Qualification Accredited

OCR
Oxford Cambridge and RSA

GCSE (9–1)

PHYSICAL EDUCATION

J587
For first teaching in 2016

Physical Training

1.2.a. Components of fitness

Learning Outcomes

BY THE END OF THIS TOPIC YOU SHOULD …

- **Know the following components of fitness**
  - **Cardiovascular endurance / stamina**
  - **Muscular endurance**
  - **Speed**
  - **Strength**
  - **Power**
  - **Flexibility**
  - **Agility**
  - **Balance**
  - **Co-ordination**
  - **Reaction time**

FOR EACH COMPONENT YOU SHOULD ……

- **Know the definition**
- **Be able to apply practical examples where the component is particularly important in physical activity and sport**
- **Know suitable tests for the component**
- **Be able to collect data when both testing and training these components of fitness**

What are components of fitness?

TASK: in groups of 3 match the 'component of fitness' with it's definition using the task cards on your table.

CARDIOVASCULAR ENDURANCE	THE ABILITY TO CONTINUOUSLY EXERCISE WITHOUT TIRING
SPEED	THE ABILITY TO MOVE THE BODY OR BODY PARTS QUICKLY
STRENGTH	THE MAXIMUM FORCE A MUSCLE OR GROUP OF MUSCLES CAN APPLY AGAINST A RESISTANCE
AGILITY	THE ABILITY TO CHANGE DIRECTION AT SPEED
REACTION TIME	THE TIME TAKEN TO RESPOND TO A STIMULUS
MUSCULAR ENDURANCE	THE ABILITY OF A MUSCLE OR MUSCLE GROUP TO REPEATEDLY CONTRACT OR KEEP GOING WITHOUT TIRING
POWER	STRENGTH X SPEED (MAXIMAL FORCE PERFORMED AT SPEED)
FLEXIBILITY	THE RANGE OF MOVEMENT OF A JOINT
BALANCE	THE ABILITY TO MAINTAIN EQUILIBRIUM, WHETHER STATIONARY OR MOVING
CO-ORDINATION	THE ABILITY TO USE TWO OR MORE BODY PARTS TOGETHER

How can we easily remember these components of fitness?

What about an Acronym?

- Cardiovascular endurance
- Reaction Time
- Muscular Endurance
- Strength
- Speed
- Power
- Flexibility
- Agility
- Balance
- Co-ordination

TASK: Come up with your own Acronym!

Can
Retired
Mega
Sports
Stars
Play
For
American
Basketball
Clubs

Who would use these components of fitness & why?

Cardiovascular Endurance/stamina:

Who?
Long distance runners/cyclists.

Why?
Good Cardiovascular endurance allows the athlete to exercise the entire body for long periods of time.

Tests?
12 minute Cooper run.
Multi Stage Fitness Test

DEFINITION:

Cardiovascular endurance is the ability to continuously exercise without tiring.

- The more oxygen that can be transported around the body the longer muscles can utilise or use this oxygen.
- The level of endurance fitness is indicated by an individual's VO2 Max (the maximum amount of oxygen an individual can take in and use in one minute)

TASK: Come up with your own Sporting Example for Cardio Vascular Endurance/Stamina

Who would use these components of fitness & why?

Muscular endurance:

Who?
Rowers.

Why?
Good Muscular Endurance allows the athlete to keep moving his or her voluntary muscles many times without getting tired.

Tests?
Press Up test
Sit Up test

DEFINITION:

Muscular endurance is the ability of the muscle or muscle groups in the body to repeatedly contract or keep going with without rest.

- Activities such as swimming or running can enlarge slow twitch fibres, which gives greater potential for energy production.
- The onset of fatigue is delayed (you get tired less quickly) because of higher maximum oxygen uptake (VO2Max).
- By Exercising the size and number of **mitochondria** in muscles are increased.
- Also with exercise there is an increase in **myoglobin** content within the muscle cell.

TASK: Come up with your own Sporting Example for Muscular Endurance

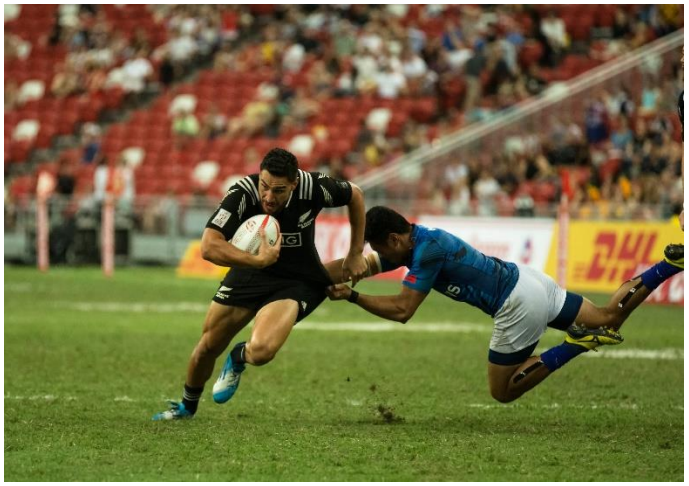
Who would use these components of fitness & why?

