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

Label and locate all the muscles and bones in arms, core and hands/feet

Year 9
Term 1: Health
Knowledge Organiser

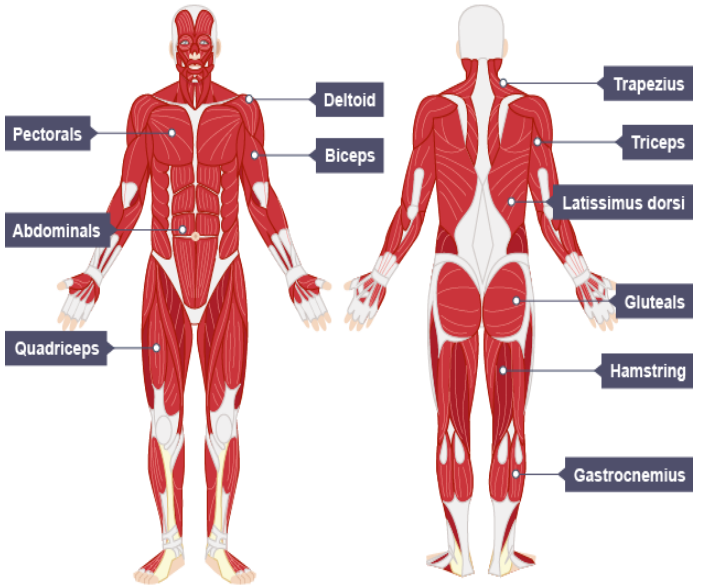
Sedentary lifestyle

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

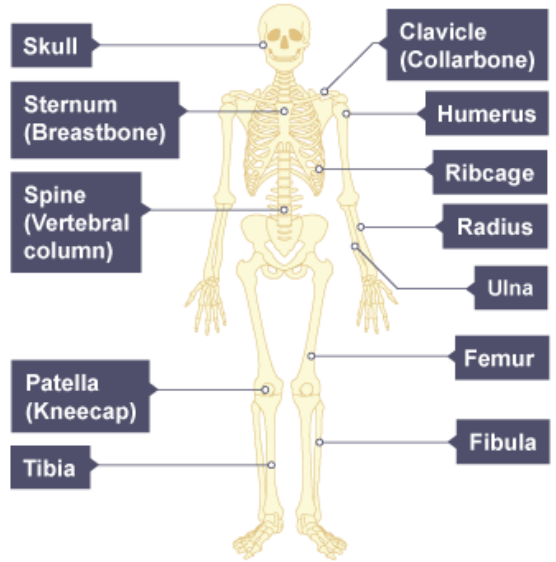
Consequences of a Sedentary lifestyle-obesity, Depression, Type 2 diabetes, Poor muscle tone, osteoporosis.

Short term effects of exercise

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



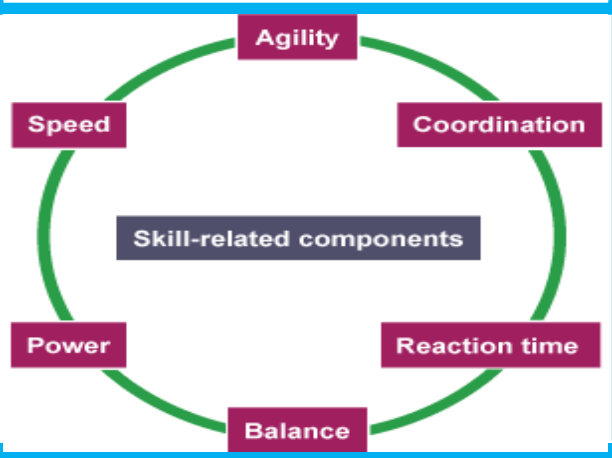
Skeletal System



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

COMPONENTS OF Health related Fitness – FABS MS

1. **Flexibility** – The ability to move a joint fluidly through its complete range of movement.
2. **Body Composition** – The relative ratio of fat mass to fat-free mass in the body.
3. **Speed** - Measured in metres per second. The faster an athlete runs over a given distance, the greater their speed.
4. **Cardiovascular endurance**-The ability of the heart, lungs and blood to transport oxygen during sustained exercise



