



Year 10:

Chapter 1: Applied Anatomy and Physiology

Chapter 2: Movement Analysis

Chapter 3: Physical Training

Year 11:

Chapter 4: Sports Psychology

Chapter 5: Socio-cultural Influences

Chapter 6: Health, fitness and well-being

# Chapter 3: Physical Training

- 3.1: Health and Fitness
- 3.2: The Components of Fitness
- 3.3: Fitness Testing
- 3.4 – 3.14: Measuring the Components of Fitness
- 3.15: The Principles of Training
- 3.16: Training Thresholds
- 3.17: Types of Training
- 3.18: Preventing Injury
- 3.19: Training Seasons
- 3.20: Warming up and Cooling down



## 3.1 Health and Fitness





## Learning Objectives

- |              |                                                                |
|--------------|----------------------------------------------------------------|
| <b>All:</b>  | <b>To know the definitions of 'Health' and 'Fitness'</b>       |
| <b>Most:</b> | <b>To understand what is meant by being physically healthy</b> |
| <b>Some:</b> | <b>To know the relationship between health and fitness</b>     |

### 3.1 Health and Fitness



On your whiteboard write down  
what you think the definitions  
for Health and Fitness are



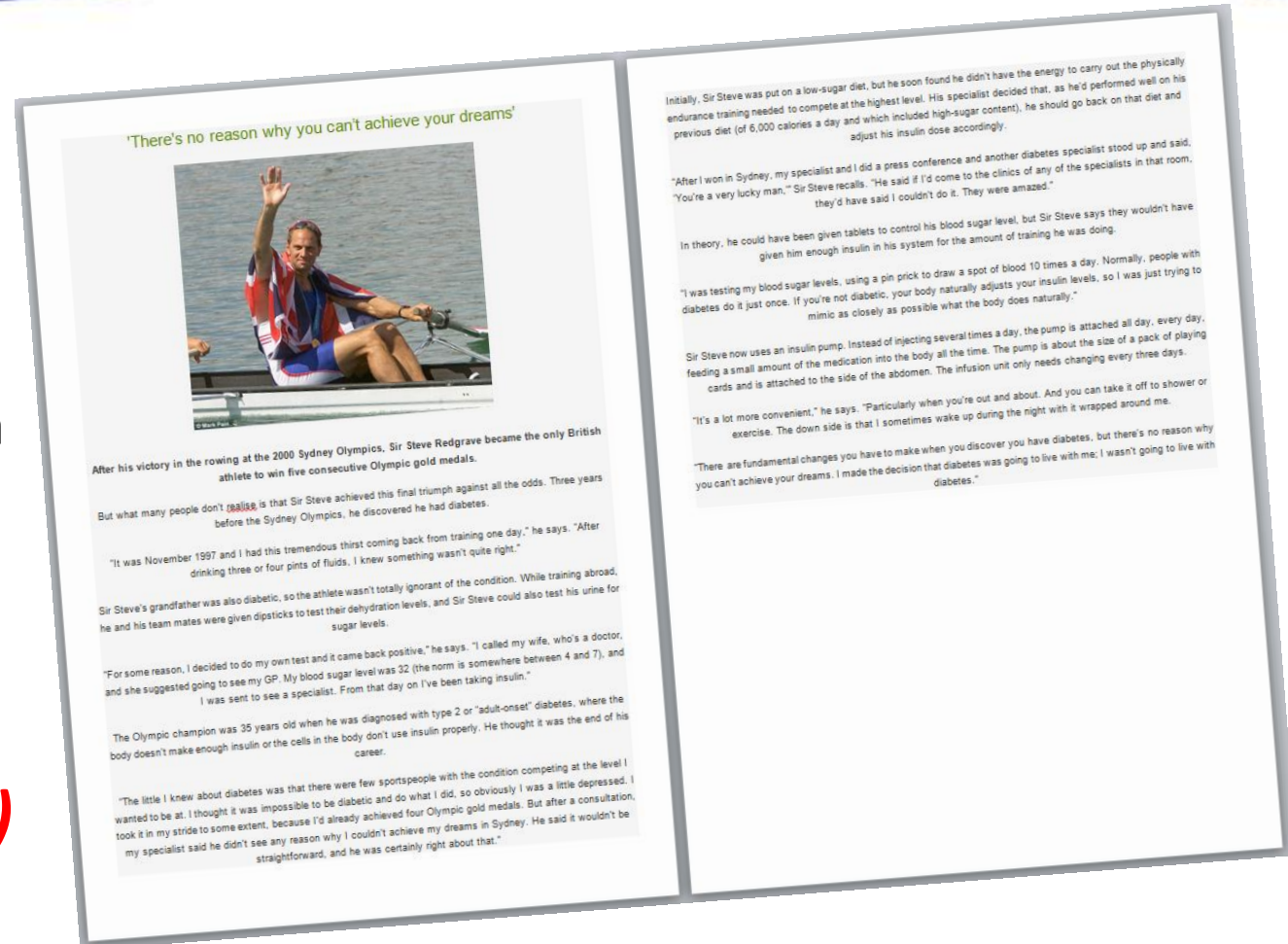


Silently read through the Steve Redgrave article



Think about the following question and be prepared to share your thoughts:

***Is it possible to be fit when you are unhealthy? (Page 44)***





KEYWORDS



# HEALTH

A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity

KEYWORDS



# FITNESS

The ability to meet, or cope with, the demands of the environment



# HEALTH + FITNESS

What is the relationship?



THINK  
PAIR  
SHARE



Remember this? →



On your whiteboard write down what you think the definitions for Health and Fitness are

PLENARY  
SESSION

*Now go back to your whiteboards and correct your original definitions with what you have learnt this lesson*

## Learning Objectives

- All: To know the definitions of 'Health' and 'Fitness'
- Most: To understand what is meant by being physically healthy
- Some: To know the relationship between health and fitness

### 3.1 Health and Fitness



## 3.2 The Components of Fitness



## Learning Objectives

- |              |                                                              |
|--------------|--------------------------------------------------------------|
| <b>All:</b>  | <b>To know the Components of Fitness</b>                     |
| <b>Most:</b> | <b>To define each Component of Fitness</b>                   |
| <b>Some:</b> | <b>To give a sport example for each Component of Fitness</b> |





Fitness for sport and physical activity can be broken down into ten components – using the worksheet provided can you guess what the 10 components are from the pictures?





**AGILITY**

**BALANCE**

**SPEED**

**STRENGTH**

**COORDINATION**

**MUSUCLAR ENDURANCE**

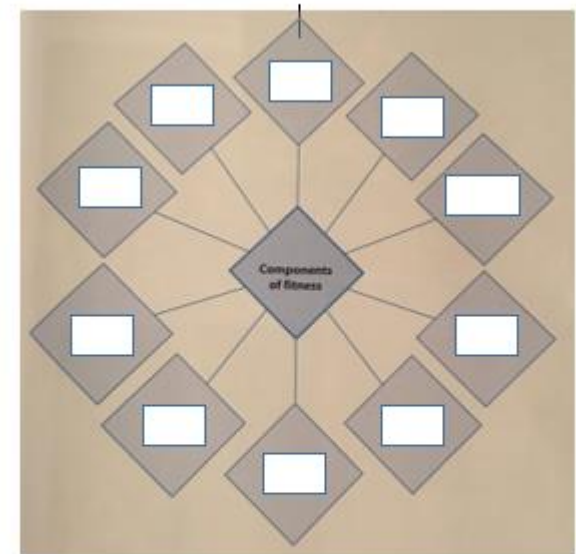
**FLEXIBILITY**

**CARDIOVASCULAR ENDURANCE**

**REACTION TIME**

**POWER**

### 3.2 The Components of Fitness



Class Mnemonic to remember the 10  
Components of Fitness:

# AGILITY:



The ability to move and change direction quickly, at speed, while maintaining control

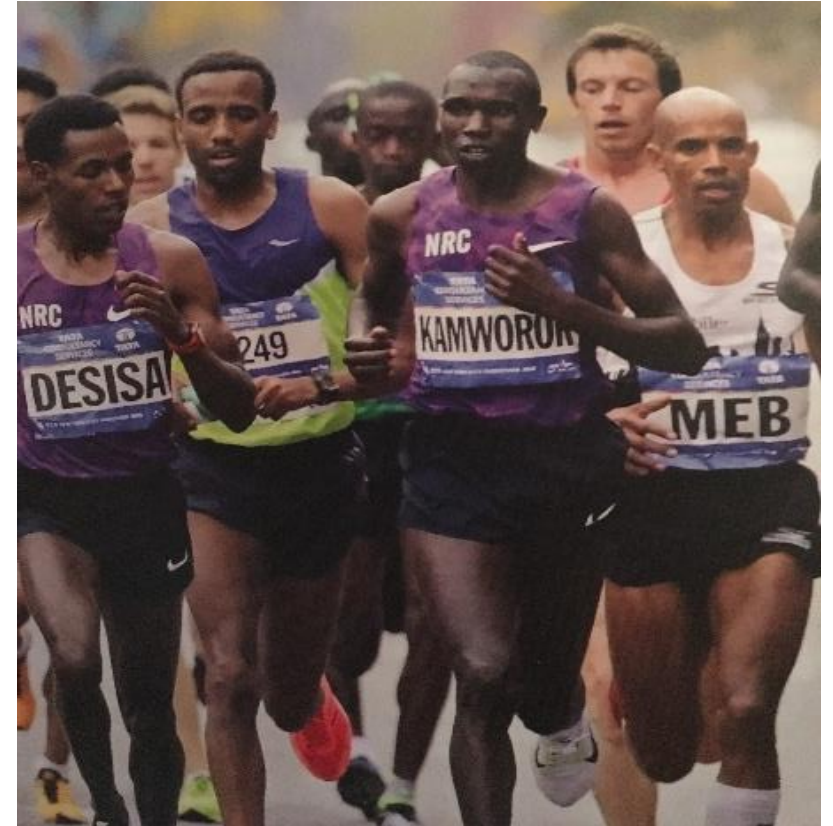




# Cardiovascular Endurance:



Often referred to as 'aerobic power'. It is the ability of the heart and lungs to supply oxygen to the working muscles



# COORDINATION:



Is the ability to use two or more different parts of the body together, smoothly and efficiently





# FLEXIBILITY:



Refers to the range of movement possible at a joint



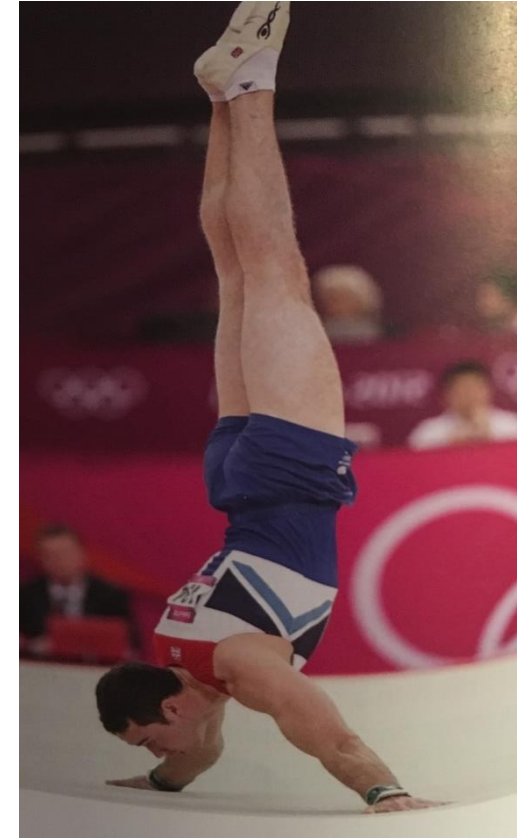
# BALANCE:



The ability to keep the body stable by maintaining the centre of mass over the base of support.

There are 2 types

1. Static Balance : Little or no movement
2. Dynamic Balance : When movement takes place during a balance





# Muscular Endurance:



The ability of a muscle or muscle group to undergo repeated contractions, avoiding fatigue. Fatigue is a feeling of extreme or severe tiredness due to a build up of lactic acid in the muscles or working for long periods of time

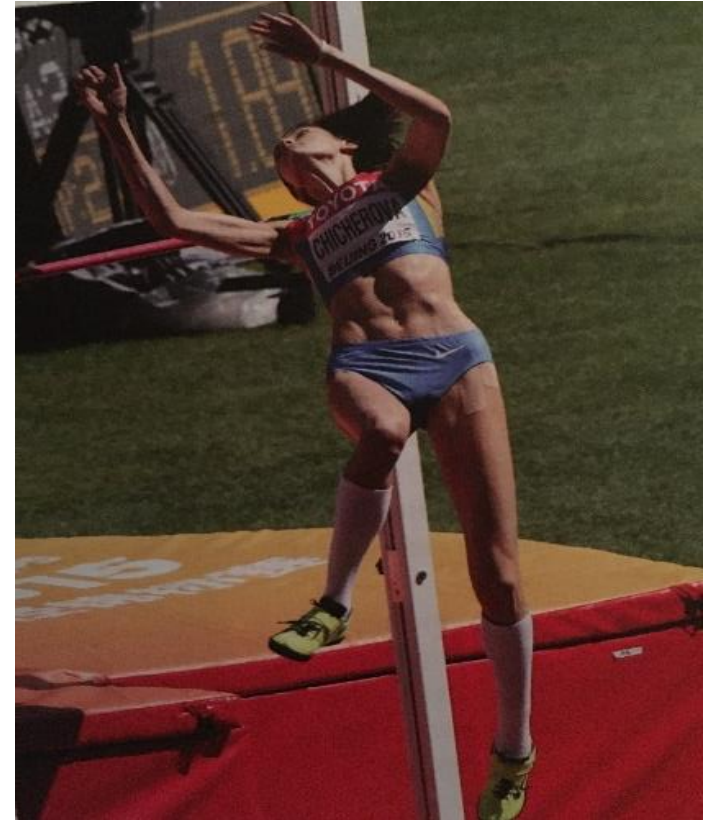


# POWER:



Is the product of strength and speed.

$$\text{Power} = \text{Strength} \times \text{Speed}$$



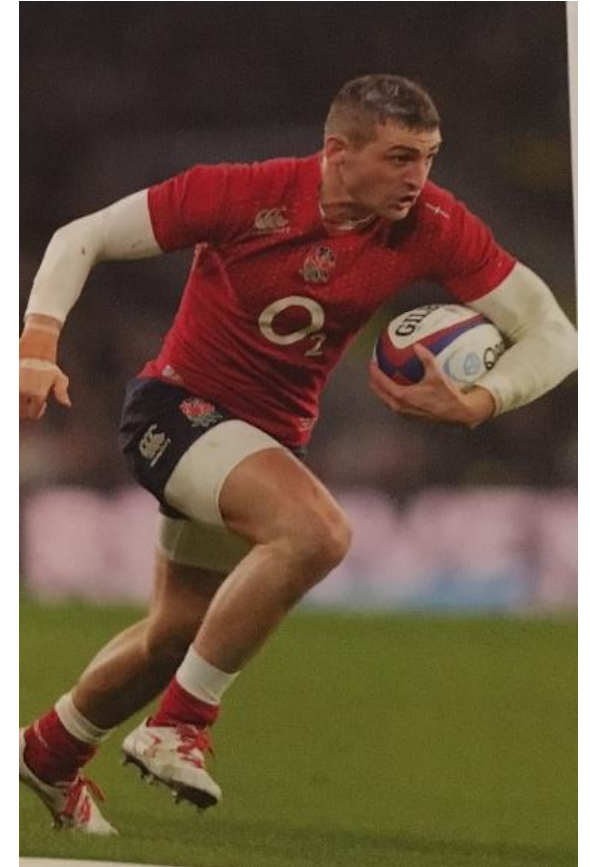


# SPEED:



The maximum rate at which an individual is able to perform a movement or cover a distance in a period of time, putting their body parts into action as quickly as possible

$$\text{Speed} = \text{Distance} / \text{Time}$$



KEYWORDS



# STRENGTH:

The ability to overcome resistance

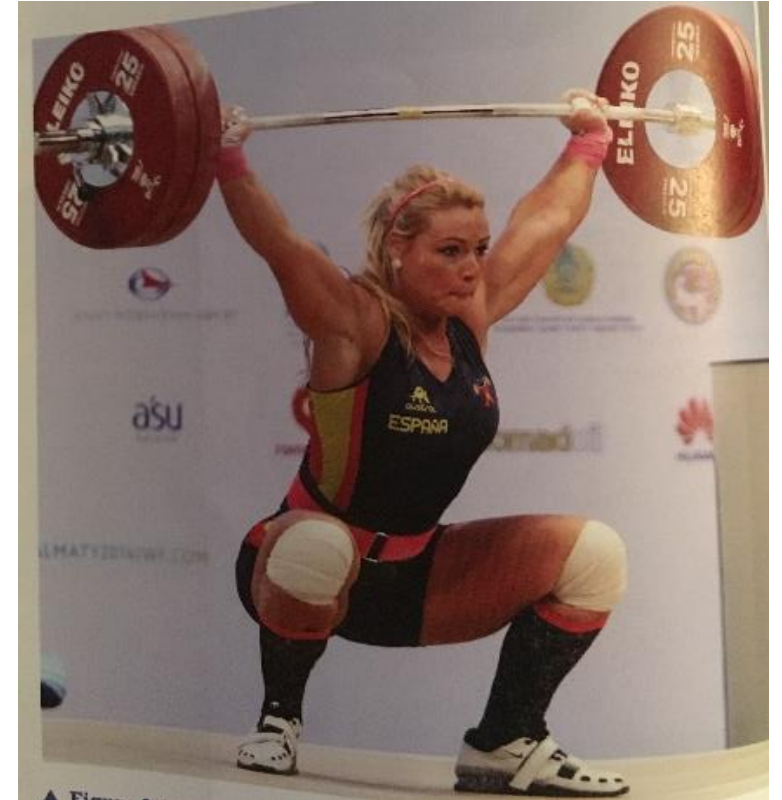
4 types of strength:

**Maximal strength**: Greatest force possible in a single maximum muscle contraction

**Static strength**: The amount of force exerted on an object you cannot move

**Explosive strength**: The amount of force exerted in one quick muscle contraction

**Dynamic strength**: The amount of force that can be exerted repeatedly by a muscle





# REACTION TIME:



The time taken to start responding to a stimulus; the time between the initiation of the stimulus and the performer starting to respond





## CLASSROOM DISCUSSION



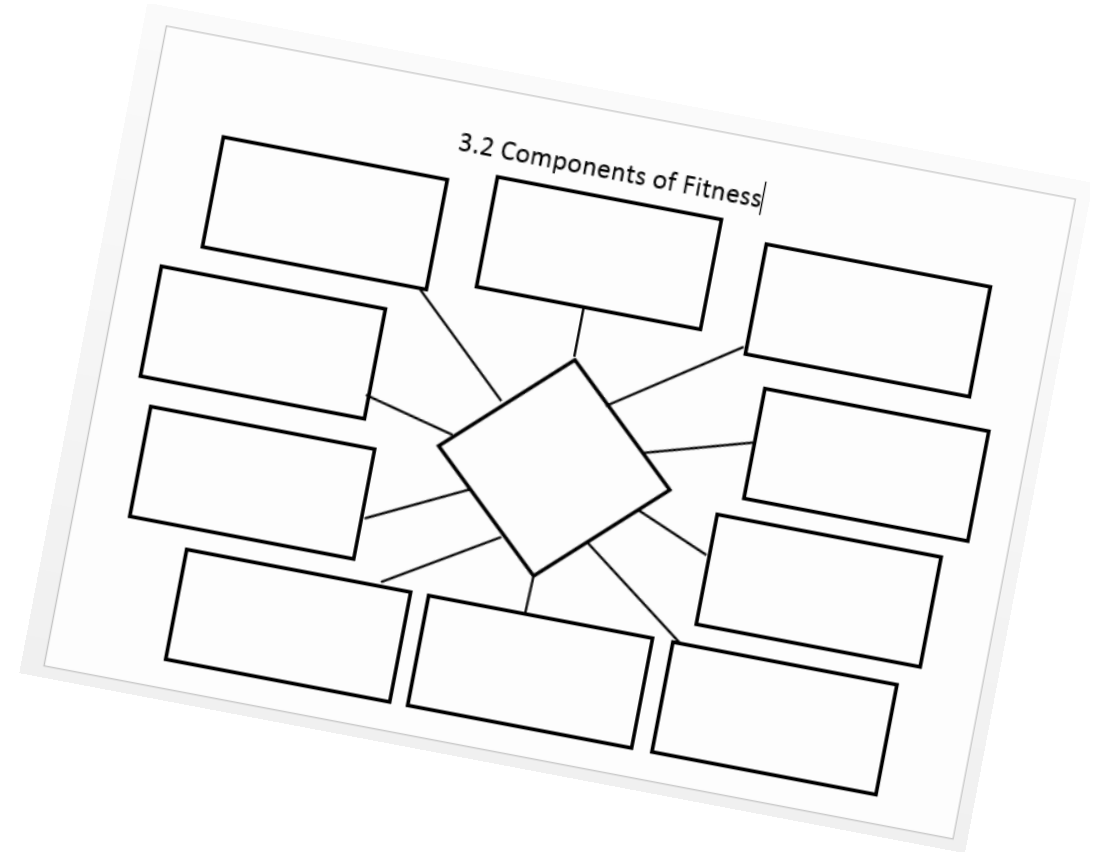
The teacher will call out each component of fitness. Using your whiteboards write down a sport example where the specific component of fitness is evident and justify your answer!



PLENARY  
SESSION



Using a Sport of your choice, explain and give specific examples of how each component of fitness is used in your chosen sport



## Learning Objectives

- All:** To know the Components of Fitness
- Most:** To define each Component of Fitness
- Some:** To give an example for each Component of Fitness



## 3.3 – 3.14 Fitness Testing



## Learning Objectives

- |              |                                                               |
|--------------|---------------------------------------------------------------|
| <b>All:</b>  | <b>To understand the purpose of fitness testing</b>           |
| <b>Most:</b> | <b>To know and explain how to carry out each fitness test</b> |
| <b>Some:</b> | <b>To link each test to the components of fitness</b>         |





Fitness Testing is used to measure a person's level of fitness in one or more of the ten components of fitness.

What do you think are the 4 main reasons for carrying out fitness tests?

# Reasons for Fitness Testing (page 52)

- Identifying strengths and weaknesses to inform training requirements
- Motivation
- Establishing a starting level of fitness and monitoring improvement
- Providing variety





# Quantitative and Qualitative Data

**Quantitative data:** Data that focuses on measuring things and involves numbers. Quantitative data involves facts and, therefore, gives you an objective answer to your question.

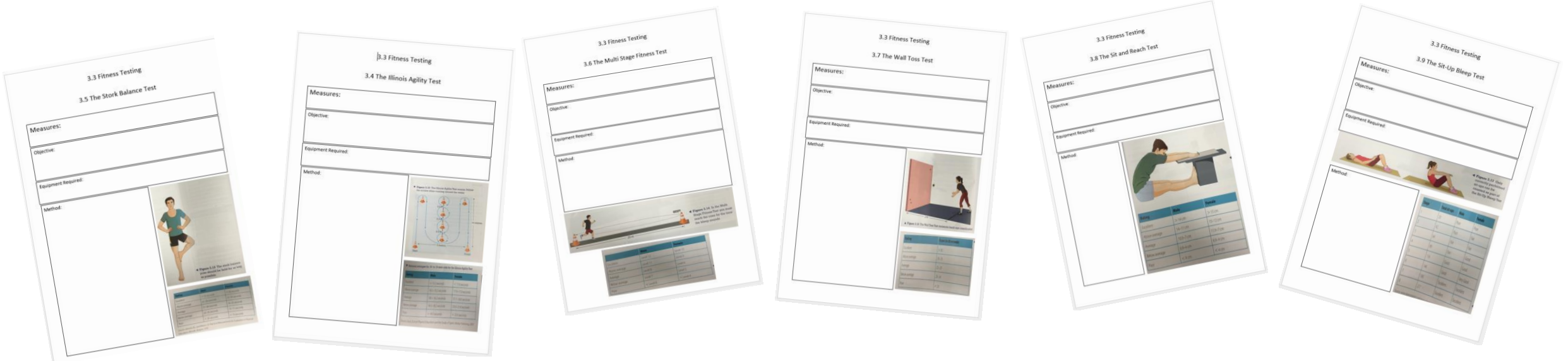
**Qualitative data:** Data that focuses on understanding things; it involves descriptions about people's opinions, about the way they feel, think and behave. Analysing qualitative data gives you a subjective answer to your question.



Complete the Activity on Page 54



Using the Fitness Test worksheets and the exercise books... fill in the gaps using pages 55 - 65







# Keywords

## Rush -

Draw a table  
like below

PLENARY  
SESSION

| Keyword – Fitness Test (10 seconds) | What does it measure? (20 seconds) | What is the objective of the test? (30 seconds) |
|-------------------------------------|------------------------------------|-------------------------------------------------|
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |
|                                     |                                    |                                                 |

## Learning Objectives

- All:** To understand the purpose of fitness testing
- Most:** To know and explain how to carry out each fitness test
- Some:** To link fitness to the components of fitness



## 3.15 The Principles of Training



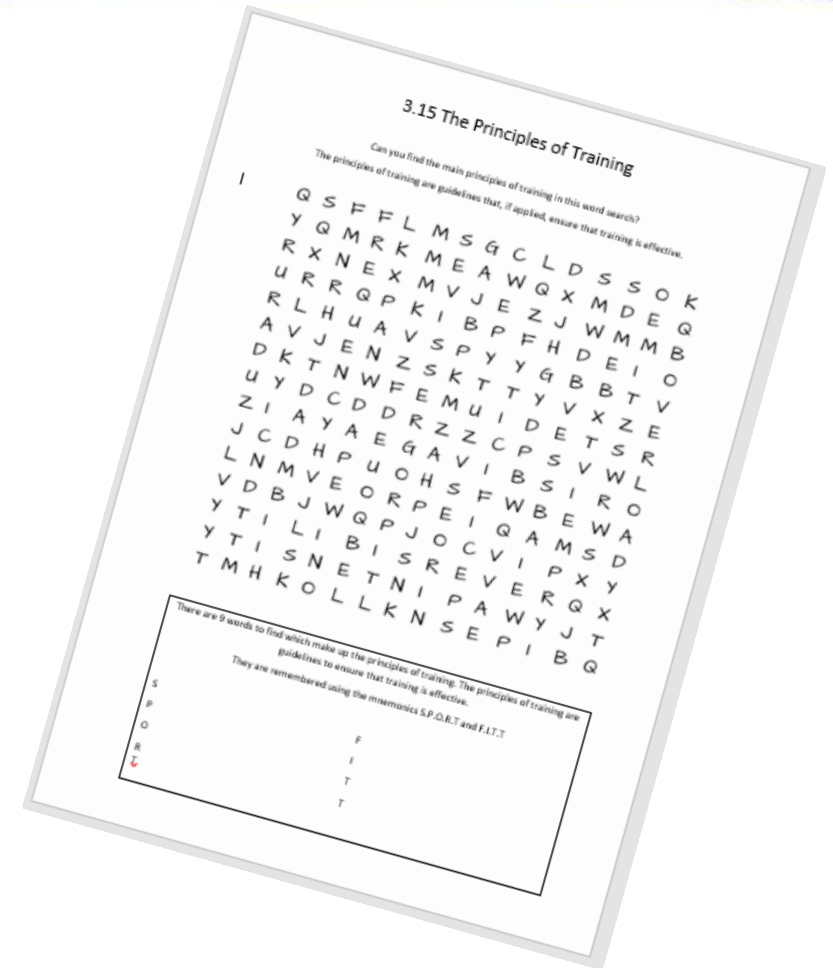
## Learning Objectives

- |              |                                                                 |
|--------------|-----------------------------------------------------------------|
| <b>All:</b>  | <b>To identify the principles of training</b>                   |
| <b>Most:</b> | <b>To define the principles of training</b>                     |
| <b>Some:</b> | <b>To relate the principles of training to a specific sport</b> |





Complete the  
starter word search  
with the aim to find  
out what the  
principles of  
training are!



# S.P.O.R.T

**S**pecificity

**P**rogressive **O**verload

**R**eversibility

**T**edium

The principles of training are guidelines that, if applied, ensure that training is effective

KEYWORDS







F.I.T.T

**F**requency

**I**ntensity

**T**ime

**T**ype

The F.I.T.T principle is used to increase the amount of work the body does in order to achieve overload.

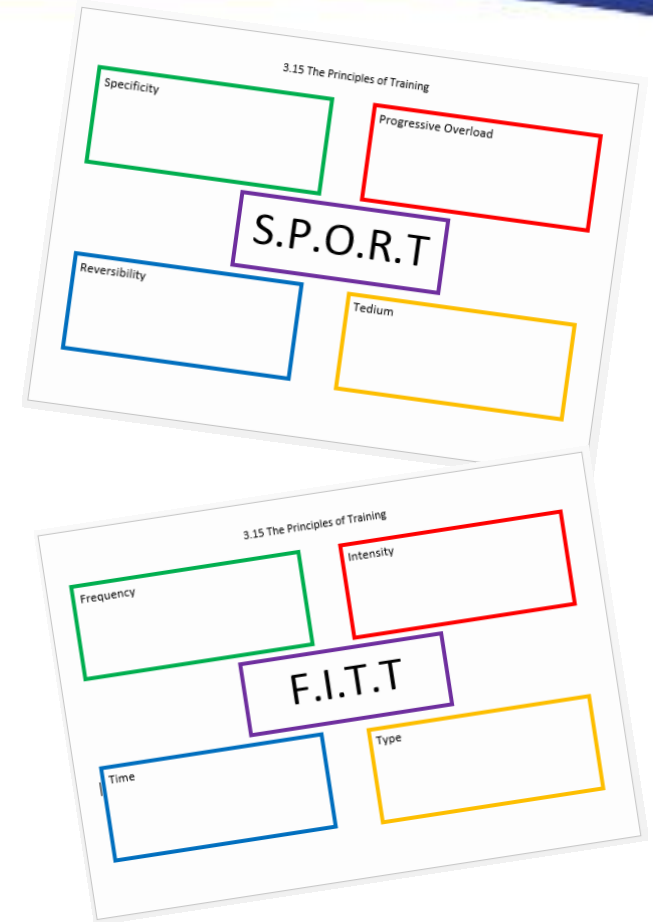
KEYWORDS





Class task – you will be divided into 8 teams. Each team will be responsible for researching 1 principle of training. You will have 8 minutes to create a clear and informative poster on that specific principle of training.

