

Athletics – Throws

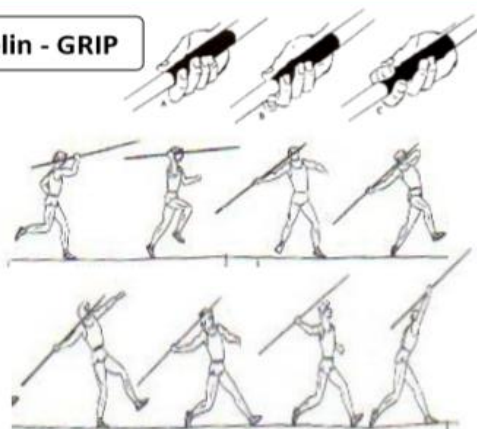
Keywords

Whip	Accuracy
Explosive	Grip
Stance	Balance
Release Point	Transfer of Weight
Speed	Power
Coordination	Flight

Can you think of anymore?

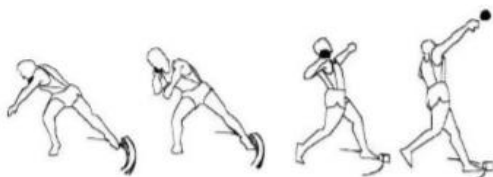
What can you do?

Javelin - GRIP



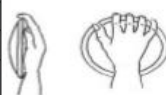
Javelin – Action:

- Transfer weight from back foot to front foot.
- 'Pull' arm through past face
- Maintain direction of the javelin tip
- Release javelin at 45 degrees



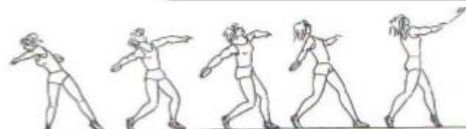
Shot Putt – Grip + Action:

- Transfer weight from back foot to front foot.
- 'Push' ball away from neck
- Rotate hips to push 'belt buckle' to the direction of throw
- Release shot at 45 degrees



Discuss – Grip + Action:

- 'Swing' arm from a high to low position
- Release shot at 45 degrees



Athletics – Sprints

Keywords

Whip	Accuracy
Explosive	Drive Phase
Stance	Balance
Reaction Time	Transfer of Weight
Speed	Power
Coordination	Muscle Fibres

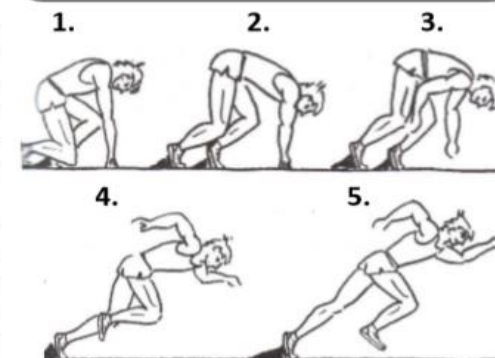
Can you think of anymore?

What can you do?



Coaching Points

- Drive knees high out of the blocks
- Use arms to drive each stride
- Rise body up slowly
- Keep torso still isolating knees and arms only.
- Stay in your lane.



Coaching Points

- Crouch on one knee, with your fingers just behind the line.
- Raise your hips to a level just above your shoulders.
- On the B of the Bang, breathe out hard and pump those arms and legs.
- Keeping your body low in your opening strides will thrust you forward.

Making and Applying Decisions	How many steps do need in run up?
	What is effective jumping style?
	Which jump is suited to you?
	Can you adapt to each jump?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Performing at Maximum Levels	How far can you jump?
	What is your best technique?
	Can you beat your Personal Best (PB)?
	Can you beat that measurement?
Accurate Replication	Can you copy the each jump?
	Scissors or Fosbury Flop
	Can you hang in the air?
	Can you use your whole body?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes during a performance

Making and Applying Decisions	How many steps do need in run up?
	What is effective jumping style?
	Which jump is suited to you?
	Can you adapt to each jump?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Performing at Maximum Levels	How far can you jump?
	What is your best technique?
	Can you beat your Personal Best (PB)?
	Can you beat that measurement?
Accurate Replication	Can you copy the each jump?
	Scissors or Fosbury Flop
	Can you hang in the air?
	Can you use your whole body?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes during a performance

