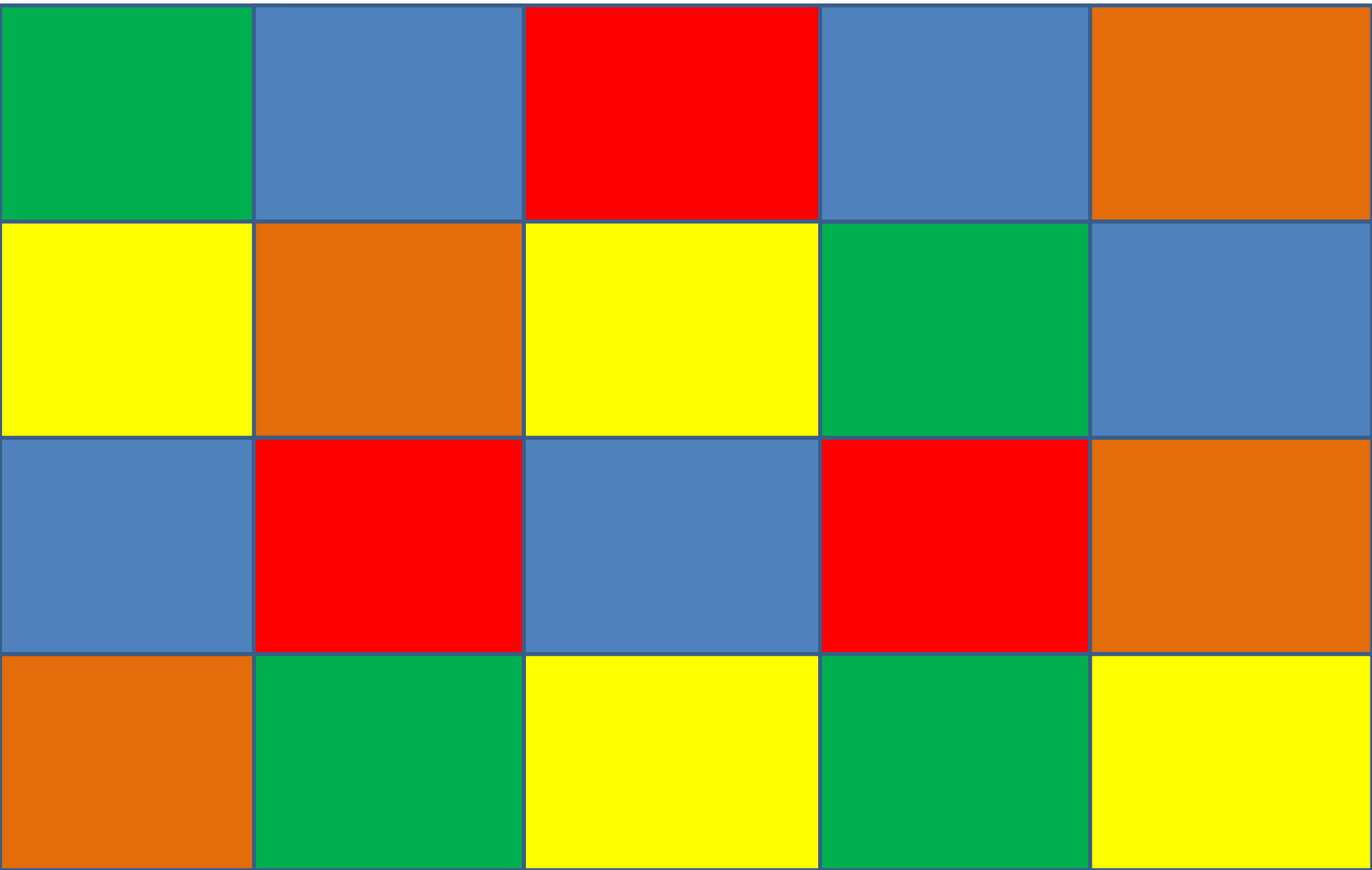


Student Hand Out



Musculoskeletal System

Name 2 flat bones in the body which provide protection	Name 2 locations of the ball and socket joint	Name 4 functions of the skeletal system	Define the term isometric contraction	Name 4 muscles in the leg
This is known as the contracting muscle	This movement is known as pointing the toes at the ankle	The downward phase of a bicep curl would be which type of contraction?	The shoulder blade is more commonly known as the?	Which joint is located at the elbow, knee and ankle?
Gross movements are generated by which type of bones?	Name 3 components of the synovial joint	Define rotation	Name 3 bones located in the arm	These attach muscle to bone
The upward phase of a bicep curl would be which type of contraction?	This is known as the relaxing muscle	These attach bone to bone	Name 4 pairs of muscles which work antagonistically	Which muscle creates extension at the hip joint?

Musculoskeletal System

<p>Pelvis Cranium Sternum Ribs</p>	<p>Hip Shoulder</p>	<p>Support Protection Shape Mineral Storage Movement Blood cell production</p>	<p>Muscle length stays the same</p>	<p>Hamstrings Quadriceps Tibialis anterior Gastrocnemius</p>
<p>Prime mover Agonist</p>	<p>Plantar flexion</p>	<p>Eccentric</p>	<p>Scapula</p>	<p>Hinge joint</p>
<p>Long bones</p>	<p>Synovial fluid Synovial membrane Bursae Joint capsule Cartilage Ligaments Tendons</p>	<p>Movement around a longitudinal axis</p>	<p>Humerus Ulna Radius</p>	<p>Tendons</p>
<p>Concentric</p>	<p>Antagonist</p>	<p>Ligaments</p>	<p>Bicep & tricep Hamstring & quadriceps Tibialis anterior & gastrocnemius Gluteals & hip flexors Deltoids & latissimus dorsi</p>	<p>Gluteals</p>

Cardiorespiratory System

