>20-25%</td>
<td>4-5%</td>
</tr>
<tr>
<td>Cardiac muscle</td>
<td>4-5%</td>
<td>4-5%</td>
</tr>
<tr>
<td>Kidneys</td>
<td>20%</td>
<td>3-4%</td>
</tr>
<tr>
<td>Bones</td>
<td>3-5%</td>
<td>0.4-1%</td>
</tr>
<tr>
<td>Brain</td>
<td>15%</td>
<td>3-4%</td>
</tr>
<tr>
<td>Skin</td>
<td>4-5%</td>
<td>6-20%</td>
</tr>
<tr>
<td>Skeletal Muscle</td>
<td>15-20%</td>
<td>65-85%</td>
</tr>
</tbody>
</table>

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

2. Decrease 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.

3. Increase Dilatation Blood Vessels:
Body temperature increase is directly proportional to the Blood Vessels size.

3. Increase 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. Increase Cardiac output
Stroke volume X beat/minut Average stroke V (70x72) 5 ltr approximately at resting position. During exercise it increase 200x200 = 40 ltr/ minut for a world class athlete.

5. Increase Heart Rate: During exercise heart rate increase normally 72 to 180+ during an aerobic activities.

6. Increase the temperature 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.

2. Increase the number of Capillaries: Mainly the aerobic activities are responsible for increasing the number of capillaries.

3. Dilatation elasticity increase blood vessel for long time causes blood flow easily.

4. Reduces the risk of heart disorder: Coronary vessels works more efficient after continuous exercise for long time.

5. Resting Heart Rate decrease: It is noted that world class athlete’s resting HR is approximately 38.

6. Decrease the number of blood cells.

7. Lowering high blood pressure at rest. It is inversely proportional to the fitness level.

8. Increase the number of myoglobin in the myocardium: myoglobin carries oxygen from the cell membrane to the mitochondria.

9. The blood capacity to circulate more O2.

10. Decrease blood lipids.

11. Fewer varicose veins

12. Diminishes stress related hormones from circulating in the blood.

13. Heart works easily.

14. 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.

References
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