In your groups you will then rotate round each component and fill in the work sheets provided accordingly





**PLENARY  
SESSION**



Choose your main sport

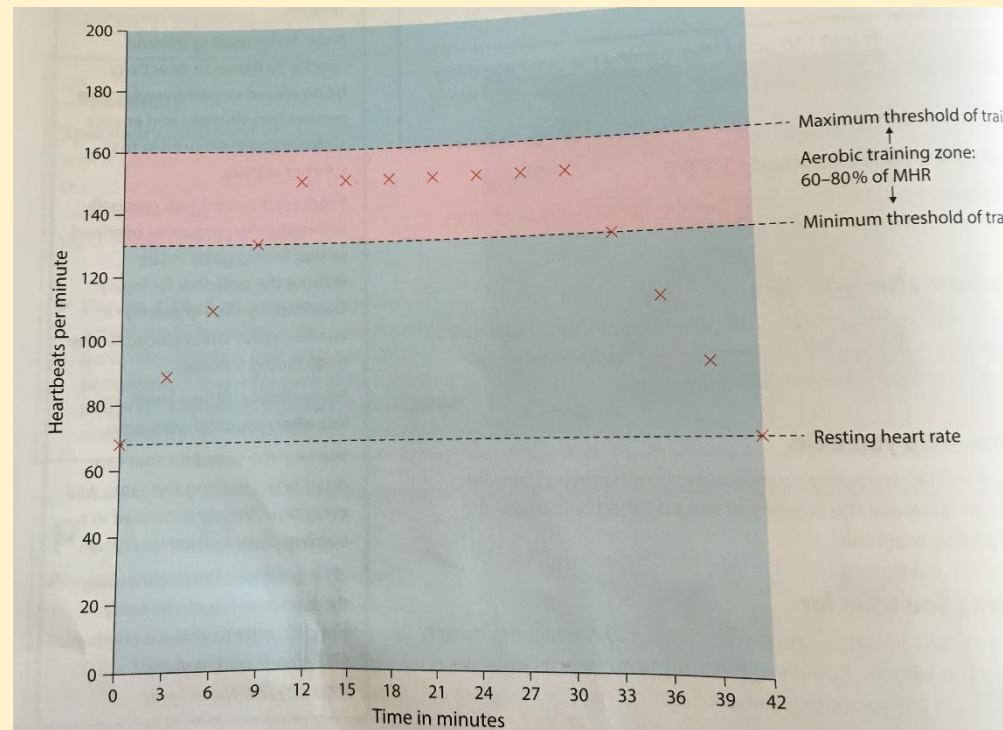
Can you relate S.P.O.R.T and F.I.T.T to your chosen sport, specific to how you would train for that sport?

## Learning Objectives

- All:** To identify the principles of training
- Most:** To describe the principles of training
- Some:** To give examples for each principle of training



## 3.16 Training Thresholds



## Learning Objectives

- |              |                                                                            |
|--------------|----------------------------------------------------------------------------|
| <b>All:</b>  | <b>To understand what Training thresholds are</b>                          |
| <b>Most:</b> | <b>To be able to calculate Training thresholds</b>                         |
| <b>Some:</b> | <b>To know the difference between aerobic and anaerobic training zones</b> |





# Wordles

- teahr tear
- sernitg teahr tear
- rownikg teahr tear
- xamimmu teahr tear
- atregt enzo
- ciborea
- ciboreana aerobic
- ercorevy atre
- Heart rate
- Resting heart rate
- Working heart rate
- Maximum heart rate
- Target Zone
- Aerobic
- Anaerobic
- Recovery rate

# Types of Heart Rate – what is?

✓ **Heart rate is...**

the number of times the heart beats per minute (bpm)

✓ **Resting heart rate is...**

the heart rate at rest (usually 60-80 bpm)

✓ **Working heart rate is...**

the heart rate during (or immediately after) exercise

✓ **Maximum heart rate is...**

$220 - \text{your age} = \text{maximum heart rate (bpm)}$

✓ **Recovery rate is...**

how long it takes for heart rate to return to its resting level after training



# Analysing training sessions

Jane

|         |     |
|---------|-----|
| RHR:    | 62  |
| 2mins:  | 104 |
| 4mins:  | 143 |
| 6mins:  | 144 |
| 8mins:  | 146 |
| 10mins: | 152 |
| 12mins: | 157 |

|        |     |
|--------|-----|
| 1min:  | 139 |
| 2mins: | 101 |
| 3mins: | 77  |
| 4mins: | 66  |
| 5mins: | 64  |

Pamela

|         |     |
|---------|-----|
| RHR:    | 71  |
| 2mins:  | 163 |
| 4mins:  | 173 |
| 6mins:  | 177 |
| 8mins:  | 181 |
| 10mins: | 183 |
| 12mins: | 184 |

|        |     |
|--------|-----|
| 1min:  | 162 |
| 2mins: | 147 |
| 3mins: | 136 |
| 4mins: | 117 |
| 5mins: | 93  |

## Analysing training sessions



- Using a ruler, you should now try to plot the results onto 2 separate graphs

Plot the resting heart rate at 0mins, and continue to plot recorded scores across the graph, every 2 minutes - including the recovery rate.

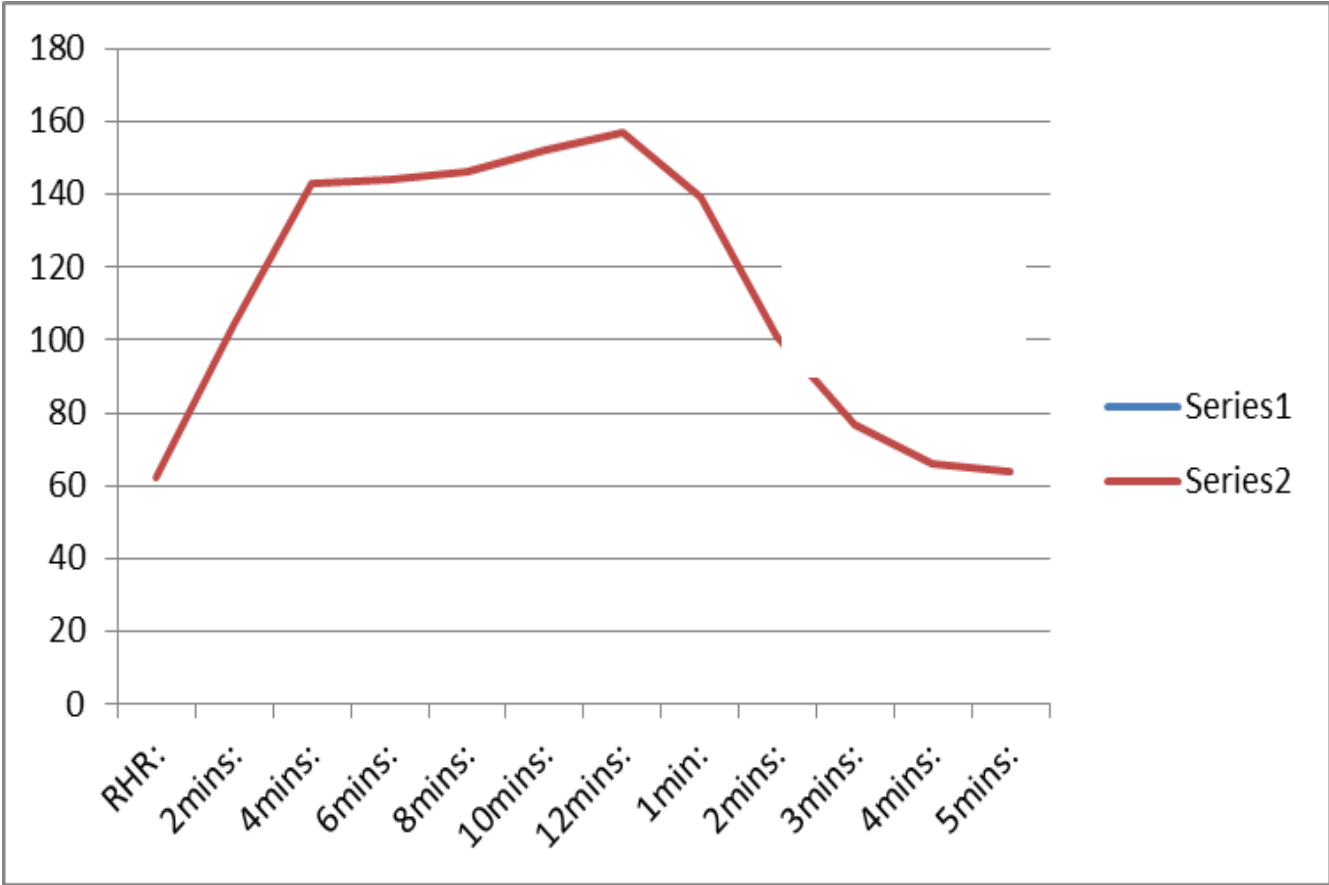
- Mark out the **aerobic target** training zone  
(60-80% of MHR) / 124 -163bpm
- Mark out the **anaerobic training** zone  
(+80% of MHR) / 163bpm +







# Graphs – Jane



|         |  |     |
|---------|--|-----|
| RHR:    |  | 62  |
| 2mins:  |  | 104 |
| 4mins:  |  | 143 |
| 6mins:  |  | 144 |
| 8mins:  |  | 146 |
| 10mins: |  | 152 |
| 12mins: |  | 157 |
| 1min:   |  | 139 |
| 2mins:  |  | 101 |
| 3mins:  |  | 77  |
| 4mins:  |  | 66  |
| 5mins:  |  | 64  |

# Graphs – Pamela



|         |     |
|---------|-----|
| RHR:    | 71  |
| 2mins:  | 163 |
| 4mins:  | 173 |
| 6mins:  | 177 |
| 8mins:  | 181 |
| 10mins: | 183 |
| 12mins: | 184 |
| 1min:   | 162 |
| 2mins:  | 147 |
| 3mins:  | 136 |
| 4mins:  | 117 |
| 5mins:  | 93  |





**Long, slow runs, easy or recovery runs - 60-70%**

Training in this zone improves the ability of your heart to pump blood and improve the muscles' ability to utilize oxygen. The body becomes more efficient at feeding the working muscles, and learns to metabolise fat as a source of fuel.

**Aerobic zone or "target heart rate zone" - 70-80%**

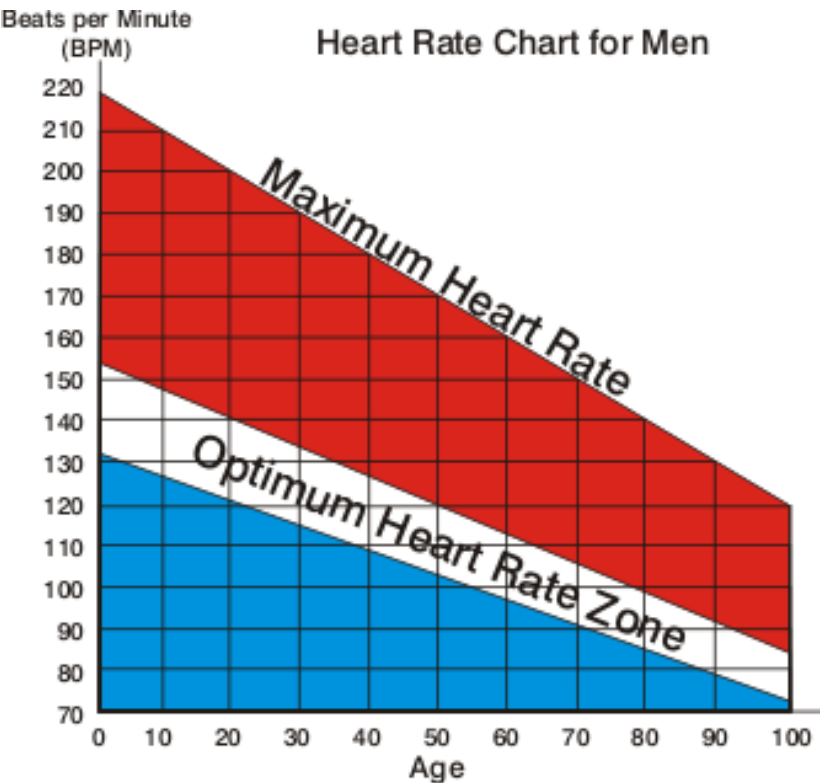
Most effective for overall cardiovascular fitness. Increases your cardio-respiratory capacity: that is, the your ability to transport oxygenated blood to the muscle cells and carbon dioxide away from the cells. Also effective for increasing overall muscle strength.

**Anaerobic zone - 80-90%**

The point at which the body cannot remove lactic acid as quickly as it is produced is called the lactate threshold or anaerobic threshold. It generally occurs at about 80-88% of the Heart Rate Reserve. Training in this zone helps to increase the lactate threshold, which improves performance. Training in this zone is hard: your muscles are tired, your breathing is heavy.

**VO2 max "Red line zone" - 90-100%**

You should only train in this zone if you re very fit, and only for very short periods of time. Lactic acid develops quickly as you are operating in oxygen debt to the muscles. The value of training in this zone is you can increase your fast twitch muscle fibers which increase speed.



# Aerobic and Anaerobic Fitness

## Aerobic

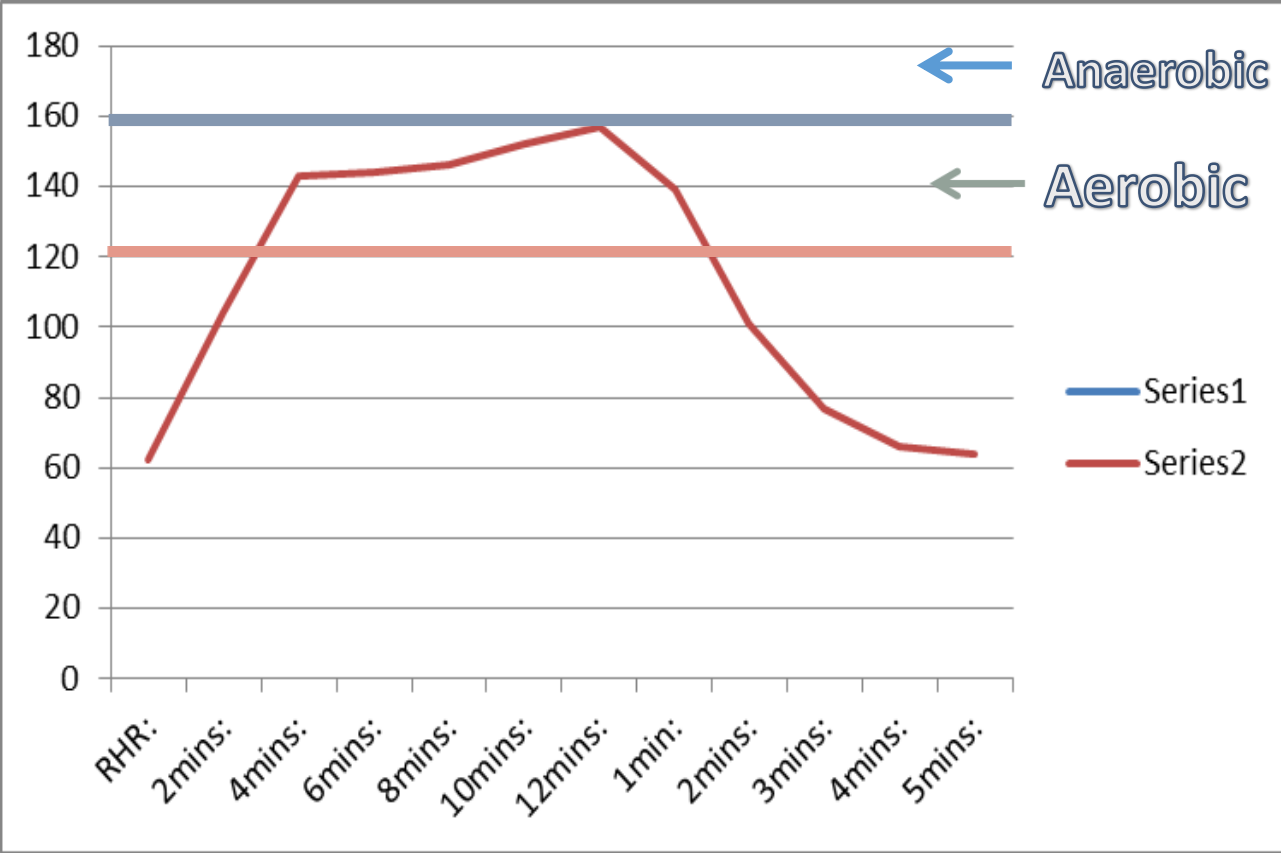
- Aerobic exercise is steady and not too fast, the heart is able to supply enough oxygen to the muscles. Aerobic training improves cardiovascular fitness. This exercise relates more to football because you need the heart to supply your muscles with oxygen so they can work for long periods of time.

## Anaerobic

- Anaerobic exercise is performed in short, fast bursts where the heart cannot supply enough oxygen to the muscles. Anaerobic training improves the ability of the muscles to work without enough oxygen when lactic acid is produced. This type of exercise is the worst out of the two for football, because you need to keep adding oxygen to your muscles so they can work for the long period of time. During anaerobic exercise, the heart cannot supply enough oxygen to the muscles.



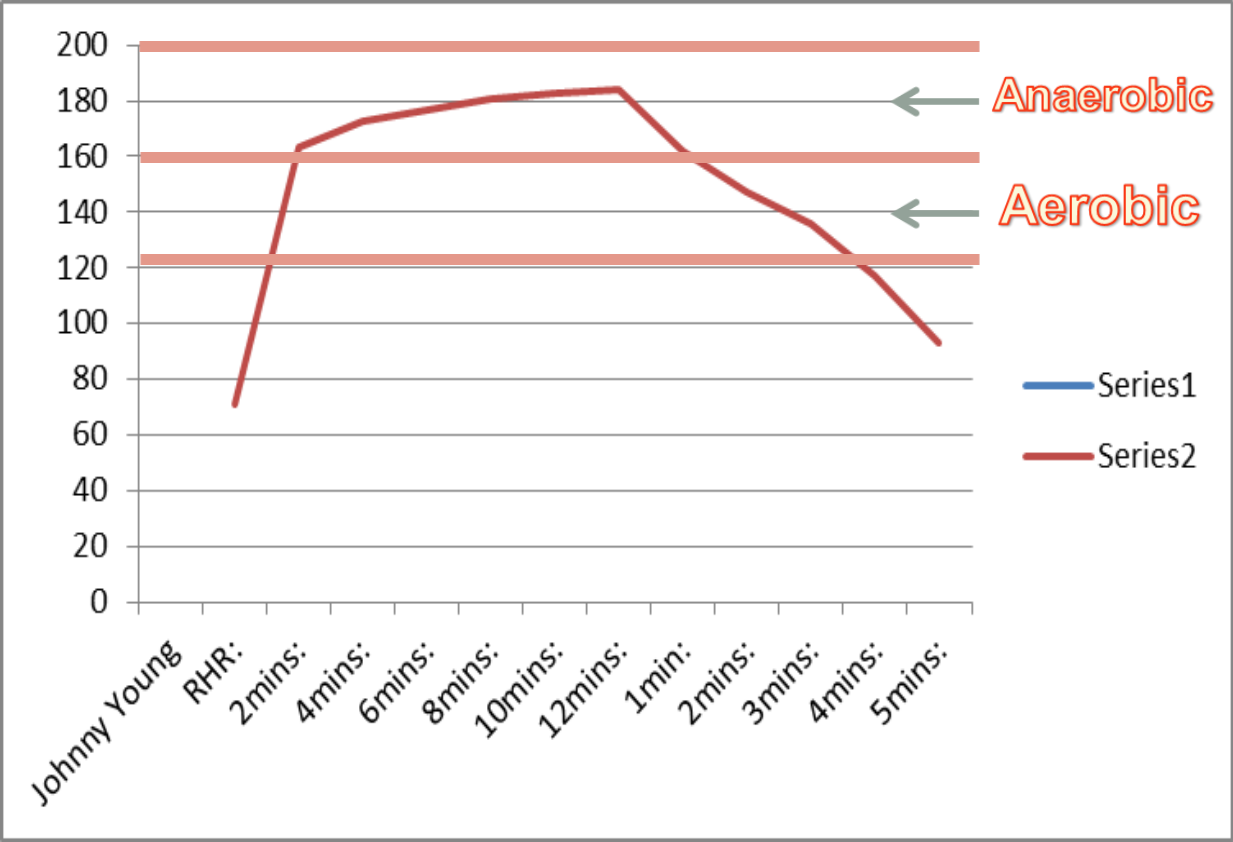
# Graphs – Jane



|         |     |
|---------|-----|
| RHR:    | 62  |
| 2mins:  | 104 |
| 4mins:  | 143 |
| 6mins:  | 144 |
| 8mins:  | 146 |
| 10mins: | 152 |
| 12mins: | 157 |
| 1min:   | 139 |
| 2mins:  | 101 |
| 3mins:  | 77  |
| 4mins:  | 66  |
| 5mins:  | 64  |



# Graphs – Pamela



|         |     |
|---------|-----|
| RHR:    | 71  |
| 2mins:  | 163 |
| 4mins:  | 173 |
| 6mins:  | 177 |
| 8mins:  | 181 |
| 10mins: | 183 |
| 12mins: | 184 |
| 1min:   | 162 |
| 2mins:  | 147 |
| 3mins:  | 136 |
| 4mins:  | 117 |
| 5mins:  | 93  |



PLENARY  
SESSION

Complete your keywords list  
accordingly!



## Learning Objectives

- All:** To understand what Training thresholds are
- Most:** To be able to calculate Training thresholds
- Some:** To know the difference between aerobic and anaerobic training



## 3.17 Types of Training



## Learning Objectives

|              |                                                                           |
|--------------|---------------------------------------------------------------------------|
| <b>All:</b>  | <b>To know the different types of training</b>                            |
| <b>Most:</b> | <b>To link the types of training to the components of fitness</b>         |
| <b>Some:</b> | <b>To know the advantages and disadvantages for each type of training</b> |





On your whiteboards write down as many different ways that you can train for a specific sport



For example... Circuit Training

(Tip: think about your core PE fitness lessons!)



- Circuit Training
- Continuous Training
- Interval/high intensity Training
- Fartlek Training
- Static Stretching
- Weight Training
- Plyometric Training



KEYWORDS



# CIRCUIT TRAINING

- A number of exercises at stations (usually between 6 and 12 stations)
- The stations can be fitness or skill based
- The variety of stations allows recovery of muscle groups
- Depending on the intensity of the activity, circuit training can be aerobic (low intensity) or anaerobic (high intensity)
- Intensity can be measured by:
  - The time at each station
  - The number of repetitions at each station
  - The number of circuits completed
- Circuit training can develop all the components of fitness depending on the nature of the stations used, e.g.
  - Press-ups for muscular endurance
  - Shuttle runs for speed
  - Dodging through cones for agility
- Can be organised so it is continuous with 30-60 second breaks between moving from one station to another.

A swimmer wearing a blue cap and goggles is swimming in a pool, with water splashing around their head.

# **CIRCUIT TRAINING**

## **Advantages**

- Exercises chosen can be simple to complex
- The circuit can be manipulated to train different components of fitness, e.g. repeated contraction of a muscle/ muscle group to train muscular endurance.
- It can be varied to suit fitness level/ age, etc.
- It is easy to monitor and alter – progressive overload can be applied by altering the work/ rest ratio.

## **Disadvantages**

- An appropriate amount of space is required.
- It may require specialist equipment, e.g. a medicine ball, benches.
- It is difficult to gauge an appropriate work/ rest ratio at the start.





# CONTINUOUS TRAINING

- Continuous training is aerobic and is therefore used more for aerobic, endurance-based activities.
- Aerobic activities are submaximal. This means you do not work flat out and so can continue to work for long periods of time.

A continuous training session should:

- Involve sustained exercise at a constant rate.
- Must not involve breaks or rests during the session.
- Should last for 20 minutes or longer (so there is an aerobic demand)

Continuous training should be used for activities that reflect the characteristics above, such as long-distance running, swimming, rowing and cycling.

Components of fitness that would improve with continuous training include:

- Cardiovascular endurance
- Muscular endurance
- It can also reduce the chance of coronary heart disease and osteoporosis (if the training is weight bearing).

A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head. The swimmer is in a freestyle stroke, with one arm extended forward.

# CONTINUOUS TRAINING

## Advantages

- Can be done with little or no equipment.
- It improves aerobic fitness.
- Running and be done virtually anywhere.
- It is simple to do – keep doing the same movement over and over.

## Disadvantages

- It can be boring/ tedious
- It can cause injury due to repetitive contractions.
- It can be time consuming.
- It does not always match the demands of the sport, e.g. in basketball the players do not always run at one speed continuously.



KEYWORDS



# FARTLEK TRAINING



Fartlek is a Swedish word meaning 'speed play.'

Involves periods of fast work with periods of slower work (interval training) therefore performers work aerobically and anaerobically.

Usually completed in an outdoor environment, so different terrains (ground conditions) can be used by the performer to help them vary the speed and work: rest ratios.

Often used in running, when the performer changes between sprinting, jogging and walking. These changes in pace allow the performer to work maximally.

Improves cardiovascular endurance and muscular endurance. Netball, rugby, football and hockey can all be associated with fartlek training.

# FARTLEK TRAINING

## Advantages

- No specialist equipment is required
- Ideal for someone training on their own
- Helps the performer learn how to pace themselves and understand their physical responses to changes in pace.

## Disadvantages

- Not suitable for groups or teams as it must be tailored to the individual
- For more experienced performers – need to ensure the workout is intense but not too intense
- Can be difficult to keep going so you need self motivation and self discipline
- Difficult to train in poor weather!





KEYWORDS



# **INTERVAL TRAINING (High intensity interval training)**

Periods of intense activity with breaks within the session to allow recovery.

A typical session is usually made up of:

- Sets of high-intensity work (e.g. sprint)
- Followed by rest or low-intensity work (active rest)
- Followed by high-intensity work (e.g. sprint)
- Followed by rest or low-intensity work (active rest).

Benefits:

- Weight loss (if overweight) due to burning calories.
- It is a very flexible training method that can be used to improve health of fitness in a range of ways.
- Normally associated with powerful or explosive activities but can be adapted to improve cardiovascular endurance by altering the length of the rest periods (shortening rest periods).
- Interval training can be in the form of training on a track, circuit training or weight training.



# **INTERVAL TRAINING (High intensity interval training)**

## **Advantages**

- It burns fat and calories quickly
- It can be altered easily to suit the individual
- It can be completed relatively quickly
- It can improve the anaerobic and aerobic energy systems

## **Disadvantages**

- Extreme work can lead to injury
- High levels of motivation are needed to complete the work
- It can lead to dizziness and feelings of nausea





# STATIC STRETCHING

There are several different methods of stretching that can be used for different purposes. The type of stretching that you need to know as a specific type of training is static stretching.

- You must stretch as far as you can without over stretching.
- The stretch is then held (isometric) for up to 30 seconds.

Benefits:

- Develops an increase in flexibility.
- Used to train for activities where an increase in range of movement at a joint is needed.

Beneficial for:

- Hurdler, footballer, gymnast.

A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head. The swimmer is positioned in the upper half of the slide, above the title.

# STATIC STRETCHING

## Advantages

- Increases flexibility (the range of movement at a joint)
- It can be done by virtually everyone.
- It is relatively safe.

## Disadvantages

- It can be time consuming to stretch the whole body.
- Some muscles are easier to stretch than others.
- Over-stretching can cause injury.





# WEIGHT TRAINING

Fartlek is a Swedish word meaning 'speed play.'

Involves periods of fast work with periods of slower work (interval training) therefore performers work aerobically and anaerobically.

Usually completed in an outdoor environment, so different terrains (ground conditions) can be used by the performer to help them vary the speed and work: rest ratios.

Often used in running, when the performer changes between sprinting, jogging and walking. These changes in pace allow the performer to work maximally.

Improves cardiovascular endurance and muscular endurance. Netball, rugby, football and hockey can all be associated with fartlek training.

A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head. The swimmer is wearing a black and pink swimsuit.

# **WEIGHT TRAINING**

## **Advantages**

- Easily adapted for different fitness aims, e.g. muscular strength or muscular endurance.
- It is relative to all sports.
- It is relatively straightforward to carry out (you simply need something to lift).
- Strength gains can occur.

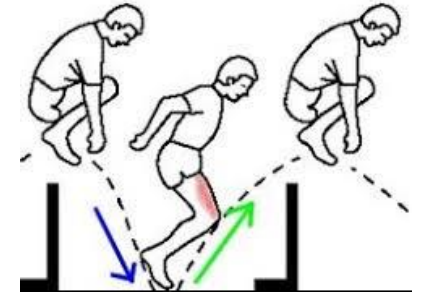
## **Disadvantages**

- Lifting heavy weights can increase blood pressure
- Injury can occur if weights are too heavy or incorrect technique is used.
- Calculating one rep max requires high levels of motivation.