Name 4 components involved in the pathway of air	Name 5 features of the alveoli, which assist with gaseous exchange	Arteries Veins Capillaries are all?	Thick outer wall and narrow lumen are characteristics of which blood vessel?	This is known as the narrowing of the arteries lumen to restrict blood flow to organs during exercise
This is known as the widening of the arteries lumen to allow a higher volume of blood to the working muscles	Name the two chambers of the heart	Stroke volume X heart rate = ?	220-AGE = ?	Define stroke volume
The slight rise in heart rate prior to exercise due to the release of adrenaline	During exercise, name a muscle which assists with inhalation	The amount of air left in the lungs after maximum expiration is known as?	Define tidal volume	Define the term systole
What happens to the size of the lungs during exhalation?	Define inspiratory reserve volume	State 2 arteries involved in the cardiac cycle	During exercise, name a muscle which assists with exhalation	State 2 veins involved in the cardiac cycle

Cardiorespiratory System

<p>Nose/mouth Trachea Bronchi Lungs Bronchioles Alveoli</p>	<p>High – low concentration Large surface area Moist, thin walls Short distance for diffusion Lots of capillaries Large blood supply</p>	<p>Blood vessels</p>	<p>Arteries</p>	<p>Vasoconstriction</p>
<p>Vasodilation</p>	<p>Atria/atrium Ventricle</p>	<p>Cardiac Output (Q)</p>	<p>Maximum Heart Rate</p>	<p>The volume of blood pumped out of the left ventricle per heart beat</p>
<p>Anticipatory Rise</p>	<p>Pectorals Sternocleidomastoid</p>	<p>Residual volume</p>	<p>Amount of air breathed in or out of the lungs in one breath</p>	<p>The heart ejects the blood</p>
<p>Decrease</p>	<p>This is the amount of extra air breathed in after tidal volume</p>	<p>Pulmonary artery Aorta</p>	<p>Abdominals</p>	<p>Pulmonary vein Vena cava</p>