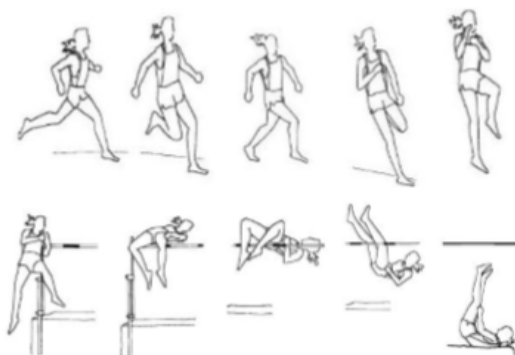
Athletics – Jumps

Keywords

Whip	Accuracy
Explosive	Drive
Stance	Balance
Control	Transfer of Weight
Speed	Take Off
Agility	Flight

Can you think of anymore?

What can you do?



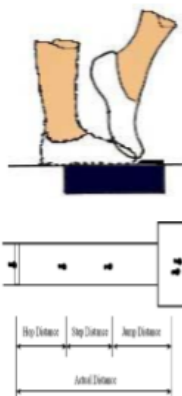
High Jump – Fosbury Flop Technique:

- Curve run up
- Take off with nearest leg to the bar (1 footed)
- Use arms to drive the jump upwards
- Push hips forward to arch back on take off.



Long/Triple Jump

- Speed on run up
- Take off 1 footed as close to board as possible
- Use arms to generate 'hang time'
- Use momentum to fall forward on landing in the pit



Making and Applying Decisions	How many steps do need in run up?
	What is effective jumping style?
	Which jump is suited to you?
	Can you adapt to each jump?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Performing at Maximum Levels	How far can you jump?
	What is your best technique?
	Can you beat your Personal Best (PB)?
	Can you beat that measurement?
Accurate Replication	Can you copy the each jump?
	Scissors or Fosbury Flop
	Can you hang in the air?
	Can you use your whole body?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes during a performance

Cricket/Rounders – Fielding

Keywords

Pitch	Posts
Balance	Obstruction
Control	Balance
Bases	Strike
Fielder	Bowl
Coordination	No Ball

Can you think of anymore?

What can you do?



High Catch

- Cup Hands
- Keep eye on Ball
- Cushion ball on impact



Body Catch

- Cup Hands
- Aim to catch with base of fingers
- Bring ball into body.



Long Barrier

- Body behind the ball
- Hands low to the ground to 'safely' pick up the ball

Making and Applying Decisions	Can you select the correct throw?
	What is effective throw?
	What tactics do you play?
	Can you adapt to each opponent?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Outwitting Opponents	What is your opponents weakness?
	Can you hit the space?
	What area of field do you aim at?
	Can you control game?
Accurate Replication	Can you copy the each shot?
	Can you perform barriers?
	Can you bowl ball?
	Is you batting stance correct?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes in a game

Cricket/Rounders – Throwing

Keywords

Pitch	Posts
Balance	Obstruction
Control	Balance
Bases	Strike
Fielder	Bowl
Coordination	Cushion

Can you think of anymore?

What can you do?



Throwing Coaching Points

- Stand sideways to the target. The throwing arm is taken back behind the head.
- Throwing arm swings forward keeping the elbow at least level with top of throwing shoulder.
- Release the ball with both feet on the ground and the chest facing the target.
- Swing the throwing arm through so that both arms end up behind the opposite hip. Keep the head and eyes facing the target.



Making and Applying Decisions	Can you select the correct throw?
	What is effective throw?
	What tactics do you play?
	Can you adapt to each opponent?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Outwitting Opponents	What is your opponents weakness?
	Can you hit the space?
	What area of field do you aim at?
	Can you control game?
Accurate Replication	Can you copy the each shot?
	Can you perform barriers?
	Can you bowl ball?
	Is you batting stance correct?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes in a game

Rounders – Batting

Keywords

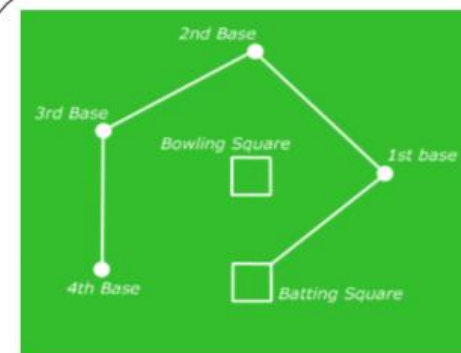
Pitch	Posts
Balance	Obstruction
Control	Balance
Bases	Strike
Fielder	Bowl
Coordination	No Ball

Can you think of anymore?