Speed:

Who?
Games players.
Example - Rugby players.

When?
For attackers to outrun defenders in the sprint to the line.
Or
For defenders to catch attackers to make tackles.
Or
Make quick passes with the ball.

Test?
30 metre sprint test



DEFINITION:
Speed is the ability to move all or part of the body quickly.

- Genetics influence how quick you are, but training can improve your rate or speed of movement.
- The amount of fast-twitch muscle fibres also influences speed.

TASK: Come up with your own Sporting Example for SPEED

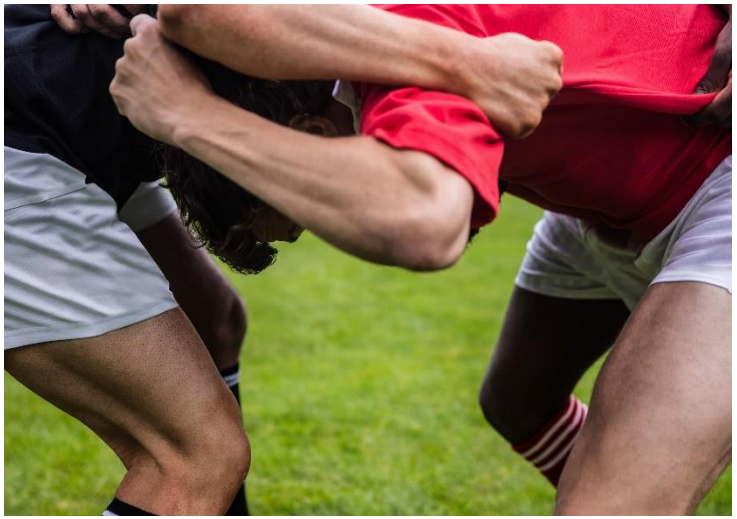
Who would use these components of fitness & why?

Strength:

Who?
Rugby players

Why?
Helps props hold up the scrum safely.

Tests?
1 Rep Max test
Hand grip test



DEFINITION:
Strength is the amount of force a muscle can exert against a resistance.

- The amount of force that can be exerted by a muscle depends on the size and number of the muscles involved, as well as the type of muscle fibres used.

TASK: Come up with your own Sporting Example for STRENGTH

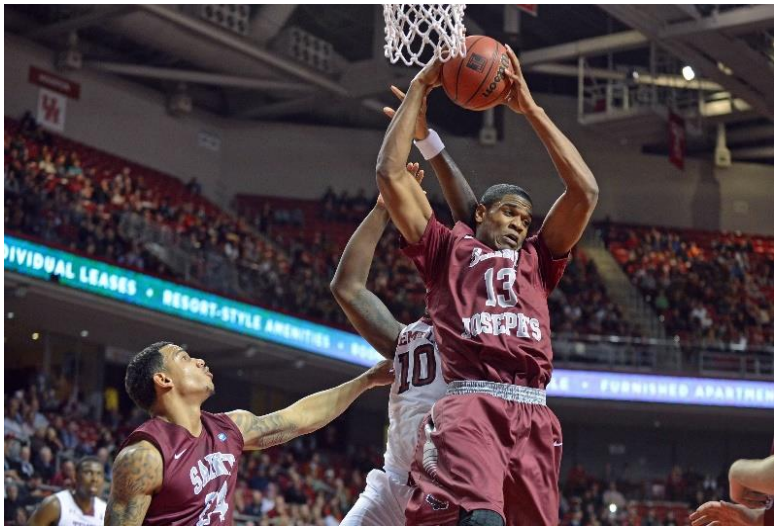
Who would use these components of fitness & why?

Power:

Who?
Basketball players.
Throwers in athletic events

Why?
Good Power will allow the basketball player to jump high to secure a rebound.
And
A javelin thrower to throw the javelin further or the tennis player fire a shot down court making it harder for his opponent to return it.

Tests?
Standing broad jump
Standing vertical jump



DEFINITION:

Power is the ability to perform strength based movements quickly

- Power is an important component of fitness that is used in many dynamic sports activities

TASK: Come up with your own Sporting Example for POWER

Who would use these components of fitness & why?

