

# Muscles, Exercise and Training

# Starter

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- Interactive activities – PE to 16 – Recap on previous lessons

# Objectives

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- Describe some of the different effects of exercise on muscles
- Describe the difference between Isotonic and Isometric contractions
- Explain two different ways of training a muscle
- Understand how to improve flexibility

# Muscle Speed and Performance

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- Two athletes same age, weight and level of fitness
- X = 75% Fast twitch
- Y = 55% Fast twitch
- X will start faster, accelerate faster and sprint faster than Y
- Therefore X has a better chance of winning

# The Immediate effects of exercise

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- Fatigue = mental or physical exhaustion
- When Fast twitch fibres work maximally for too long they fatigue eg. 400m sprint
- Fatigue is caused by build up of Lactic Acid – waste product
- Slow twitch fibres work for several hours they also fatigue – body runs out of glucose (stored as glycogen)

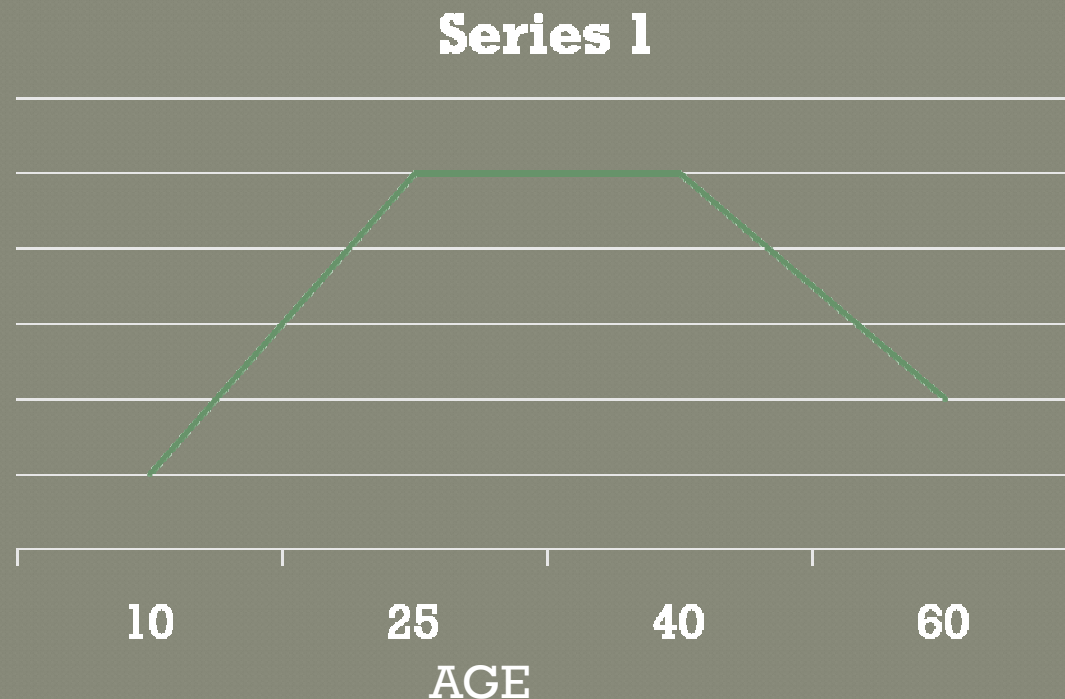
# Muscles and Training

- **Cardiac Muscle**
  - Bigger and Stronger – Hypertrophy
  - More blood is pumped around the body which means more Oxygen reaches the muscles
- **Voluntary Muscles**
  - Bigger and stronger
  - Does the sport need fast or slow twitch fibres?
- **Fast Twitch Fibres**
  - With training they contract more strongly
  - Improve performance in maximum effort sports
- **Slow Twitch Fibres**
  - With training and diet you can train your muscles to store more glycogen, and get used to using fat as an energy source.

# Training, everyday life and Long Term Benefits

- Strength work and stamina helps hearts and muscles become stronger and fitter
- Muscle training important for older people

IF YOU DO NOT  
USE IT LOSE IT!!!!



# Muscle training and flexibility

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- Poor flexibility = poor performance
- Combine strength and flexibility training
- Strength training without flexibility = “muscle bound”
  
- Flexibility training important for the elderly as tendons and ligaments become less elastic = injury and restricted movement



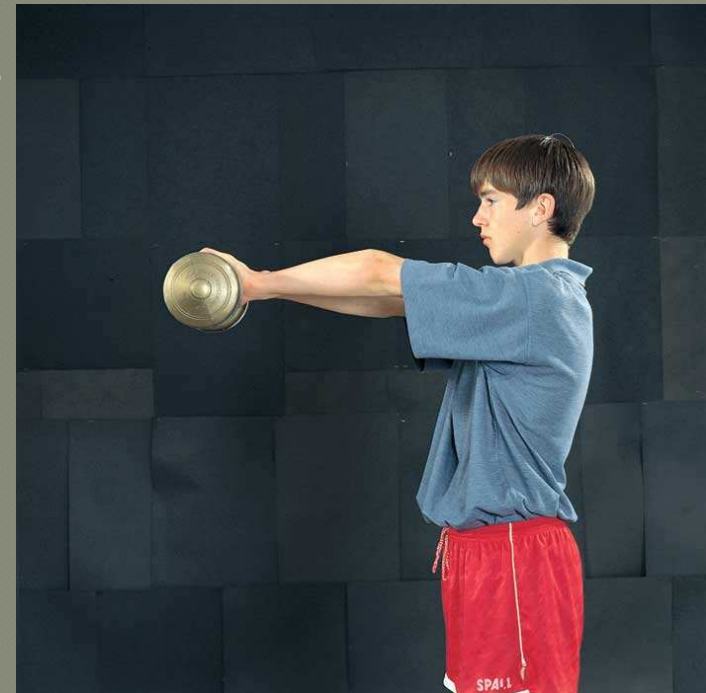
# Isotonic Training

- Bend arm at elbow, Bicep Contracts (shortens)
- Also called Dynamic Contractions
- Isotonic training = isotonic contractions to improve strength and endurance – press ups, chin ups, and weight lifting



# Isometric Training

- Muscles contract but stay the same length
- Also called Static Strength
- Rugby scrum, gymnastics



# Improving Flexibility

- Stretching
- Static – muscle is held in stretched position for 10-20 seconds



- Active – You do the work and stretch as far as is possible



- Passive – Your partner does the work