COMPONENTS OF SKILL RELATED FITNESS – CRAP B

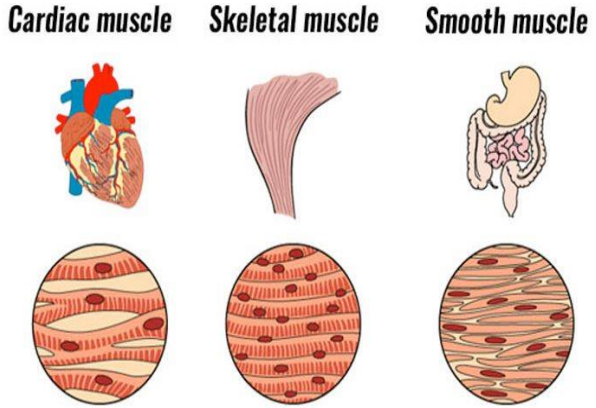
1. **Co-ordination** – The smooth flow of movement needed to perform a motor task efficiently and accurately e.g. do more than one thing at the same time.
2. **Reaction Time** – The time taken for a sports performer to respond to a stimulus.
3. **Agility** – The ability of a sports performer to quickly and precisely move or change direction without losing balance.
4. **Power** – The product of strength and speed. Power is needed in many sports.
5. **Balance** – The ability to maintain centre of mass over a bass support; dynamic and static.

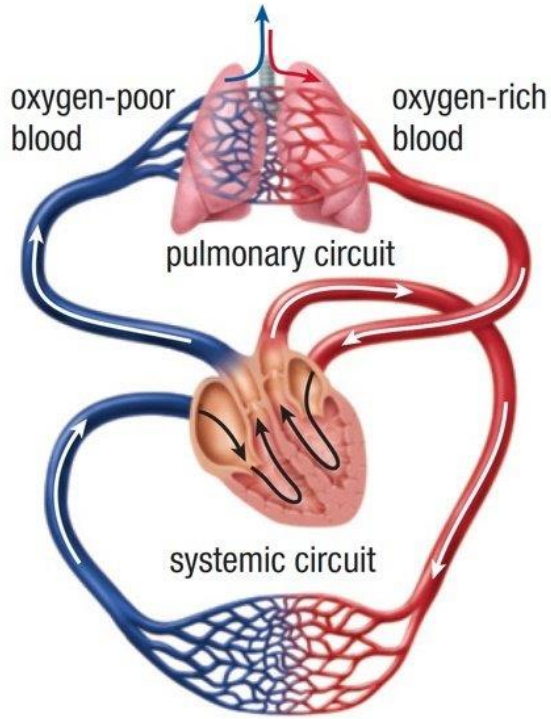
The cardiovascular system and respiratory system working together

The lungs bring oxygen into the body, to provide energy, and remove carbon dioxide, the waste product created when you produce energy. The heart pumps the oxygen to the muscles that are doing the exercise. When you exercise and your muscles work harder, your body uses more oxygen and produces more carbon dioxide

Year 9: Term 1
Health
Knowledge Organiser

Different types of muscle

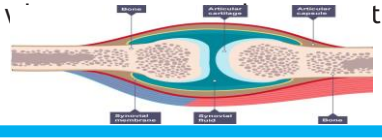




Key Vocabulary: Cardiovascular. Carbon dioxide Pulmonary circuit Skill related fitness components Health related

Joints

A joint is a place w t and is also called an articulation

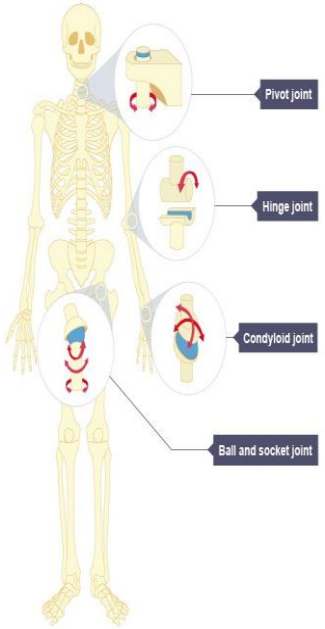


Hinge - these can be found in the elbow, knee and ankle. They allow flexion and extension of a joint.