What can you do?



- 1) STAND SIDEWAY ON
- 2) NON STANDING FOOT FORWARD
- 3) BAT UP – HEAD HEIGHT
- 4) FOLLOW THROUGH ON CONTACT
- 5) MAKE SURE YOU RUN AROUND GATE – NOT THROUGH!



Can you set up a Rounders pitch?

In groups of 5 can you replicate the pitch above and practice batting, bowling and fielding? Bowl each player 5 balls each.

Making and Applying Decisions	Can you select the correct throw?
	What is effective throw?
	What tactics do you play?
	Can you adapt to each opponent?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Outwitting Opponents	What is your opponents weakness?
	Can you hit the space?
	What area of field do you aim at?
	Can you control game?
Accurate Replication	Can you copy the each shot?
	Can you perform barriers?
	Can you bowl ball?
	Is you batting stance correct?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes in a game

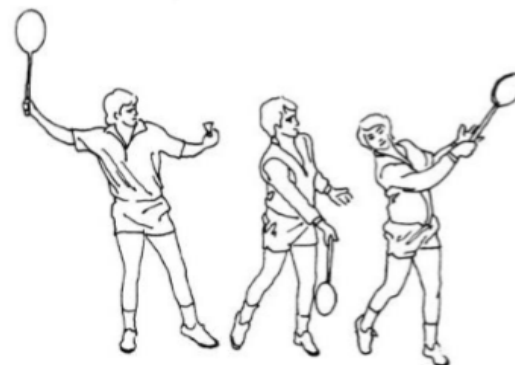
Badminton – Serves

Keywords

Clear	Accuracy
Balance	Flick
Tap	Push
Control	Disguise
Speed	Clear
Agility	Shuttlecock Flight

Can you think of anymore?

What can you do?



- Racket head must make contact with the shuttle below the waist.
- Make sure you serve diagonal



view from above



view from side

A basic grip of the racket is vital:

- A 'V' should be made with your thumb and index finger.

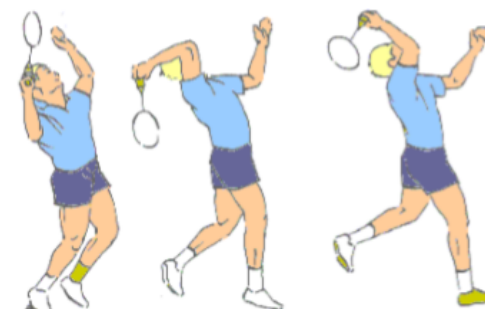
Badminton – Overhead Shots

Keywords

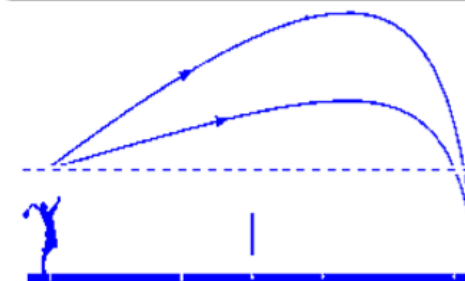
Clear	Accuracy
Balance	Flick
Tap	Push
Control	Disguise
Speed	Clear
Agility	Shuttlecock Flight

Can you think of anymore?

What can you do?



Look at the flight of the shuttlecocks below



What do you notice about the flight (Trajectory) of the shots?

Think: Flight/Attacking/Defensive/Time

Badminton – Net Shots

Keywords

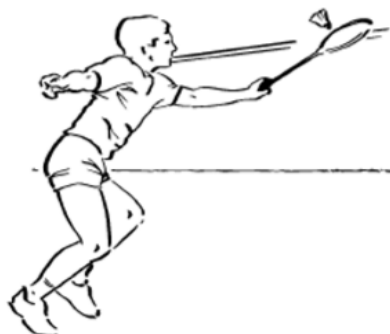
Clear	Accuracy
Balance	Flick
Tap	Push
Control	Disguise
Speed	Preparation
Angles	Shuttlecock Flight

Can you think of anymore?

