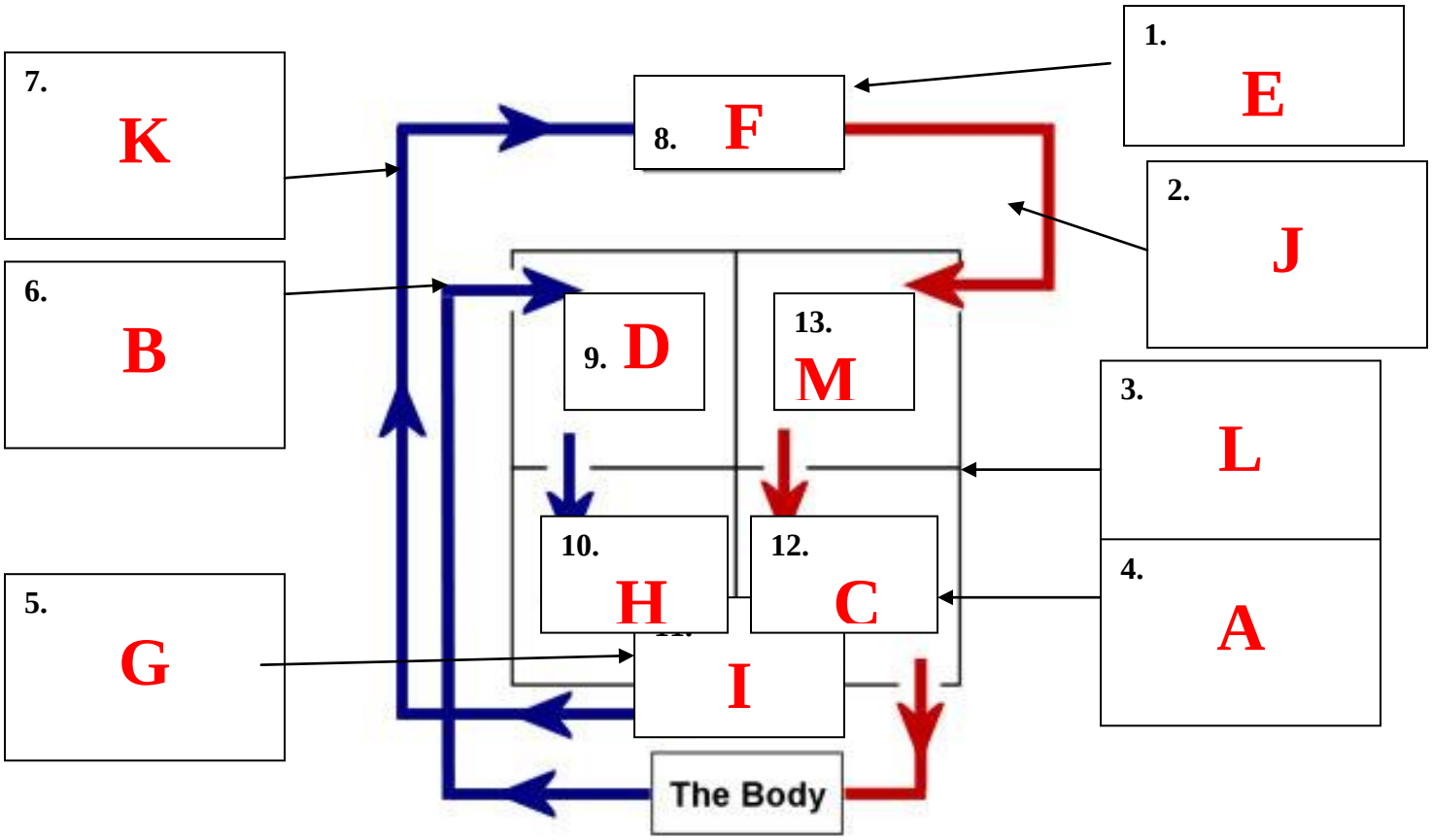
Fitness for Sport & Exercise REVISION

Key term	Meaning
Physical fitness	
Speed	The rate at which an individual is able to perform a movement or cover a distance.
Muscular endurance	The ability to use voluntary muscles without getting tired. E.g rowing
Strength	The amount of force a muscle can exert. E.g rugby scrum
Flexibility	Ability to move a joint through its complete range of movement. E.g trampolining, goal keeper
Aerobic endurance	The capacity to cover prolonged activity and withstand fatigue (tiredness) e.g long distance activities
Body composition	The percentage of fat, muscle and bone in the body.
Cardio-respiratory system	Heart, breathing system and blood vessels.
Skill related fitness	
Co-ordination	The ability to use two or more body parts together e.g. hand-eye, foot-eye
Reaction Time	The time taken to respond to a stimulus and the initiation of the response. E.g simple (one choice) and choice reaction time (more than one choice).
Agility	The ability to change the position of the body under full control. E.g dodging
Balance	The maintenance of the body's centre of mass. E.g archery
Power	The ability to take strength performances quickly. E.g high jump take off.
Measuring heart rate	Using your pulse-carotid (neck), femoral (leg), radial (wrist).
Maximum Heart rate	Highest pulse rate achieved during maximal exercise
How to measure possible maximum heart rate	220-age
Training zones	Aerobic –with oxygen (working at 60-85% of max heart rate), improves cardiovascular and respiratory system, increases size and strength of your heart, good for endurance training. Anaerobic-without oxygen (working at 85-100% of maximum heart rate), improves VO2 max (highest amount of oxygen consumed during exercise) and gives higher lactate tolerance-improve endurance and fight fatigue better (high intensity zone)
Borg Scale	It rates perceived exertion (gauge an athlete's level of intensity in training)
Training principles	
Frequency	How often you train
Intensity	How hard you train
Timing	How long you train
Type	The type of training exercise used. E.g weight, interval, continuous, fartlek
Progressive overload	Gradually adapting the demands placed on the body (training too much will cause injury, too little will have no effect)
Specificity	Specific effect each type of training has. Weight training-increases muscle size or tone.
Individual needs/differences	Having a plan to suit your OWN needs and requirements
Adaptations	The more you work, the more the body will meet its demands.
Reversibility	The process of losing fitness after stopping exercising/ training (atrophy)
Variations	Varying training to prevent athlete getting bored
Rest and recovery	Important to allow time to replenish energy stores and allow muscle recovery - a balance between not training enough and training too much or over training.
Training Methods	
Flexibility training	Developing the ability to move a joint through its full range
Static flexibility training	Stationary flexibility training- two types: Passive and Active Advantages – safe, unlikely to cause injury -overcomes the stretch reflex Disadvantages – doesn't increase flexibility through full range - Not very effective for stretching all muscle groups

