

# Component 3—How can we develop fitness to help improve performance in physical activity?

## FMBASS (Physical)

- Flexibility** – activities requiring a wide range of movement.
  - Muscular endurance** – sports lasting longer than 30 minutes.
  - Body composition** – low body fat.
  - Aerobic endurance** – sports lasting longer than 30 minutes.
  - Strength** – activities requiring force.
  - Speed** – activities requiring fast movements.
- ## BCARP (Skill related)
- Balance** – activity requiring the control of the distribution of weight to remain upright or steady.
  - Coordination** – activity requiring the movement of two or more body parts and can include the use of sporting equipment.
  - Agility** – activities requiring quick change of movement.
  - Reaction time** – activities where a quick decision or response to a stimulus is needed.
  - Power** – activities requiring explosive movement.

6	No exertion
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10	
11	Light
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13	Somewhat hard
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15	Hard (heavy)
16	
17	Very hard
18	
19	
20	Maximal exertion

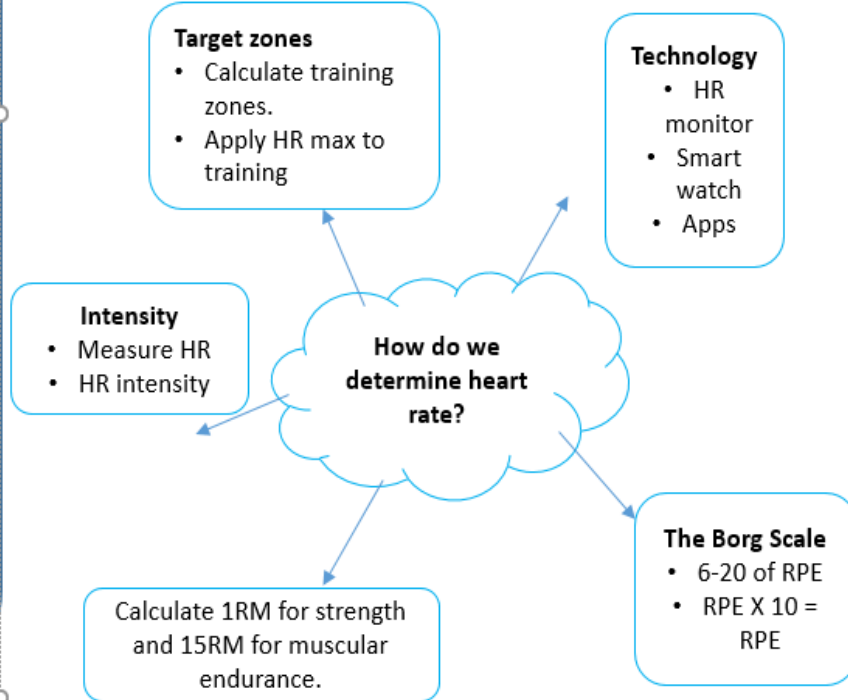
Aerobic training zone	50-80%	This zone is used to develop aerobic endurance
Anaerobic training zone	80-90%	In this zone, the anaerobic energy systems are used to produce energy.

To calculate HR;  
RPE X 10 = HR

To calculate MHR:  
220- AGE = MHR

### Basic Principles of Training (FITT)

- Frequency** – Number of training sessions over a period of time.
- Intensity** – How hard an individual may train.
- Time** – How long an individual may train for.
- Type** – Selecting a training method to improve a specific component of fitness.



### Additional Principles of Training (SPARRIV)

- Specificity** – Training needs to meet the needs of the sport for fitness goals to be developed.
- Progressive Overload** – In order to progress, training needs to be demanding enough to cause the body to adapt.
- Adaptation** – Changes to the body due to increased training loads.
- Reversibility** – If training stops or intensity is lowered, fitness gains from training are lost
- Rest and recovery** – Allow the body to recover and adapt.
- Individual Differences** – Training needs to meet the needs of the individual.
- Variation** – Altering types of training to avoid boredom.

# Component 3—How can we develop fitness to help improve performance in physical activity?

## Reliability

Reliability is a question of whether the test is accurate. It is important to ensure that procedures are maintained to obtain a consistency of results.