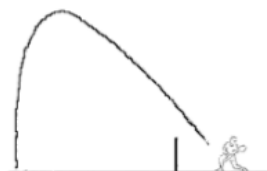
What can you do?



Net Shot



Defensive Lob



Important Points:

- Early preparation of your feet.
- Disguise on the shot.



Making and Applying Decisions	Can you select the correct shot?
	What is effective grip?
	What tactics do you play?
	Can you adapt to each opponent?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Outwitting Opponents	What is your opponents weakness?
	Can you feint your shot selection?
	What area of court do you aim at?
	Can you control the rally?
Accurate Replication	Can you copy the each shot?
	Which foot do you lead with?
	Can you strike shuttle?
	Do you flick your wrist?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes in a game

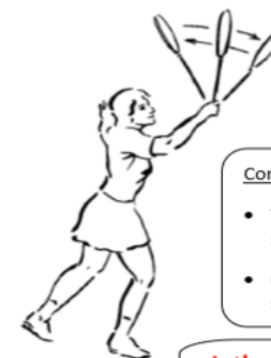
Badminton – Attacking Shots

Keywords

Clear	Accuracy
Balance	Flick
Tap	Push
Control	Trajectory
Speed	Stance
Angles	Flight

Can you think of anymore?

What can you do?



Consider the following:

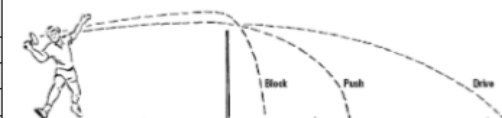
- The Contact Point on the shuttle.
- Consider the flight of the shuttlecock

Is the kill shot an attacking or defensive shot?



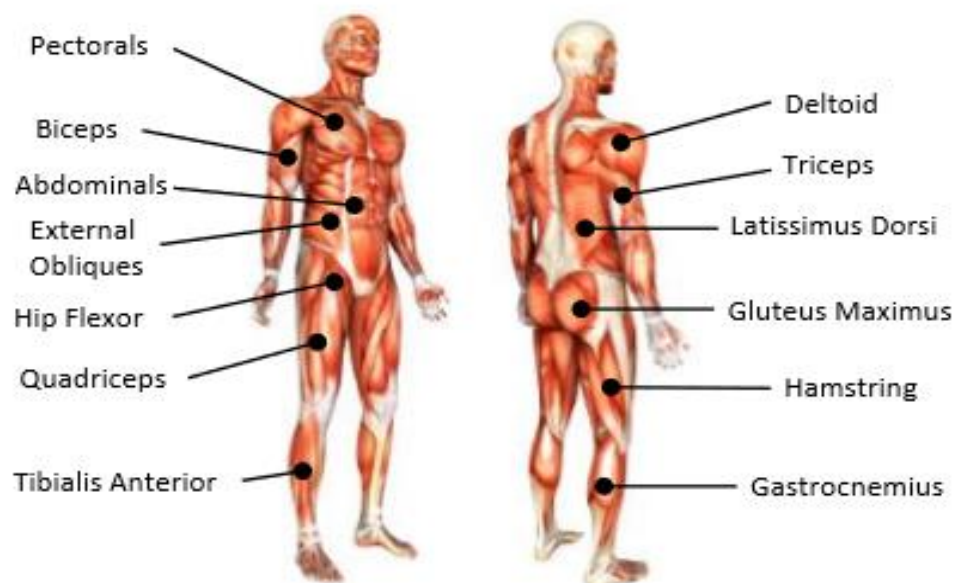
Important Points:

- Early preparation of your feet.
- Disguise on the shot.