# PLYOMETRIC TRAINING



High impact activities that teach the muscles to perform their maximum contractions faster (and become more **powerful**).

An eccentric isotonic contraction (where the muscle contracts and lengthens) is followed by a larger concentric isotonic contraction (where the muscle contracts and shortens).

Used for sports requiring power, including sprinting, high jump and javelin throwing.

# PLYOMETRIC TRAINING

## Advantages

- Many plyometric exercises require little or no equipment
- A plyometric workout is a short, high intensity work out
- Plyometric exercises stimulate muscle contractions and movements made in sport



## Disadvantages

- 3 days of recovery is required between each plyometric training session.
- The performer must have good levels of strength and muscular endurance before attempting plyometric training
- Repetitive bounding can cause stress on the joints and muscle soreness after training.





# HIGH ALTITUDE TRAINING

5 minute timer





10 minute timer





Complete a spider-diagram or mind-map on  
TYPES OF TRAINING

It must include:

1. **Description** of the type of training
2. **Components of fitness** it trains
3. **Two examples** of sports/ activities it will suit
4. **Advantages** of the training type
5. **Disadvantages** of the training type

- Circuit Training
- Continuous Training
- Interval/high intensity Training
- Fartlek Training
- Static Stretching
- Weight Training
- Plyometric Training
- High Altitude Training



Using a sport of your choice on the worksheets provided...

Using the specific type of training, write down the components of fitness which are used for that type of training.

Then use an example from your sport which demonstrates that type of training and the components of fitness mentioned

3.17 Types of Training

| <u>Circuit Training</u>        |
|--------------------------------|
| Components of fitness trained: |
| Specific to your chosen sport: |

| <u>Continuous Training</u>     |
|--------------------------------|
| Components of fitness trained: |
| Specific to your chosen sport: |

| <u>Interval/high intensity Training</u> |
|-----------------------------------------|
| Components of fitness trained:          |
| Specific to your chosen sport:          |



## MATCH IT UP GAME



Using the cards given out – can you match up the advantages and disadvantages to the specific Types of Training?

PLENARY  
SESSION



Get the advantages and disadvantages for each Type of Training written down!!!

## Learning Objectives

- All:** To know the different types of training
- Most:** To link types of training to the components of fitness
- Some:** To know the advantages and disadvantages for each type of training



## 3.18 Preventing Injury



## Learning Objectives

- |              |                                                                                   |
|--------------|-----------------------------------------------------------------------------------|
| <b>All:</b>  | <b>To know the 9 rules to avoid injury</b>                                        |
| <b>Most:</b> | <b>To give a description of the 9 rules to avoid injury</b>                       |
| <b>Some:</b> | <b>To create a guide for a specific sports performer on how to prevent injury</b> |





# WHITEBOARD RUSH

In 2 teams, one at a time, you will write on the whiteboard a way to prevent injury!  
The team with the most suggestions in the time limit wins!



# RULE 1



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury

## **RULE 2**



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury



## **RULE 3**



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury



## **RULE 4**



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury

## RULE 5



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury

## **RULE 6**



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury



## **RULE 7**



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury

## **RULE 8**



Rule:

Description:

**Most:** To give a description of the 9 rules to avoid injury

**All:** To know the 9 rules to avoid injury





**RULE 9**



Rule:

Description:



PLENARY  
SESSION



# Complete the worksheet provided!



## Learning Objectives

- All:** To know the 9 rules to avoid injury
- Most:** To give a description of the 9 rules to avoid injury
- Some:** To create a plan for a specific sports performer on how to prevent injury



## 3.19 Training Seasons





## Learning Objectives

- |              |                                                                |
|--------------|----------------------------------------------------------------|
| <b>All:</b>  | <b>To know the 3 different training seasons</b>                |
| <b>Most:</b> | <b>To understand what each training season entails</b>         |
| <b>Some:</b> | <b>To research an elite athletes training season programme</b> |



Using the 'Training seasons' cards – can you divide them into 3 different categories/seasons?





### **Pre-season/preparation**

Performers focus on:

- general aerobic fitness, through continuous training, interval training and/or Fartlek training
- general strength and muscular endurance, through weight training
- training the components of fitness that are essential to success in their chosen sport or physical activity
- practising the skills and techniques that will prepare them for success in the competitive season ahead.

► **Figure 3.34:** Jamaal Lascelles takes part in strength and conditioning training during a Newcastle United pre-season training session





## **Competitive/peak/playing season**

Performers concentrate on maintaining their fitness levels throughout their competitive season, when they are playing in matches or competing every week. They must avoid training too much, however, as this can

cause fatigue, which would decrease their performance. Instead, they should work on optimising their skills and, in team sports, practising set plays to improve team performance.

KEYWORDS



### 3.19 Training Seasons

**Most:** To understand what each training season entails



## **Post-season/closed season/transition**

Performers rest and recuperate; only taking part in light aerobic training to maintain a level of general fitness.

At the end of the closed season, performers should be fully rested and ready for pre-season training.

KEYWORDS





PLENARY  
SESSION



Can you identify  
the pre-season,  
playing season  
and post season  
training plans for  
these 2 sport  
training  
programmes?

3.19 Training Seasons

Which Season is this?

You're going to want to build on the endurance and strength that you've been working on by adding muscular power, speed and agility. In this period, you're making a concentrated effort to engage in activities more netball-like. This means that you're wanting to increase the intensity and lower the duration of your workouts. For instance, if you're running, try to complete your course in less minutes each time you run. Aerobic exercises are the best option here as the swift movements and high-intensity are similar to those on the court.

Which Season is this?

You should be focusing on getting your body used to low intensity workouts over longer periods of time rather than the intense focused workouts of the netball court. This will give your body a chance to recover from the strains on muscles and joints and is the most important time for focusing on those injuries. Finding a social sports team to join will keep you exercising regularly. Include swimming in your weekly schedule to improve upper body and core strength and consider yoga to aid flexibility.

Which Season is this?

You should be attending a training session once a week to maintain your general fitness levels. You will also be competing in regular matches which will add to your general fitness – do not overdo it however as you do not want to cause the body to fatigue!

3.19 Training Seasons

Which Season is this?

Active rest and mobility are important aspects to recovery and injury prevention. The upper and lower body mobility / recovery routines outlined in the recovery section on your training days should be performed a minimum of 4x per week. This is why on your sample training schedule it is outlined on your training days but also attached to your active rest days.

Which Season is this?

Our main objective is to maintain everything that you earned in the off-season and progress on any area that we can while keeping you healthy, injury free and full of energy for your games. This means keeping up your strength, size, power output, aerobic / anaerobic capacity and agility all within the same system.

Which Season is this?

Focus on maintaining muscular strength and endurance, while your practices provide a conditioning component. Workouts should be shorter and feature multi-joint movements that target large muscle groups to get a bigger bang for your buck with each exercise. Perform the exercises with lighter weight for fewer sets and more reps, so they will be challenging, but won't fatigue your muscles too much.

The hockey-training program below switches up the sets and reps each week so your muscles don't get too comfortable with the workout and continue making gains. Follow the set and rep schedule below with all exercises unless otherwise specified. Perform grouped exercises in superset fashion.

3.19 Training Seasons

Some: To research an elite athletes training season programme



## Learning Objectives

- All:** To know the 3 different training seasons
- Most:** To understand what each training season entails
- Some:** To research elite athletes training season programme

## 3.20 Warming up and cooling down





## Learning Objectives

- |              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| <b>All:</b>  | <b>To know the importance of a warm up and cool down</b>                                |
| <b>Most:</b> | <b>To know the different stages of a warm up and cool down</b>                          |
| <b>Some:</b> | <b>To create a session plan with an effective and appropriate warm up and cool down</b> |





Using the task card you have been given you have 5 minutes to answer it

Your key phrase is:



## The Exercise Session

3.20 Warming up and cooling down

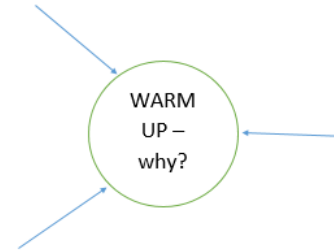
**All: To know the importance of a warm up and cool down**



As a class we will go through pages 80 – 81 whilst filling in the worksheets about warming up and cooling down

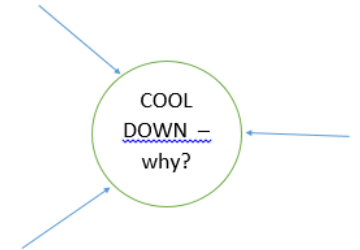


3.20 Warming up and cooling down



4 stages of a warm up

3.20 Warming up and cooling down



2 stages of a cool down

3.20 Warming up and cooling down

**All: To know the importance of a warm up and cool down**

**Most: To know the different stages of a warm up and cool down**





Task : Create an exercise session for one of the below sports (15 minutes)

Swap your session with a partner – in a different coloured pen add anything you think is required to your partners session and evaluate it





**PLENARY  
SESSION**



Using the task card you have been given you have 5 minutes to answer it

Your key phrase is:

**The Exercise Session**



Swap your whiteboard and task card with a partner – complete the task your partner has underneath their original response in a different coloured pen

## Learning Objectives

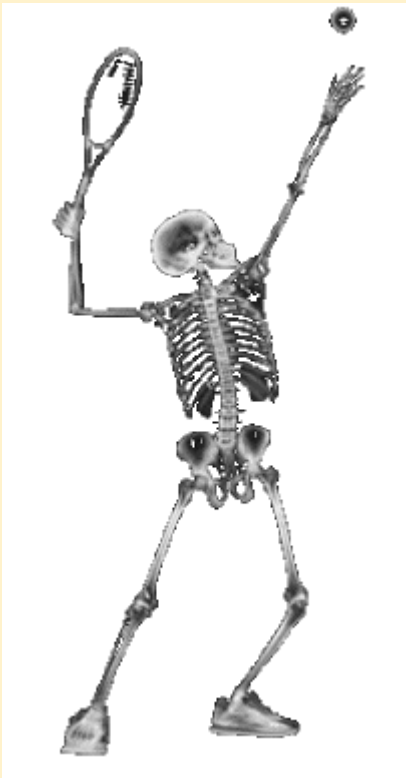
- All:** To know the importance of a warm up and cool down
- Most:** To know the different stages of a warm up and cool down
- Some:** To create a lesson plan with an effective and appropriate warm up and cool down



# Chapter 1: Applied Anatomy and Physiology

- 1.1: The structure and functions of the Skeleton
- 1.2: The structure and function of the Muscular System
- 1.3: The structure and function of the Cardio-respiratory System
- 1.4: Aerobic and Anaerobic Exercise
- 1.5: The effects of exercise

# 1.1 The structure and functions of the skeleton – part 1





## Learning Objectives

|              |                                                                         |
|--------------|-------------------------------------------------------------------------|
| <b>All:</b>  | <b>To know the structure of the skeletal system</b>                     |
| <b>Most:</b> | <b>To understand the functions of the skeletal system</b>               |
| <b>Some:</b> | <b>To understand the link between the skeletal and muscular systems</b> |

### 1.1 The structure and functions of the skeleton

# Musculoskeletal System

The skeletal system and muscular system are known together as the musculoskeletal system – they work together to allow movement, which occurs at the joints. One system cannot work without the other!



**Some: To understand the link between the skeletal and muscular systems**





Stating one bone per post it note, can you try and fill your whole table with post it notes and correctly named bones with a partner?





Cranium, vertebrae, scapula,  
humerus, ribs, sternum, radius,  
ulna, pelvis, femur, tibia, patella,  
fibula, talus, ribs.

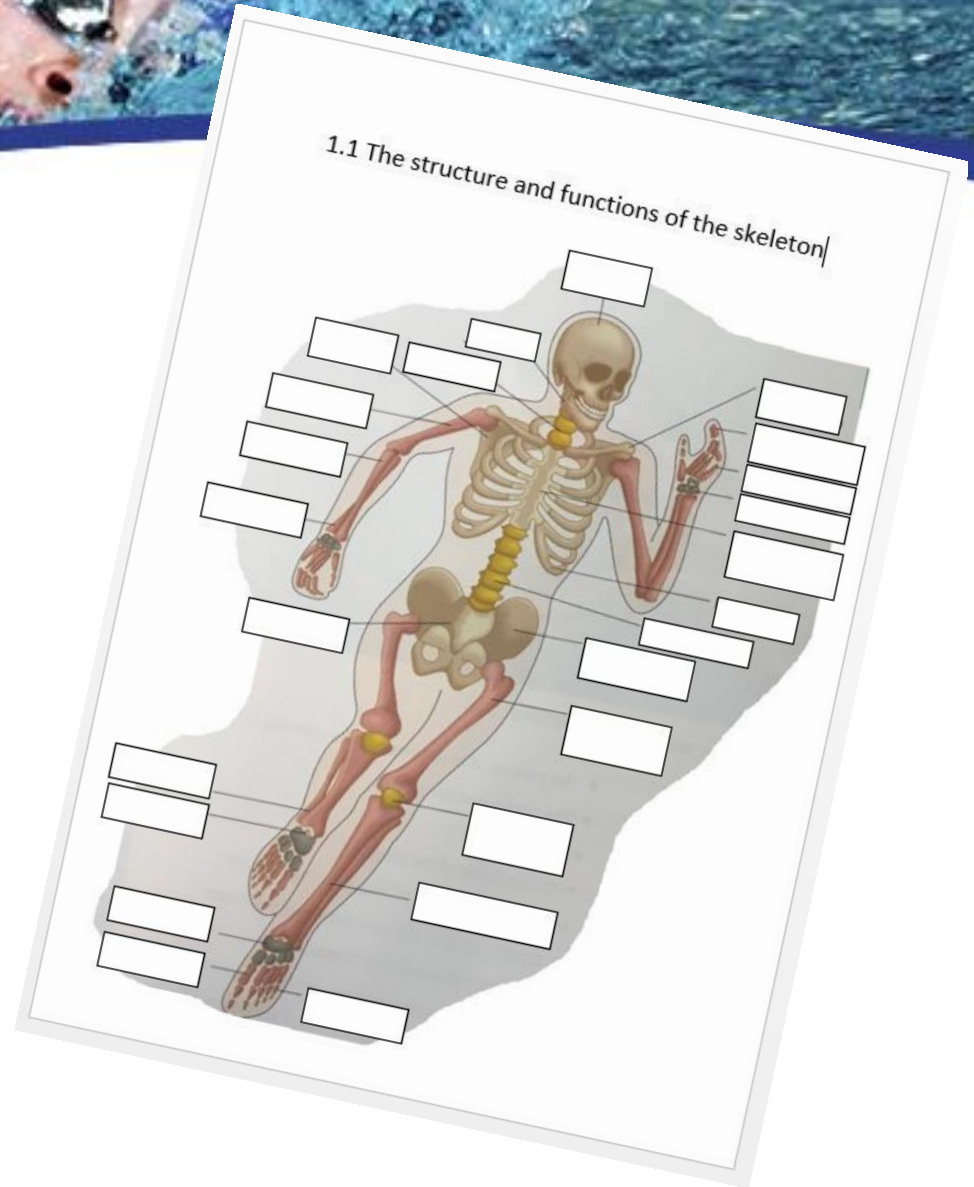




Watch the YouTube video and try to fill in the gaps on the skeleton worksheet (in pencil!!)

We will then go through the correct answers as a class (page 6)

<https://www.youtube.com/watch?v=uuWbqwQfLxQ>





Articulating bones – bones that meet at a joint to enable movement

| Joint    | Articulating Bones |
|----------|--------------------|
| Shoulder | ***                |
| Elbow    | ***                |
| Hip      | **                 |
| Knee     | ****               |
| Ankle    | ***                |



## **Learning Objectives**

Identify the different type of bone found in the body.

Describe the different types of bone and explain their function.

Explain the functions of the skeletal system and link them to sports performance.

## Types of Bones

Flat Bones – are often quite large and usually protect vital organs

Long bones – enable gross (large) movements

Short bones – enable finer, controlled movements

Irregular bones – Specifically shaped to protect



On the bottom of your skeleton sheet create a 'key'

The skeleton is shaded in 4 different colours – these colours represent the 4 types of bones.... Which is which??



**Name the  
bone! and  
which type  
of bone is  
this?**



1.1 The structure and functions of the skeleton

**All: Identify the different type of bone found in the body.**

**Name the  
bone! and  
which type  
of bone is  
this?**



1.1 The structure and functions of the skeleton

**All: Identify the different type of bone found in the body.**



**Name the  
bone! and  
which type  
of bone is  
this?**



**Name the  
bone! and  
which type  
of bone is  
this?**





A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head.

## Functions of the Skeletal System

### Support

Support for muscles and vital organs. Without support the body would just be soft tissue that would be unable to move

### Protection

Protection for vital organs. During physical activity protection is crucial for both performance and long term health. It reduces the chance of injury.

### Movement

Movement occurs when muscles contract to pull on bones and joints. Without the skeleton we would be unable to move at all.

### Shape and Structure

For maintaining the basic shape of the body and providing something for muscles to attach to. Without shape and structure we would not be able to move.

### Blood Cell Production

Takes place in the bone marrow. Red blood cells are especially important in aerobic activities because they carry oxygen to working muscles. White blood cells fight infections and platelets help blood to clot following an injury.

### Storage of Minerals

Essential for major body functions. Very important for the general health of an athlete which clearly affects sporting performance.

## 1.1 The structure and functions of the skeleton

**Explain the functions of the skeletal system and link them to sports performance.**

PLENARY  
SESSION

With a partner (use 1 of you as the model) using the post it notes can you correctly identify and locate the main bones of the body?



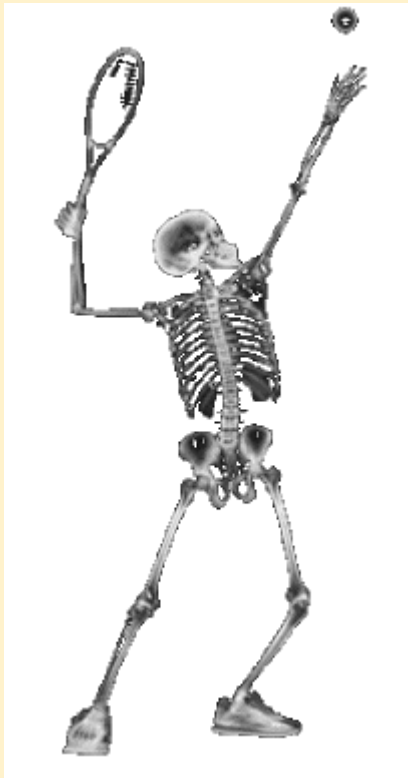


## Learning Objectives

- All:** To know the structure of the skeletal system
- Most:** To understand the functions of the skeletal system
- Some:** To understand the link between the skeletal and muscular systems



# 1.1 The structure and functions of the skeleton - part 2





## Learning Objectives



Identify parts of a synovial joint and describe their function.



Describe two different types of synovial joint and give examples of where they are found in the body.



Explain the movements that can take place at these synovial joints.



What is the highest value word you can make from the scrabble card?

The word **MUST** be to do with the Skeletal System

**SCRABBLE**

Using the 'topic' on the board see if you can make 8 key words linked to the topic with the aim of getting the highest score in the class once you total up all 8 of your words!

Good Luck

|                 |                |                |                 |                |                |
|-----------------|----------------|----------------|-----------------|----------------|----------------|
| A <sub>1</sub>  | B <sub>3</sub> | C <sub>3</sub> | D <sub>2</sub>  |                |                |
| E <sub>1</sub>  | F <sub>4</sub> | G <sub>2</sub> | H <sub>4</sub>  | I <sub>1</sub> | J <sub>8</sub> |
| K <sub>5</sub>  | L <sub>1</sub> | M <sub>3</sub> | N <sub>1</sub>  | O <sub>1</sub> | P <sub>3</sub> |
| Q <sub>10</sub> | R <sub>1</sub> | S <sub>1</sub> | T <sub>1</sub>  | U <sub>1</sub> | V <sub>4</sub> |
| W <sub>4</sub>  | X <sub>8</sub> | Y <sub>4</sub> | Z <sub>10</sub> |                |                |

© 2015

Scrabble Challenge:

| Key Word: | Score:               |
|-----------|----------------------|
| 1.....    | <input type="text"/> |
| 2.....    | <input type="text"/> |
| 3.....    | <input type="text"/> |
| 4.....    | <input type="text"/> |
| 5.....    | <input type="text"/> |
| 6.....    | <input type="text"/> |
| 7.....    | <input type="text"/> |
| 8.....    | <input type="text"/> |

Use this space to work out your score:

T O T A L



# SCRABBLE

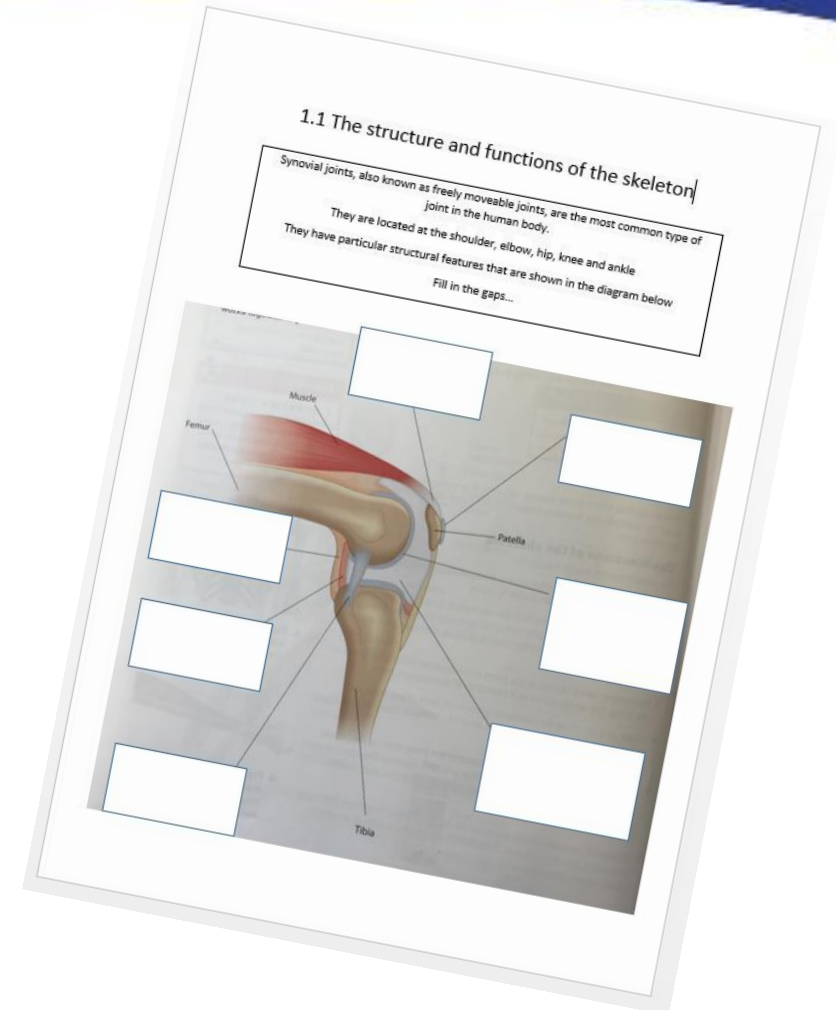
*Using the 'topic' on the board see if you can make 8 key words linked to the topic with the aim of getting the highest score in the class once you total up all 8 of your words!*

*Good Luck*





Using page 8 (page  
20 in booklets), fill in  
the gaps on your  
Synovial Joint  
Structure worksheet





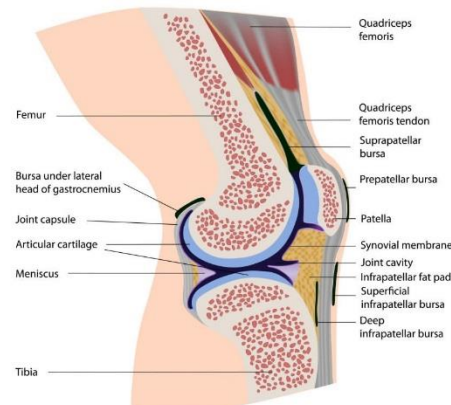
## 1.1 The structure and functions of the skeleton



### Cartilage

- A tough but flexible tissue.
- Acts as a buffer between the bones
- Prevents bones rubbing together and causing friction.
- E.g. Cartilage on the ends of the femur and tibia bones at the knee.

Anatomy of the Knee Joint



### Tendon

- A connective tissue that attaches **muscle to bone**.
- It's role is to **transfer the effort** created by a contracting **muscle to the bone**.
- This results in the **movement** of that bone/ joint.
  - E.g. Achilles Tendon





# Types of Synovial Joint

## Ball and Socket Joint

- Can move away from the body
- Can move back towards the body
  - Can rotate
- Most moveable joint in the body

## Hinge Joint

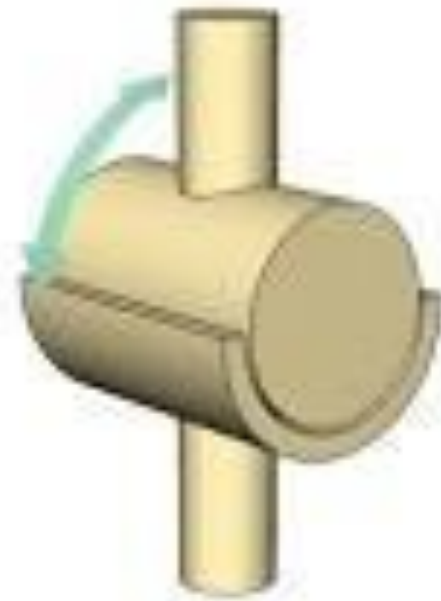
- Can move only in one direction
- Can move back toward and away from each other
  - Like a hinge on a door



# Ball and Socket Joint



# Hinge Joint





**Name the  
joint! and  
which type  
of joint is  
this?**

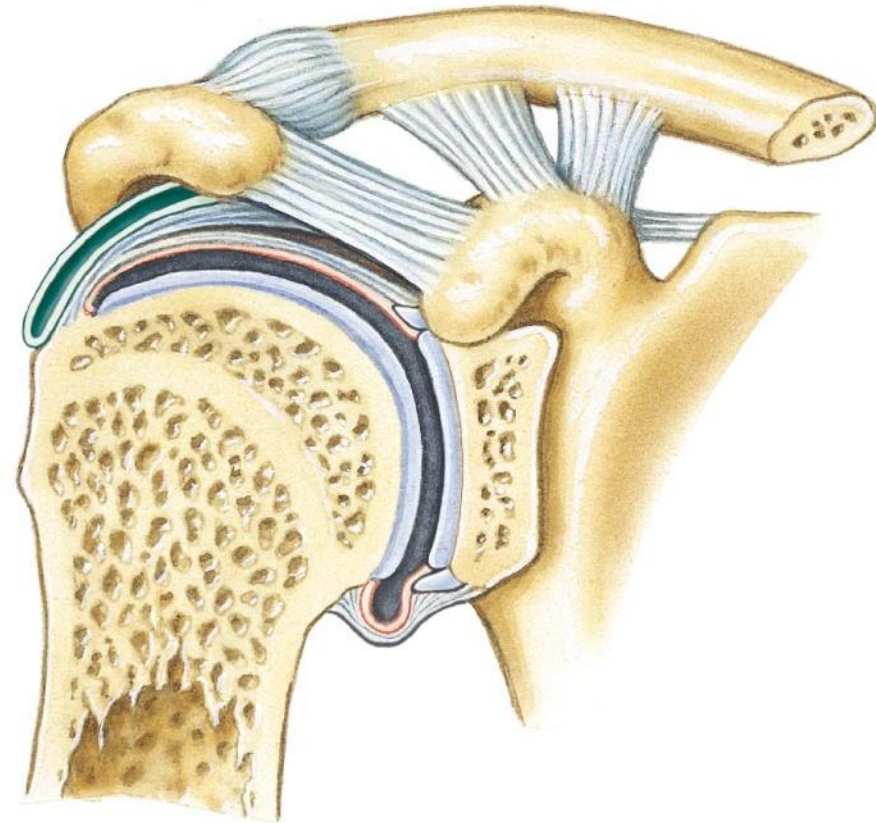


**Name the  
joint! and  
which type  
of joint is  
this?**





**Name the  
joint! and  
which type  
of joint is  
this?**



**Name the  
joint! and  
which type  
of joint is  
this?**





**Name the  
joint! and  
which type  
of joint is  
this?**



PLENARY  
SESSION



## SUPER 6!

Complete the score  
predictions and 3  
questions on your  
SUPER 6 exit pass!