### Factors which affect reliability:

- Calibration of equipment.
- Motivation of participants.
- Conditions of testing environment (indoor/outdoor).
- Experience of the person administering the test.
  - Compliance with the procedures.

(Example – Poor outdoor weather conditions when performing the cooper run outside).

## Reasons for fitness testing:

- Provides baseline data for monitoring/improving performance.
- Can design training programmes based on test results.
- Determined whether training programs are working.
- Provide goal setting aims.

## Practicality

Practicality is the quality of being effective or sustainable.

### Factors which can affect practicality:

- Cost (equipment/ facilities).
- Time taken to perform the test.
- Time taken to set up the test.
- Time taken to analyse data.
- The number of participants that can take part at any one time.

## Pre-test Procedures:

- Calibration of equipment.
- Complete informed assessment.
- Complete Physical Activity Readiness Questionnaire (PAR-Q).
- Participant pre fitness questionnaire

## Validity

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

## Fitness Test Methods of Physical Fitness

### Aerobic endurance

- Multi-stage fitness test.
  - Yo-Yo test
- Harvard step test
- 12 minute cooper run

### Flexibility

- Sit and reach
- Calf muscle flexibility
- Shoulder flexibility

### Muscular strength

- Grip dynamometer
- 1 Rep Max

### Muscular endurance

- One minute press-up.
- One minute sit-ups.
  - Timed plank.

### Speed

- 30 meter sprint test.
- 30 Meter flying sprint.

### Body composition

- BMI
- BIA
- Waist to hip

- Knowledge of published standard test methods and equipment.
- Accurate measurement and recording test results.
- Basic processing of test results for interpretation.
- Ability to safely select appropriate tests.

## Fitness test Methods of Skill-Related Fitness

### Balance:

- Stork stand test
- Y balance test

### Coordination:

- Alternate – hand wall-toss test
- Stick flip

### Agility:

- Illinois agility run test.
- T Test

### Power:

- Vertical jump
- Standing long jump
- Margaria-Kalamen

### Reaction Time:

- Ruler drop test
- Online reaction time test

# Component 3—How can we develop fitness to help improve performance in physical activity?

**Warm Up** – Prior to taking part in fitness testing to reduce the risk of injury.

**Stage 1: Pulse raiser** (e.g. gentle jog, side stepping, skipping).

**Stage 2: Mobility** – Dynamic movements to replicate sport specific movements, focusing on increasing range of movement at a joint.

**Stage 3: Stretch** – Static (still) or, dynamic (movement based).

**Cool Down** – Slowly reduce heart rate and breathing to return the body back to resting state **after** exercise.

**Stage 1:** Begin with gentle jog, **reducing** to a walk.

**Stage 2: Static stretches** lasting a minimum of 30 seconds.

A cool down helps to remove **lactic acid** and returns the muscle back to pre-exercise length.

### FITT Principles:

**Frequency** – How often an athlete will train.

**Intensity** – How hard an athlete will train.

**Time** – How long the athlete will train for.

**Type** – The method of training the athlete uses.

### Voluntary Provision:

The voluntary sector has the largest number of people involved. It involves volunteers who enjoy sport and develop teams.

#### Advantages:

- Provides accessibility for a large volume of people.
- Promotes participation for all.
- Fits in around school.
- Different payment options available.

#### Disadvantages:

- Coaching is not at an elite level.
- Volunteers who run the session may change frequently.

### Public Provision:

Public sector facilities are usually owned by the local council or local authority.

#### Advantages:

- Affordable
- Accessible
- Variety of offerings

#### Disadvantages:

- Specialist training not catered for
- Large membership numbers means less accessible equipment.
- Less 1-1 coaching.

### Private Provision:

Private sector facilities are usually for members only. The aim to make profit for owners>

#### Advantages:

- High quality training facilities.
- Specialised equipment.
- Fewer members so you are more likely to use the equipment you want.

#### Disadvantages:

- Expensive.
- Less facilities in local areas meaning that members have to travel.