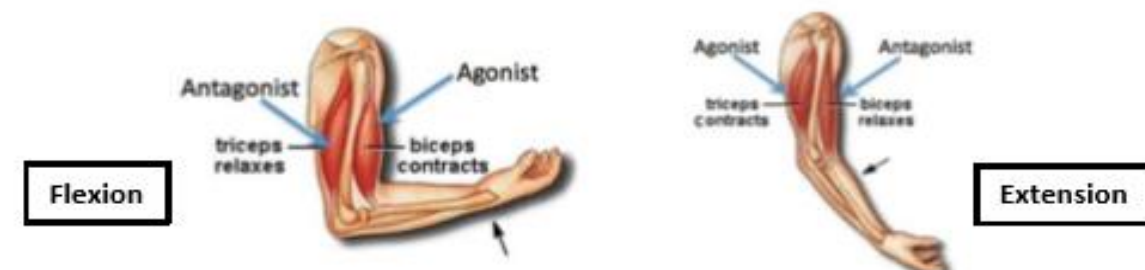
Making and Applying Decisions	Can you select the correct shot?
	What is effective grip?
	What tactics do you play?
	Can you adapt to each opponent?
Developing physical and mental capacity	What type of training method?
	How often do you train?
	Overcoming mental barriers
	The will to be successful/achieve
Outwitting Opponents	What is your opponents weakness?
	Can you feint your shot selection?
	What area of court do you aim at?
	Can you control the rally?
Accurate Replication	Can you copy the each shot?
	Which foot do you lead with?
	Can you strike shuttle?
	Do you flick your wrist?
Exercising Safely & Effectively	Did you warm up effectively?
	How long do you hold a stretch for?
	Why do we need to exercise?
	What happens to your body during exercise?
Evaluating and improving	Able to compare work with others
	Pick out strengths/weaknesses
	To improve your skills and others
	React to the changes in a game

Structure of the muscular system



Antagonistic pairs - Muscles are arranged in antagonistic pairs.

As one muscle contracts (shortens) its partner relaxes (lengthens) *i.e. Biceps and Triceps.*



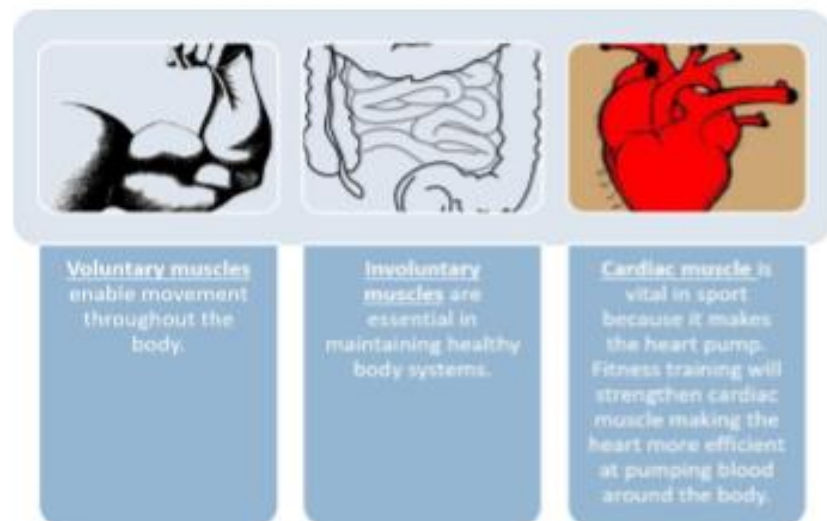
Agonist = the muscle that contracts to produce movement.

Antagonist = the muscle that relaxes to allow the movement to occur.

Examples in the body:

- Biceps & Triceps
- Quadriceps & Hamstring
- Hip Flexor & Gluteus Maximus
- Tibialis Anterior & Gastrocnemius

Types of muscle

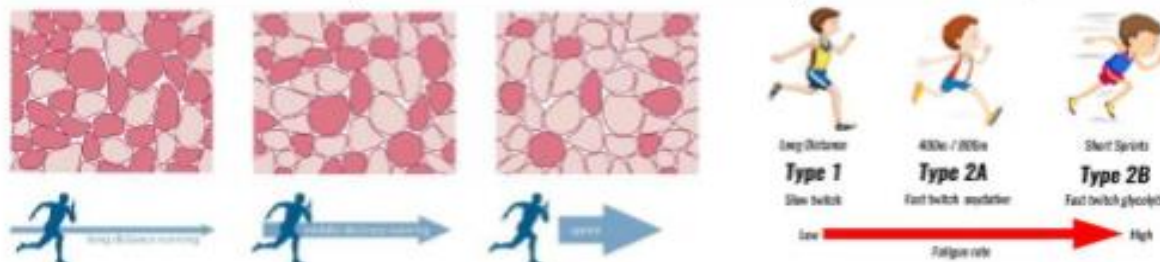


The **short term effects** of exercise on the muscles:

1. Working muscles produce heat
2. Increased muscle fatigue due to lactate accumulation
3. Blood is re-distributed to working muscles (Shunting)

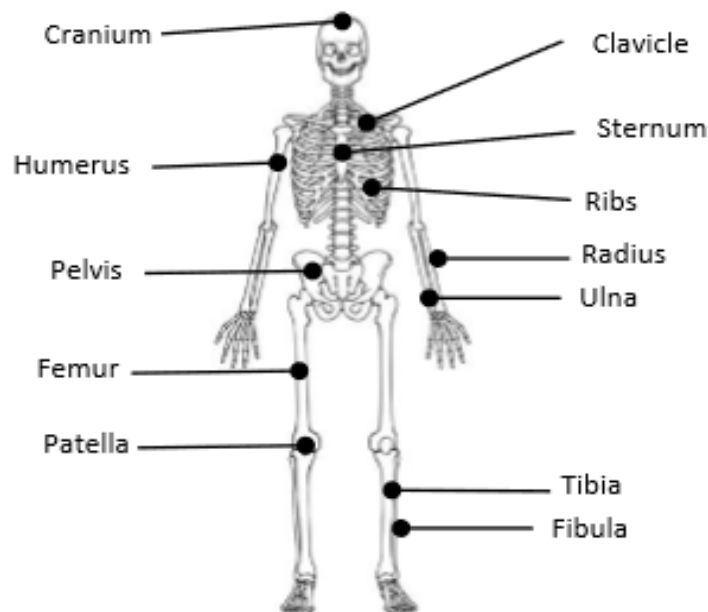
Muscle fibre types

Slow twitch muscle fibres (Type I)	Fast twitch muscle fibres (Type IIa)	Fast twitch muscle fibres (Type IIx/b)
<ol style="list-style-type: none"> 1. Smaller in size. 2. Work aerobically with high fatigue resistance. 3. Have a good oxygen supply = deep red in colour. 4. They contract slowly, but can work for long periods. <p>Marathon runner</p>	<ol style="list-style-type: none"> 1. Larger in size 2. Work anaerobically & linked to high intensity activities. 3. Are paler in colour and have limited oxygen supply. 4. They contract quickly and powerfully, but tire easily. <p>400/800m runner</p>	<ol style="list-style-type: none"> 1. Large in size 2. Work anaerobically & linked to extreme high intensity activities. 3. Very high speed of contraction but low fatigue resistance. <p>100m Sprinter</p>

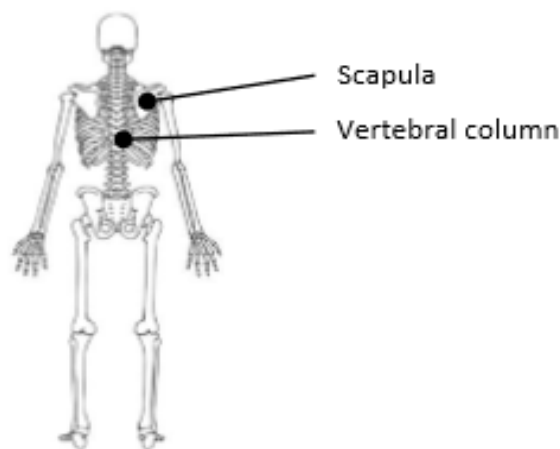


Link of the muscular and skeletal system – both systems work together to produce movement. *i.e. a contracting muscle pulls on a bone which changes the angle at a joint.*

Structure of the skeletal system



Structure of the skeletal system



Vertebral Column

The vertebral column is divided into 5 sections. It is made up of irregularly shaped bones called vertebrae.

Each vertebra is protected with cartilage to prevent friction.

The vertebrae protects the spinal cord.