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
Cardiovascular system	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
Respiratory system	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
Energy system	Increased production of energy from the aerobic energy system; increased tolerance to lactic acid
Muscular system	Muscle hypertrophy; increased strength of tendons; increased strength of ligaments
Skeletal system	Increase in bone density

Year 9: Term 1
PE Theory
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 weightlifting 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

Key vocabulary: Hinge Ball and Socket. Hypertrophy. Vital Capacity. Tidal Volume Latic acid Fitness Component

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

Year 9
Term 2: Health
Knowledge Organiser

SOLUTIONS TO BARRIERS

•Appropriate programmes
•Specific sessions
•Suitable activities
•Appropriate timings
•Targeted promotions
•Use of role models
•Access to facilities
•Appropriate pricing
•Access to transport
•Initiatives

OPEN 24 HOURS

sky sports

Key Vocabulary: Veins Arteries Circuit Plyometric Interval Continuous Weight Fartlek Water Safety User Groups

BALANCED DIET/NUTRITION

A balanced diet is essential for maintaining overall health and providing your body with the nutrients it needs to function effectively. Here's a breakdown of the key components:

1. Macronutrients

•**Carbohydrates)**: The body's main source of energy. Focus on complex carbohydrates like whole grains, fruits, and vegetables. Limit refined sugars and highly processed carbs.

•**Proteins:** Essential for building and repairing tissues. Include lean meats, fish, eggs, legumes, nuts, and dairy products.

•**Fats)**: Necessary for hormone production, nutrient absorption, and brain health. Prioritize healthy fats from sources like avocados, nuts, seeds, and olive oil while limiting saturated and trans fats.

2. Micronutrients

These are vitamins and minerals needed in smaller amounts but are crucial for various bodily functions.

•**Vitamins**:: B vitamins (like B12 and folate) and vitamin C, Vitamins A, D, E, and K.

•**Minerals**: Key minerals include calcium, potassium, iron, magnesium, and zinc.

•**Fibre:** Fibre is important for digestive health and helps regulate blood sugar levels. Aim for whole grains, fruits, vegetables, and legumes to increase fibre intake.

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 9
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.

Key Vocabulary: Veins Arteries Circuit Plyometric Interval Continuous Weight Fartlek Water Safety User Groups

Year 8
Term 2: Health
Knowledge Organiser

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.

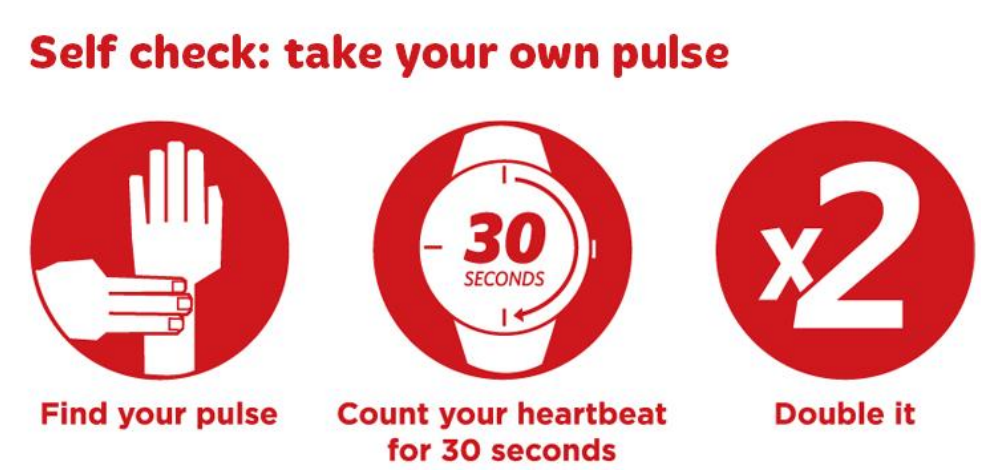
3.Weight Training: A form of strength training using weights (dumbbells, barbells, or machines) to build muscle strength and endurance.

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:



Antagonistic pairs:

Antagonistic pairs refer to pairs of muscles that work against each other to create movement. When one muscle contracts (agonist), the other relaxes (antagonist). IE Bicep/Tricep

TRAINING METHODS:

1. Circuit Training

Positives: Variety keeps workouts interesting, Adaptable for all fitness levels.

Negatives: Can be tiring; risk of fatigue. Poor form may lead to injuries. Limited strength gains compared to traditional weight training.

2. Continuous Training

Positives: Builds cardiovascular endurance. Simple and accessible. Can be mentally relaxing.

Negatives: Monotonous over time. Risk of overuse injuries. Less effective for strength building.

3. Weight Training

Positives: Effective for building strength. Boosts metabolism. Improves bone health.

