

# Components of Fitness

## Physical Fitness

1. **B**ody Composition
2. **A**erobic Endurance
3. **S**trength (Muscular)
4. **S**peed
5. **F**lexibility
6. **M**uscular Endurance

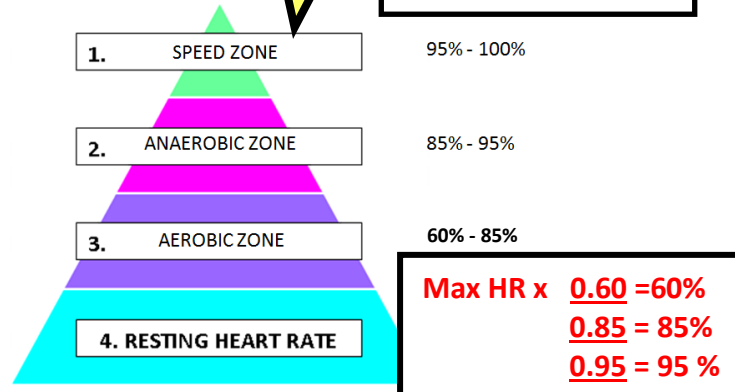
## Skill - related Fitness

1. **C**o-ordination
2. **R**eaction time
3. **A**gility
4. **B**alance
5. **P**ower

# Exercise Intensity

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

## Training Pyramid



# 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...?)

## BORG Scale – Rating of Perceived Exertion (RPE)

$$\text{RPE} \times 10 = \text{Heart rate bpm}$$

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

**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)

**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

# Training Methods

## 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




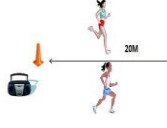







1. **Continuous training** – non-stop 30 mins
2. **Fartlek Training** – ‘Speed play’, slow, medium, fast/different terrain
3. **Interval Training** – work, rest, work, rest

## 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 over the page

# Fitness Tests

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