**SOCCER SATURDAY**  
**SUPER 6**

Name:

|                      |                       |                      |
|----------------------|-----------------------|----------------------|
| <input type="text"/> | Man Utd v Man City    | <input type="text"/> |
| <input type="text"/> | Burnley v Hull        | <input type="text"/> |
| <input type="text"/> | Liverpool v Leicester | <input type="text"/> |

What are the three major bones located in the arm?  
\_\_\_\_\_

What are the five functions of the skeleton?  
\_\_\_\_\_  
\_\_\_\_\_

For a sport of your choice, describe how one of the functions of the skeletal system helps the sports person in their sport:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Correct result = 2pts    Correct score = 5pts  
Correct answer to revision question = 3pts  
No attempt at the questions above = minus 3pts

1.1 The structure and functions of the skeleton

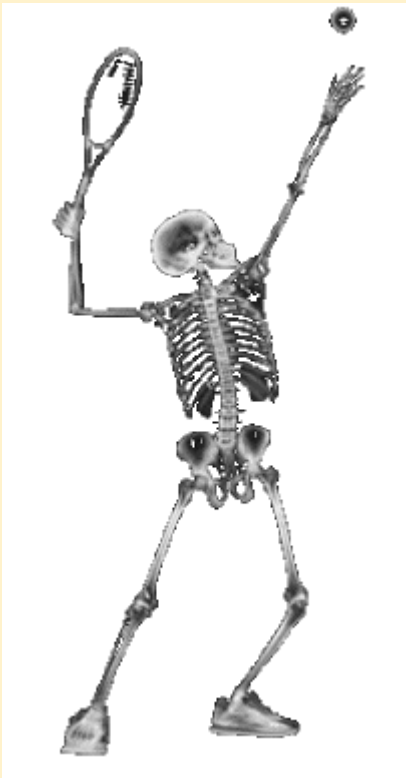
**Some: To know where the different types of synovial joints are found in the skeleton**



## Learning Objectives

- All:** To know the structure of synovial joints
- Most:** To know the different types of synovial joints
- Some:** To know the different types of synovial joints are found in the skeleton

# 1.1 The structure and functions of the skeleton – part 3





## Learning Objectives

- |              |                                                          |
|--------------|----------------------------------------------------------|
| <b>All:</b>  | <b>To identify the different types of movement</b>       |
| <b>Most:</b> | <b>To explain the different types of movement</b>        |
| <b>Some:</b> | <b>To give a sport example for each type of movement</b> |

### 1.1 The structure and functions of the skeleton



# BONE BINGO

|                    |           |             |             |                   |                       |                     |                 |
|--------------------|-----------|-------------|-------------|-------------------|-----------------------|---------------------|-----------------|
| Cranium            | Clavicle  | Scapula     | Radius      | Ulna              | Vertebrae             | Sacrum              | Fibula          |
| Talus              | Tarsals   | Metatarsals | Phalanges   | Tibia             | Patella               | Femur               | Pelvis          |
| Ribs               | Sternum   | Carpals     | Metacarpals | Long Bones        | Short Bones           | Flat Bones          | Irregular Bones |
| Articulating Bones | Support   | Protection  | Movement    | Shape & Structure | Blood cell production | Storage of minerals | Synovial joints |
| Ball and Socket    | Hinge     | Humerus     | Flexion     | Extension         | Plantar Flexion       | Dorsiflexion        | Rotation        |
| Adduction          | Abduction | Shoulder    | Elbow       | Hip               | Knee                  | Ankle               | Musculoskeletal |

## 1.1 The structure and functions of the skeleton

**All: To identify the different types of movement**



A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head.

# **7 Types of Joint Movement**

Flexion

Extension

Plantar Flexion

Dorsiflexion

Rotation

Adduction

Abduction

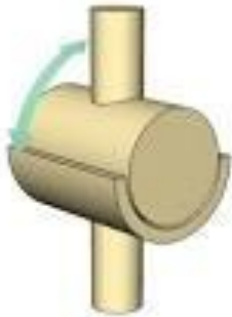
KEYWORDS



# FLEXION



## Hinge Joint



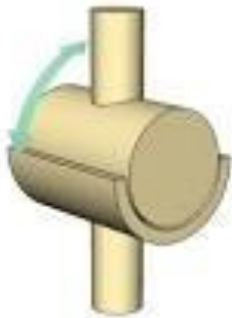


KEYWORDS



# EXTENSION →

**Hinge Joint**



KEYWORDS



# ABDUCTION →



## Ball and Socket Joint





KEYWORDS



# ADDUCTION →



## Ball and Socket Joint



KEYWORDS



# ROTATION



## Ball and Socket Joint





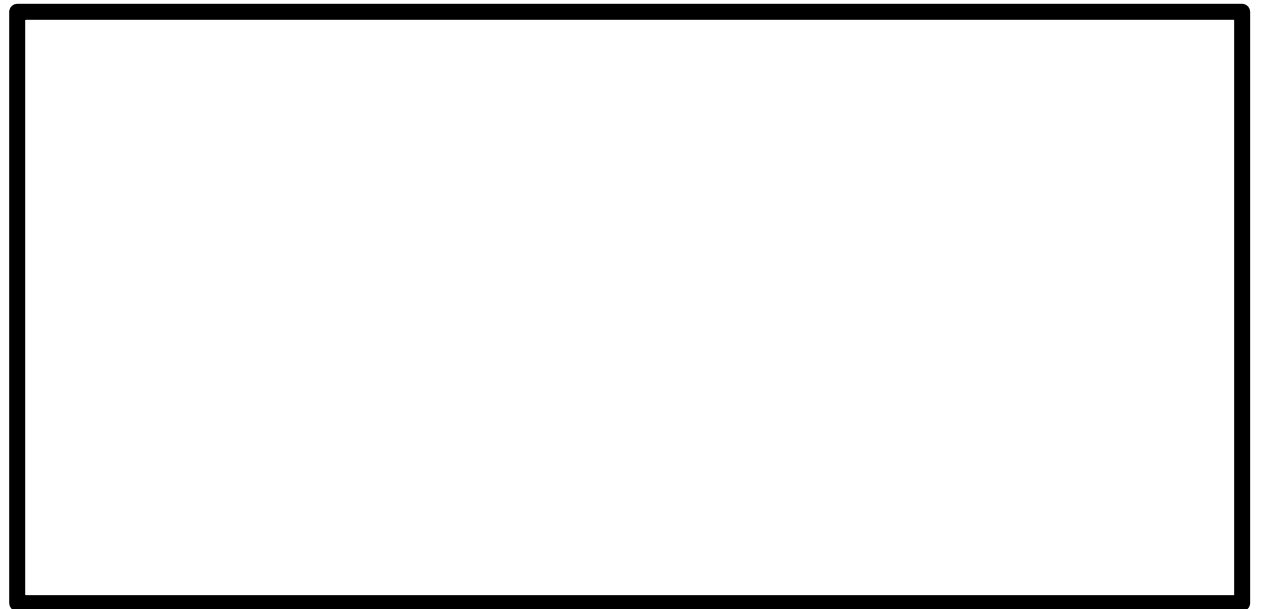
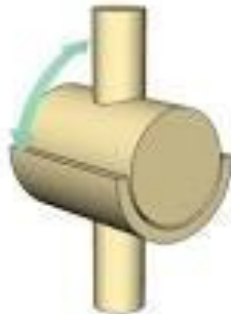
KEYWORDS



# PLANTAR FLEXION



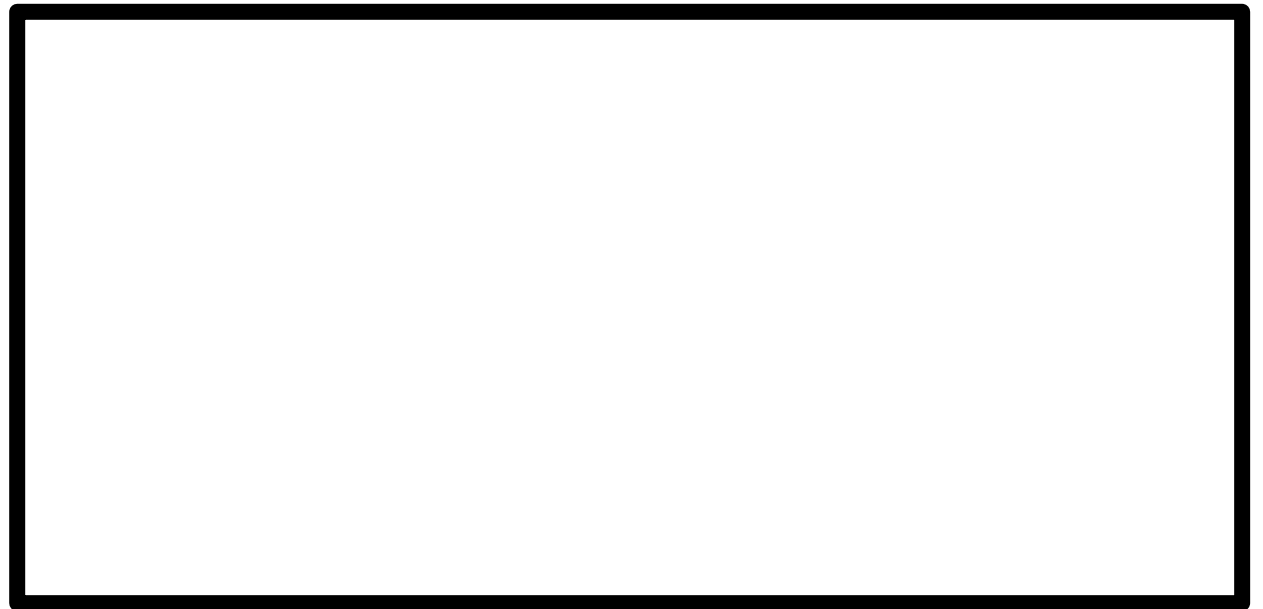
Hinge Joint



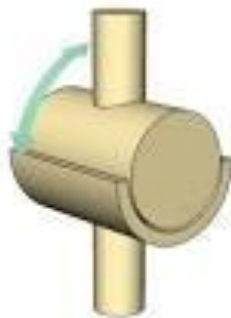
KEYWORDS



# DORSI- FLEXION



**Hinge Joint**







Complete the worksheet to  
find sport examples of the  
joint movement types

CHALLENGE: Can you think of  
times in your sport where  
these movements take place?



**PLENARY  
SESSION**

In pairs, can you get your partner to perform a movement/position by using only the correct terminology from today's lesson

E.g. I would like you to cause flexion of the knees and then extension of the knees

This will result in the performer to complete a jumping action

**CHALLENGE : CAN YOU GET YOUR PARTNER TO PERFORM A WHOLE SKILL RATHER THAN PART OF A SKILL I.E. TRIPLE JUMP!?**

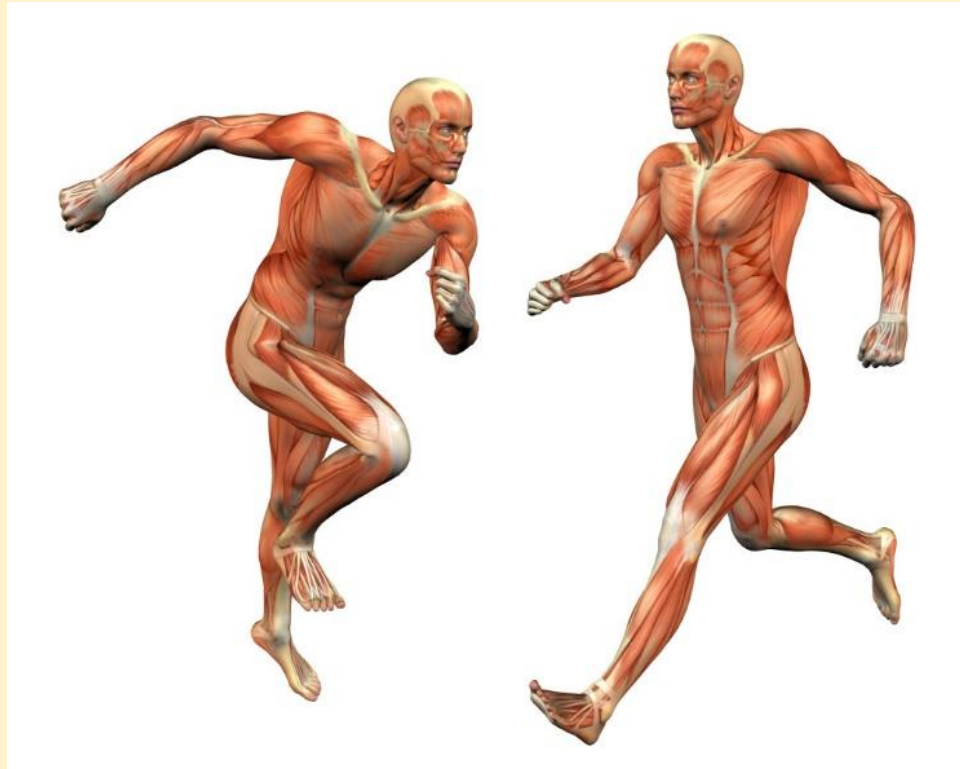


## Learning Objectives

- All:** To identify the different types of movement
- Most:** To give two different types of movement
- Some:** To give an example for each type of movement



## 1.2 The structure and functions of the muscular system



## Learning Objectives

|              |                                                                     |
|--------------|---------------------------------------------------------------------|
| <b>All:</b>  | <b>To identify the main muscles of the body</b>                     |
| <b>Most:</b> | <b>To know which and how muscles cause joint movement</b>           |
| <b>Some:</b> | <b>To understand the two different types of muscle contractions</b> |



Stating one bone per post it note, can you try and fill your whole table with post it notes and correctly named bones with a partner?



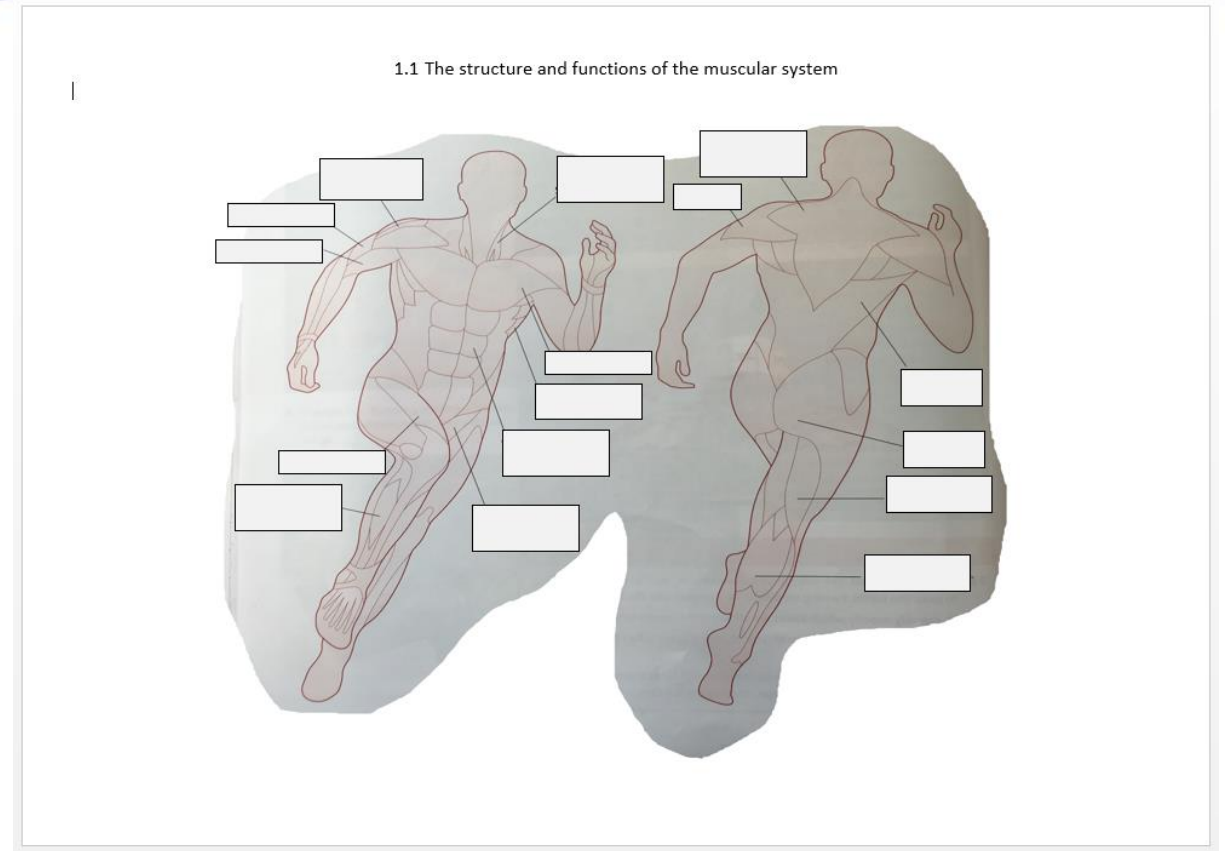




Watch the YouTube video and try to fill  
in the gaps on the skeleton worksheet  
(in pencil!!!)

We will then go through the correct  
answers as a class (page 12)

<https://www.youtube.com/watch?v=s-uXNgpcakU>



## 1.2 The structure and function of the muscular system

**All: To identify the main muscles of the body**



# The major muscle groups that operate at the joints

| Joint    |       |
|----------|-------|
| Shoulder | ***** |
| Elbow    | **    |
| Hip      | **    |
| Knee     | **    |
| Ankle    | **    |



KEYWORDS

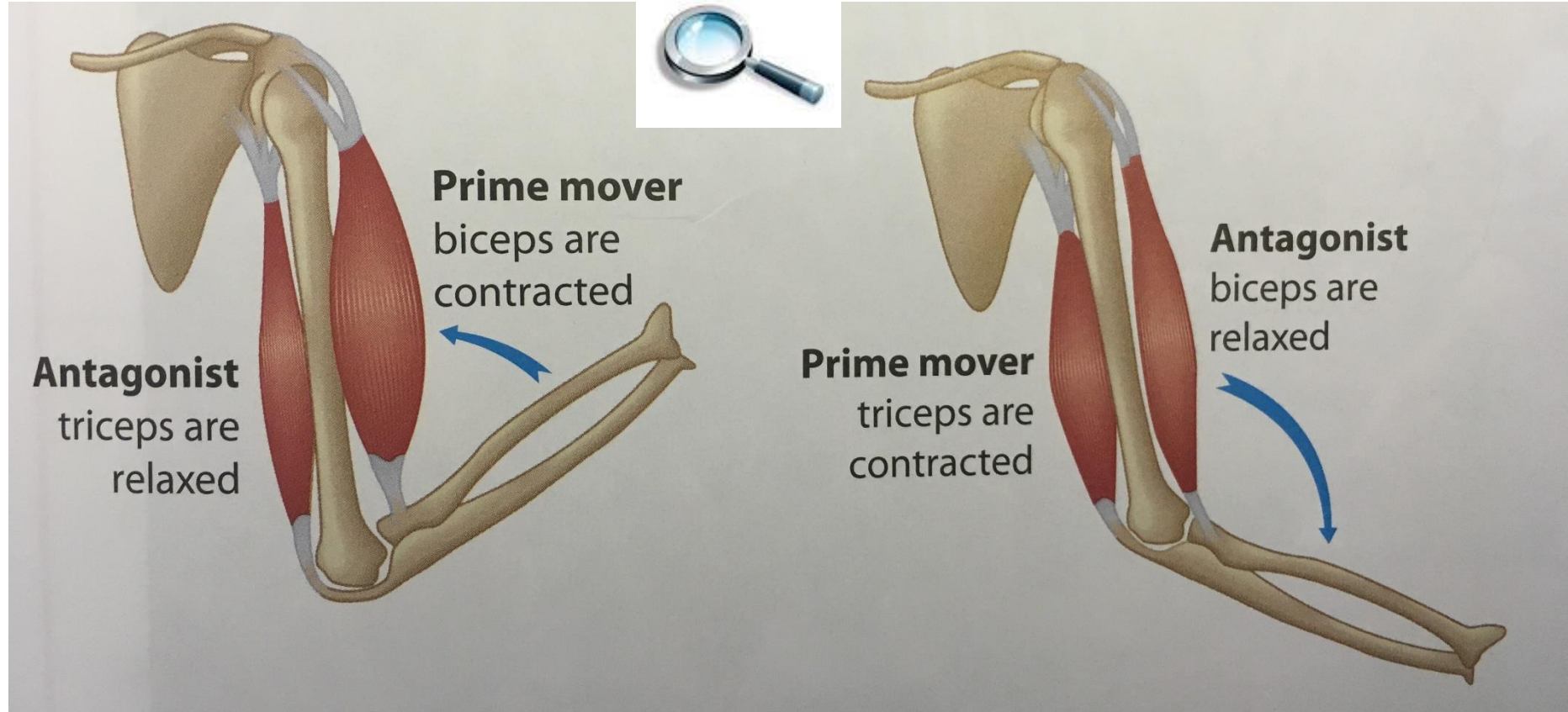


Muscles can only pull, not push. They are therefore arranged in pairs on either side of joints. One muscle contracts and pulls while the other relaxes, and vice versa.

The muscle that contracts is the **prime mover/agonist**

The muscle that relaxes is called the **antagonist**

This is why we say that muscles work in **ANTAGONISTIC PAIRS**



Most: To know which and how muscles cause joint movement

## 1.2 The structure and function of the muscular system





Can you think of muscles that make up obvious antagonistic pairs? What joint movement do these antagonistic pairs create?

EXAMPLE:

The biceps and triceps act at the elbow to create flexion and extension



KEYWORDS



## Muscles Contract in two different ways:

### ISOTONIC CONTRACTION

Concentric

Eccentric

### ISOMETRIC CONTRACTION



**CONCENTRIC ISOTONIC CONTRACTION?    ECCENTRIC ISOTONIC CONTRACTION?  
ISOMETRIC CONTRACTION?**

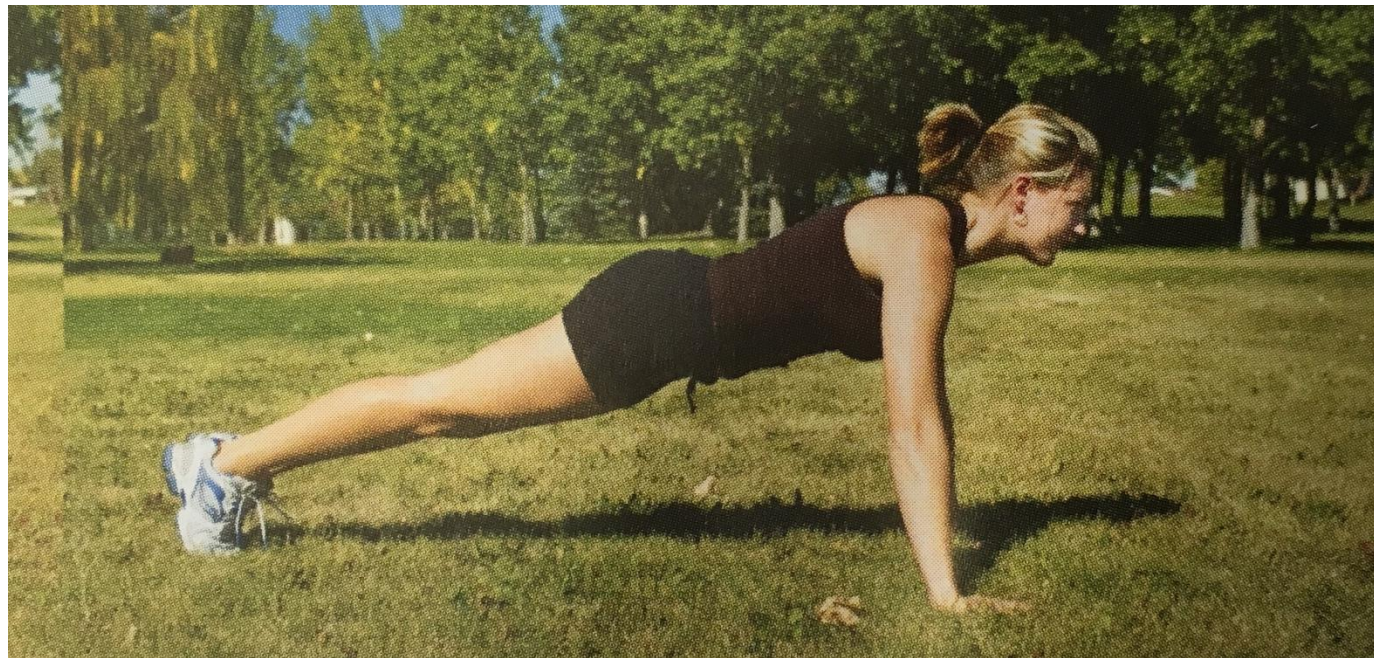


1.2 The structure and function of the muscular system

**Some: To understand the two different types of  
muscle contractions**



## CONCENTRIC ISOTONIC CONTRACTION?    ECCENTRIC ISOTONIC CONTRACTION? ISOMETRIC CONTRACTION?





**CONCENTRIC ISOTONIC CONTRACTION?    ECCENTRIC ISOTONIC CONTRACTION?  
ISOMETRIC CONTRACTION?**



1.2 The structure and function of the muscular system

**Some: To understand the two different types of  
muscle contractions**



PLENARY  
SESSION

With a partner (use 1 of you as the model) using the post it notes can you correctly identify and locate the main muscles of the body?

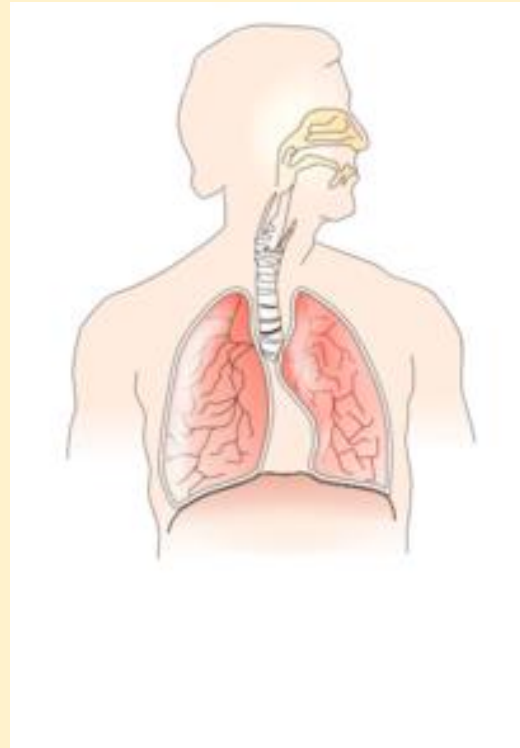
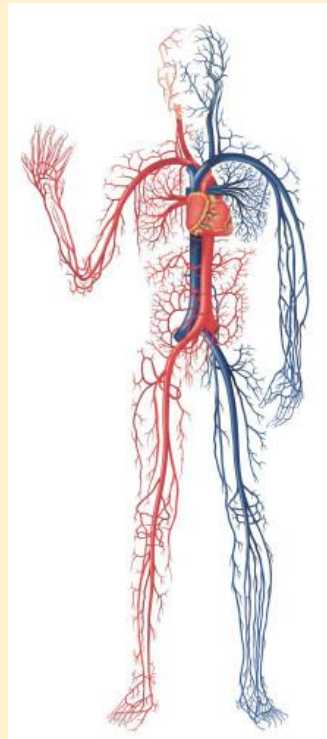




## Learning Objectives

- All:** To identify the main muscles of the body
- Most:** To know which muscles cause joint movement
- Some:** To understand the two different types of muscle contraction

## 1.3 The structure and function of the cardio-respiratory system (part 1)





## Learning Objectives

|              |                                                                     |
|--------------|---------------------------------------------------------------------|
| <b>All:</b>  | <b>To understand what the cardio-respiratory system is</b>          |
| <b>Most:</b> | <b>To know the structure of the respiratory system</b>              |
| <b>Some:</b> | <b>To know the pathway air takes through the respiratory system</b> |

# The 5 W's



Lesson focus = The respiratory system



Create a question that you would like to know about the lesson focus using

**Who, What, Why, Where and When?**



The cardio-respiratory system is made up of the circulatory system ( \_\_\_\_\_ , \_\_\_\_\_ and \_\_\_\_\_ ) and the respiratory system ( \_\_\_\_\_ and \_\_\_\_\_ ).

Its main function is to enable the body to \_\_\_\_\_ ,  
pumping blood and \_\_\_\_\_ around the body.

During physical activity, the system works \_\_\_\_\_ to  
supply \_\_\_\_\_ and \_\_\_\_\_ to the  
\_\_\_\_\_ .

