

Component 1 Long Term Effects of exercise

Skeletal System:

Adaptations

- Increased bone density
- Stronger ligaments and tendons



Explanation:

- Weight bearing activities lead to stronger bones, stronger bones mean that you are less chance of breaks/fractures. There is also less chance of osteoporosis
- Stronger ligaments and tendons mean that joints are more stable so you are less likely to dislocate or an overuse injury of the tendon such as golfer elbow

Muscular System:

Aerobic adaptations

- Hypertrophy of the slow twitch muscle fibres
- Increased myoglobin content
- Increased size of mitochondria



Explanation:

- Slow twitch muscle fibres will get bigger through aerobic exercise, muscular endurance will improve
- An increase in myoglobin means that more oxygen can get to the working muscles for aerobic exercise
- An increase in mitochondria allows us to produce more energy aerobically

Anaerobic adaptations

- Hypertrophy of the fast twitch Muscle fibres
- Increased strength
- Increased tolerance to lactic acid



Explanation:

- Fast twitch muscle fibre will get bigger allowing more strength and power for anaerobic activities
- An increase in strength allows us to produce more force in anaerobic activities
- An increased tolerance to lactic acid allows muscles to carry on working at a high intensity without getting tired

Respiratory System:

Adaptations

- Increased number of alveoli
- Increased strength of intercostal muscles
- Increased strength of the diaphragm
- Increased tidal volume & vital capacity



Explanation

- More alveoli mean that more oxygen and carbon dioxide can be exchanged
- An increase in the diaphragm and intercostal muscles allow the lungs to fully inflate
- An increase in tidal volume and vital capacity allows more oxygen to be taken into the lungs and more carbon dioxide can be removed
- All the adaptations to the respiratory system allow more oxygen to be delivered to the working muscles and for more carbon dioxide to be removed

Cardiovascular System:

Adaptations

- Increased elasticity of the muscular wall of veins and arteries
- Reduced resting blood pressure
- Increase size and strength of the heart (cardiac hypertrophy)
- Increase in resting stroke volume
- Lower resting heart rate
- Increase in maximum cardiac output
- Increased capillarisation
- Increased number of red blood cells
- Faster recovery rate



Explanation

- An increase in the elasticity of veins and arteries reduces your resting blood pressures and have less chance of developing coronary heart disease
- Cardiac hypertrophy of the heart allows more blood to be ejected from the heart in one beat (stroke volume). Because it can pump more blood, resting heart is reduced
- When exercising the heart can pump more blood around the body per minute (cardiac output) This allows more oxygen to be transported to the working muscles and for the removal of carbon dioxide
- More capillaries allow more oxygen to get into the blood / working muscles and the removal of carbon dioxide
- An increase in red blood cells allows the blood to carry more oxygen to the working muscles
- Because the heart is bigger and more efficient, we can recover quicker after exercise