Passive stretching	Stretching involving a partner
Active stretching	Stretching involving only the performer
Ballistic flexibility training	Using mobility to move limbs and force muscles beyond their normal range. Sport example= martial arts Advantages – similar in speed to body movements in actual sporting activity Disadvantages – Can cause injury - Extensive use can cause decrease in flexibility
PNF (proprioceptive neuromuscular facilitation)	Using a partner to stretch the joint further than the performer can stretch it on their own. Used in rehabilitation (recovery from injury) Advantages – develops a range of motion - Helps rehabilitation Disadvantages – requires help from a partner who knows what they're doing
Warming up	3 stages – Pulse raiser- gradually increase heart rate to working rate Stretching – lengthen specific muscles Mobilisation- moving muscles appropriate to activity
Cooling down	3 stages – Pulse lowering- returning the pulse to normal rate static stretching,- aims to remove any lactic acid in working muscles developmental stretching- encouraging the muscles to lengthen
Circuit Training	Involves a number of exercises arranged as to avoid exercising the same muscle groups consecutively. In a circuit, you undertake a sequence of exercises. Each exercise is performed at a station (or workstation). Develops a general fitness, working both the muscular and cardiovascular system. Advantages – Can combine different components of fitness Cheap equipment Can tailor to suit all fitness and ability levels Includes aerobic and anaerobic activities Wide range of exercises used, therefore more interesting Can motivate people to work hard and reach their goals Uses the principles of progressive overload Disadvantages – Circuit training can take time to arrange Often requires a lot of equipment.
Weight Training	Uses progressive resistance, in the form of actual weight lifted or in terms of the number of repetitions. Suitable for those who take part in strength activities such as in athletics, speed and jumping events such as sprinting and long jump, and rugby. Advantages – Can be used to improve muscular strength, endurance or power depending on the program used There are a wide variety of exercises from which to choose It is easy to monitor progress and overload It can aid rehabilitation after injury Disadvantages – Weight training often requires a lot of equipment.
Repetitions (Reps)	A 'repetition' is a single movement or exercise
Sets	A 'set' is a given number of repetitions (usually 8–12).
Plyometric Training	Plyometrics is defined as activities that enable a muscle to reach maximal force in the shortest amount of time Plyometric exercise is used in sport-specific training to improve strength and explosive power. It involves the performer jumping down off a box and then immediately back up onto another box, or something similar. Plyometrics is a training method used by performers who want to jump higher, run faster, throw further, or hit harder, such as sprinters and hurdlers, netball, volleyball and basketball players. Advantages – It is a very effective way to improve your explosive strength.