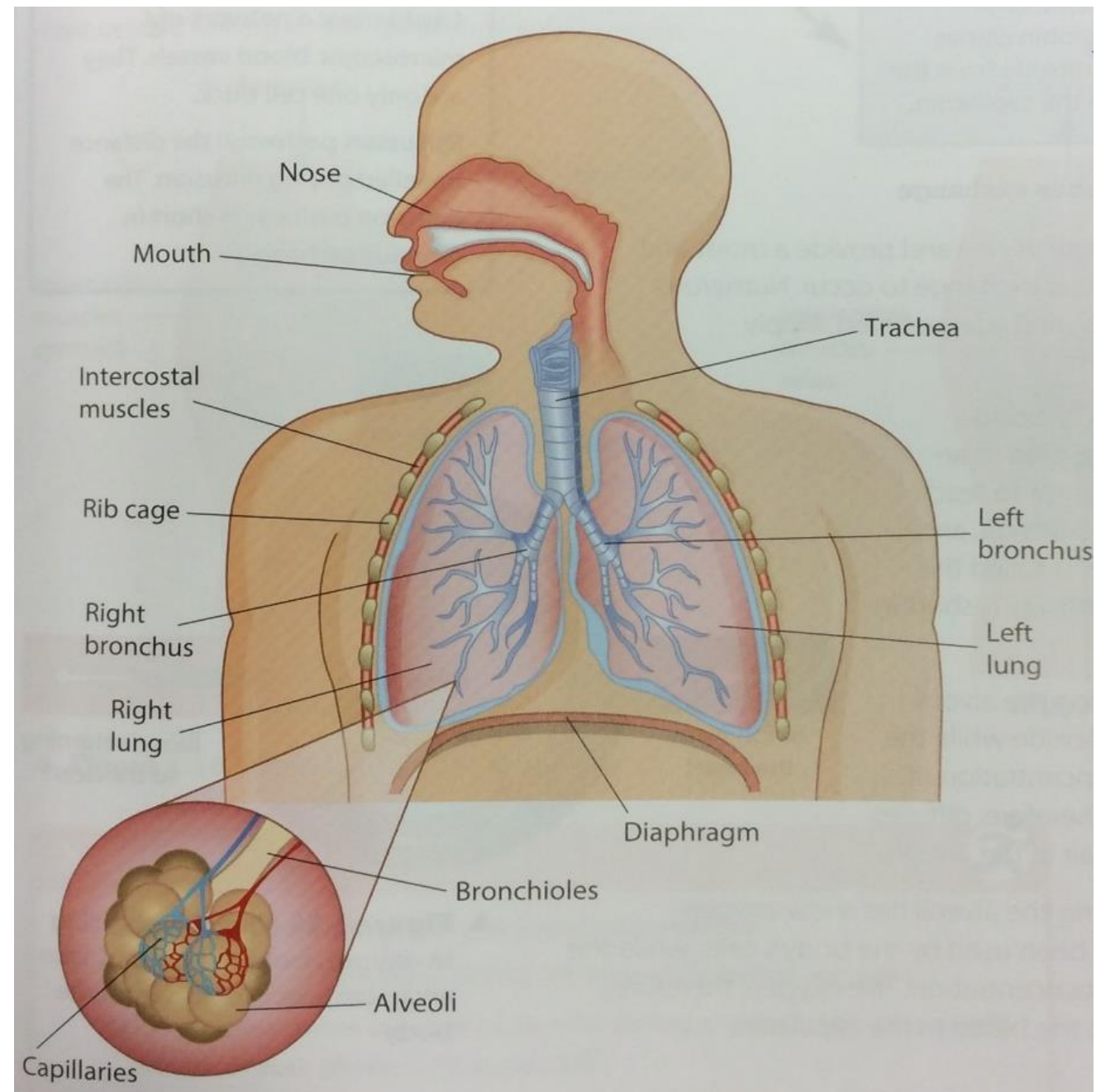
**Oxygen**  
**Blood**  
**Heart**  
**Breathe**  
**Oxygen**  
**Airways**  
**Blood vessels**  
**Blood**  
**Harder**  
**Muscles**  
**Lungs**

### 1.3 The structure and function of the cardio-respiratory system

**All: To understand what the  
cardio-respiratory system is**

The respiratory system brings oxygen into the body so it can be used to produce energy and enable activity. It then gets rid of carbon dioxide, a waste product, which is produced in the muscles during exercise.





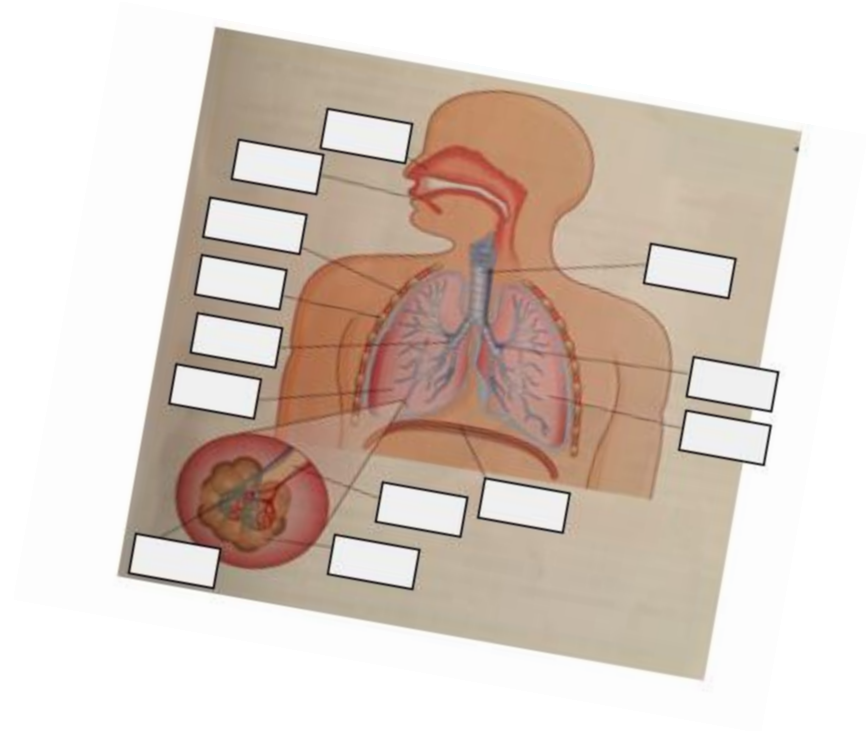


KEYWORDS



Task :

Can you correctly locate  
each part of the  
respiratory system?







Using the information from the lesson and worksheet, can you create a story telling us the pathway air takes through the respiratory system?

### Story Time – The Journey of Air

PLENARY  
SESSION



Remember this?

Can you now  
answer the  
questions you  
created based on  
your learning from  
the lesson?

## The 5 W's

Lesson focus = The respiratory  
system

Create a question that you would  
like to know about the lesson focus  
using

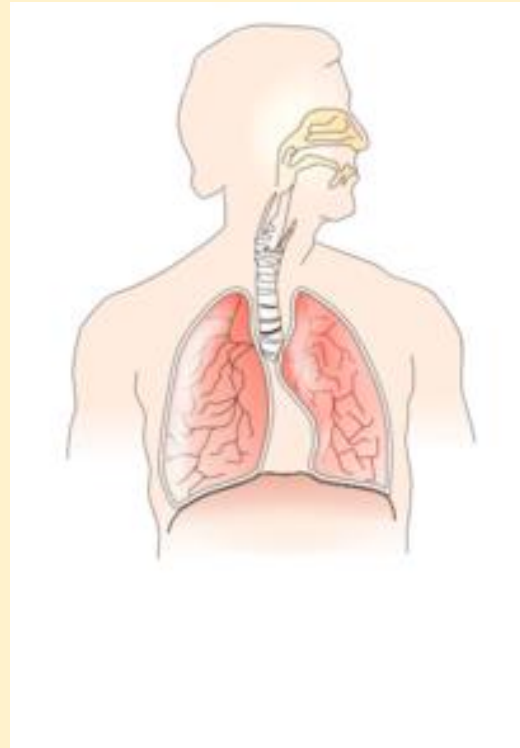
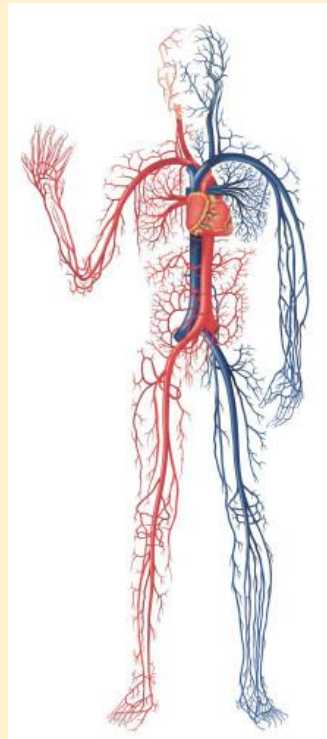
**Who, What, Why, Where and  
When?**



## Learning Objectives

- All:** To understand how the cardio-respiratory system is
- Most:** To know the structure of the respiratory system
- Some:** To know how air takes through the respiratory system

## 1.3 The structure and function of the cardio-respiratory system (part 2)





## Learning Objectives

- All:** To know what Gaseous Exchange is
- Most:** To know the keywords/definitions of the components which make up Gaseous Exchange
- Some:** To explain the process of Gaseous Exchange

A swimmer in a pool, wearing a blue swim cap and goggles, is shown from the chest up, splashing water.

If this is the answer, what is the question?



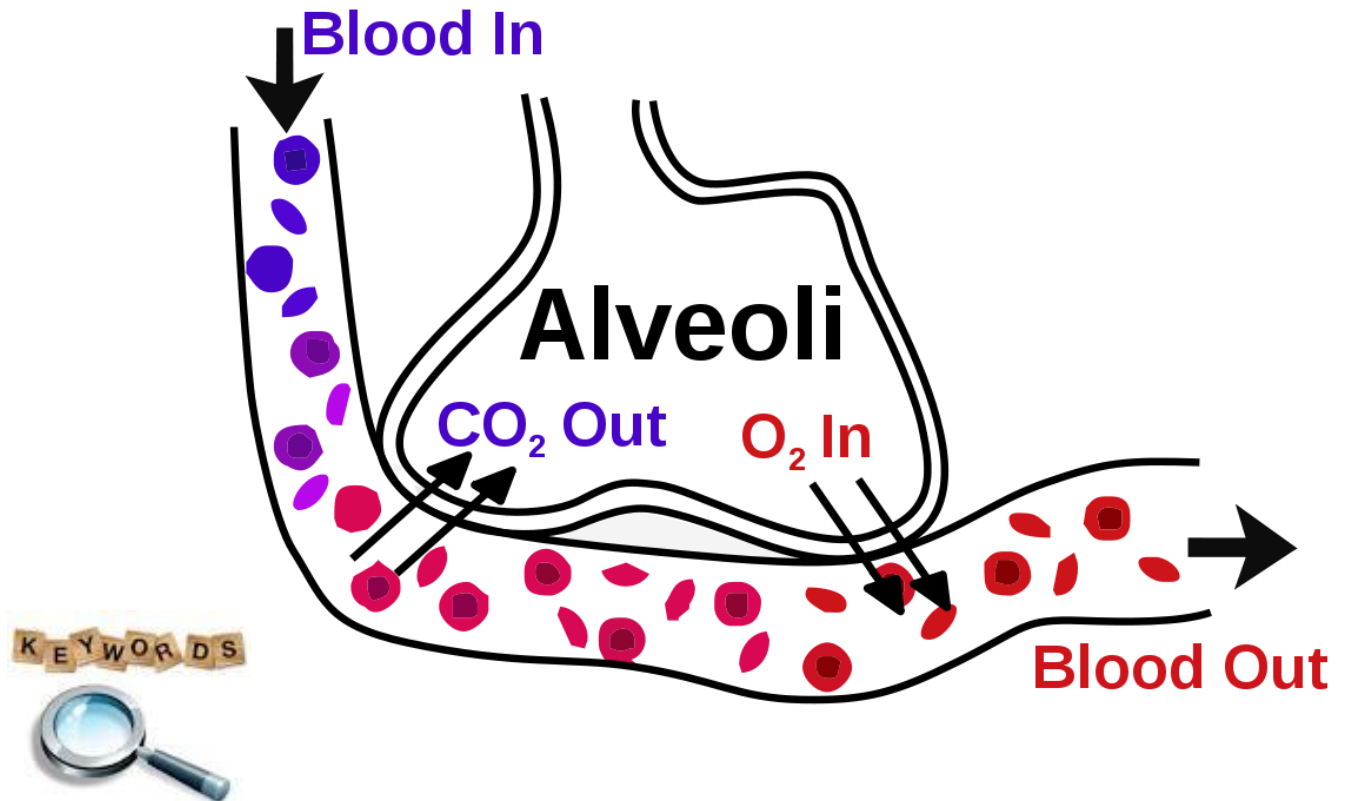
*The process where oxygen from the air in the alveoli moves into the blood in the capillaries, while carbon dioxide moves from the blood in the capillaries into the air in the alveoli*



# Gaseous Exchange

=

*The process where oxygen from the air in the alveoli moves into the blood in the capillaries, while carbon dioxide moves from the blood in the capillaries into the air in the alveoli*



Alveoli

Capillaries



Haemoglobin

Oxyhaemoglobin

Diffusion pathway

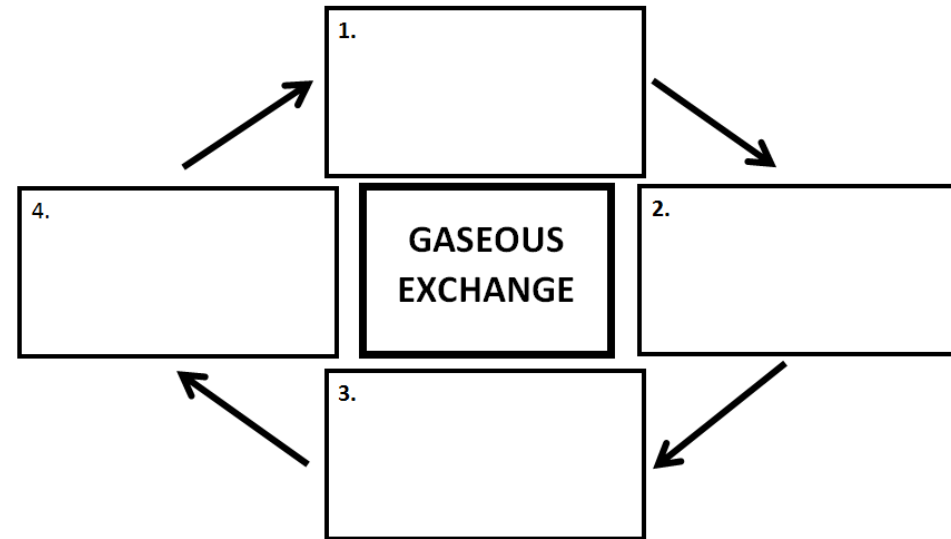




Using the 'Gaseous Exchange Worksheet' and page 16 in the text book, fill in the gaps with the process of gaseous exchange

Extension: Make notes from page 16.

1.3 The structure and function of the cardio-respiratory system

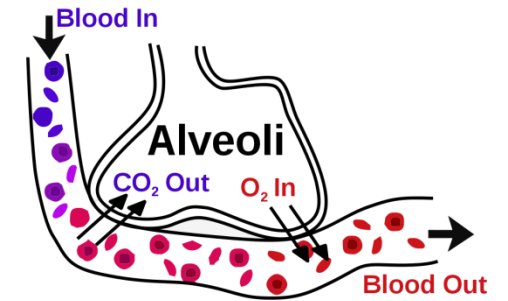


**Some: To explain the process of Gaseous Exchange**

PLENARY  
SESSION

1. What are the main two gases being exchanged between the lungs and the circulatory system?

Flip card >



Most: To know the keywords/definitions of the components which make up Gaseous Exchange

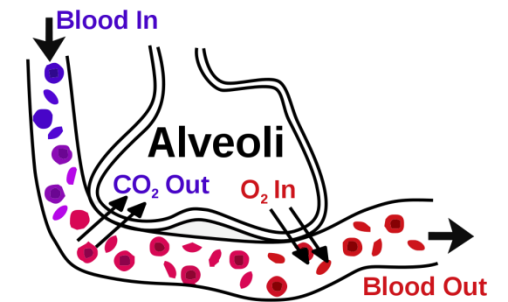
## 1.3 The structure and function of the cardio-respiratory system



PLENARY  
SESSION

**2. Explain diffusion**

Flip Card ➤



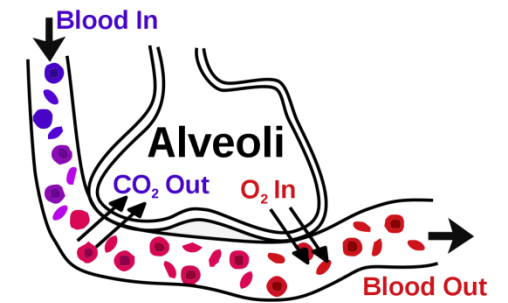
**Most:** To know the keywords/definitions of the components which make up Gaseous Exchange

## 1.3 The structure and function of the cardio-respiratory system

PLENARY  
SESSION

3. Which feature do both alveoli and capillaries share which aids gas exchange?

Flip Card ➤



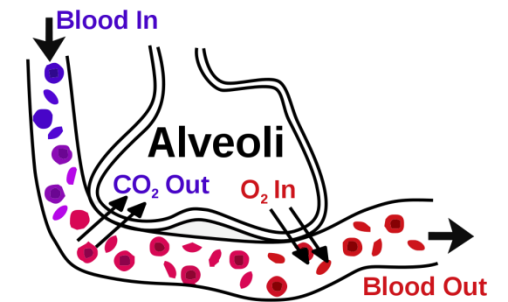
Most: To know the keywords/definitions of the components which make up Gaseous Exchange



PLENARY  
SESSION

4. Why does carbon dioxide pass out of the blood supply when it reaches the alveoli?

Flip Card >

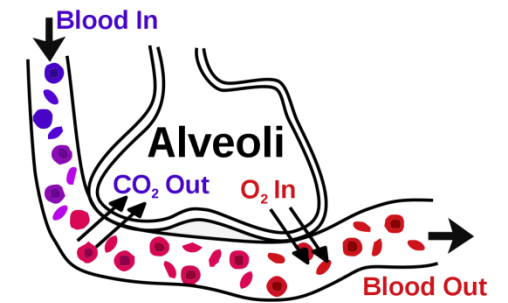


**Some: To explain the process of  
Gaseous Exchange**

PLENARY  
SESSION

5. How much oxygen is in the air we breathe in and the air we breathe out?

Flip Card >



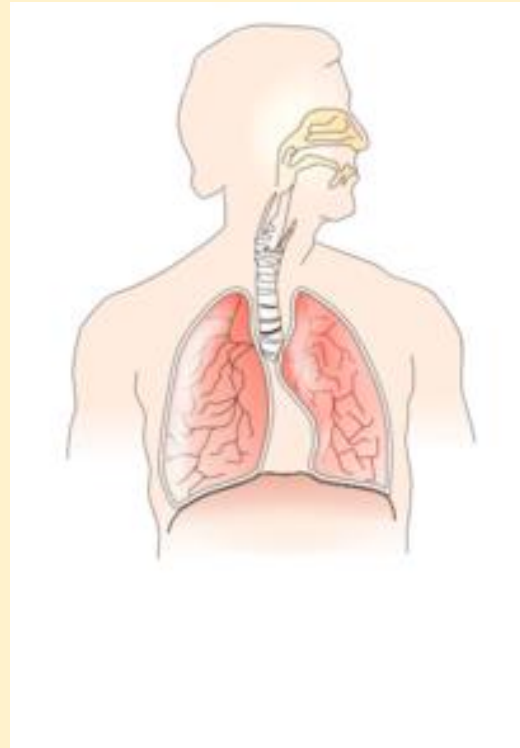
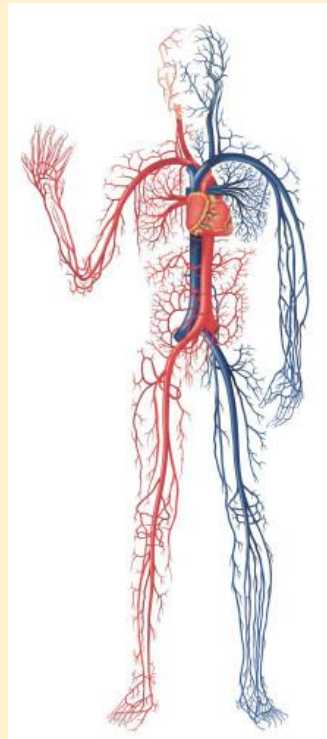
**Some: To explain the process of  
Gaseous Exchange**



## Learning Objectives

- All:** To know what Gaseous Exchange is
- Most:** To know the key words/definitions of the components which make up Gaseous Exchange
- Some:** To explain the process of Gaseous Exchange

## 1.3 The structure and function of the cardio-respiratory system (part 3)

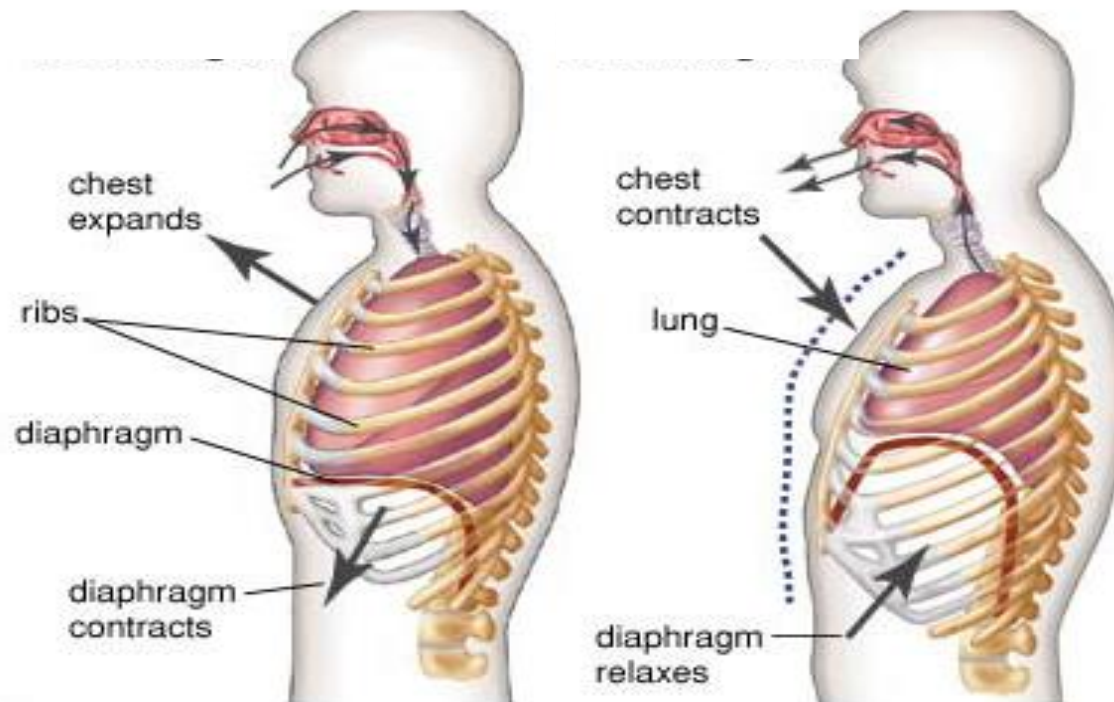




## Learning Objectives

|              |                                                              |
|--------------|--------------------------------------------------------------|
| <b>All:</b>  | <b>To know the definitions of inspiration and expiration</b> |
| <b>Most:</b> | <b>To understand the mechanics of breathing</b>              |
| <b>Some:</b> | <b>To understand the spirometer trace</b>                    |

# What does this picture represent?



1.3 The structure and function of the cardio-respiratory system

**All: To know the definitions of  
inspiration and expiration**



KEYWORDS



## Jumbles

Can you unjumble the sentences?

Inhalation/Inspiration - Breathing the in of process

Exhalation/Expiration - Process out the breathing of



Make  
notes  
from  
page 17

Write notes here:





## Spirometer Trace Bingo!



You will be given one definition to write in on your bingo cards next to whichever key word it relates to

You then need to walk around the room to find out the other definitions on your bingo card



Once you have them all written in – call BINGO!

A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head. The swimmer is positioned in the upper half of the frame, with their head and shoulders visible above the water surface.

## Spirometer Trace

**Tidal Volume** – The normal amount of air inhaled or exhaled per breath. Tidal volume **increases** with exercise.

**Expiratory reserve volume** – The amount of air that can be forced out of the lungs after tidal volume (after normal expiration). It **decreases** during exercise.

**Inspiratory reserve volume** – The amount of air that can be forced into the lungs after tidal volume (after normal inspiration). Inspiratory reserve volume **decreases** during exercise.

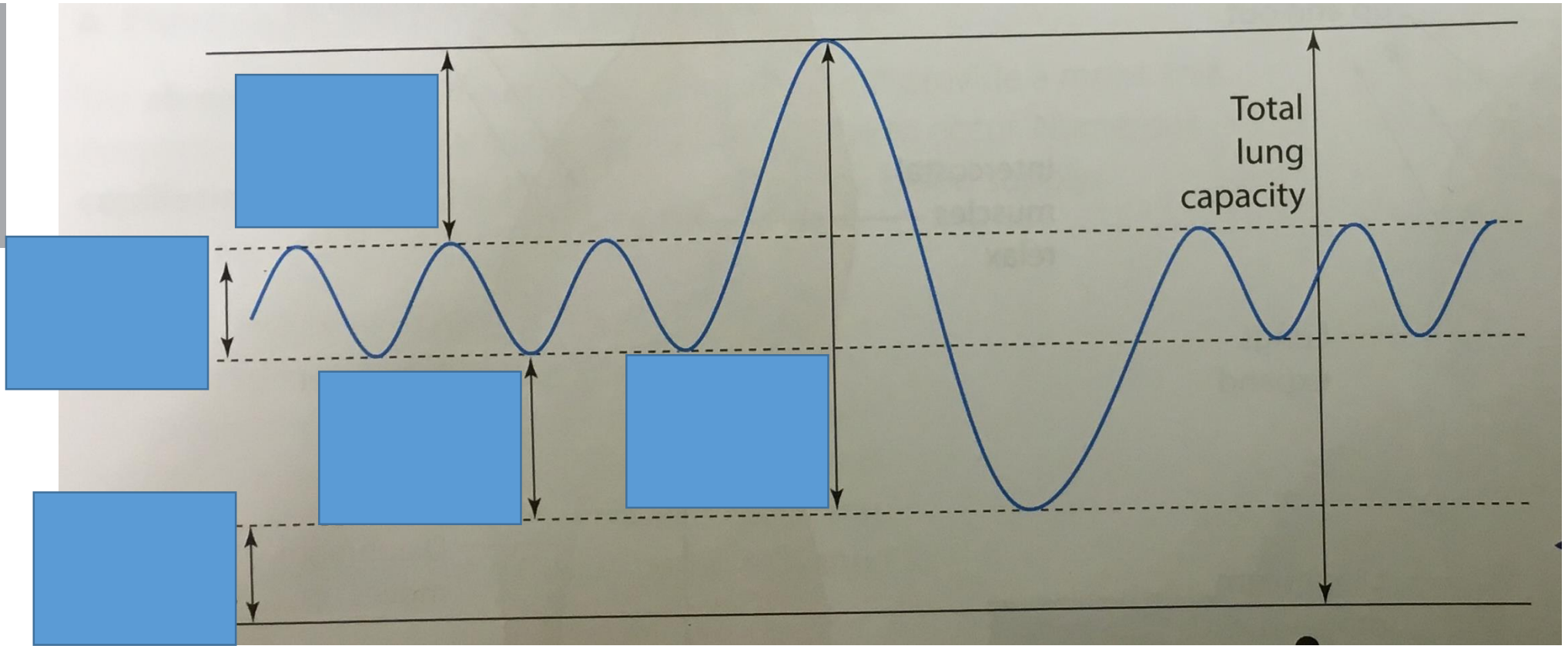
**Residual volume** – The amount of air that remains in the lungs after maximal expiration. There is **no change** in residual volume during exercise.

**Vital capacity** – The largest volume of air that can be forcibly expired after the deepest possible inspiration.



PLENARY  
SESSION

Fill in the  
blanks  
using  
your  
keywords  
from the  
lesson!

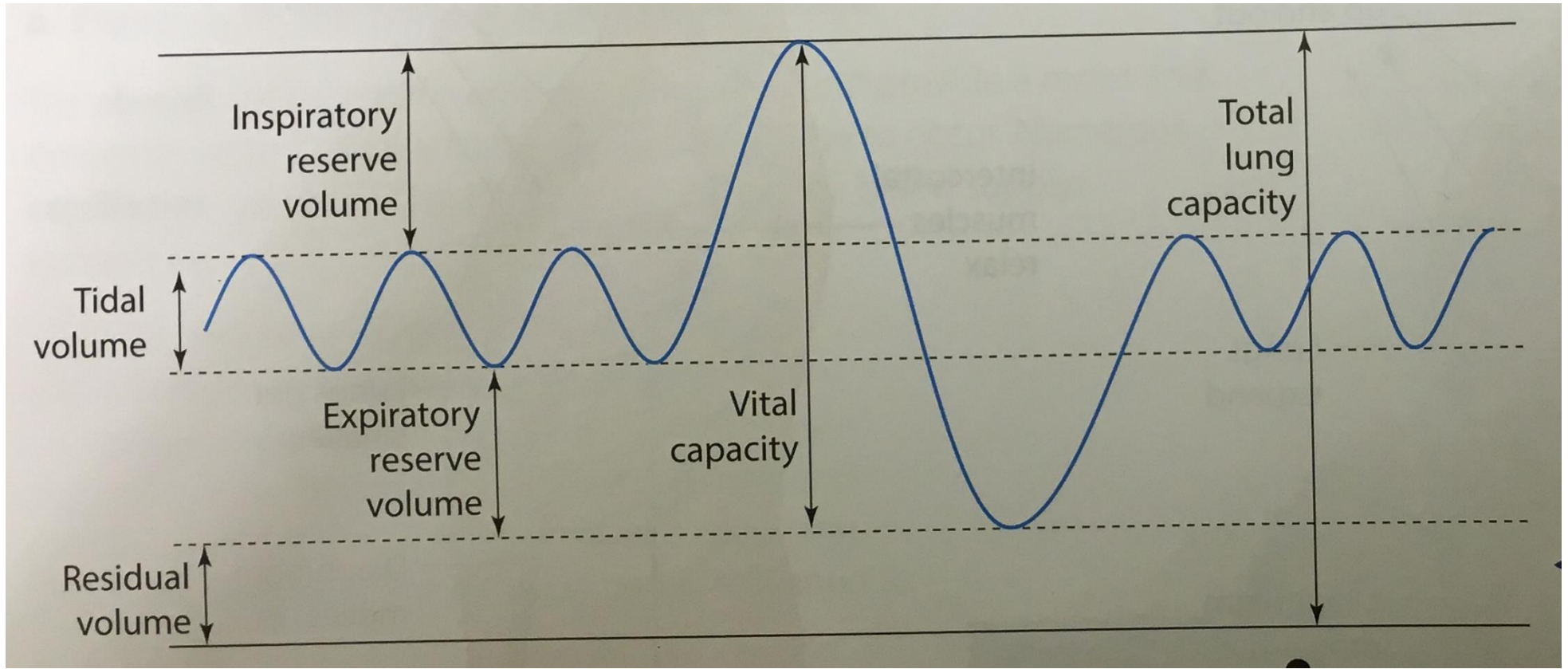


## 1.3 The structure and function of the cardio-respiratory system

Some: To understand the  
spirometer trace

PLENARY  
SESSION

Fill in the  
blanks  
using  
your  
keywords  
from the  
lesson!



