



Components of Fitness

Physical Fitness

1. **Strength (Muscular)**
2. **Flexibility**
3. **Body Composition**
4. **Muscular Endurance**
5. **Aerobic Endurance**
6. **Speed**

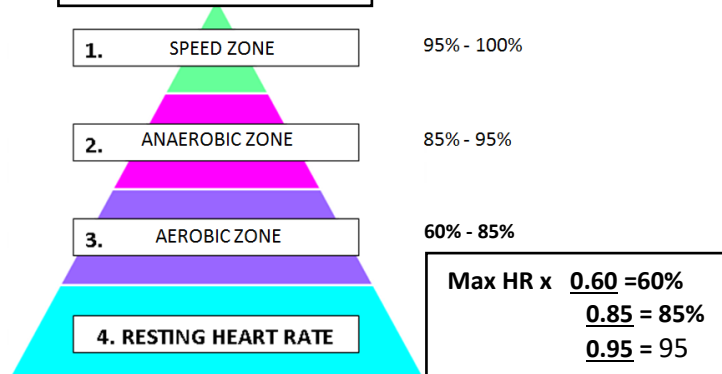
Skill - related Fitness

1. **Co-ordination**
2. **Reaction time**
3. **Agility**
4. **Balance**
5. **Power**

Exercise Intensity

$$\text{Max HR} = 220 - \text{Age}$$

Training Pyramid



BORG Scale – Rating of Perceived Exertion (RPE)

RPE x 10 = Heart rate bpm
 E.g Level 13 x 10 = 130bpm

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

Principles of Training

FIT

Frequency – How often do you train? (How many times a week)

Intensity – How hard do you train? (Heart rate/pyramid, BPM, BORG scale RPE)

Time – How long you train for? (min. 30mins)

Type – What type of training method (e.g. weight, circuit, interval...?)

Specificity – training specific to the individual needs of athlete (Sport, Position, Component of fitness, Age, Gender)

Progressive Overload – Make training gradually harder so body gradually improves and adapts (increase FREQUENCY/INTENSITY/TIME)

Adaptation – Body adapts in response to training (gets stronger because of strength training etc.)

Rest and Recovery – Allows adaptation to take place and to avoid injuries due to fatigue/tiredness (have rest days)

Reversibility – Body will reverse back if training is stopped for a prolonged time (illness, injury, and motivation)

Variation – Training must be varied to avoid boredom (use different TYPES of training methods)

Training Methods

Warm up - Pulse raiser, stretches, joint mobilisation

Cool down – Pulse lowering, Static stretches, Developmental stretches (PNF)

Flexibility training

1. **Static Stretching** – Active (you), Passive (someone/thing else)
2. **Ballistic Stretching** – bouncing, actions
3. **PNF Stretching** – stretch, hold, tension, stretch further

Strength, muscular endurance and power training

1. **Free weights** – Sets, reps, barbell, dumbbell
2. **Circuit Training** – stations
3. **Plyometric** – bouncing, throwing, jumping

Aerobic Endurance Training

1. **Continuous training** – non-stop 30 mins
2. **Fartlek Training** – ‘Speed play’, slow, medium, fast/different terrain
3. **Interval Training** – work, rest, work, rest

Speed Training

1. **Hollow Sprint** - broken up by ‘hollow’ lower level work
2. **Acceleration Sprints** - jogging to striding and finally to sprinting at maximum speed.
3. **Interval Training** — work. rest. work. rest



Fitness Tests		Advantages	Disadvantages	
Body Composition	<p>Body Mass Index (BMI)</p> $\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)} \times \text{Height (m)}}$		<ul style="list-style-type: none"> • Easy to carry out 	<ul style="list-style-type: none"> • Results can be misleading as muscles weigh more than fat
	<p>Bioelectrical Impedance Analysis (BIA)</p> <p>BIA = electricity passed through body from WRIST to ANKLE. Measures the resistance from muscle and fat</p>		<ul style="list-style-type: none"> • Quick and gives instant results • Can be repeated over time with no bad effects 	<ul style="list-style-type: none"> • Needs expensive equipment
	<p>Sum of Skinfolds</p> <p>Use CALLIPERS to measure skin on the BICEP, TRICEP, SHOULDER BLADE and HIP. Add measurements together and use to the JACKSON-POLLOCK nomogram (4 lines)</p>		<ul style="list-style-type: none"> • Provides accurate percentages of body fat 	<ul style="list-style-type: none"> • Needs specialist equipment • Problems with people revealing bare skin
Aerobic Endurance	<p>Multi Stage Fitness Test (MST/Bleep test)</p> <p>Cones/Lines 20m apart, run in-between to the sound of a beep. Gradually gets faster. Longer you can keep up the higher the level</p>		<ul style="list-style-type: none"> • Can test a large group at once • Tests to maximum effort 	<ul style="list-style-type: none"> • Practice can affect score • If outside environment may affect • Scores can be subjective
	<p>Forestry Step Test</p> <p>Step/ bench- 33cm for females and 40cm for males. Step up and down for 5 minutes to a metronome. (90bpm/22.5steps a min). Record pulse and compare to table</p>		<ul style="list-style-type: none"> • Low cost • Can be performed inside or outside • Can test on your own 	<ul style="list-style-type: none"> • People may struggle to keep with the stepping pace on metronome
Speed	<p>35m sprint test</p> <p>Sprint from one line/cone to another in a straight line over 35m. Record time and compare to normative data</p>		<ul style="list-style-type: none"> • Little equipment so cheap to run 	<ul style="list-style-type: none"> • Human error when timing can affect results
Strength	<p>Grip dynamometer</p> <p>3 attempts, squeeze grip dynamometer measure result in Kg or KgW.</p>		<ul style="list-style-type: none"> • Simple and easy test • Lots of normative data 	<ul style="list-style-type: none"> • Must be adjusted for hand size which may affect results
Flexibility	<p>Sit and Reach test</p> <p>Both feet against the sit and reach box, reach forward and measure result in centimetres</p>		<ul style="list-style-type: none"> • Well known test • Quick and easy to perform 	<ul style="list-style-type: none"> • measures lower back & hamstrings only • length of arms and legs affect results
Muscular Endurance	<p>Sit up and press up tests</p> <p>Count how many sit ups or press-ups completed in 1 minute</p>		<ul style="list-style-type: none"> • Quick and easy • Little equipment • Large groups at once 	<ul style="list-style-type: none"> • Arguments of correct technique can affect results
Agility	<p>Illinois Agility test</p> <p>Cones set up as in the image, lie face down on the floor at the start, measure time to complete course in seconds</p>		<ul style="list-style-type: none"> • Cheap and easy to conduct 	<ul style="list-style-type: none"> • Human error with timing can affect results • Weather or surface conditions can affect results
Power	<p>Vertical Jump test</p> <p>Stand side on to wall reach up and mark/set the measure. Standing jump as high as possible touching wall. Measure between two marks/measures</p>		<ul style="list-style-type: none"> • Quick and easy 	<ul style="list-style-type: none"> • Technique can affect result as need to jump and mark wall