Flexibility:

Who?
Gymnasts.

Why?
Good Flexibility allows the athlete to increase their range of movement possible about a joint, and thereby stretch further and perform more complex moves and routines.

Tests?
Sit and reach test

DEFINITION:

Flexibility is the amount or range of movement that you have around a joint.

- If we are flexible we are less likely to suffer from soft tissue / muscular injury.

TASK: Come up with your own Sporting Example for FLEXIBILITY

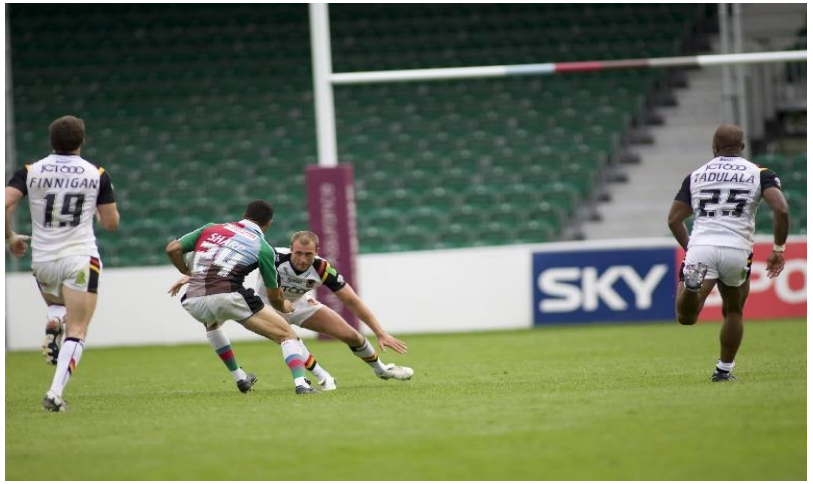
Who would use these components of fitness & why?

Agility:

Who?
Rugby Players/ Hockey players

Why?
Being able to change direction quickly (dodging) will allow attackers to evade a tackling player.

Test?
Illinois agility test



DEFINITION:

Agility is how quickly you can change direction under control and maintaining speed, balance and power.

There are THREE main components of Agility:

- **Core Strength**
- **Balance**
- **Flexibility**

TASK: Come up with your own Sporting Example for AGILITY

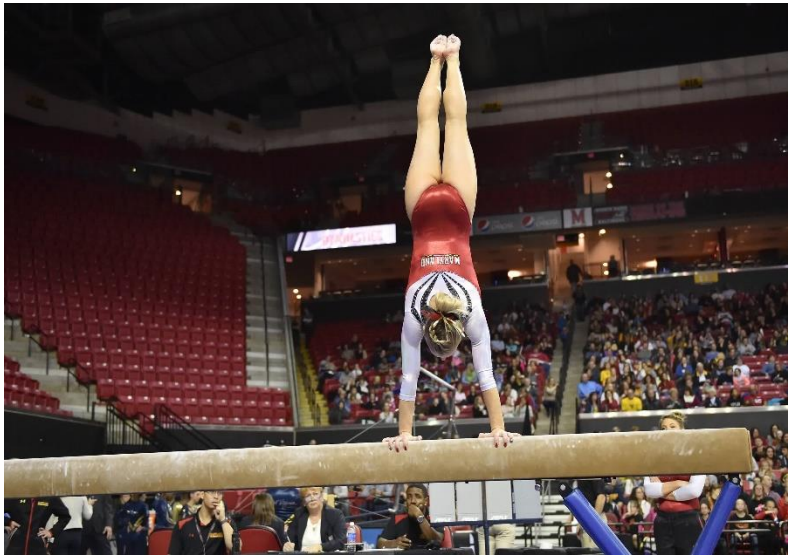
Who would use these components of fitness & why?

Balance:

Who?
Dancer / Gymnast

Why?
both need balance to hold and perform complex routines with control without falling over.

Tests?
Stork stand test



DEFINITION:
Balance is the ability to maintain equilibrium, whether stationary or moving.

TASK: Come up with your own Sporting Example for Balance

Who would use these components of fitness & why?

Co-ordination:

Who?
Rugby player taking a drop kick.
Server in badminton.

Why?
Both need co-ordination to be able to move different body parts at the same time and get the ball where they want it to go.

Test?
'Wall throw test'.

DEFINITION:
Co-ordination is the ability to move different limbs at different times or do more than one task effectively at the same time.

