# 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

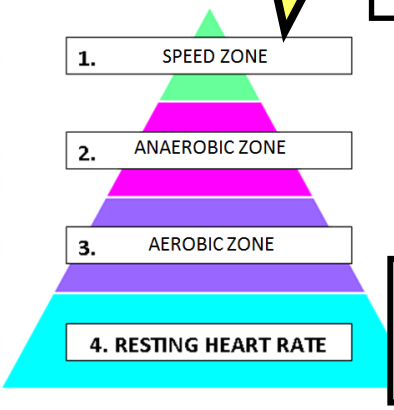
## Skill - related Fitness

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

# Exercise Intensity

**220-Age=Max HR**

## Training Pyramid




Max HR x 0.60 =60%
0.85 = 85%
0.95 = 95 %

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

| | |
|---|---|
| 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 |

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

# Principles of Training

**F**
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**T**

**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…?)

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

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

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

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

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

**V**ariation – 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

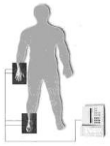
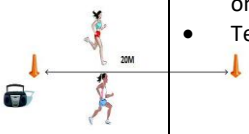
1. Continuous training – non-stop 30 mins
2. Fartlek Training – 'Speed play', slow, medium, fast/different terrain
3. Interval Training – work, rest, work, rest

## 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 over the page

# Fitness Tests

| Component of Fitness | Fitness test | | Advantages | Disadvantages |
|---|---|---|---|---|
| Body Composition | **Body Mass Index (BMI)**<br>$BMI = \frac{\text{Weight (kg)}}{\text{Height (m)} \times \text{Height (m)}}$ | | • Easy to carry out | • Results can be misleading as muscles weighs more than fat |
| | **Bioelectrical Impedance Analysis (BIA)**<br>BIA = electricity passed through body from **WRIST** to **ANKLE.** Measures the resistance from muscle and fat |  | • Quick and gives instant results<br>• Can be repeated over time with no bad effects | • Needs expensive equipment |
| | **Sum of Skinfolds**<br>Use **CALLIPERS** to measure skin on the **BICEP, TRICEP, SHOULDER BLADE** and **HIP.**<br>Add measurements together and use to the **JACKSON-POLLOCK** nomogram (4 lines) | | • Provides accurate percentages of body fat | • Needs specialist equipment<br>• Problems with people revealing bare skin |
| Aerobic Endurance | **Multi Stage Fitness Test (MST/Bleep test)**<br>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 |  | • Can test a large group at once<br>• Tests to maximum effort | • Practice can affect score<br>• If outside environment may affect<br>• Scores can be subjective |
| | **Forestry Step Test**<br>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 | | • Low cost<br>• Can be performed inside or outside<br>• Can test on your own | • People may struggle to keep with the stepping pace on metronome |
| Speed | **35m sprint test**<br>Sprint from one line/cone to another in a straight line over 35m. Record time and compare to normative data | | • Little equipment so cheap to run | • Human error when timing can affect results |
| Strength | **Grip dynamometer**<br>3 attempts, squeeze grip dynamometer measure result in Kg or KgW. | | • Simple and easy test<br>• Lots of normative data | • Must be adjusted for hand size which may affect results |
| Flexibility | **Sit and Reach test**<br>Both feet against the **sit and reach box**, reach forward and measure result in centimetres | | • Well known test<br>• Quick and easy to perform | • measures lower back & hamstrings only<br>• length of arms and legs affect results |
| Muscular Endurance | **Sit up and press up tests**<br>Count how many sit ups or press-ups completed in 1 minute | | • Quick and easy<br>• Little equipment<br>• Large groups at once | • Arguments of correct technique can affect results |
| Agility | **Illinois Agility test**<br>Cones set up as in the image, lie face down on the floor at the start, measure time to complete course in seconds | | • Cheap and easy to conduct | • Human error with timing can affect results<br>• Weather or surface conditions can affect results |
| Power | **Vertical Jump test**<br>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 | | • Quick and easy | • Technique can affect result as need to jump and mark wall |