Aerobic & Anaerobic Exercise

Immediate, short and long term effects of Exercise

Define aerobic respiration	Define anaerobic respiration	State 3 aerobic sporting activities	State 3 anaerobic activities	What does EPOC stand for?
State 3 methods to recover from exercise	What does DOMS stand for?	State 3 immediate effects of exercise	State 3 short term effects of exercise	What do understand by the term bradycardia?
Increased size of the heart is known as?	State 3 long term effects of exercise	When does EPOC occur?	Why does heavy breathing occur after anaerobic exercise?	A football match would be classified as which type of exercise?
Shot putt would be classified as which type of exercise?	State 1 reason why rehydration is important as part of a recovery process	State 1 reason why a cool down is important as part of a recovery process	State 1 reason why ice baths are important as part of a recovery process	Is dizziness and nausea an immediate or short term effect of exercise?

Aerobic & Anaerobic Exercise

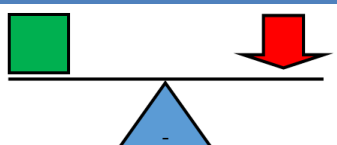
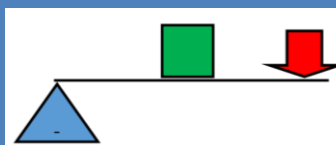
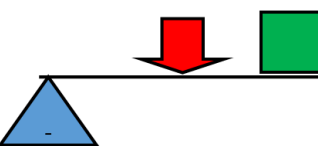
Immediate, short and long term effects of Exercise

<p>Glucose + oxygen – Carbon dioxide + energy + water</p>	<p>Glucose – energy + lactic acid</p>	<p>Boxing Marathon Tour De France (any sporting activity related to a long period of time)</p>	<p>100m sprint High jump Pole vault (any sporting activity related to a short period of time)</p>	<p>Excess Post- Exercise Oxygen Consumption</p>
<p>Ice baths Cool down Rehydration Massage Manipulation of diet (carbohydrates)</p>	<p>Delayed onset muscle soreness</p>	<p>Red skin Increased depth and frequency of breathing Sweating Increased heart rate</p>	<p>Fatigue Nausea Dizziness DOMS</p>	<p>Lower resting heart rate</p>
<p>Cardiac hypertrophy</p>	<p>Loss of weight Body shape may change Improved components of fitness (specific) Cardiac hypertrophy Bradycardia</p>	<p>Anaerobic Exercise</p>	<p>Repay the oxygen debt</p>	<p>Aerobic Exercise</p>
<p>Anaerobic Exercise</p>	<p>Replaces the fluids lost during exercise</p>	<p>Allowing the body to recover Removal of lactic acid Prevent DOMS Heart rate and body temperature to gradually return to normal state</p>	<p>Aid the repair of tears in the muscles Reduced swelling of injured areas Help prevent DOMS</p>	<p>Short term effect of exercise</p>

Movement Analysis

Which component is in the middle for a 1 st class lever?	Draw a 1 st class lever system	Which component is in the middle for a 2 nd class lever system?	Draw a 2 nd class lever system	Which component is in the middle for a 3 rd class lever system?
Draw a 3 rd class lever system	Extension at the elbow acts as which lever system?	Flexion at the knee acts as which lever system?	Plantar flexion at the ankle acts as which lever system?	Flexion at the elbow acts as which lever system?
Dorsi flexion at the ankle acts as which lever system?	Extension at the knee acts as which lever system?	What is the rhyme for levers?	A pirouette in ice skating would be brought about the movement of which plane and axis?	A cartwheel in gymnastics would be brought about which plane and axis?
A squat in weightlifting would be brought about the movement of which plane and axis?	Which lever system generates the greatest mechanical advantage?	Describe a frontal plane	Describe a transverse plane	State the equation for mechanical advantage