Negatives: Requires equipment or gym access. Learning proper technique can be needed. Time-consuming for significant gains.

4. Fartlek Training

Positives: Engaging and varied workouts. Improves both speed and endurance. Easy to adapt to different fitness levels.

Negatives: Lacks structure; can be confusing. Risk of overtraining if not managed. May require some experience to implement effectively.

5. Interval Training

Positives: Time-efficient with quick results. Effective for fat loss. Versatile across different exercises.

Negatives: High intensity may overwhelm beginners. Requires recovery time. Risk of injury if form is poor.

6. Plyometric Training

Positives: Builds power and explosiveness. Improves agility and coordination. High caloric burn.

Negatives: High impact; can stress joints. Not suitable for everyone. Needs space and possibly equipment.

Key Vocabulary: Veins Arteries Circuit Plyometric Interval Continuous Weight Fartlek Water Safety User Groups

Year 7
Term 2: Health
Knowledge Organiser

REDISTRIBUTING BLOOD

Vasoconstriction
•**Definition**: Narrowing of blood vessels.
•**During Exercise**:
- Decreases blood flow to less active areas (like the digestive system).
- Redirects blood to active muscles and vital organs.

Vasodilation
•**Definition**: Widening of blood vessels.
•**During Exercise**:
- Increases blood flow to active muscles.
- Enhances oxygen and nutrient delivery and waste removal.

Vascular Shunting
•**Definition**: Redistribution of blood flow.
•**During Exercise**:
- Prioritises blood to working muscles while reducing flow to non-essential organs (like the stomach).

Blood Cells- What do they do?

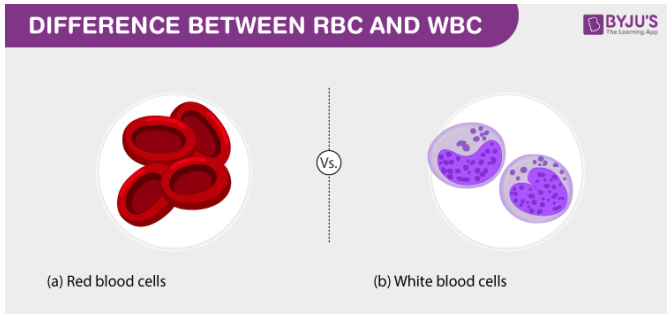
Red blood cells (RBCs)
- Carry oxygen from the lungs to the rest of the body and return carbon dioxide back to the lungs for exhalation. They contain hemoglobin, a protein that binds to oxygen, enabling this vital gas exchange.

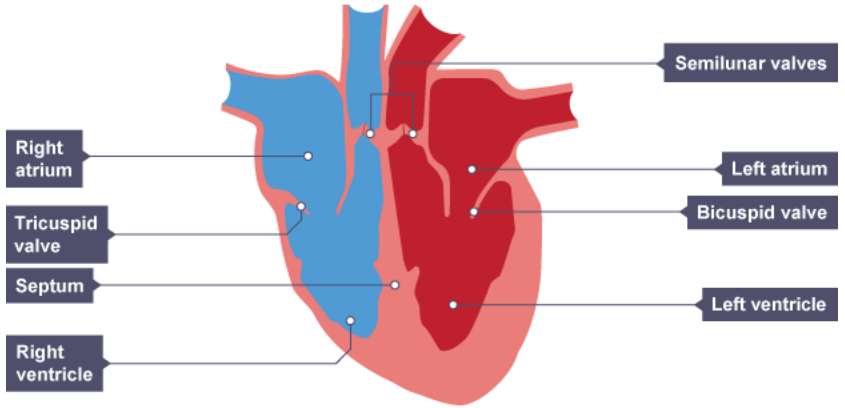
White blood cells (WBCs)
- Are part of the immune system and help the body fight infections and other diseases. They identify and attack pathogens like bacteria, viruses, and harmful invaders to protect the body from illness.

