

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
7	
8	
9	
10	
11	Light
12	
13	Somewhat hard
14	
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

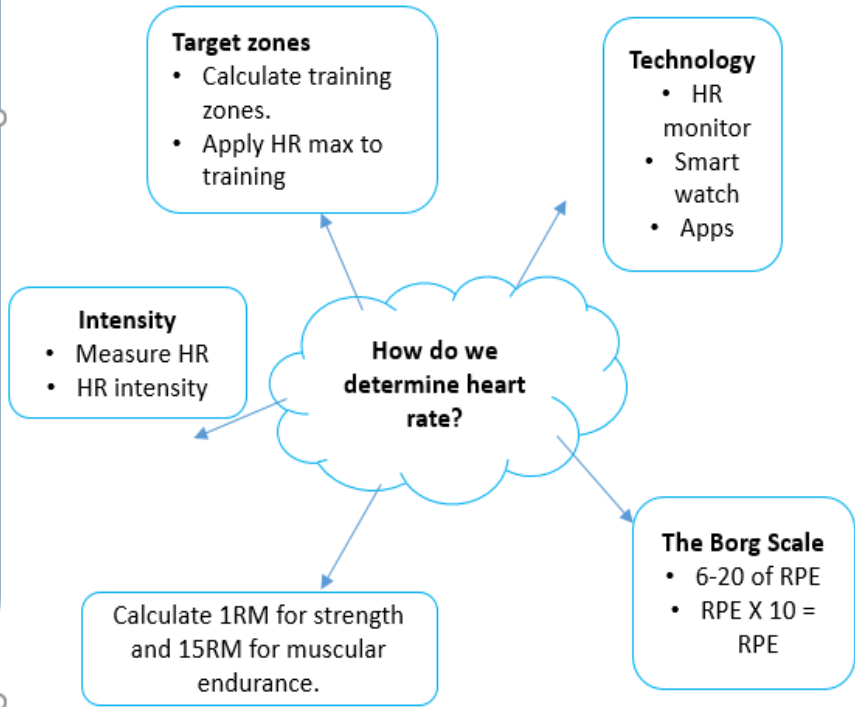
Basic Principles of Training (FITT)

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.

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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

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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.

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.

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.

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.

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.

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.

Short Term Goals:

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

Extrinsic Motivation:

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

Long Term Goals:

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

Tangible Rewards:

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



Intangible Rewards:

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