

## WARM-UP

### 1. Pulse Raising Activity

- ❖ Pulse raising activities gently raises the heart rate.
- ❖ E.g. Jogging, cycling, skipping.



### 2. Stretches

- ❖ Stretches should be dynamic (moving, not held). They prepare the muscles.
- ❖ E.g. High knees to stretch the hamstrings, heel flicks to stretch the quadriceps.



### 3. Skill-Based Activity

- ❖ This is the final part of the warm-up.
- ❖ This is where you familiarise yourself with the skills and actions that will be needed in the session.
- ❖ E.g. Passing the ball in rugby.

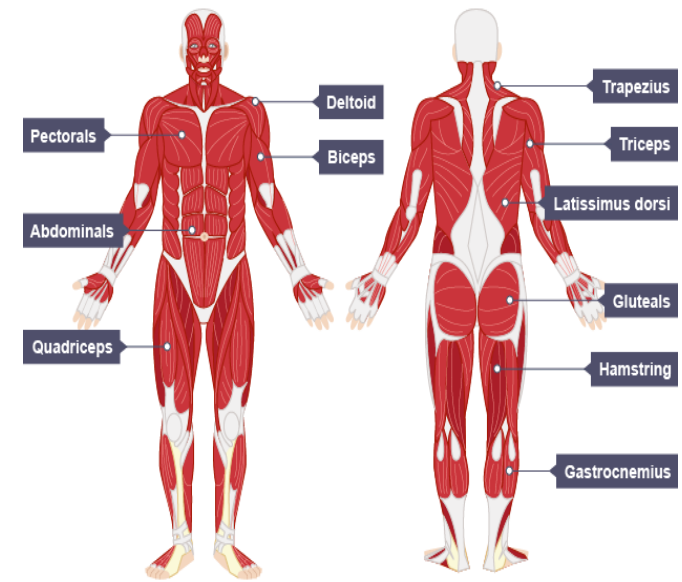


**Cool down**- starts with low intensity exercise such as light jogging, medium pace walking or easy cycling, anything that allows the heart rate to maintain an increased rate then gradually decrease. This is followed by stretching, which is usually more static (held) in a cool down.

## Muscular system

Arms-Biceps and Triceps

Legs- Quadriceps and Hamstrings  
Core-Abdominals



## Year 8:Term 1: Health Knowledge Organiser

### Sedentary lifestyle

A sedentary lifestyle is one with no or irregular physical activity and an excessive amount of daily sitting.

Consequences of a Sedentary lifestyle-obesity, Depression, Type 2 diabetes, Poor muscle tone, osteoporosis.

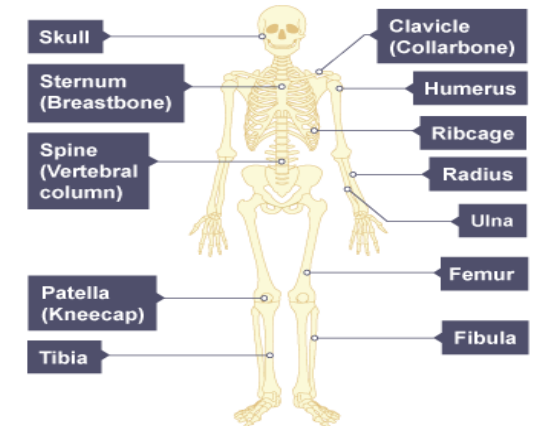


### Short term effects of exercise

on HR and breathing rate =increase  
Long term effect of exercise  
=decrease

## Skeletal System

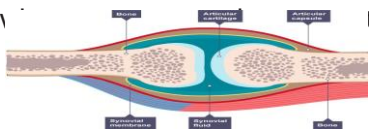
Arms-Humerus, ulna and radius  
Legs-Femur, Patella, Tibia and Fibula



*Key Vocabulary: Pulse raiser Sedentary. Triceps Biceps Humerus Radius. Ulna Femur Patella Tibia Fibula Abdominals*

## Joints

A joint is a place where two bones meet and is also called an articulation

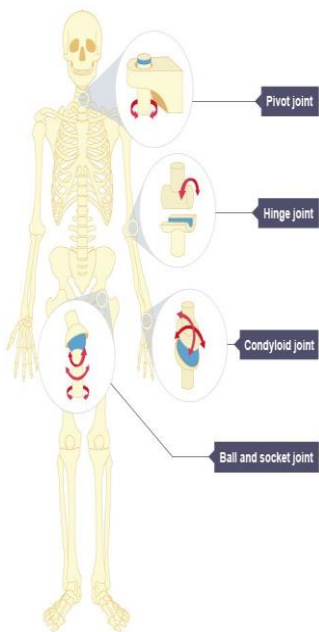


**Hinge** - these can be found in the elbow, knee and ankle. They allow flexion and extension of a joint.

**Ball and socket** - these types of joint can be found at the shoulder and hip and allow movement in almost every direction.

