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USP42
Principles of health and fitness

Learning Outcome 2

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Learning Outcome 2:

Understand the effects of exercise on the body

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At the end of this learning outcome, you will be able to:

a) Describe the short and long term affects of exercise on the body systems

b) Describe the blood pooling effect following exercise

c) Identify the types of activities likely to cause delayed onset of muscle soreness

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The following slides are presented by section, a, b & c

a. Describe the short and long term affects of exercise on the body systems

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a. Describe the short and long term affects of exercise on the body systems

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Short Term Effects of Exercise

Cardiovascular System:

- Increased heart rate
- Increased stroke volume – volume of blood pumped out of the left ventricle, during systolic contraction
- Increased cardiac output – volume of blood pumped out of the heart in 1 minute
- Increased blood flow
- Increased blood pressure

Respiratory System:

- Increased breathing rate
- Increased depth of breathing
- Increased gaseous exchange

a. Describe the short and long term affects of exercise on the body systems

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Short Term Effects of Exercise

Skeletal System:

- Increased joint temperature
- Increased mobility

Muscular System:

- Increased muscle temperature
- Increased elasticity
- Muscular contraction – improved strength, endurance, mobility

a. Describe the short and long term affects of exercise on the body systems

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Long Term Effects of Exercise

Skeletal System:

- Increased bone density
- Increased strength
- Increased ligament thickness and strength

Muscular System:

- Increased muscle hypertrophy
- Increased muscle strength
- Increased tendon thickness and strength
- Increased tolerance to lactic acid
- Increased myoglobin – oxygen binding protein
- Increased mitochondria – energy producing cells
- Increased glycogen storage – increasing energy
- Increased capillarisation – improved and increased oxygenation

a. Describe the short and long term affects of exercise on the body systems

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Long Term Effects of Exercise

Cardiovascular System:

- Increased cardiac hypertrophy
- Increased stroke volume – volume of blood pumped out of the left ventricle, during systolic contraction
- Increased cardiac output – volume of blood pumped out of the heart in 1 minute
- Decreased resting heart rate
- Decreased resting blood pressure
- Improved aerobic capacity

Respiratory System:

- Increased surface area of alveoli – increasing gaseous exchange efficiency
- Increased oxygen diffusion rate
- Increased minute ventilation – volume of gas inhaled/exhaled in 1 minute
- Increased efficiency of respiratory muscles
- Increased resting tidal volume – amount of air in and out of the lungs in one respiratory cycle
- Reduced resting respiratory rate

b. Describe the blood pooling effect following exercise

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b. Describe the blood pooling effect following exercise

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Blood pooling affects after exercise

Cause of Blood Pooling in the Lower Extremities:

- Rapid cessation of exercise
- Blood pooling

Decreasing Blood Pooling through Venous Return:

- Skeletal muscle pump
- Non-return valves – within the circulatory system

Associated Risks of Blood Pooling:

- Dizziness
- Fainting

Preventing Blood Pooling:

- Effective, progressive cool down

c. Identify the types of activities likely to cause delayed onset of muscle soreness

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c. Identify the types of activities likely to cause delayed onset of muscle soreness

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Delayed onset muscle soreness (DOMS)

- **Structural Muscle Damage:**
  - Microscopic fibre tears
  - Muscle cell leakage
- **Effects of Eccentric Muscle Contractions/Causal Activities:**
  - Plyometrics
  - Eccentric resistance training
  - Isometric training
  - Downhill running
  - Higher than normal exercise intensity

What next?

- **All sections** of learning outcome 2 for unit USP42 will be assessed in through portfolio evidence.

- Refer to your VTCT Level 3 Diploma in Sports Massage Therapy learner record of assessment handbook for direction.

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