TASK: Come up with your own Sporting Example for Co-ordination

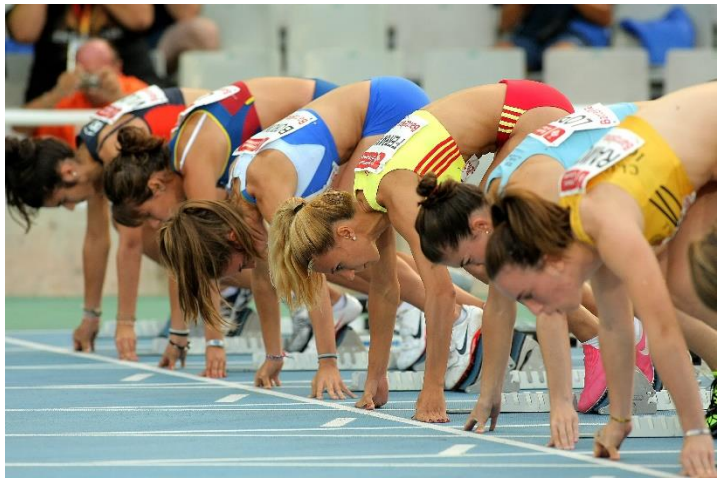
Who would use these components of fitness & why?

Reaction Time:

Who?
Sprinters / Goal Keepers.

Why?
Being able to react to the starter gun will give s sprinter a good start
Or
Improve a goal keepers chances of saving the shot on goal.

Tests?
Reaction time ruler test



DEFINITION:

Reaction Time is the time is take for you to initiate an action or movement in response to a stimuli.

- Reaction Time: is the time between the onset of the stimulus and the initiation of the response
- Movement Time: is the time it takes to move
- Response Time: is the time between the onset of the stimulus to the completion of the movement.

TASK: Come up with your own Sporting Example for REACTION TIME

How can we test these components of fitness?

TASK: can you match these fitness tests to the appropriate component of fitness?

Sit and Reach Test

FLEXIBILITY

Multi Stage Fitness Test

CV ENDURANCE

Wall throw test

CO-ORDINATION

12 min Cooper Run Test

CV ENDURANCE

Press Up Test

MUSCULAR ENDURANCE

Sit Up Test

MUSCULAR ENDURANCE

Standing Stork Test

BALANCE

Illinois Agility test

AGILITY

Standing Broad Jump Test

POWER

Hand Grip Test

STRENGTH

Vertical Jump Test

POWER

30m Sprint Test

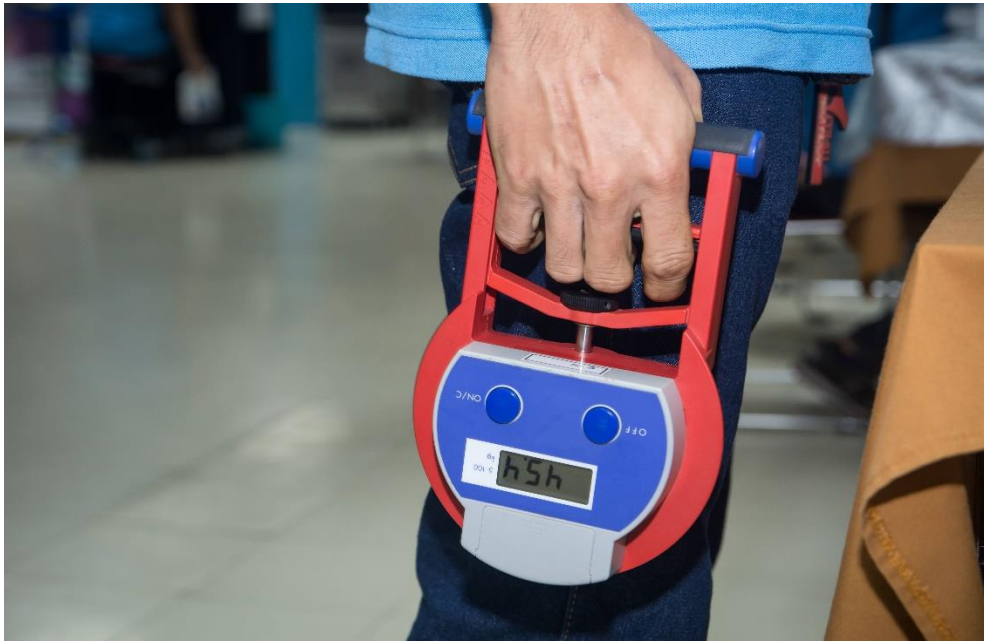
SPEED

Ruler Drop Test

REACTION TIME

NOTE:

You need to know how to perform all these tests!



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