**Pivot** - this joint can be found in the neck between the top two vertebrae. It allows only rotational movement such as moving your head from side to side as if you were saying 'no'.

**Condyloid** - this type of joint is found at the wrist. It allows you to flex and extend the joint, and move it from side to side.



### Short term effects of exercise

- Cardiovascular system-Increase in stroke volume (SV); increase in heart rate (HR); increase in cardiac output (Q); increase in blood pressure (BP)
- Respiratory system-Increase in breathing rate; increase in tidal volume
- Cardio-respiratory system-increase in oxygen uptake; increase in carbon dioxide removal
- Energy system--increase in lactate production
- Muscular system-increase in temperature of muscles; increased pliability; muscle fatigue

	Long term effects of exercise
<b>Cardiovascular system</b>	Cardiac hypertrophy; increased stroke volume (SV); decrease in resting heart rate (HR); increase in maximum cardiac output (Q); capillarisation at the lungs and muscles; increase in number of red blood cells; increased size and strength of the heart; drop in resting blood pressure due to more elastic muscular wall of veins and arteries
<b>Respiratory system</b>	Increased vital capacity; increased number of functioning alveoli; increased strength of the respiratory muscles (internal and external intercostals and diaphragm); increased lung capacity and volume
<b>Energy system</b>	Increased production of energy from the aerobic energy system; increased tolerance to lactic acid
<b>Muscular system</b>	Muscle hypertrophy; increased strength of tendons; increased strength of ligaments
<b>Skeletal system</b>	Increase in bone density

## Year 8: Term 1 Health Knowledge Organiser

### Fitness Components

**Strength** = The maximum force that can be generated by a muscle or muscle group.

**Muscular Endurance** = The ability of muscles to continually contract over a period of time against a light to moderate resistance load.

**Power** = The product of strength and speed.

**Agility**-Ability to rapidly change body direction, accelerate, or decelerate.

**Cardiovascular endurance**-The ability of the heart, lungs and blood to transport oxygen during sustained exercise

### Fitness Test

- Strength - Hand grip dynamometer
- Maximal strength - One rep max test
- Select the body part that is to be tested and use the weight lifting technique for that body part - for example quadriceps a leg extension, pectorals - bench press
- Cardiovascular endurance - Multi-stage fitness test
- Flexibility - Sit and reach test
- Speed - 30 metre sprint test
- Muscular endurance - 60 second press-up test
- Muscular endurance - 60 second sit-up bleep test
- Agility - Illinois agility test
- Coordination - Alternate hand wall toss test
- Reaction time - Ruler drop test
- Balance - Standing stork test
- Power - Vertical jump test



## USER GROUPS in Sport/Fitness

- Young children
- Teenagers
- People with disabilities
- Parents (singles or couples)
- People who work
- Unemployed/economically disadvantaged people
- Gender
- People from different ethnic groups
- Retired people/people over 60
- Families with children
- Carers
- People with family commitments

## Barriers faced by user groups

- Employment and unemployment
- Family commitments
- Lack of disposable income
- Lack of transport
- Lack of positive sporting role models
- Lack of positive family role models or family support
- Lack of appropriate activity provision
- Lack of awareness of appropriate activity provision
- The lack of equal coverage in media in terms of gender and ethnicity by the media

## WATER SAFETY

- 1. Floating:** The ability to float on your back helps conserve energy and breathe more easily while waiting for rescue.
- 2. Treading Water:** This skill involves moving your arms and legs to keep your head above water, allowing you to stay in one place without sinking.
- 3. Swimming for Distance:** Knowing how to swim at least 25 meters can help you reach safety or a shore if needed.
- 4. Controlled Breathing:** Practicing proper breath control allows you to stay calm, conserve energy, and avoid panic in emergency situations.

**Year 8  
Term 2: Health  
Knowledge Organiser**

## Swimming rules

- No running:
- Supervise children:
- No diving in shallow water:
- Shower before entering:

## Hydration

Hydration is essential in a balanced diet because water supports nearly every bodily function, including digestion, nutrient absorption, temperature regulation, and waste elimination. Staying properly hydrated helps maintain energy levels, promotes healthy skin, lubricates joints, and ensures that cells function optimally.