Some: To understand the  
spirometer trace

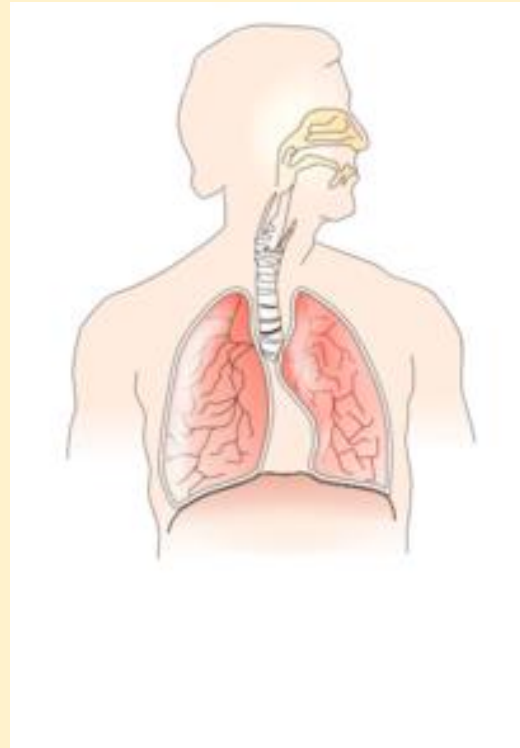
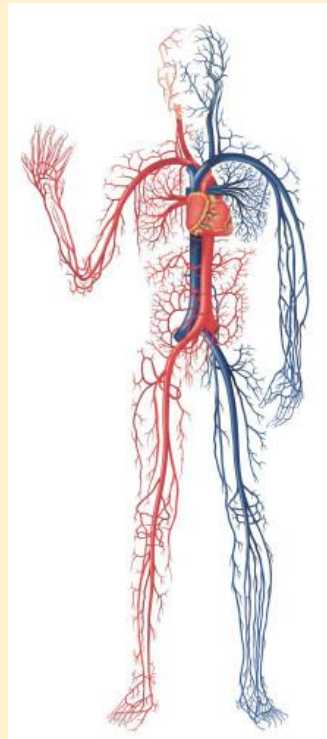
## 1.3 The structure and function of the cardio-respiratory system



## Learning Objectives

- All:** To know the descriptions of inspiration and expiration
- Most:** To understand the mechanics of breathing
- Some:** To understand the spirometer trace

## 1.3 The structure and function of the cardio-respiratory system (part 4)





## Learning Objectives

- |              |                                                                        |
|--------------|------------------------------------------------------------------------|
| <b>All:</b>  | <b>To identify the structures of the heart</b>                         |
| <b>Most:</b> | <b>To understand the terms deoxygenated blood and oxygenated blood</b> |
| <b>Some:</b> | <b>To understand the pathway blood takes</b>                           |



Give me 10 key words that relate to.....



# THE HEART

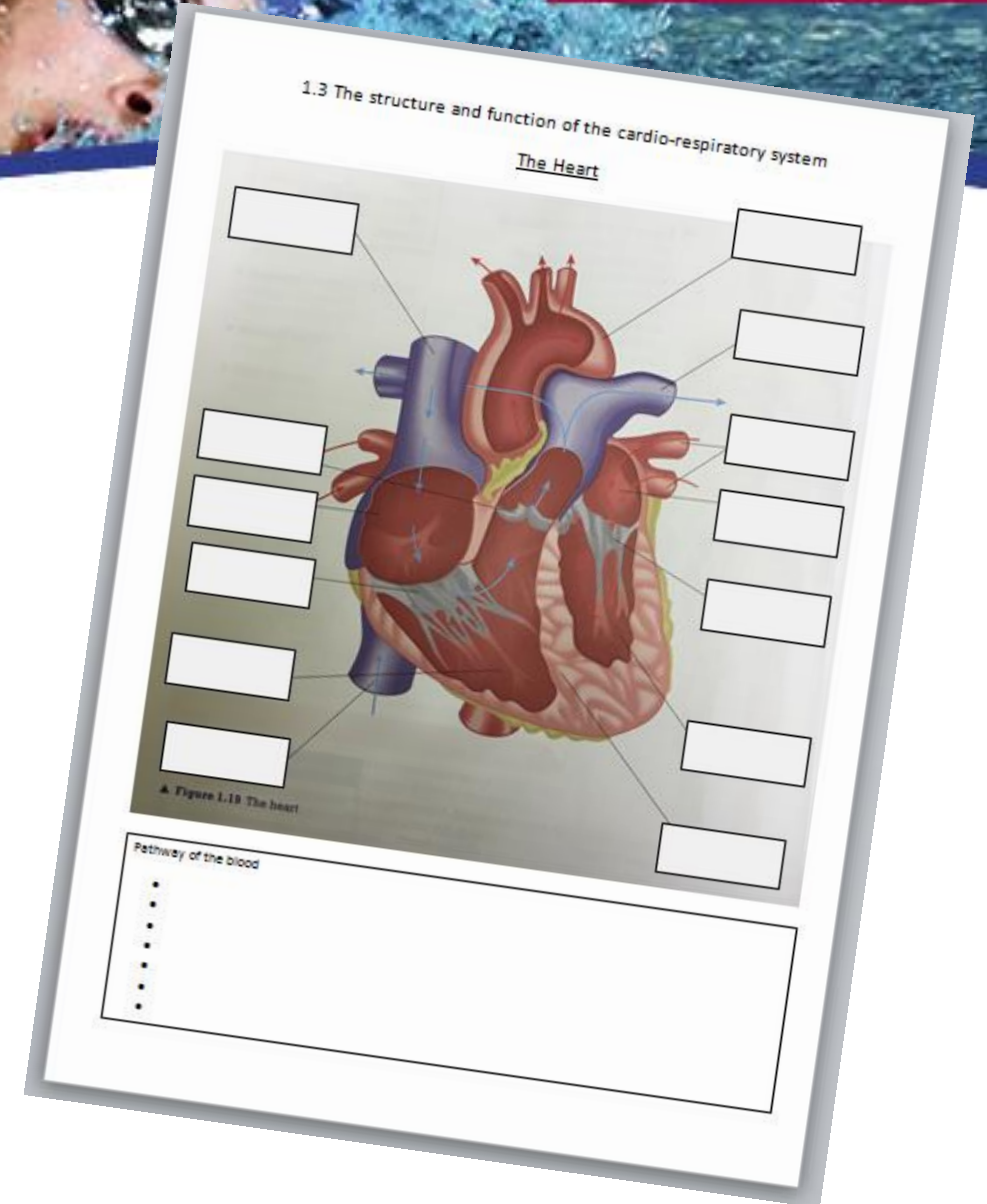




Watch the YouTube video and try to fill in the gaps on the heart worksheet (in pencil!!)

We will then go through the correct answers as a class (page 20)

<https://www.youtube.com/watch?v=p-wilmN80XE>



KEYWORDS



### Table Text

You will be divided into 6 groups

Each group will be given a key term

Research the key term and write as much information as you can about the key term onto the tables in the time limit given

You will then rotate round your tables to fill in gaps on your lesson outline sheet

Good Luck!



### Key Terms

Oxygenated Blood  
Deoxygenated  
Blood  
Heart rate  
Arteries  
Veins  
Capillaries

**Most: To understand the terms  
deoxygenated blood and  
oxygenated blood**

## 1.3 The structure and function of the cardio-respiratory system



# Oxygenated Blood

KEYWORDS



**Most:** To understand the terms  
deoxygenated blood and  
oxygenated blood

# Deoxygenated Blood

KEYWORDS



**Most:** To understand the terms  
deoxygenated blood and  
oxygenated blood



# Heart Rate

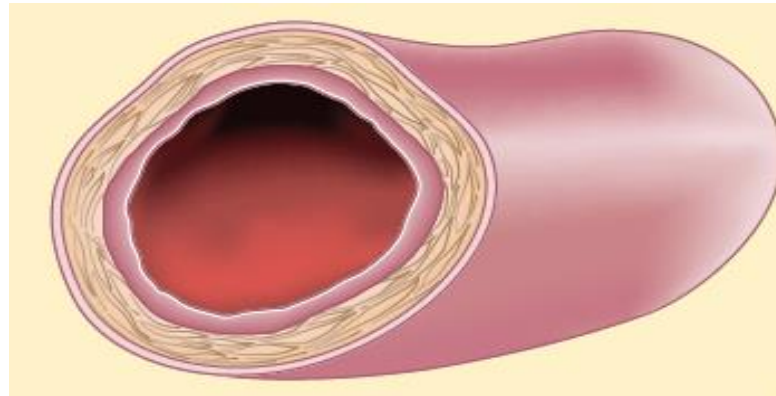
KEYWORDS



**Most:** To understand the terms  
deoxygenated blood and  
oxygenated blood

# Arteries

KEYWORDS

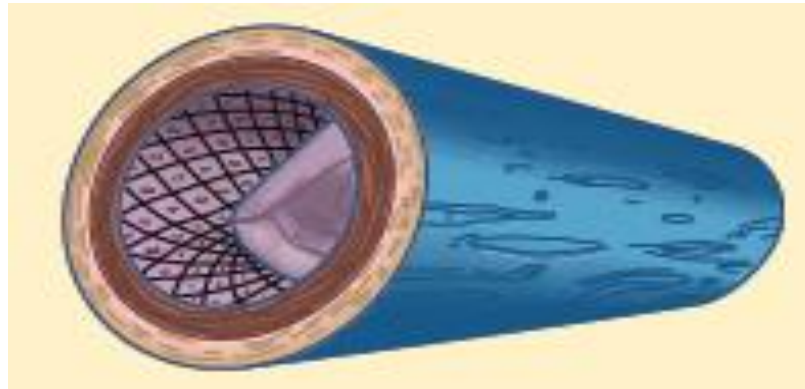


Most: To understand the terms  
deoxygenated blood and  
oxygenated blood



# Veins

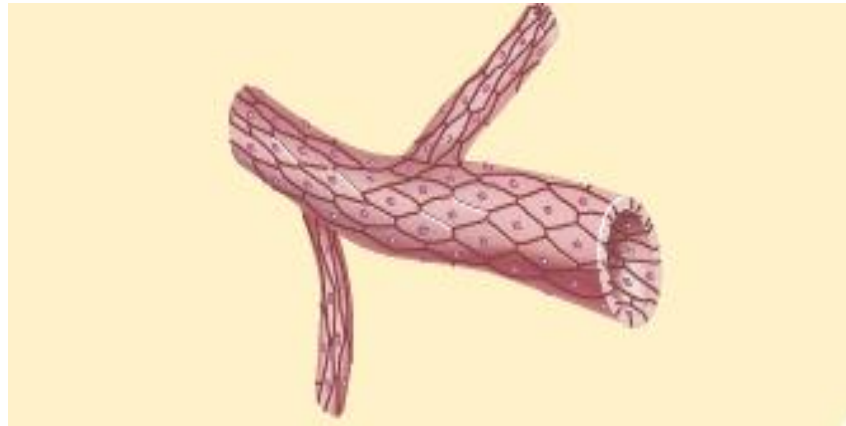
KEYWORDS



Most: To understand the terms  
deoxygenated blood and  
oxygenated blood

# Capillaries

KEYWORDS

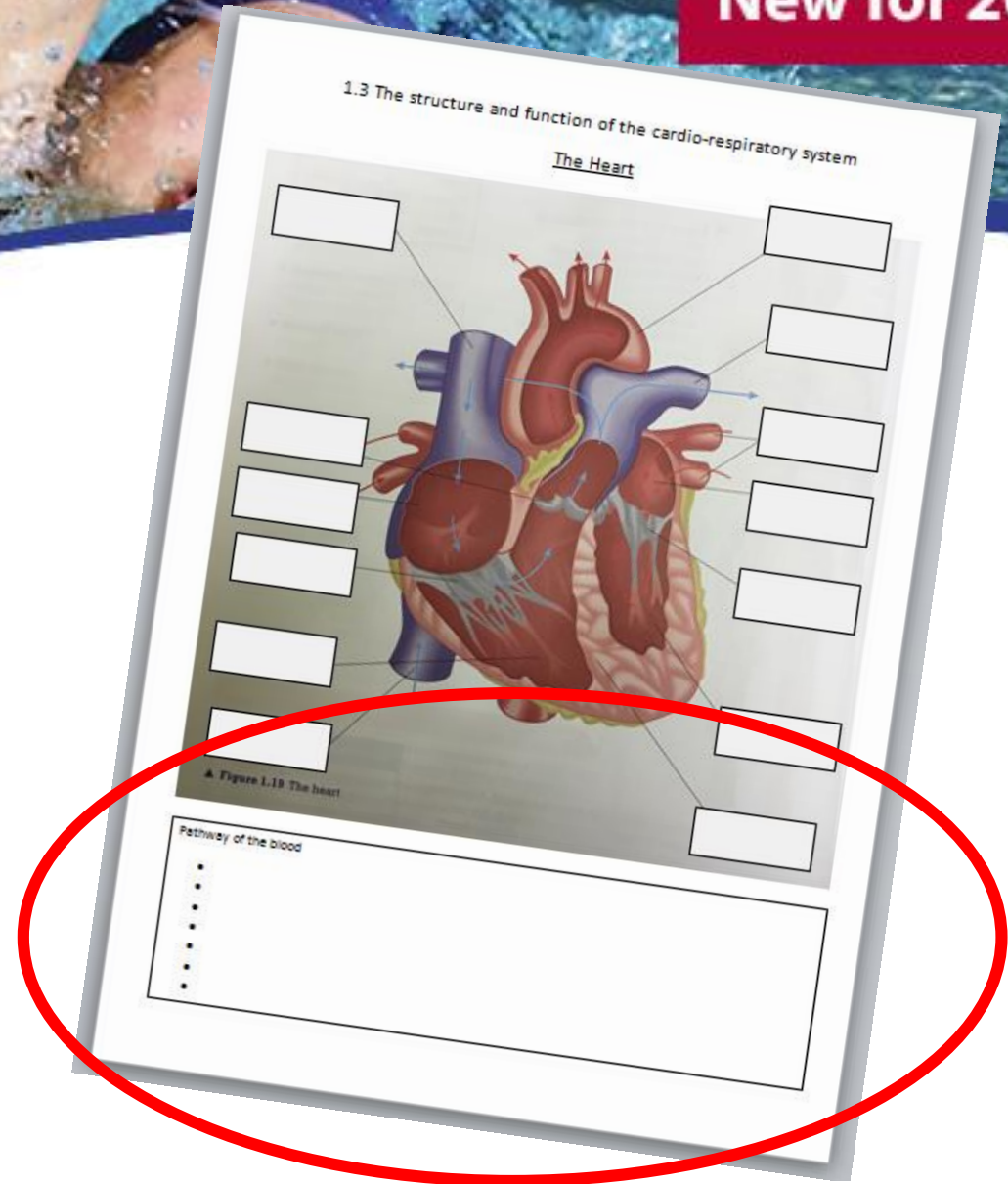


Most: To understand the terms  
deoxygenated blood and  
oxygenated blood





Using the arrows on your worksheet to help you and page 21 in the text book, silently write down in order the pathway that blood takes through the heart



Some: To understand the pathway blood takes



PLENARY  
SESSION

Now that you have learnt about the heart in more detail – would change any of your original 10 key words about the heart?

Give me 10 key words that relate to.....



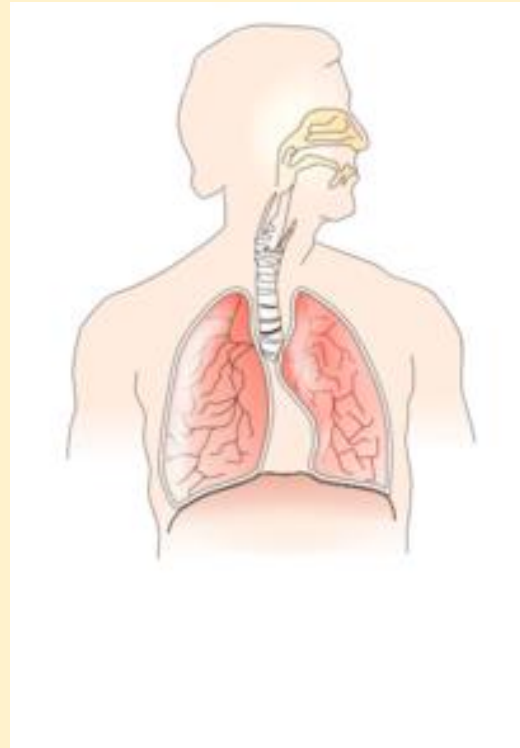
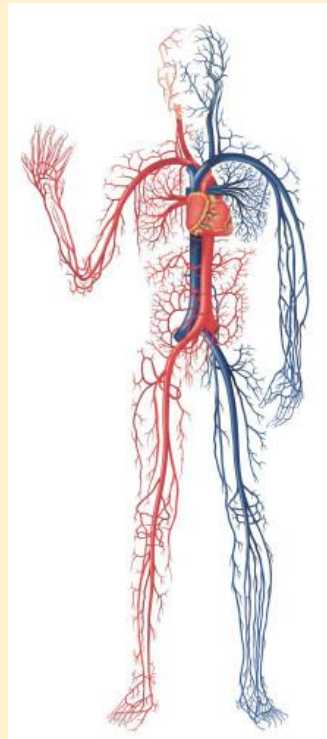
# THE HEART



## Learning Objectives

- All:** To identify the structures of the heart
- Most:** To understand the terms deoxygenated blood and oxygenated blood
- Some:** To understand the pathway blood takes

## 1.3 The structure and function of the cardio-respiratory system (part 5)





## Learning Objectives

- All:** To define cardiac output (Q), stroke volume (SV) and heart rate (HR)
- Most:** To understand the relationship between Q, SV and HR
- Some:** To understand the effect of exercise on Q, SV and HR



# How does our heart respond to different intensities of physical activity?



## 1.3 The structure and function of the cardio-respiratory system

All: To define cardiac output (Q),  
stroke volume (SV) and heart rate (HR)



# Heart Rate (HR)

KEYWORDS



Number of times your heart ventricles beat in one minute

Average resting heart rate is 70-72 bpm

Maximal heart rate =  $220 - \text{age}$

Low resting heart rate = high level of aerobic endurance fitness

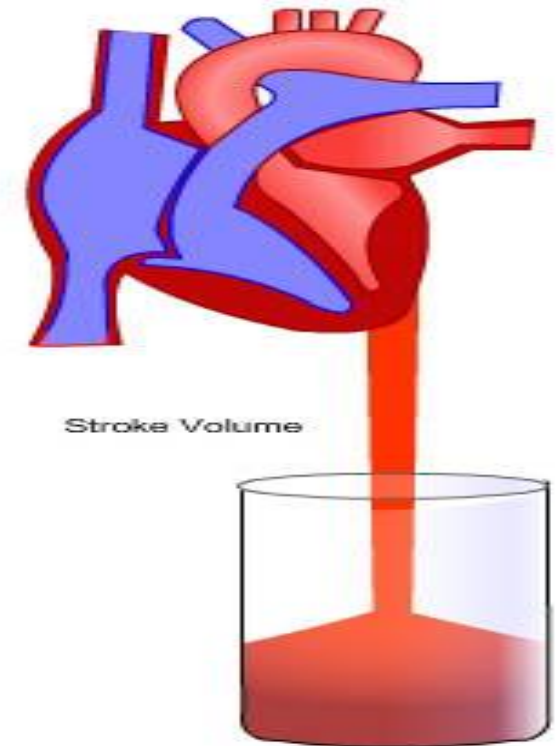
RHR below 60 = bradycardia (slow HR = increase in stroke volume due to hypertrophy)

KEYWORDS



## Stroke volume (SV)

The volume of blood pumped out of the heart by each ventricle during one contraction





# Cardiac output (Q)

KEYWORDS



- The volume of blood ejected by the heart in one minute

How do SV, HR and Q link together??

$$Q = SV \times HR$$

$$(\text{L/min}) = (\text{ml per beat}) \times (\text{beats per min})$$

**Most:** To understand the relationship  
between Q, SV and HR



Find the fib!

Write down 3 statements about what we have just learnt – 2 of which are true, 1 which is a fib!

Be prepared to share with the class





As you exercise, your cardiac output increases. Your heart works harder to deliver oxygen to your muscles, and carry away carbon dioxide more quickly!

Draw out the graph in the space below, on page 23 from the text book to show the effect of exercise on heart rate

## 1.3 The structure and function of the cardio-respiratory system

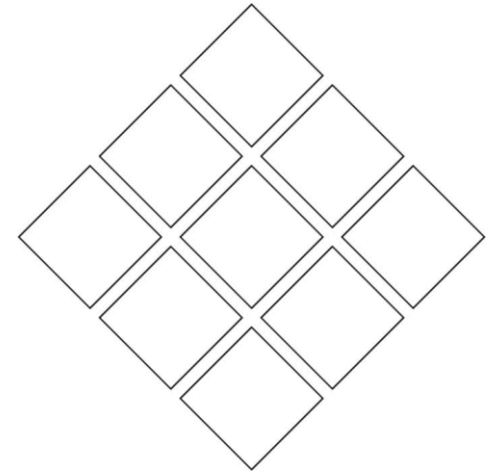
**Some: To understand the effect of exercise on Q, SV and HR**

PLENARY  
SESSION

## Diamond 9

In small groups using the information from the lesson I would like you to order the information on the diamond

The top of the diamond being most important, the bottom being not so!





## Learning Objectives

- All:** To define cardiac output (Q), stroke volume (SV) and heart rate
- Most:** To understand the relationship between Q, SV and HR
- Some:** To understand the effect of exercise on Q, SV and HR

## 1.4 Aerobic and Anaerobic Exercise





## Learning Objectives

- |              |                                                                 |
|--------------|-----------------------------------------------------------------|
| <b>All:</b>  | <b>Understand the terms aerobic and anaerobic</b>               |
| <b>Most:</b> | <b>Understand the effects of aerobic and anaerobic exercise</b> |
| <b>Some:</b> | <b>To know the methods of recovery</b>                          |

## PAIRS



Anaerobic exercise

Intensity

Aerobic Exercise

Sprinter

Long-distance runner

Lactic Acid

Aerobic exercise

Anaerobic exercise

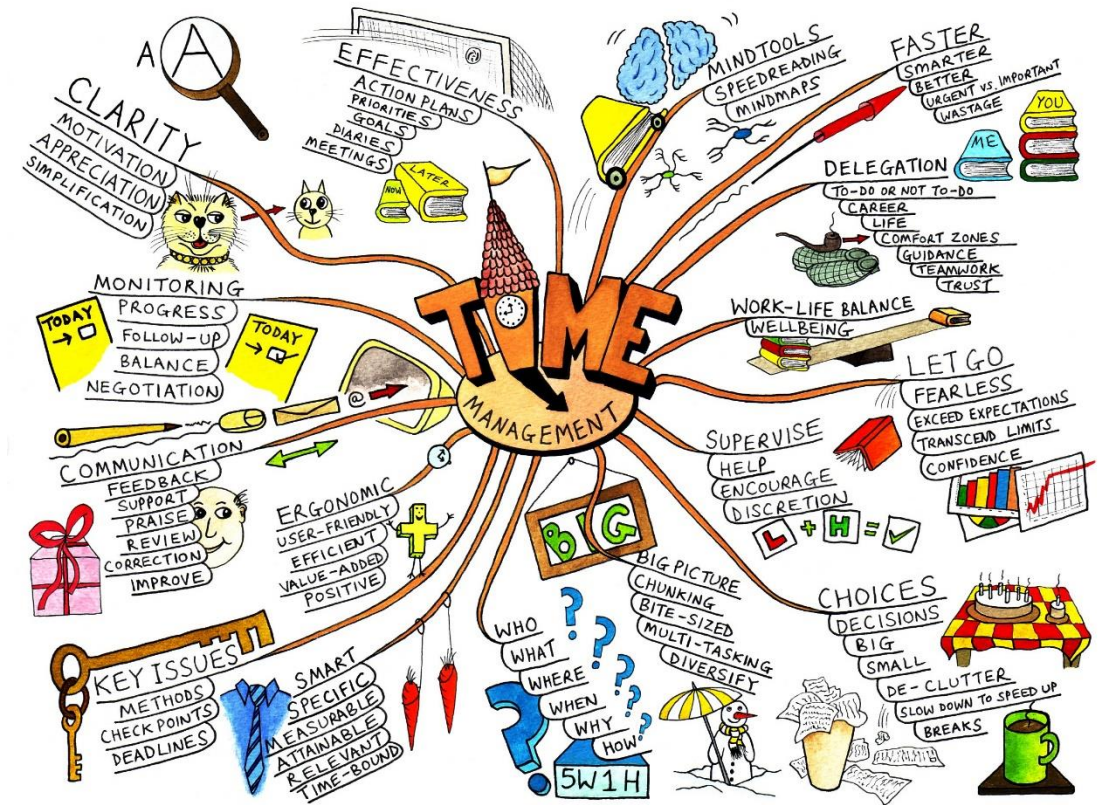




# CONVERSION

Turn the text on pages 24 and 25 into 2 separate mind maps

- 1 mind map on Aerobic Exercise
- 1 mind map on Anaerobic Exercise



All: Understand the terms aerobic and anaerobic

Most: Understand the effects of aerobic and anaerobic exercise





Make a list of 10 different sports or physical activities

- a) Next to each activity, write down whether it is low, medium or high intensity
- b) Next to each activity, make a note of approximately how long each activity lasts
- c) Draw two columns on a page, one labelled aerobic, the other labelled anaerobic. Place each activity into one of the columns. Are there any that could go in both columns?





*It is important to ensure that the body recovers from vigorous exercise*



Using the post it notes  
can you list as many  
different methods of  
recovery as possible?





# CONVERSION

Turn the text on page 26 into bullet points for each method of the recovery process:

Cool Down

Manipulation of Diet

Ice baths or Massage



PLENARY  
SESSION



Revisit the  
pairs activity –  
do you still  
agree with  
your original  
answers  
having now  
learnt the  
content?

## PAIRS

Anaerobic exercise

Intensity

Aerobic Exercise

Sprinter

Long-distance runner

Lactic Acid

Aerobic exercise

Anaerobic exercise

## Learning Objectives

- All:** Understand the terms aerobic and anaerobic
- Most:** Understand the effects of aerobic and anaerobic exercise
- Some:** To know the methods of recovery



# Recovery from exercise



## Learning Objectives

 **Describe processes used to recover effectively from vigorous exercise**

 Explain how recovery processes help to prevent DOMS after vigorous exercise

 **Evaluate recovery processes and suggest which would be more beneficial to certain sports performers**





Can you list down as many different ways to recover from vigorous exercise?



Recovery from exercise

**Describe processes used to recover effectively from vigorous exercise**

Watch the following clip of a rally between Andy Murray and David Ferrer

<https://www.youtube.com/watch?v=A7sILSJf24>

Andy Murray's 3 hour recovery routine after each tennis match:

1. Shower - 15 minutes
2. **Exercise bike (cool down) – 10 minutes**
3. **Eat! (within 30 minutes of match finishing) 50 pieces of sushi – 20 minutes**
4. Rehydrate – 5 minutes
5. Deep massage – 45 minutes
6. Ice bath – 8 minutes
7. Hot tub – 5 minutes
8. Meet the press – 60 minutes
9. Practice (optional) – 30 minutes



Recovery from exercise

Describe  
exercise



### Cool down

Rather than just stopping at the end of a physical activity session, you should end the session gradually by doing 5 to 10 minutes of walking or jogging to help decrease body temperature and remove waste products such as lactic acid from the working muscles. This should be followed by 5 to 10 minutes of stretching to help the muscles relax.

An appropriate cool down has the following benefits:

- Aids in the clearing of waste products – including lactic acid
- Reduces the potential for DOMS
- Reduces the chances of dizziness or fainting caused by the pooling of blood in the extremities
- Allows breathing and heart rate to slowly return to their resting rates and so prevent sudden changes to heart rhythm, which could be dangerous.



Recovery from exercise

**Describe processes used to recover effectively from vigorous exercise**

### Manipulation of diet

Drinking water to rehydrate is essential to help your body recover and replace the fluids lost during exercise, so you are ready to train again. Exactly how much water you need to ensure you are fully hydrated depends on the intensity and duration of the exercise. Air temperature, humidity, altitude and your body composition also affect how much water you need.

Endurance athletes, such as marathon runners, use a strategy called carbohydrate loading to boost their performance and limit the length and severity of their recovery period. Carbohydrate loading involves increasing the amount of complex carbohydrates eaten a few days before an event in order to maximise the amount of glucose in the body so it can better meet the demands of performance.



The timing of protein intake is particularly important for power athletes, who are training to increase their strength and speed. A lot of small tears appear in the muscle during training and, because of a process called "hypertrophy", the muscles increase in size and become stronger when these tears heal. Consuming protein after training provides the body with the nutrients it needs to heal the tears quickly and build muscle.

59

Recovery from exercise

**Describe processes used to recover effectively from vigorous exercise**



### Ice baths or massage

Ice baths and massages immediately after intense exercise are very popular with elite performers as they help to prevent **Delayed Onset Muscle Soreness (DOMS)**, the muscle soreness that you feel in your muscles the day after intense exercise.

