

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

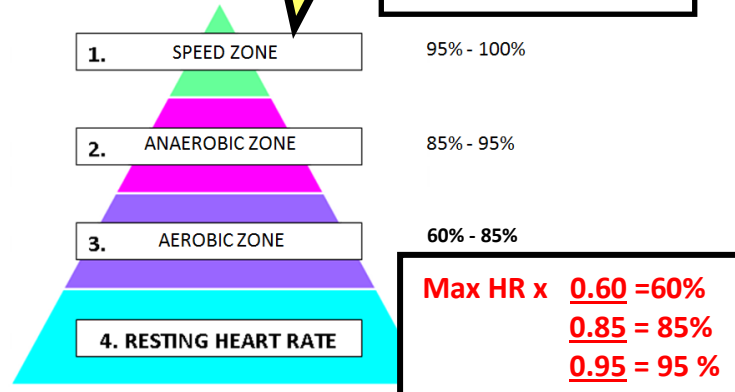
Skill - related Fitness

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