## TRAINING METHODS:

**1. Circuit Training:** A form of exercise where participants cycle through a series of exercises, targeting different muscle groups, with minimal rest between each station.

**2. Continuous Training:** Involves sustained, steady-state activity, like running or cycling, for an extended period without rest, designed to build cardiovascular endurance.

**3. Weight Training:** A form of strength training using weights (dumbbells, barbells, or machines) to build muscle strength and endurance.

**4. Fartlek Training:** A type of running workout that blends continuous and interval training by varying pace and intensity over different terrains or set times.

**5. Interval Training:** Alternates between periods of high-intensity effort and low-intensity recovery, improving speed and cardiovascular fitness.

**6. Plyometric Training:** Focuses on explosive movements, like jumps or bounds, to increase power and strength in muscles, particularly useful for athletes.

## HEART RATES:

### Self check: take your own pulse



Find your pulse



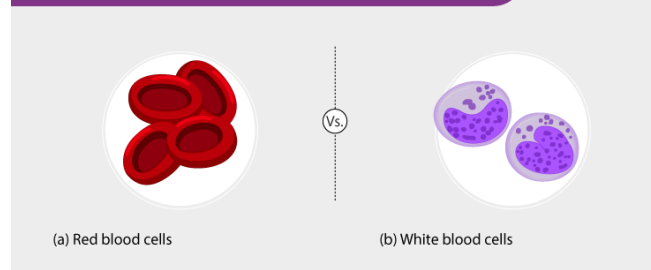
Count your heartbeat  
for 30 seconds



Double it

## Year 8 Term 2: Health Knowledge Organiser

### DIFFERENCE BETWEEN RBC AND WBC



### Blood Cells- What do they do?

#### Red blood cells (RBCs)

- Carry oxygen from the lungs to the rest of the body and return carbon dioxide back to the lungs for exhalation. They contain hemoglobin, a protein that binds to oxygen, enabling this vital gas exchange.

#### White blood cells (WBCs)

- Are part of the immune system and help the body fight infections and other diseases. They identify and attack pathogens like bacteria, viruses, and harmful invaders to protect the body from illness.

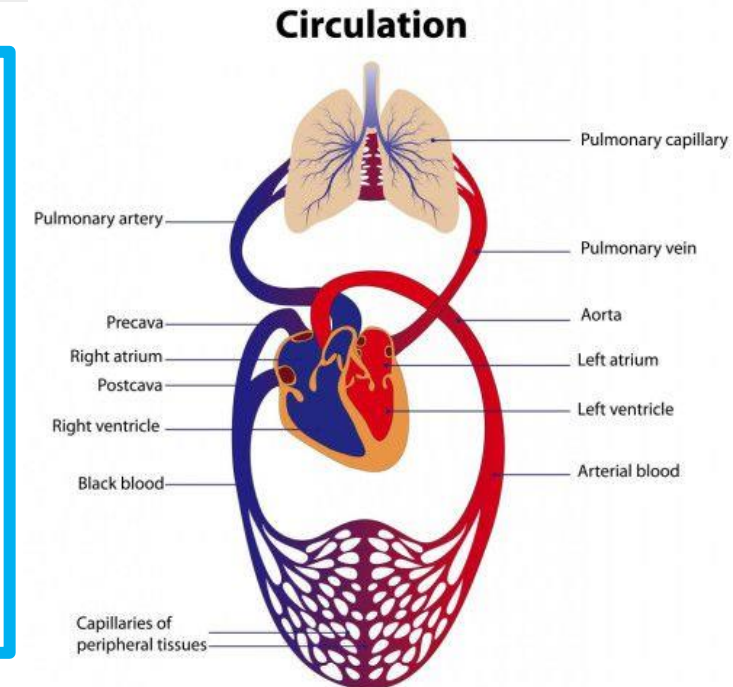
## CARDIOVASCULAR SYSTEM

### Veins

- Veins are blood vessels that return deoxygenated blood from various parts of the body back to the heart, where it can be reoxygenated.

### Arteries

- Arteries are blood vessels that carry oxygen-rich blood away from the heart to tissues and organs throughout the body, ensuring they receive the oxygen and nutrients needed for proper function.