Function of the skeleton

- Protection of vital organs
- Muscle attachment
- Joints for movement
- Blood cell production (platelets, red and white)
- Storage of calcium and phosphorus

Classification of joint

- Pivot (neck – atlas and axis)
- Hinge (elbow and knee)
- Ball and socket (hip and shoulder)
- Condyloid (wrist)



Connective tissue

Ligaments – attaches bone to bone to add joint stability.

Tendons – attaches muscles to bone and contributes to joint movement as a result of muscle contraction.

Classification of bones

Long (leverage)	Short (weight bearing)	Flat (protection + muscle attachment)	Irregular (protection and muscle attachment)
Clear shaft region to the bone. <i>i.e. femur, humerus & phalanges</i>	Light, small and very strong. <i>i.e. carpals, tarsals</i>	Broad surface area for muscle attachment. <i>i.e. cranium</i>	Assist the functioning of certain joints. <i>i.e. Patella/vertebrae</i>

Joint movements

Flexion	Adduction	Rotation	Dorsi-Flexion (ankle joint)
Decreasing the angle at a joint (bending)	Limbs moving towards the midline of the body.	A twisting/turning action around a joint.	When the toes are turned up to the body.
Extension	Abduction	Circumduction	Planter-Flexion (ankle joint)
Increasing the angle at a joint (straightening)	Limbs moving away from the midline of the body.	A combination of flexion, extension, adduction & abduction.	When the toes are pointed away from the body.

Physical-Related Fitness Components

Aerobic Endurance: The ability of the heart and lungs, to work for a long period of time. Sports: Long distance running, Football, Road Cycling.

Muscular Endurance: the ability of a muscle, to work continuously without tiring. Sports: Hockey, Rugby, Endurance Sports

Flexibility: The range of movement at a joint. Sports: Gymnastics, Dance, Diving.

Muscular Strength: The maximum amount of force a muscle can produce in a short period of time. Sports: Rugby, Powerlifting, Boxing.

Speed: The ability to cover distances quickly. 3 types of speed; Accelerative Speed, Pure Speed & Speed Endurance. Sports; Athletics, Football, Rugby.

Body Composition: The ratio of Fat to fat-free mass In the body. Different sports will need a different body fat percentage



Skill Related Fitness Components

Agility: Ability to change direction quickly and efficiently. Sports: Tennis, Rugby.

Balance: Ability to maintain centre of mass over a base of support. Two types; Static and Dynamic Balance. Sports; Gymnastics, games sports.

Co-Ordination: Smooth flow of movement to be able to perform a motor skill fluently. Sports; Tennis, Rugby, Gymnastics.

Power: Combination of Speed and Strength. Sports; Long Jump, Rugby, American Football.

Reaction Time: The ability to react quickly to a stimulus. Sports; Sprinting, Tennis, Table tennis.



Principles of Training

For any training to be successful, it must stick to the following principles;

Specificity: Tailoring training to your goals and sport.

Progressive Overload: Gradually increasing exercise intensity to cause adaptation.

Variation: Changing the type of training, to increase motivation.

Adaptation: Changes in the body caused by exercising at a high intensity.

Reversibility: When you stop training, you lose any fitness adaptations you will have gained.

Rest & Recovery: The time required to allow your body to repair any damage sustained during training/competition. The body will repair itself and become stronger than before.

Frequency: How often you train

Intensity: How hard you train

Time: How long you train for

Type: what type of training do you do



Exercise Intensity

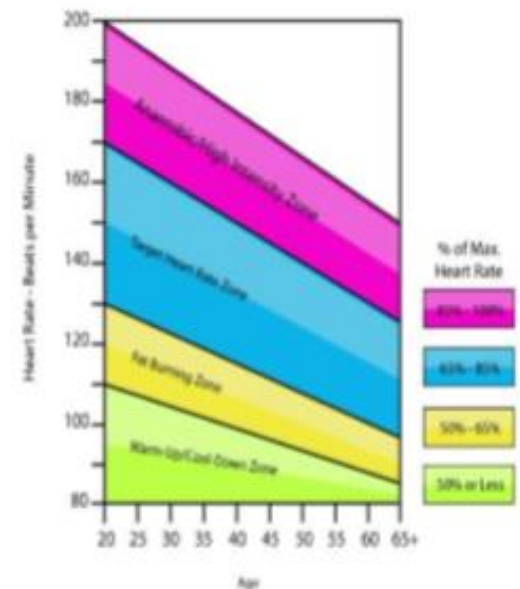
Measure how hard you are training by using your heart rate (BPM).