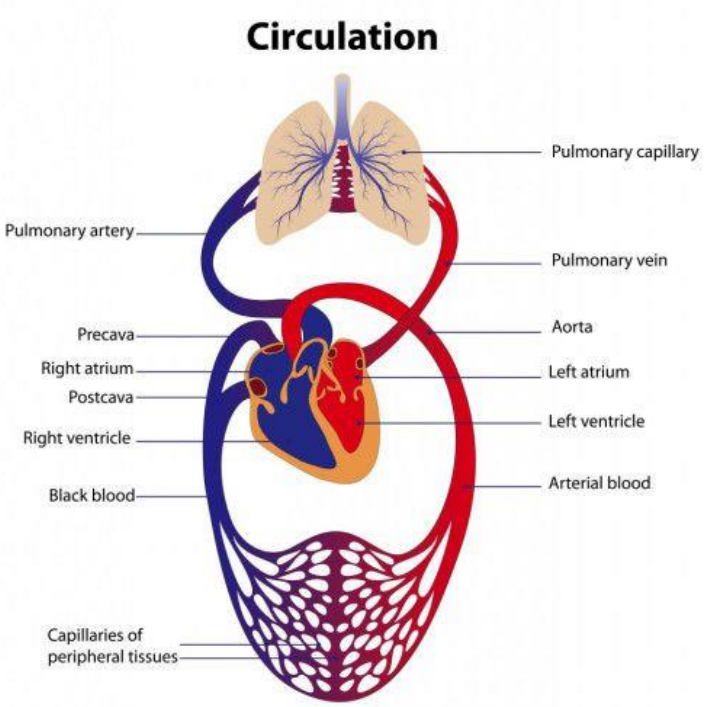
CARDIOVASCULAR SYSTEM

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.







Key Vocabulary: Veins Arteries Circuit Plyometric Interval Continuous Weight Fartlek Water Safety User Groups

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Year 9
Term 3: Health
Knowledge Organiser

SOLUTIONS TO BARRIERS

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sky sports

OPEN 24 HOURS

Year 9
Term 3: Health
Knowledge Organiser

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

CARBOHYDRATE LOADING

Carbohydrate loading is a strategy used by endurance athletes to maximize glycogen stores in muscles before a long-duration event (e.g., marathon, triathlon). It involves increasing carbohydrate intake 3-7 days before competition while tapering exercise intensity. This ensures sustained energy levels, delays fatigue, and enhances performance.

Method (6-7 Days Before Competition)

•**Days 1-3**: Low-carb diet (10-15% of total calories) with high-intensity training to deplete glycogen stores.

•**Days 4-7**: High-carb diet (70-80% of total calories) with reduced training to super compensate glycogen levels.

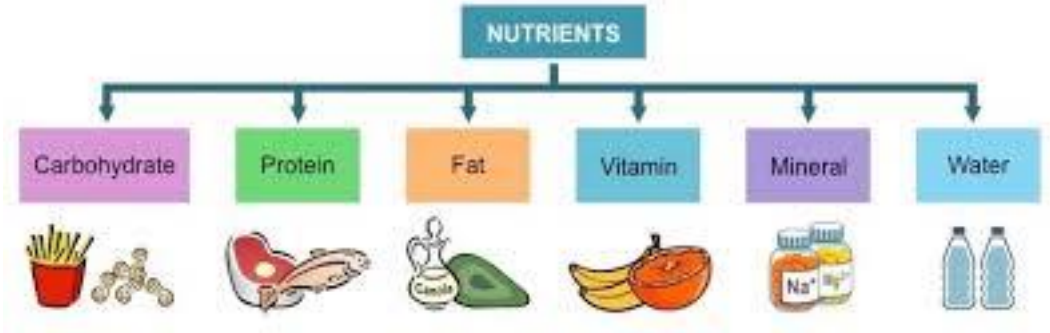
EATING PROTEIN:

The timing of protein intake is crucial for muscle recovery, repair, and growth.

•**Pre-Workout**: Consuming protein before exercise helps reduce muscle breakdown and provides amino acids for sustained performance.

•**Post-Workout (Within 30-60 minutes)**: Aids in muscle protein synthesis, reduces soreness, and accelerates recovery.

•**Before Sleep**: A slow-digesting protein (e.g., casein) supports overnight muscle repair and prevents muscle breakdown.



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).
:

Year 9
Term 3: Health
Knowledge Organiser

Age-predicted maximum heart rate (APMHR)

HRmax = 220 - age

Karvonen formula

% HRR = ([HRmax – RHR] x % intensity) + RHR

Individual needs -

All athletes/people are different. Training must be related to the athlete's age and *gender*, their injury status and fitness level. Any training that fails to be relevant to the individual will fail to motivate the athlete and will prove to be unsuccessful in the long term.

FREQUENCY

INTENSITY

TIME

TYPE