# Year 8 Term 3: Health Knowledge Organiser

## USER GROUPS in Sport/Fitness

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- Teenagers
- People with disabilities
- Parents (singles or couples)
- People who work
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## **NUTRITION:**

A balanced diet consists of six essential nutrients:

- 1. Carbohydrates** – The body's main energy source, found in foods like grains, fruits, and vegetables.
- 2. Proteins** – Essential for growth, repair, and muscle maintenance, sourced from meat, beans, and dairy.
- 3. Fats** – Provide long-term energy and support cell function, found in nuts, oils, and fatty fish.
- 4. Vitamins** – Support immune function, metabolism, and overall health, present in fruits, vegetables, and dairy.
- 5. Minerals** – Aid in bone strength, nerve function, and hydration, including calcium, iron, and potassium from leafy greens, dairy, and meat.
- 6. Water** – Essential for hydration, digestion, and temperature regulation, making up a large portion of the body.

## **ROLE OF MACRO NUTRIENTS IN SPORT**

**Carbohydrates** – The primary energy source for athletes, carbohydrates fuel endurance and high-intensity activities by providing glucose, which is stored as glycogen in muscles and the liver. They help maintain stamina, delay fatigue, and support quick recovery.

**Proteins** – Essential for muscle repair, recovery, and growth, proteins aid in rebuilding muscle fibers damaged during exercise. They also support immune function and contribute to enzyme and hormone production necessary for athletic performance.

**Fats** – A secondary energy source, fats provide sustained energy for long-duration, low- to moderate-intensity activities. They help preserve glycogen stores and support overall endurance, particularly in endurance sports like marathon running or cycling.

## **NUTRITION:**

- Carbohydrates are essential in sporting activity because they provide a quick and efficient source of energy, fueling muscles and sustaining performance during exercise.
- Hydration is crucial as it regulates body temperature, maintains electrolyte balance, and prevents dehydration, which can impair endurance, strength, and overall athletic performance



## TRAINING PRINCIPLES:

Training thresholds refer to intensity levels that determine the effectiveness of an exercise program. There are two key thresholds:

1. **Aerobic Threshold** (50-70% of maximum heart rate) – The point where the body starts using oxygen efficiently for sustained activity, improving endurance.
2. **Anaerobic Threshold** (80-90% of maximum heart rate) – The intensity at which lactic acid accumulates faster than it can be cleared, enhancing high-intensity performance and muscle strength.

## KARVONEN PRINCIPLE

The **Karvonen Principle** calculates target heart rate for optimal training intensity using the **Heart Rate Reserve (HRR)** method:

- **HRR** = Maximum Heart Rate (220 - age) - Resting Heart Rate
- **Intensity %** = Desired effort level (e.g., 60-85% for aerobic training)
- **Resting Heart Rate (RHR)** = Measured at rest, indicating baseline fitness

This formula personalizes training zones, ensuring workouts are effective and aligned with fitness goals.

## FITT Principle

The **FITT Principle** is a guideline for structuring effective workout programs. It stands for:

1. **Frequency** – How often you exercise (e.g., 3-5 times per week).
2. **Intensity** – How hard you work out (e.g., moderate or high intensity, based on heart rate or weight resistance).
3. **Time** – Duration of the exercise session (e.g., 30-60 minutes).
4. **Type** – The kind of exercise performed (e.g., cardio, strength training, flexibility).

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## Year 8 Term 3: Health Knowledge Organiser

Age-predicted maximum heart rate (APMHR)

$$\text{HRmax} = 220 - \text{age}$$

Karvonen formula

$$\% \text{ HRR} = ((\text{HRmax} - \text{RHR}) \times \% \text{ intensity}) + \text{RHR}$$

## ANAEROBIC VS AEROBIC EXERCISE

- Aerobic exercise, like jogging or cycling, uses oxygen to produce energy, primarily generating carbon dioxide and water as byproducts.
- Anaerobic exercise, like sprinting or weightlifting, occurs without oxygen, producing lactic acid as a byproduct.

## Energy Sources for Aerobic and Anaerobic Exercises

### Aerobic Exercise (With Oxygen)

1. Uses **carbohydrates** (glucose/glycogen) and **fats** as the primary energy sources.
2. During prolonged, low-to-moderate intensity activities (e.g., jogging, cycling), the body primarily relies on **fat oxidation** for sustained energy.
3. **Oxygen is required** to break down these fuels efficiently, producing **ATP, water, and carbon dioxide** as byproducts.

### Anaerobic Exercise (Without Oxygen)

1. Uses **stored ATP, creatine phosphate (CP), and glycogen** as quick energy sources.
2. During short bursts of high-intensity activities (e.g., sprinting, weightlifting), the **ATP-PC system** and **anaerobic glycolysis** supply energy.
3. **Lactic acid** is produced as a byproduct when glycogen is broken down without oxygen, leading to muscle fatigue.