Maximum heart rate = $220 - \text{age}$
Target heart rate zone for Aerobic training 60-85% of your maximum heart rate.

Therefore, you should be training hard enough, that your heart rate is between 60-85% of your maximum heart rate. This will cause your body to adapt.

Borg's RPE scale can also predict intensity and heart rate.

$\text{RPE} \times 10 = \text{HR}$



Muscular Strength

Test: Hand Grip Dynamometer Test

Protocol: Grip the dynamometer in one hand. Start with your hand up and bring down to side while pulling in handle. No swinging your hand.



Advantages	Disadvantages
<ul style="list-style-type: none">• Simple and easy to complete	<ul style="list-style-type: none">• Only one size of dynamometer which may affect reading.• Focuses solely on forearm strength.

Muscular Endurance

Test: 1 minute sit up test



Test: 1 minute press up test



Protocol: Complete as many full sit ups/press ups as possible in 1 minute.

Advantages	Disadvantages
<ul style="list-style-type: none">• Simple test to complete• Minimal equipment needed.	<ul style="list-style-type: none">• Difficult to assess whether each repetition is performed correctly. Difficult to accurately measure large groups.

Flexibility

Test: Sit and Reach Test

Protocol: Sit with legs straight out in front and soles of feet against box/table. Reach forward without bending knees. No jerking movements.



Advantages	Disadvantages
<ul style="list-style-type: none">• Quick and easy to perform.• Data table readily available for comparison	<ul style="list-style-type: none">• Can cause injury if not fully warmed up appropriately.• Only measures flexibility of lower back and hamstrings.

Cardiovascular Fitness (Aerobic Endurance)

Test: 12 min Cooper Run

Protocol: Continuously run/swim for 12 minutes. Distance recorded.



Advantages	Disadvantages
<ul style="list-style-type: none">• Minimal equipment needed• Test can be self administered.	<ul style="list-style-type: none">• Inaccuracy of heart rate measurements• Motivation dependant

Test: Harvard Step Test

Protocol: Step continuously for 5 minutes. Measure heart rate at 1, 2 and 3 minutes after exercise.

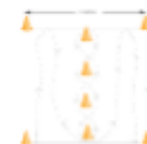


Advantages	Disadvantages
<ul style="list-style-type: none">• Simple test to complete	<ul style="list-style-type: none">• Motivation dependant

Agility

Test: Illinois Agility Test

Protocol: Start lying down at the start line. Complete course as quick as possible (10m x 5m – 4 central cones)



Advantages	Disadvantages
<ul style="list-style-type: none">• Simple and easy to complete	<ul style="list-style-type: none">• Motivation dependant / Timing errors.

Speed

Test: 30m Sprint Test

Protocol: Start from stationery position. Complete distance in the quickest possible time. Time is stopped when chest crosses the line.



Advantages	Disadvantages
<ul style="list-style-type: none">• Quick test to complete.• Minimal equipment needed and can be performed anywhere with a flat 50m run.	<ul style="list-style-type: none">• Running surfaces/weather conditions can affect the results.• Inaccuracies with stopwatch usage.

Power

Test: Vertical jump Test

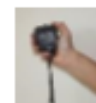
Protocol: Stand next to wall and mark an initial reach while feet are flat on the ground. Standing jump to reach as high as possible. Measure distance from first mark to second.



Advantages	Disadvantages
<ul style="list-style-type: none">• Quick and easy to perform.• Easy to complete with large groups.	<ul style="list-style-type: none">• Technique plays a large role in successful completion.

Reliability /Validity

Validity relates to whether the test actually measures what it sets out to measure.



Reliability is a question of whether the test is accurate. It is important to ensure that the procedure is correctly maintained for ALL individuals.

Results can be improved:

- By using experienced testers & calibrating equipment
- Ensuring performers have the same level of motivation to complete each test
- Repeatedly test to avoid human error (x3)