**Massage** Increases blood flow to the sore area, speeding up the healing process and reducing pain.

Ice baths help the body flush lactic acid from the working muscles. The cold causes the blood vessels to constrict, forcing lactic acid out. Then, when you get out of the ice bath, your blood vessels dilate and bring oxygenated blood in.



Recovery from exercise

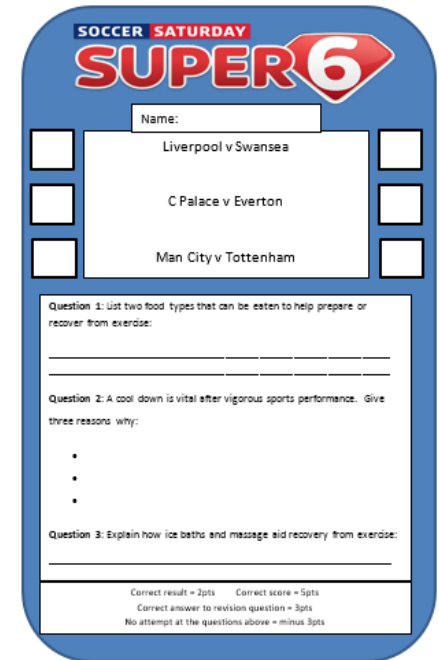
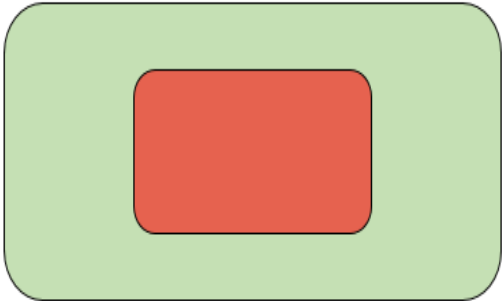
**Describe processes used to recover effectively from vigorous exercise**

PLENARY  
SESSION

Complete the **green** box with  
your new information.

**THEN**

Complete your 'Super Six'  
form (questions first, then  
score predictions)



The Super Six form is a blue-bordered card with a red and white 'SOCCER SATURDAY SUPER 6' logo at the top. It includes a 'Name:' field, three match prediction boxes (Liverpool v Swansea, C Palace v Everton, Man City v Tottenham), and three questions about recovery from exercise. A scoring section at the bottom indicates a correct result is 2pts, a correct score is 5pts, and a correct answer to a revision question is 3pts. No attempt at the questions above minus 5pts.

SOCCER SATURDAY  
**SUPER 6**

Name: \_\_\_\_\_

☐ Liverpool v Swansea ☐

☐ C Palace v Everton ☐

☐ Man City v Tottenham ☐

Question 1: List two food types that can be eaten to help prepare or recover from exercise:  
\_\_\_\_\_  
\_\_\_\_\_

Question 2: A cool down is vital after vigorous sports performance. Give three reasons why:  
•  
•  
•

Question 3: Explain how ice baths and massage aid recovery from exercise:  
\_\_\_\_\_

Correct result = 2pts    Correct score = 5pts  
Correct answer to revision question = 3pts  
No attempt at the questions above = minus 5pts

Recovery from exercise

**Describe processes used to recover effectively from vigorous exercise**



## 1.5 The effects of exercise



## Learning Objectives



**Describe the difference between immediate, short-term and long-term effects**



Recall the immediate, short-term and long-term effects of exercise on the body



**Explain the effects of exercise on the body and fitness levels**





Can you list down as many different effects of exercise as possible on your whiteboard?

Who can fill their white board in the time limit?

Example: You will sweat  
Your muscles will ache



Once the time is up can you divide your ideas up into 'immediate effects' 'short term effects' and 'long term effects'?

All: To know the 3 different categories of the effects of exercise

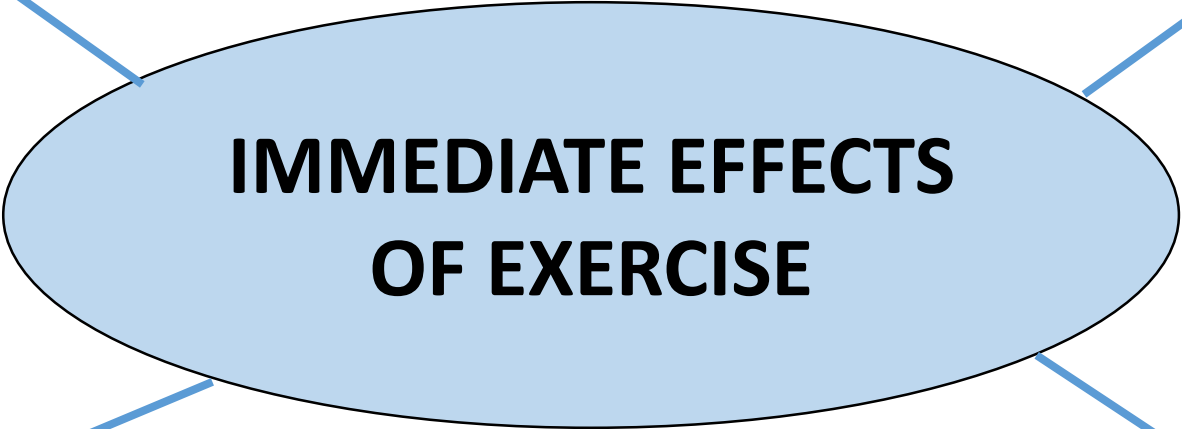


What answers did you get? (class discussion)

Increase in heart  
rate



You will sweat &  
your skin will  
redden



You will feel  
hotter

You will breathe  
more deeply and  
more frequently





What answers did you get? (class discussion)

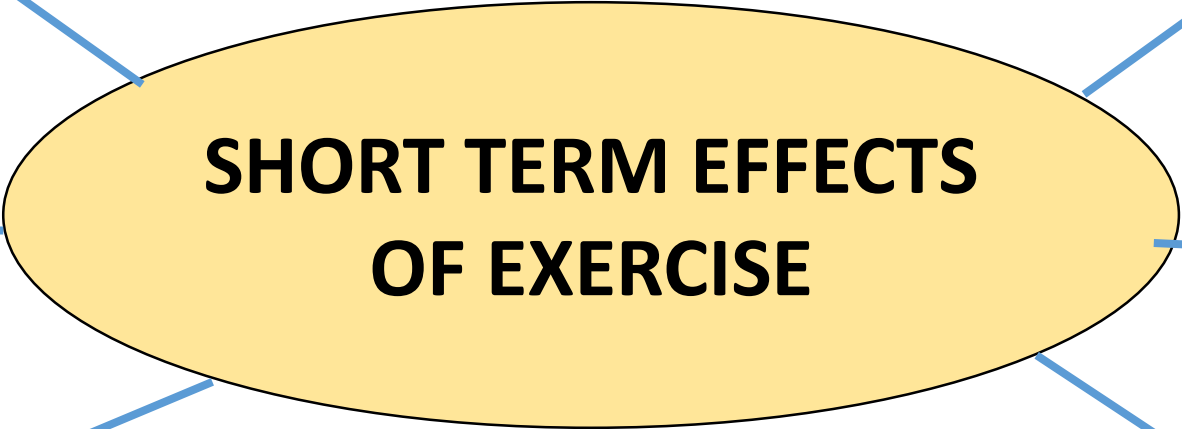


Feel tired,  
possibly very  
fatigued

Your muscle will  
ache a little

You may feel light  
headed

You may  
experience  
DOMS (high  
intensity  
exercise)



**SHORT TERM EFFECTS  
OF EXERCISE**

You may feel  
nauseous (feel  
sick)

**FATIGUE IS A FEELING OF EXTREME OR SEVERE  
TIREDNESS DUE TO THE BUILD UP OF LACTIC ACID IN  
THE MUSCLES OR WORKING FOR A LONG TIME**

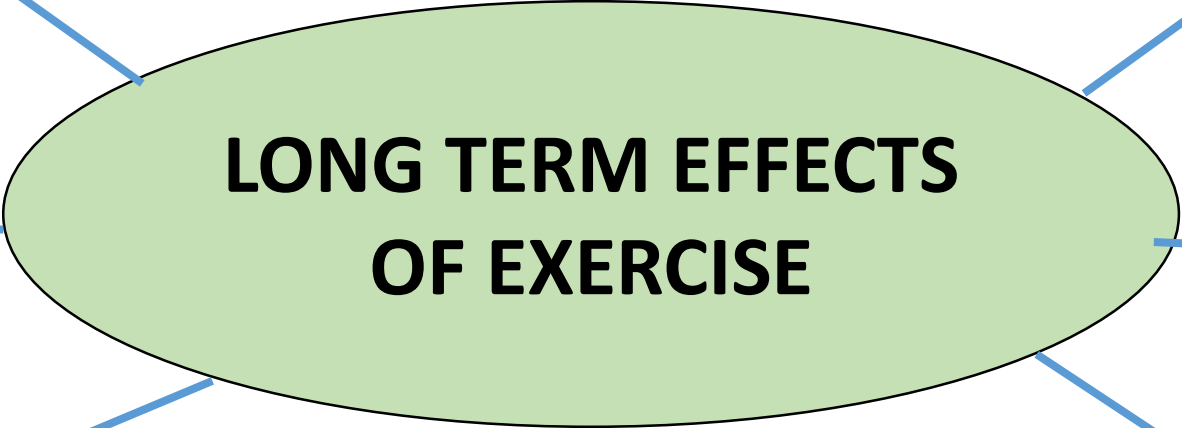
You may  
experience  
muscle cramps



What answers did you get? (class discussion)

Your body will  
change shape

Improvements in  
components of fitness.  
Increased strength,  
muscular endurance,  
cardiovascular endurance  
etc



## LONG TERM EFFECTS OF EXERCISE

Heart increases in  
size (Cardiac  
Hypertrophy).  
Cardiac output  
increases

Muscle increase in size  
(Hypertrophy)

Your cardiovascular  
endurance (stamina)  
will improve

Your resting  
heart rate will be  
lower  
(Bradycardia)



On your lined paper answer  
the following question:

**What is the link between the  
effects of exercise and the  
benefits of participating in  
physical activity?**



PLENARY  
SESSION

Complete the **green** box with  
your new information.

**THEN**

Complete your 'Super Six'  
form (questions first, then  
score predictions)

SOCCER SATURDAY  
**SUPER 6**

Name: \_\_\_\_\_

☐ Liverpool v Swansea ☐

☐ C Palace v Everton ☐

☐ Man City v Tottenham ☐

Question 1: List two food types that can be eaten to help prepare or recover from exercise:  
\_\_\_\_\_  
\_\_\_\_\_

Question 2: A cool down is vital after vigorous sports performance. Give three reasons why:  
•  
•  
•

Question 3: Explain how ice baths and massage aid recovery from exercise:  
\_\_\_\_\_  
\_\_\_\_\_

Correct result = 2pts    Correct score = 5pts  
Correct answer to revision question = 3pts  
No attempt at the questions above = minus 3pts



## Learning Objectives

- All:** To know the 3 different categories of the effects of exercise
- Most:** To know the effects of immediate, short term and long term
- Some:** To know the link between the effects of exercise and the benefits of participating in physical activity

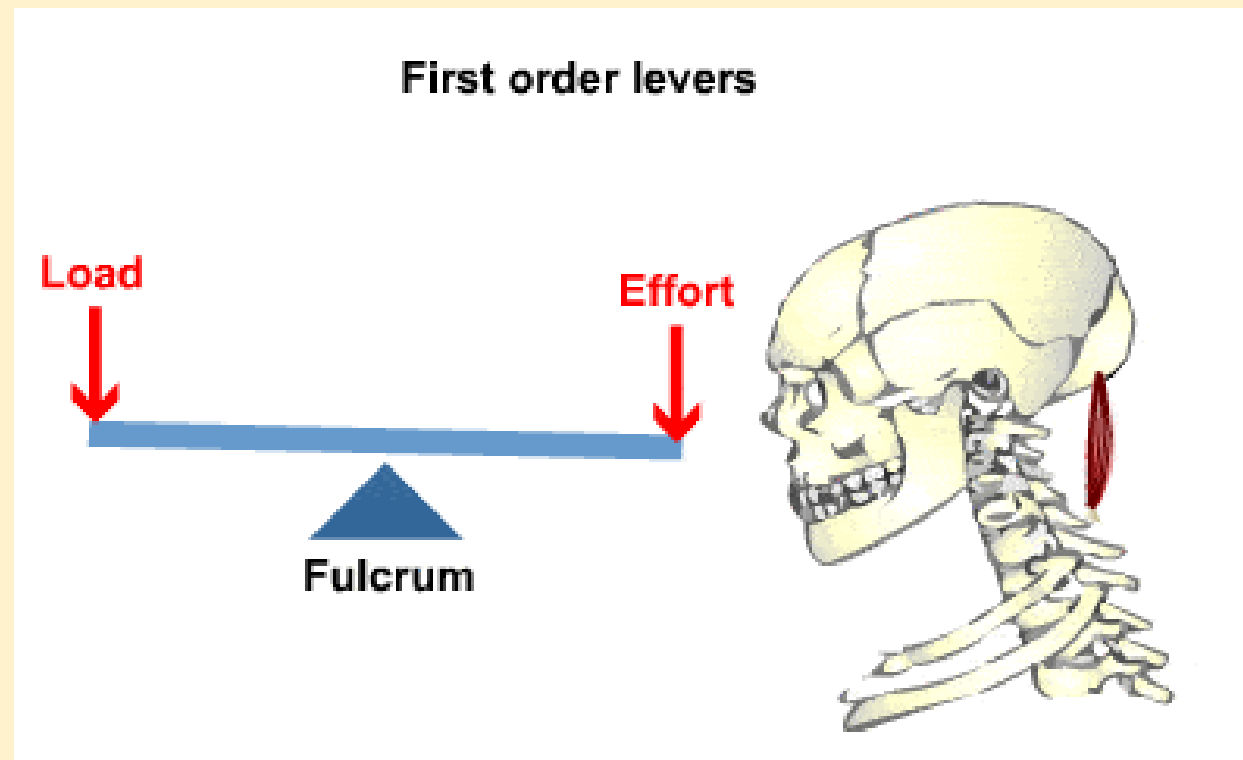
A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head. The swimmer is wearing a black and pink swimsuit.

# Chapter 2: Movement Analysis

- 2.1 Types of Levers
- 2.2 Basic Movements
- 2.3 Planes of movement and axes of rotation



## 2.1 Types of Levers



## Learning Objectives

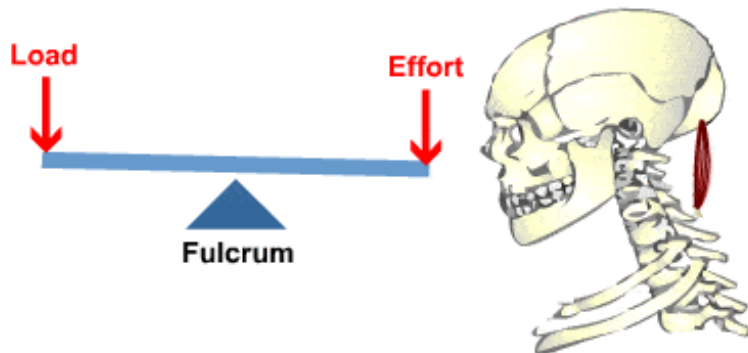
- All:** To understand what first class, second class and third class levers are
- Most:** To provide sport examples for each type of lever
- Some:** To understand the term 'mechanical advantage'



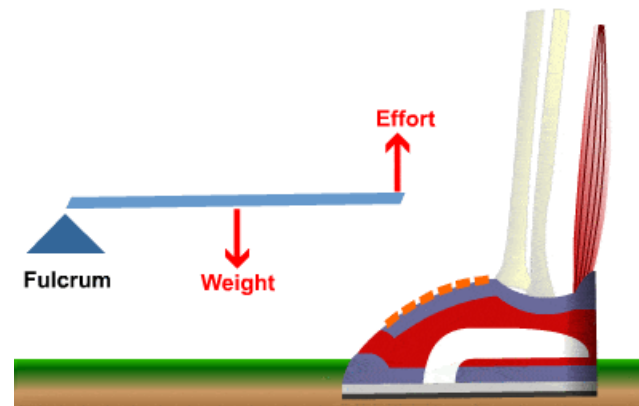


# Can you identify what the difference is between these 3 pictures?

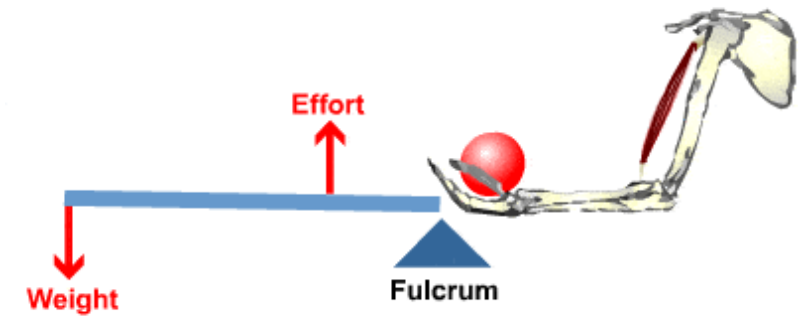
First order levers



Second order levers



Third order levers



## 2.1 Types of levers

All: To understand what first class, second class and third class levers are

All movements made by the body are produced by a series of **levers** working together. Without levers we would not be able to throw or kick a ball, run or jump. A lever is a rigid bar that turns about an axis to create movement.

There are three types of levers – **first class levers**, **second class levers** and **third class levers** – and they all make use of a **fulcrum**, **load** and **effort**.

The fulcrum is the point at which a lever turns or is supported.

The load is the weight or resistance that the lever must move.

The effort is the force required to move the load and, in the human body, the effort comes from the muscles.

KEYWORDS



**Using page 32 – can you define the terms highlighted in red on your keywords sheet?**

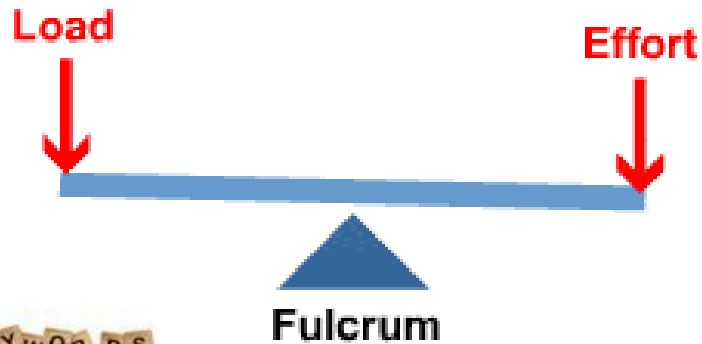
## 2.1 Types of levers

**All: To understand what first class, second class and third class levers are**

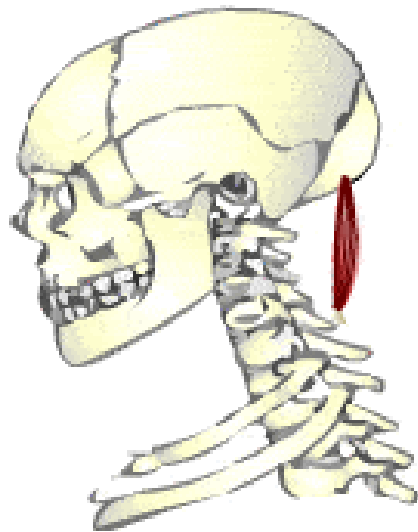


# FIRST CLASS LEVERS

First order levers

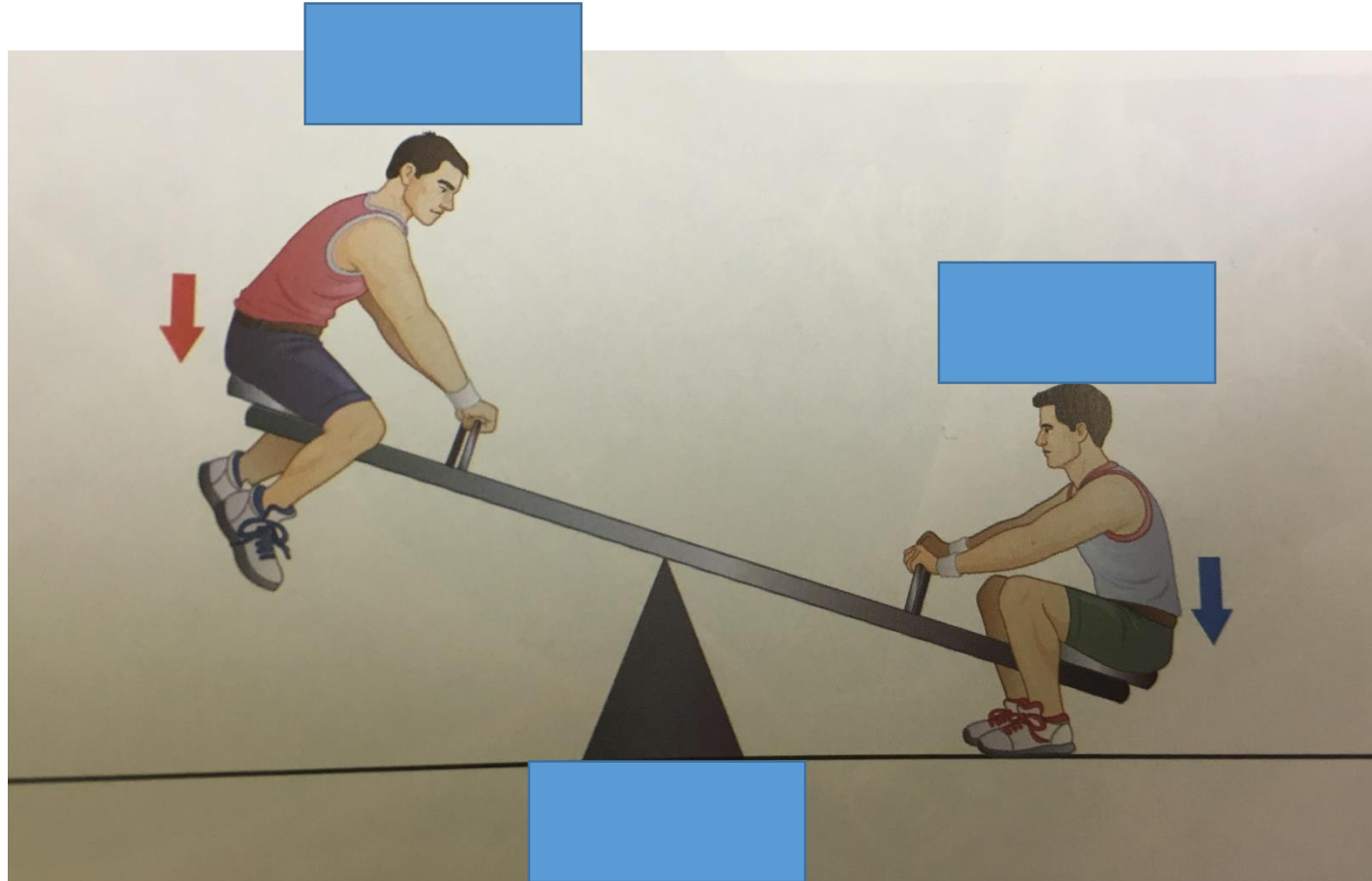


KEYWORDS



First Class levers have the fulcrum midway between the effort and the load. Also the fulcrum is quite close to both the effort and the load.

# FIRST CLASS LEVERS



## 2.1 Types of levers

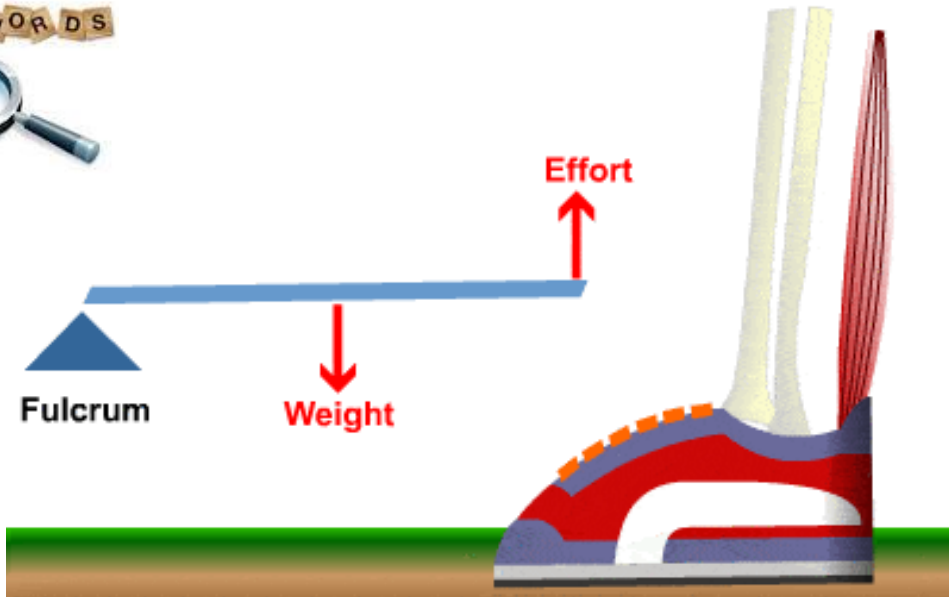
All: To understand what first class, second class and third class levers are



## SECOND CLASS LEVERS

Second order levers

KEYWORDS



Second class levers have the load between the fulcrum and the effort. This means that a large load can be moved with relatively low effort

## SECOND CLASS LEVERS

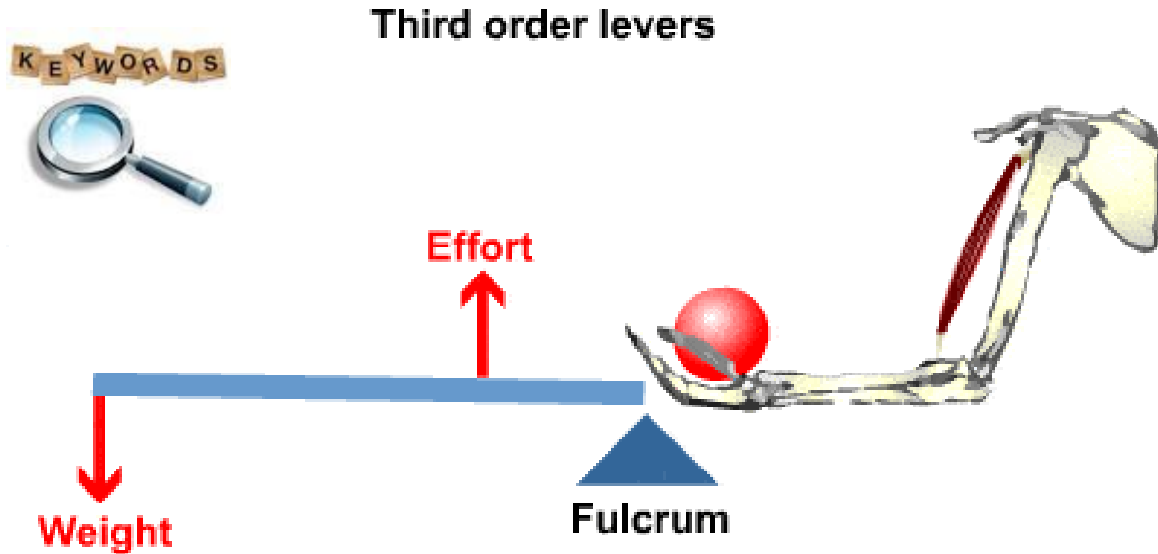


### 2.1 Types of levers

All: To understand what first class, second class and third class levers are

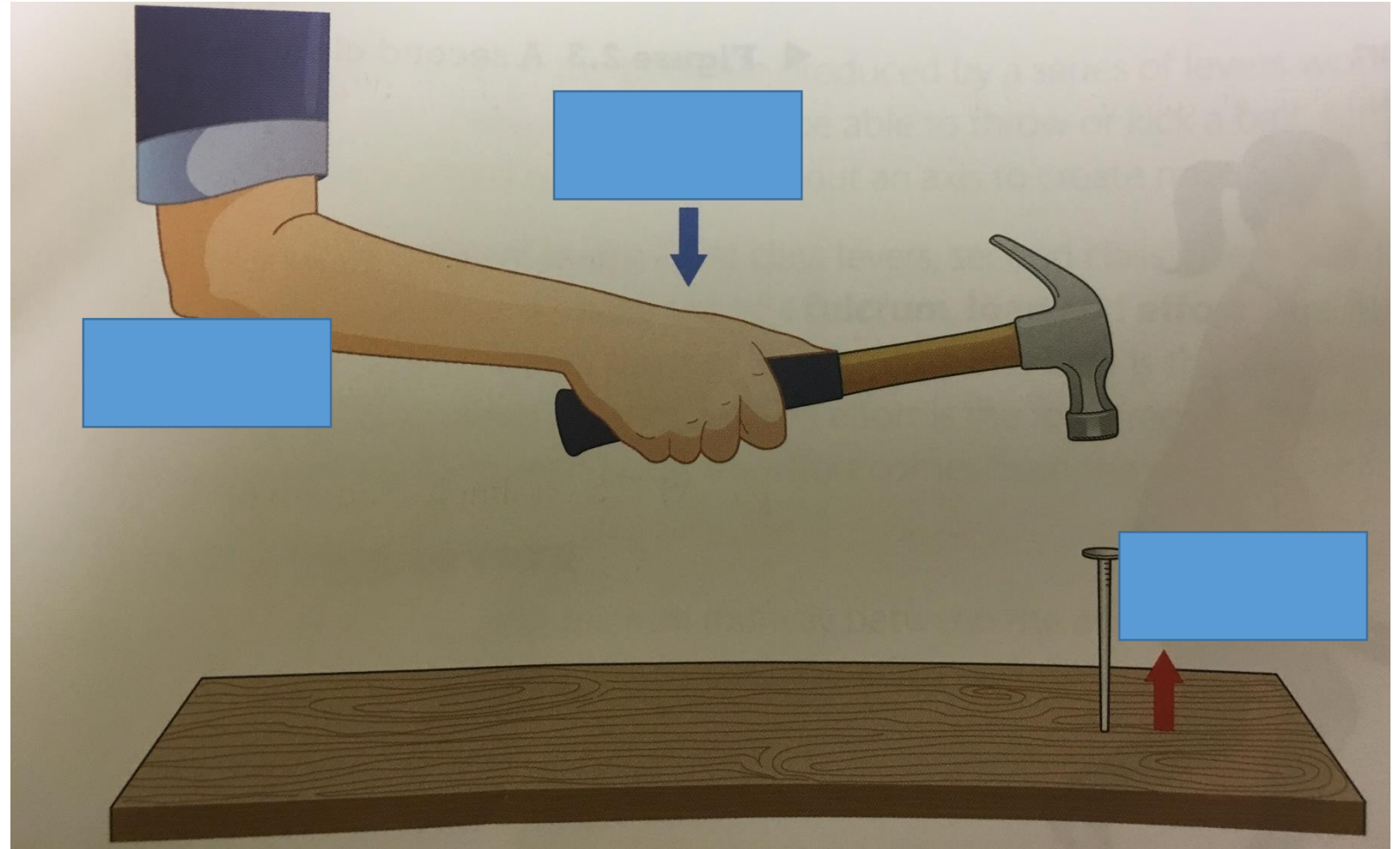


# THIRD CLASS LEVERS



Third class levers have the effort placed between the fulcrum and the load. This means they can produce a larger range of movement with relatively low effort

# THIRD CLASS LEVERS



## 2.1 Types of levers

All: To understand what first class, second class and third class levers are



A photograph of a swimmer in a pool, wearing a blue swim cap and goggles, with water splashing around their head.