	Lots of different sports people can benefit from it. Disadvantages – You need some special equipment to do it properly. You need to someone to supervise or teach you how to do it properly so it doesn't cause an injury. You can't do plyometric sessions too close together.
Fitness Tests	
Sit & Reach (Flexibility)	Measures the **flexibility** of the muscles in the lower back & hamstrings. **Measured in cm.**
Hand Grip Dynamometer (Strength)	This is a static test to assess **muscular strength** in the forearm & hand muscles. **Measured in Kg.**
Multi-stage Fitness Test (Bleep Test) (Aerobic Endurance)	Estimation of VO_2 max for **aerobic endurance.** VO_2 max is the maximum amount of oxygen uptake. **Measured in ml of oxygen per kg of body mass per minute (m//kg/min)**
Forestry Step Test (Aerobic Endurance)	To predict **aerobic endurance** levels. **Measured in ml/kg/min.**
35-metre Sprint (Speed)	To measure the straight running **speed** of a person. **Measured in seconds.**
Illinois Agility Run (Agility)	Test for running **agility.** **Measured in seconds.**
Vertical Jump Test (Power)	Test of **power** seeing how high an athlete can jump. **Measured in cm or kgm/s.**
1-minute Press-up Test (Muscular Endurance)	Test of **muscular endurance** of the arms & chest. **Measured in reps (number of press-ups per minute).**
1-minute Sit-up Test (Muscular Endurance)	Test of **muscular endurance** of the abdominals. **Measured in reps (number of sit-ups per minute).**
Body Mass Index (BMI) (Body Composition)	Works out if a person is overweight. **BMI = Weight (kg) / (Height (m) x Height (m))** **Measured in kg/m^2**
Bioelectrical Impedance Analysis (BIA) (Body Composition)	Used for prediction of percentage body fat **Measured in percentage body fat.**
Skinfold Testing (Body Composition)	Used for prediction of percentage body fat **Measured in percentage body fat.**
Requirements for administration of fitness tests	
Pre-test procedures	When testing athletes, it is important that the tests are safe and that conditions the tests are performed in are consistent and stable. **The athlete should:** • Have medical clearance for any health conditions • Be free from injuries • Be wearing appropriate clothing • Not have a heavy meal three hours before the test • Have a good night's sleep • Not have trained on the day and be fully recovered from previous training • Have avoided stimulants such as tea, coffee or nicotine for two hours before the test
Informed Consent	An informed consent form makes the athlete aware of what is involved in the exercise testing and any risks there may be. They can then give their agreement or consent to undertake the tests with an awareness of the risks which are involved. **The informed consent form confirms that the individual:** • Is able to follow the test method • Knows exactly what is required of them during testing • Has fully consented to their participation in the fitness tests • Knows that they are able to ask any questions relating to the tests • Understands that they can withdraw from the test at any time
Calibration of Equipment	Describes the process of checking (and if necessary adjusting) the accuracy of fitness testing equipment before it is used, by comparing it to a recognised standard. Prior to testing, equipment should be checked carefully. If equipment isn't correctly calibrated it could lead to inaccurate (invalid) results.
Reliability	Is the ability to carry out the same fitness test method again and expect the same results. Reliability is repeatability - the results obtained should be consistent.

Validity	Is the accuracy of the results. This means whether the results you have recorded from the fitness tests are a true reflection of what you are actually trying to measure.
Practicality	This is do with whether the test can actually be carried out for the person or people it is intended for and includes considering the number of people that need to be tested, the equipment and resources available etc.
Baseline Data	Initial collection of data which serves as a basis for comparison with the subsequently acquired data. It gives you a starting point from which performance can me measured. Without it you would not be able to measure improvement.



A. Oxygenated blood transported from the heart to the muscles in the body.
B. Deoxygenated blood transported back to the heart
C. Left Ventricle
D. Right Atrium
E. Oxygen is transferred into the blood via the lungs
F. Lungs
G. The muscles in the body use the oxygen in the blood to work
H. Right Ventricle
I. Body
J. Oxygenated blood transported from the lungs
K. Heart pumps deoxygenated blood back to the lungs
L. The Heart (acts as a pump)
M. Left Atrium