### Fitness Training Methods for Physical Components of Fitness:

#### Flexibility:

- Static active
- Static passive
- Proprioceptive Neuromuscular Facilitation (PNF)

#### Aerobic Endurance:

- Continuous training
- Fartlek training
- Interval training
- Circuit training

#### Muscular Endurance:

- Free weights
- Fixed resistant machines
- Circuit training (low load, high reps)

#### Muscular Strength:

- Free weights
- Fixed resistant machines
- High loads and low reps.

#### Speed:

- Acceleration sprints
- Interval training
- Resistance drills

### The Effects of Long Term Fitness Training on the Body Systems:

#### Flexibility Training:

- Adaptations to muscular and skeletal system
- Increased range of movement at a joint.
  - Increased muscle length.
  - Increased ligament flexibility.

#### Aerobic Endurance Training:

- Adaptions to the cardiovascular and respiratory systems.
  - Cardia hypertrophy.
- Decreased resting heart rate.
- Respiratory muscle strength increase..

#### Muscular Endurance Training:

- Adaptations to the muscular systems.
- Capillarisation around the muscle tissue.
  - Increased muscle tone.

#### Muscular Strength Training:

- Adaptations to the muscular and skeletal system.
  - Muscular hypertrophy.
  - Increased tendon strength.
  - Increased bone density.

#### Speed Training:

- Adaptations to the muscular system
- Increased tolerance to lactic acid.

### Fitness Training Methods for Skill-Related Components of Fitness (BCARP):

**Balance** – Use of specific training exercises that require balancing on a reduced size base.

**Coordination** – Use of specific training exercises using two or more body parts together.

**Agility** – Speed Agility and Quickness training (SAQ).

**Reaction time** – Use of specific training exercises to practice quick responses to an external stimulus.

**Power** – Plyometric – Lunges, jumping, incline press-ups, bounding.

# Component 3—Developing Fitness to Improve Other Participants Performance in Sport and Physical Activity

## Aims:

The overall aim of a fitness programme is what the participant hopes to be able to achieve. Common aims are:

- Improving sport performance
  - Lose excess body fat
- Build muscle to increase strength

## Objectives:

These are things the participant needs to do in order to achieve their main aim, for example:

- To attend 2 football training sessions per week, with a focus on improving dribbling and shooting skills.

## Personal Information:

When designing a training programme, coaches should consider the personal information of an athlete and implement based on:

- The sport/activity undertaken
  - Gender
  - Access to facilities
  - Injuries/ health issues
  - Training preferences
  - Physical activity levels

## Attitude:

A settled way of thinking or feeling about something. **Example:** A marathon runner wanting to improve their performance using continuous training despite the nature of the activity.

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**Specific** – Targets must be specific to the individual and activity.

**Measurable** – Can the target be measured and compared.

**Achievable** – The target must be challenging but achievable.

**Realistic** – The target must be matches to the performers skill level.

**Time Related** – Set a particular time for the target to be completed.

**Exciting** – Motivation to strive towards your goals and is driven by emotions. Set inspiring goals.

**Recorded** – Writing goals down makes them more tangible and real, to measure against and stay committed.

## Motivation Techniques:

Motivation is **defined** as the internal mechanisms and external stimuli that arouse and direct behaviour.



## Goal Setting:

A good way of maintaining motivation throughout a fitness plan is to set realistic goals.

## Intrinsic Motivation:

The feeling of well-being derived from such motivation ensures that the performer maintains the desire to continue with the activity.

## Benefits of Motivation on the Performer:

- Increases participation
- Improved performance
- Maintaining training.

## Extrinsic Motivation:

Comes from a source outside of the performer. This encourages athletes to fall into tangible and intangible.



## Tangible Rewards:

Using physical rewards such as medals, certificates, and money to motivate participants.

## Short Term Goals:

These are goals that are achievable in a few weeks. Example: To reduce 5Km run time to under 30 minutes.

## Long Term Goals:

These are goals that span over a few months of a playing season. Example: To run a marathon in 10 months.

## Intangible Rewards:

Praise, recognition, and applause. This encourages performers to repeat the behaviour which earned the praise.