On the next few slides a series of sport examples will appear.

Can you identify which type of lever they are?

Can you identify where the fulcrum, effort and load is on the picture?

Which type of  
lever is this?

3<sup>rd</sup> Class

Fulcrum = Left Hand

Effort = Right arm

Load = Water resistance





Which type of  
lever is this?

**2nd Class**

Fulcrum = Toes

Load = Body weight

Effort = Biceps/ triceps



Which type of  
lever is this?

**1st Class**

Load = Javelin (at hand)

Fulcrum = Elbow

Effort = Bicep





Which type of  
lever is this?

3<sup>rd</sup> Class

Fulcrum = Elbow

Effort = Bicep

Load = Dumbbell/  
Weight



Which type of  
lever is this?

**2nd Class**

Fulcrum = Toes

Load = Body weight

Effort = Gastrocnemius/  
Soleus (Calf muscles)





Which type of  
lever is this?

**1st Class**

Load = Weight (at hand)

Fulcrum = Elbow

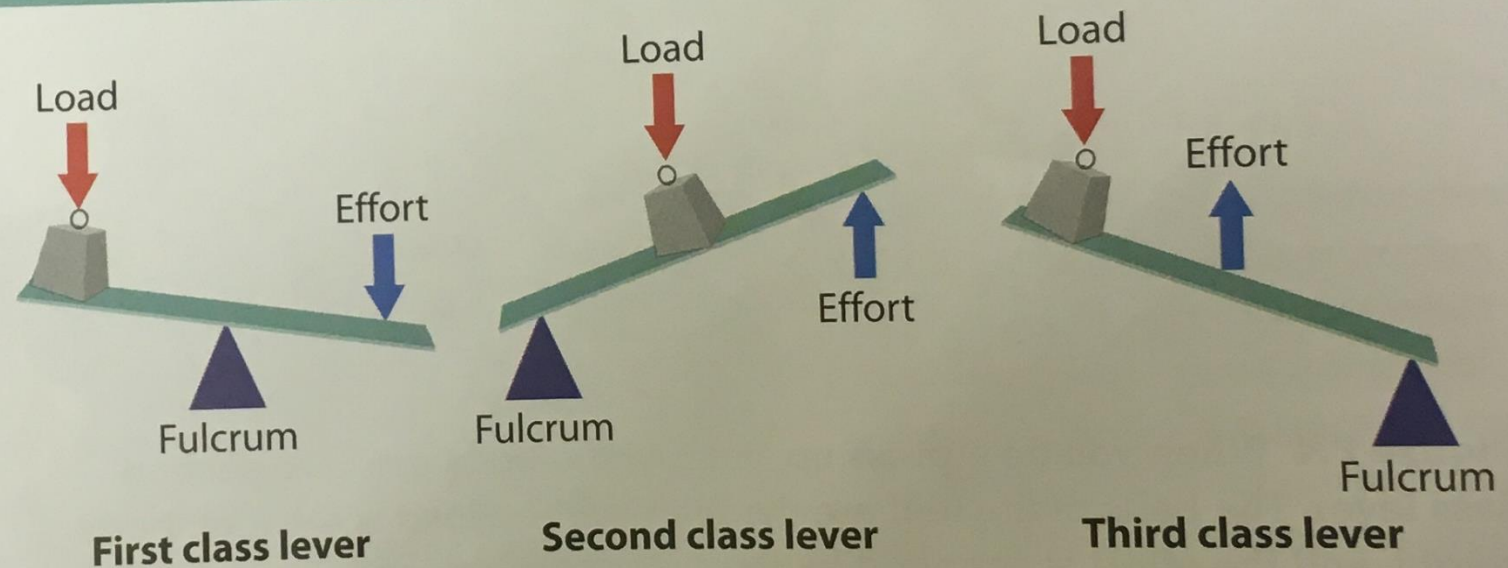
Effort = Tricep



### Exam tip

You may be asked to draw a 'linear version' of a lever showing the position of the fulcrum, load and effort. This just means that you have to draw a simple diagram. Study the diagrams opposite and learn how to draw them.

► **Figure 2.7**

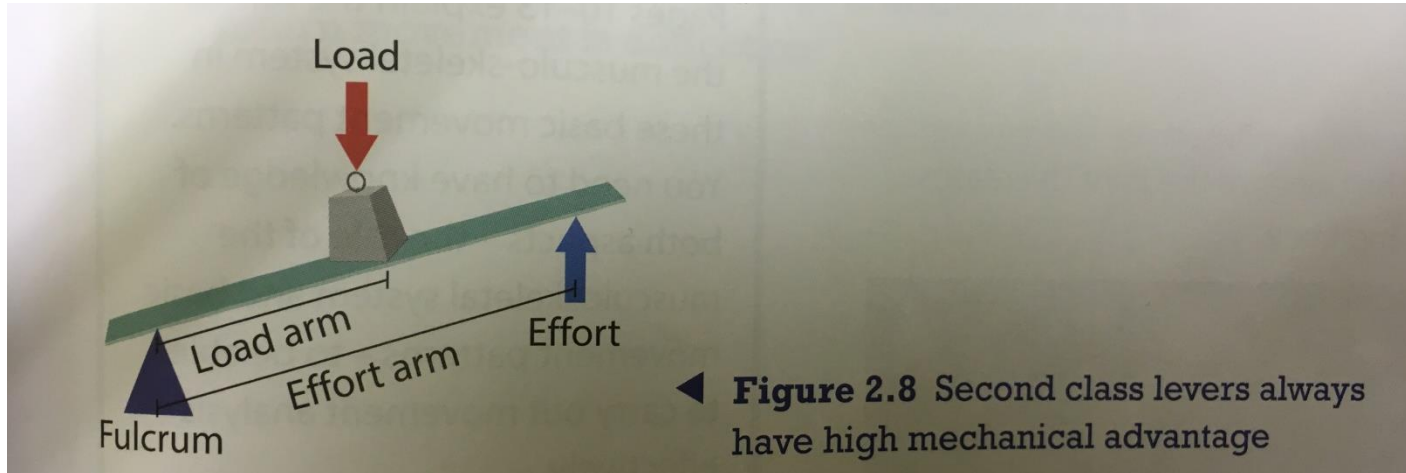


## 2.1 Types of levers

**Most:** To provide sport examples for each type of lever



**Mechanical Advantage** – The distance from the load to the fulcrum is known as the load arm, while the distance from the effort to the fulcrum is known as the effort arm.

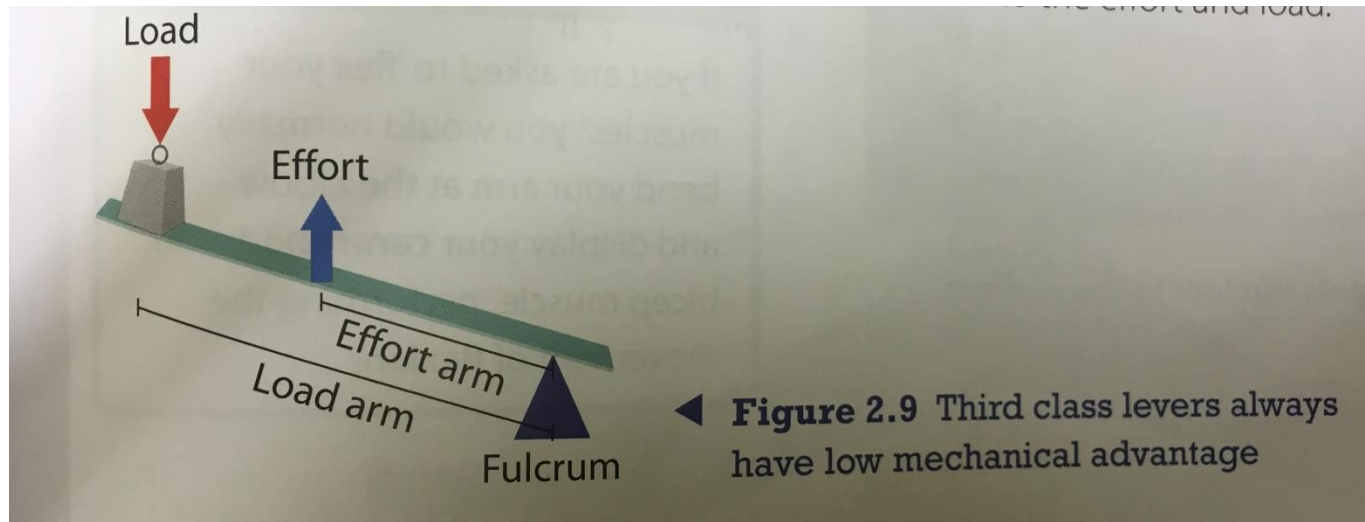


When a lever's **effort arm** is longer than its **load arm** it is said to have a **high mechanical advantage**.

This means it can move large/ heavy loads with relatively low effort.

Large force can be applied.

**Mechanical Advantage** – The distance from the load to the fulcrum is known as the load arm, while the distance from the effort to the fulcrum is known as the effort arm.



When a lever's **load arm** is longer than its **effort arm** it is said to have a **low mechanical advantage**.

Third class levers always have low mechanical advantage and cannot lift heavy loads due to the position of the fulcrum in relation to the effort and load.

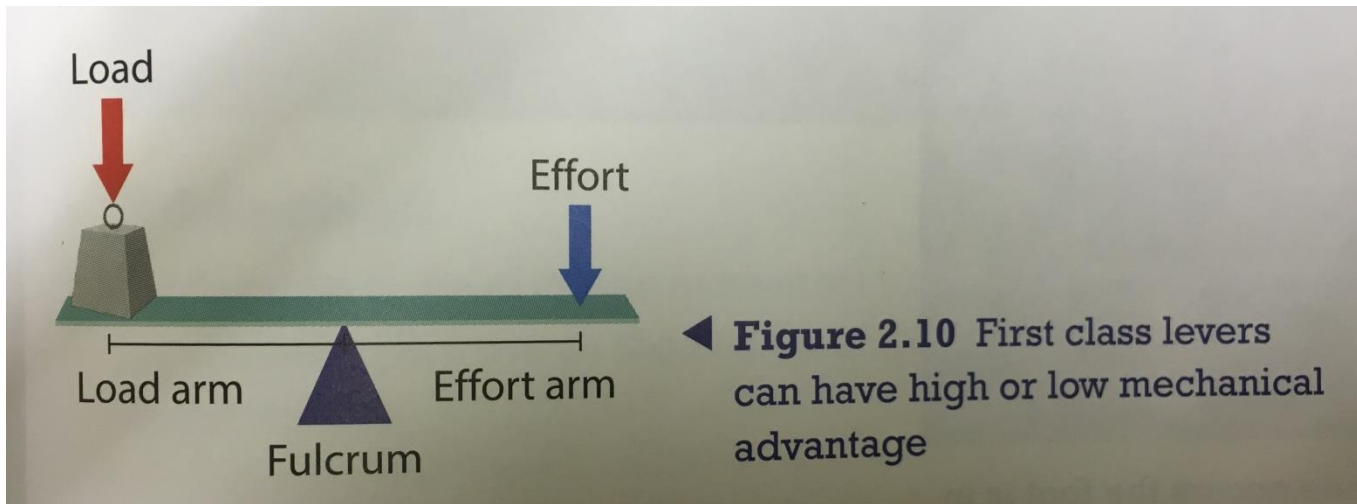
Only low force can be applied



KEYWORDS



**Mechanical Advantage** – The distance from the load to the fulcrum is known as the load arm, while the distance from the effort to the fulcrum is known as the effort arm.



◀ **Figure 2.10** First class levers can have high or low mechanical advantage

First class levers can have high or low mechanical advantage.

If the **fulcrum** is closer to the **load** it has **high mechanical advantage**.

If the **fulcrum** is closer to the **effort** it has **low mechanical advantage**.

## 2.1 Types of levers

**Some:** To understand the term 'mechanical advantage'

PLENARY  
SESSION



**Summarise this photo using key terminology from the lesson:**



2.1 Types of levers



## Learning Objectives

- All:** To understand what first class, second class and third class levers are
- Most:** To provide sports examples for each type of lever
- Some:** To understand the term 'mechanical advantage'

## 2.1 Basic Movements





## Learning Objectives

- |              |                                                        |
|--------------|--------------------------------------------------------|
| <b>All:</b>  | <b>To identify the 7 basic movements</b>               |
| <b>Most:</b> | <b>To define the 7 basic movements</b>                 |
| <b>Some:</b> | <b>To give sport examples of the 7 basic movements</b> |



Choose 2 picture cards – on your white board answer the following questions about your pictures



How is the movement in the picture occurring?

Can you describe the movement of the body in your picture?



## 2.2 Basic Movements

All: To identify the 7 basic movements



## Basic Movements



Flexion  
Extension  
Abduction  
Adduction  
Dorsiflexion  
Plantar Flexion  
Rotation



Using the text books find the definitions for the 7 basic movements

Under the diagram column sketch a diagram of what that type of movement would look like!

2.1 Basic Movements

Fill in the definitions of each basic movement by using pages 36 – 39 in the text books

| Basic Movement  | Definition | Diagram |
|-----------------|------------|---------|
| Flexion         |            |         |
| Extension       |            |         |
| Abduction       |            |         |
| Adduction       |            |         |
| Dorsiflexion    |            |         |
| Plantar flexion |            |         |
| Rotation        |            |         |





Name the movement and where it's taking place...

This is

\_\_\_\_\_

of the \_\_\_\_\_ joint.

## 2.2 Basic Movements

**Some: To give sport examples of the 7 basic movements**

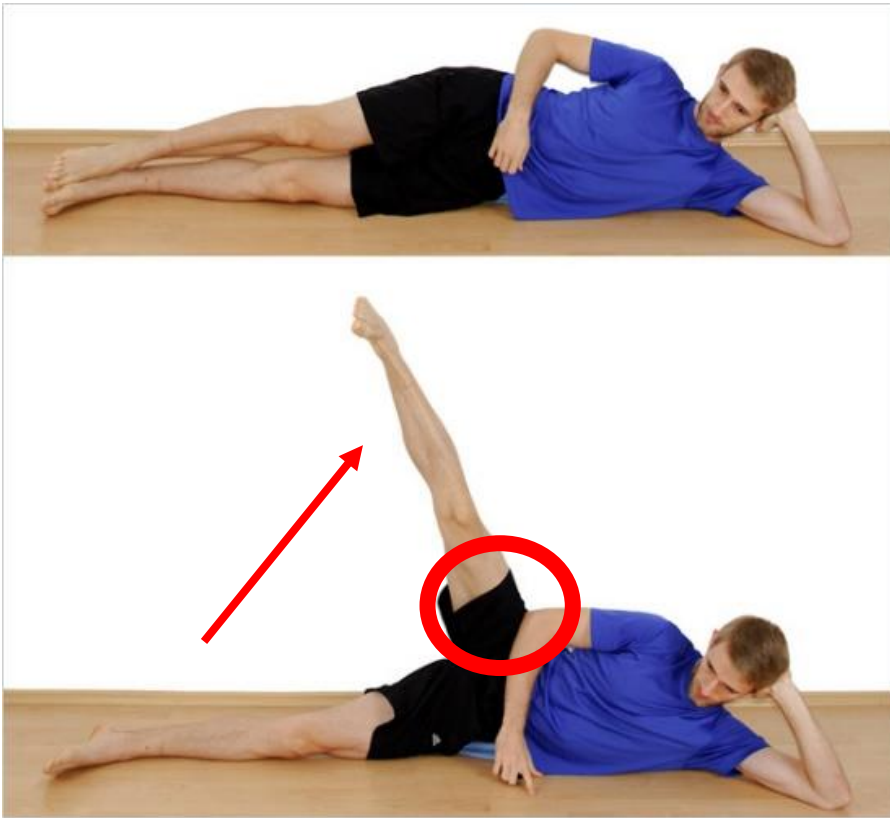


Name the movement and where it's taking place...

This is

\_\_\_\_\_ of the \_\_\_\_\_ joint.





Name the movement and where it's taking place...

This is

\_\_\_\_\_

of the \_\_\_\_\_ joint.

## 2.2 Basic Movements

**Some: To give sport examples of the 7 basic movements**



Name the movement and where it's taking place...

This is

\_\_\_\_\_

of the \_\_\_\_\_ joint.





Name the movement and where it's taking place...

This is

\_\_\_\_\_

of the \_\_\_\_\_ joint.



Name the movement and where it's taking place...

This is

\_\_\_\_\_

of the \_\_\_\_\_ joint.





Name the movement and where it's taking place...

This is

\_\_\_\_\_

of the \_\_\_\_\_ joint.

PLENARY  
SESSION



Revisit the starter and answer the questions using the correct terminology that you have learnt this lesson



Choose 2 picture cards – on your white board answer the following questions about your pictures

How is the movement in the picture occurring?

Can you describe the movement of the body in your picture?



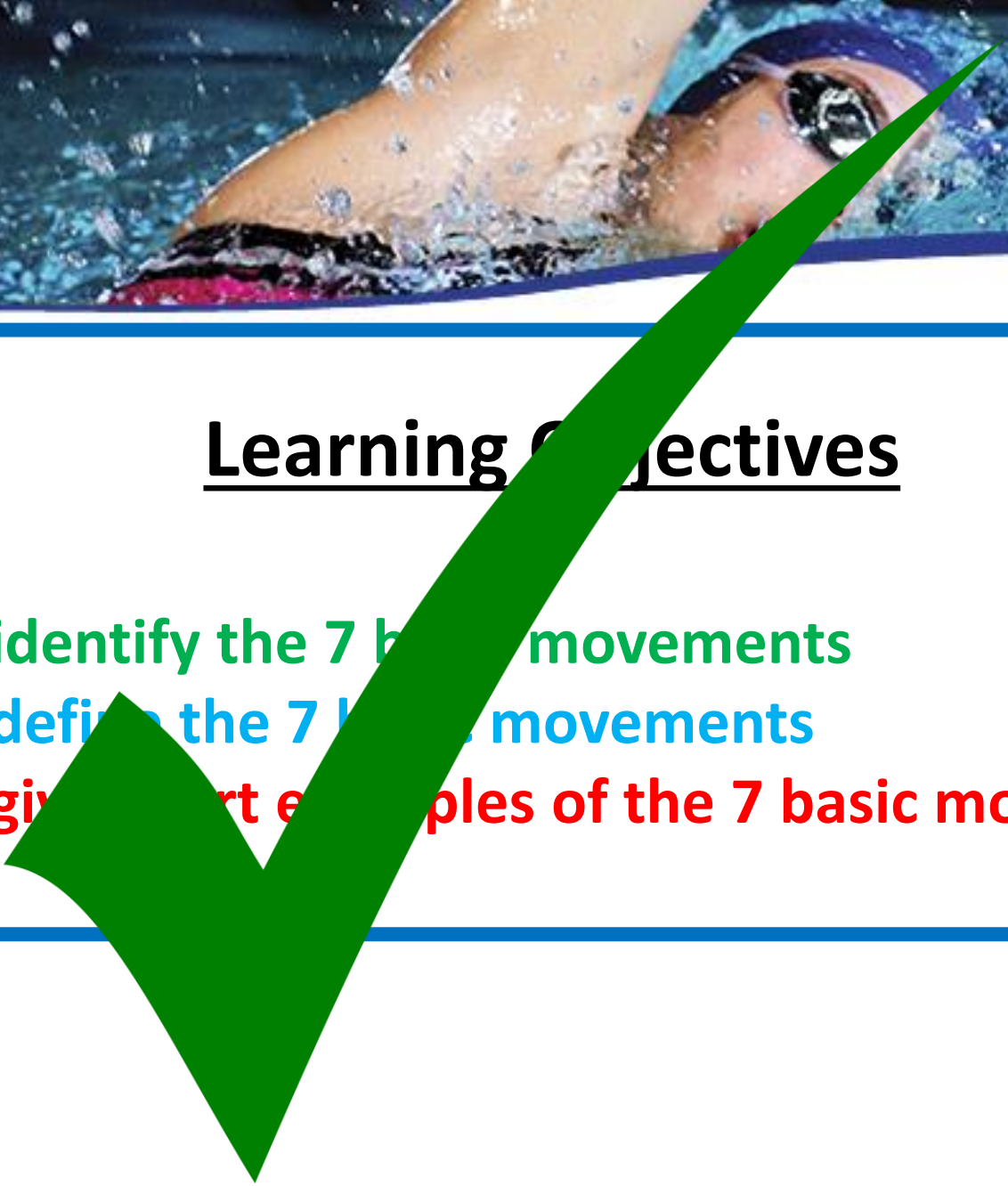
## 2.2 Basic Movements

All: To identify the 7 basic movements



## Learning Objectives

- All:** To identify the 7 basic movements
- Most:** To define the 7 basic movements
- Some:** To give short examples of the 7 basic movements



## 2.3 Planes of movement and axes of rotation





## Learning Objectives

- |              |                                                                    |
|--------------|--------------------------------------------------------------------|
| <b>All:</b>  | <b>To identify the different planes and axes</b>                   |
| <b>Most:</b> | <b>To define the different planes and axes</b>                     |
| <b>Some:</b> | <b>To provide sport examples for the different planes and axes</b> |

# The 5 W's



Lesson focus = Planes of movement and axes of rotation



Create a question that you would like to know about the lesson focus using

**Who, What, Why, Where and When?**





Planes and axes are technical words to help you describe directions of movement

Think of a plane as a line drawn through the body dividing it into two parts. A movement occurs in a plane. There are three planes referred to in movement analysis: the frontal plane, the transverse plane and the sagittal plane

An axis is an imaginary line around which the body rotates. There are three different axes of rotation in movement analysis: the sagittal axis, the longitudinal axis and the transverse axis.



KEYWORDS



# FRONTAL PLANE

Can you define and  
draw a diagram to  
represent this plane?

## 2.3 Planes of movement and axes of rotation

|       |                                           |
|-------|-------------------------------------------|
| All:  | To identify the different planes and axes |
| Most: | To define the different planes and axes   |





KEYWORDS



# TRANSVERSE PLANE

Can you define and  
draw a diagram to  
represent this plane?

## 2.3 Planes of movement and axes of rotation

|       |                                           |
|-------|-------------------------------------------|
| All:  | To identify the different planes and axes |
| Most: | To define the different planes and axes   |



# SAGITTAL PLANE

Can you define and draw a diagram to represent this plane?

## 2.3 Planes of movement and axes of rotation

|       |                                           |
|-------|-------------------------------------------|
| All:  | To identify the different planes and axes |
| Most: | To define the different planes and axes   |





KEYWORDS



# SAGITTAL AXIS

Can you define and draw a diagram to represent this axis?

## 2.3 Planes of movement and axes of rotation

|       |                                           |
|-------|-------------------------------------------|
| All:  | To identify the different planes and axes |
| Most: | To define the different planes and axes   |



KEYWORDS



# LONGITUDINAL AXIS

Can you define and draw a diagram to represent this axis?

## 2.3 Planes of movement and axes of rotation

|       |                                           |
|-------|-------------------------------------------|
| All:  | To identify the different planes and axes |
| Most: | To define the different planes and axes   |





KEYWORDS



# TRANSVERSE AXIS

Can you define and draw a diagram to represent this axis?

<https://www.youtube.com/watch?v=iP7fpHuVaiA>

Link the planes of movement and axes of rotation to the basic movements....

|                                        |   |                                                     |
|----------------------------------------|---|-----------------------------------------------------|
| Frontal Plane and Sagittal axis        | = | what type of movement? _____<br>sport example _____ |
| Transverse Plane and Longitudinal axis | = | what type of movement? _____<br>sport example _____ |
| Sagittal Plane and Transverse axis     | = | what type of movement? _____<br>sport example _____ |

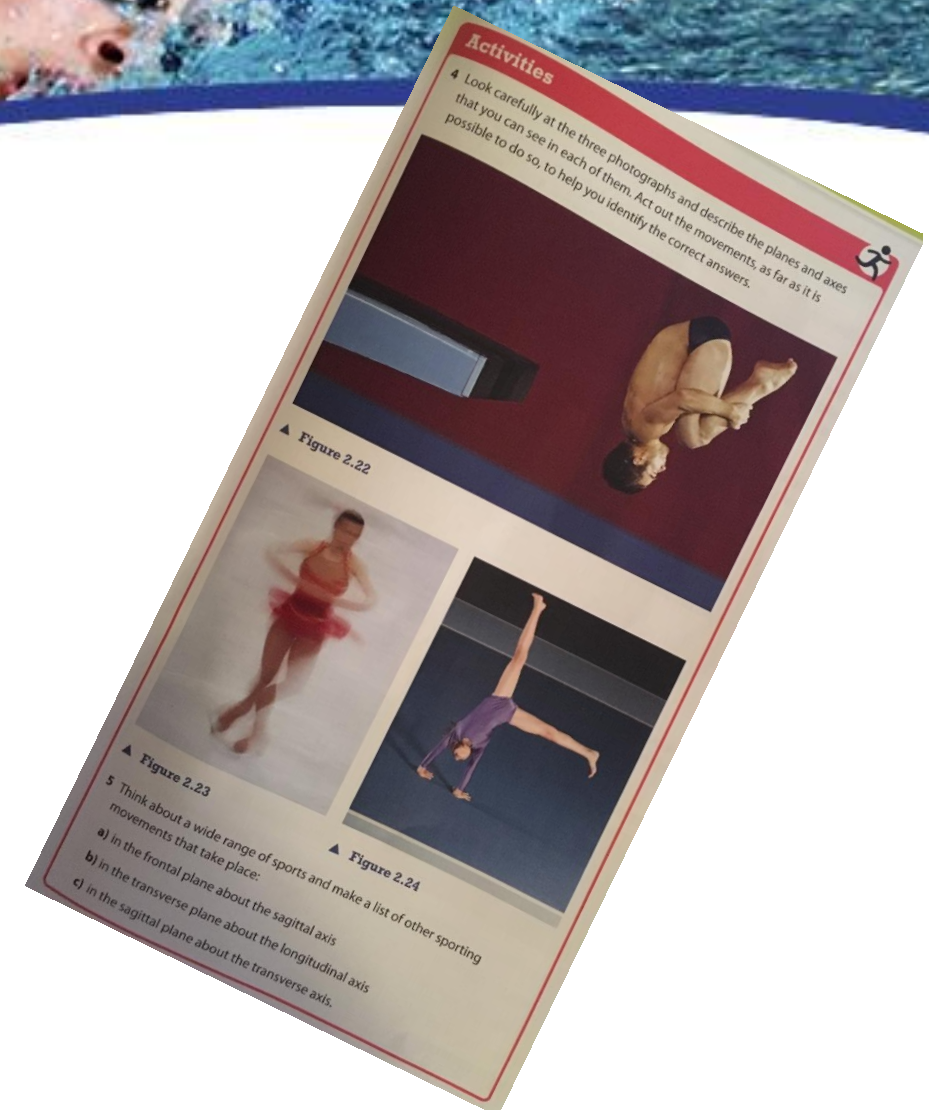
## 2.3 Planes of movement and axes of rotation

**All:** To identify the different planes and axes  
**Most:** To define the different planes and axes





Complete the task on  
page 1 in the textbook  
to find sport examples  
which represent the  
different planes and  
axis!



PLENARY  
SESSION



Remember this?

Can you now  
answer the  
questions you  
created based on  
your learning from  
the lesson?

## The 5 W's

Lesson focus = planes of movement  
and axes of rotation

Create a question that you would  
like to know about the lesson focus  
using

**Who, What, Why, Where and  
When?**



## Learning Objectives

- All:** To identify the different planes and axes
- Most:** To define the different planes and axes
- Some:** To provide sports examples for the different planes and axes