

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

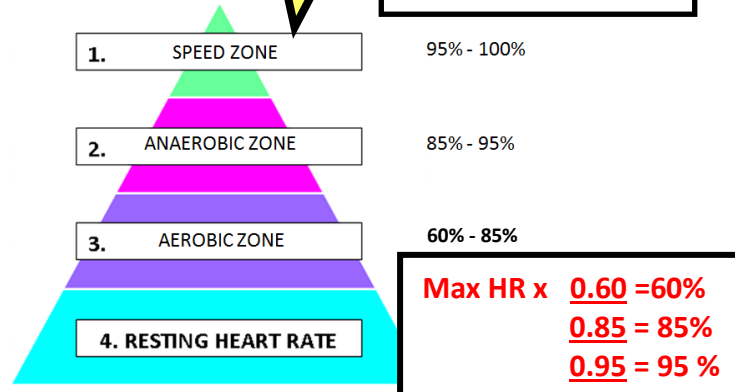
Skill - related Fitness

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




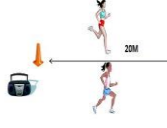







1. **Continuous training** – non-stop 30 mins
2. **Fartlek Training** – ‘Speed play’, slow, medium, fast/different terrain
3. **Interval Training** – work, rest, work, rest

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 | Body Mass Index (BMI) $\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)} \times \text{Height (m)}}$ |  | <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 |
| | Bioelectrical Impedance Analysis (BIA) BIA = electricity passed through body from WRIST to ANKLE . Measures the resistance from muscle and fat |  | <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 |
| | Sum of Skinfolds 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) |  | <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 | Multi Stage Fitness Test (MST/Bleep test) 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 |  | <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 |
| | Forestry Step Test 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 |  | <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 | 35m sprint test 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"> Little equipment so cheap to run | <ul style="list-style-type: none"> Human error when timing can affect results |
| Strength | Grip dynamometer 3 attempts, squeeze grip dynamometer measure result in Kg or KgW. |  | <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 | Sit and Reach test Both feet against the sit and reach box , reach forward and measure result in centimetres |  | <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 | Sit up and press up tests Count how many sit ups or press-ups completed in 1 minute |  | <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 | Illinois Agility test 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"> 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 | Vertical Jump test 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"> Quick and easy | <ul style="list-style-type: none"> Technique can affect result as need to jump and mark wall |