Movement Analysis

<p>F</p>	 <p>First Class Lever System</p>	<p>L</p>	 <p>Second Class Lever System</p>	<p>E</p>
 <p>Third Class Lever System</p>	<p>1st class lever</p>	<p>3rd class lever</p>	<p>2nd class lever</p>	<p>3rd class lever</p>
<p>2nd class lever</p>	<p>3rd class lever</p>	<p>1, 2, 3, F, L, E</p>	<p>Transverse plane Longitudinal axis</p>	<p>Frontal plane Sagittal axis</p>
<p>Sagittal plane Transverse axis</p>	<p>2nd class lever</p>	<p>A frontal planes divides the body into front and back halves</p>	<p>A transverse plane divides the body in half horizontally</p>	<p>Mechanical advantage = Effort arm / resistance arm</p>

Health & Fitness

Components of Fitness

Define the term health	Define the term fitness	State 5 ways to improve your lifestyle	The ability to move and change direction quickly (at speed) whilst maintaining control	Name the fitness test to measure balance
Define coordination	Name the fitness test to measure cardiovascular endurance	The range of movements possible at a joint	Ability of a muscle or muscle group to undergo repeated contractions, avoiding fatigue	One rep max test measures which component of fitness?
Name the fitness test to measure power	Define reaction time	Distance / time = ?	The ability to overcome a resistance	The sit and reach test measures which component of fitness?
Name the fitness test to measure reaction time	Define static strength	Define cardiovascular endurance	Define balance	Name the fitness test to measure coordination

Health & Fitness

Components of Fitness

<p>A state of complete physical, mental and social well-being not merely the absence of disease or infirmity</p>	<p>The ability to cope/meet the demands of the environment</p>	<p>Regular medical check ups Use the stairs rather than the lift/escalator Get off the bus one stop earlier Walk short distances rather than transport '5 a day' (any other example)</p>	<p>Agility</p>	<p>Stork stand test</p>
<p>The ability to use different (two or more) parts of the body together, smoothly and efficiently</p>	<p>Multi-stage fitness test</p>	<p>Flexibility</p>	<p>Muscular Endurance</p>	<p>Maximal strength</p>
<p>Vertical jump test</p>	<p>The ability to initiate a response to a stimulus</p>	<p>Speed</p>	<p>Strength</p>	<p>Flexibility</p>
<p>Ruler drop test</p>	<p>The ability to hold a body part (limb) in a static position</p>	<p>The ability of the heart and lungs to provide oxygen to the working muscles</p>	<p>The maintenance of the centre of mass over the base of support</p>	<p>Wall toss test</p>

Principles of Training

Types of Training

Define the term frequency	Name the 'S' in SPORT	Define the term intensity	Name the 'P O' in SPORT	Define the term time
Name the 'R' in SPORT	A more common name for tedium	A series of exercise stations whereby periods of work are interspersed with periods of rest.	Define fartlek training	Involves working for a sustained period of time without rest.
Define interval training	Name a sports performer who would benefit from static stretching	The number of times an individual action is performed in weight training	Define plyometric training	Define 'set' in relation to weight training
Name a sports performer who would benefit from plyometric training	Define weight training	Name a sports performer who would benefit from interval training	Define static stretching	Name a sports performer who would benefit from continuous training

Principles of Training

Types of Training

How often	Specificity	How hard	Progressive Overload	How long
Reversibility	Boredom	Circuit training	Periods of fast work with intermittent periods of slower work.	Continuous training
Periods of training/work that are followed by periods of rest	Dancer Gymnast (other answers accepted)	Repetition	This involves working explosively at maximal intensity using hopping, jumping, skipping, and throwing activities.	A set is a group of repetitions.
High Jump Long jump Triple jump (other answers accepted)	The use of weights / resistance to cause adaptation of the muscles.	Short distance sports performer (e.g. 100m)	Holding a stretch still / held / isometric.	Long distance sports performer (e.g. marathon runner)

Optimise Training, Prevent Injury, Warming Up & Cooling Down and Use of Data

What training zone is 80-90% of maximal heart rate?	How do you calculate maximal heart rate?	What training zone is 60-80% of maximal heart rate?	Power / strength	Muscular endurance
State the 3 training seasons	Name an advantage of altitude training	State 5 methods to prevent injury	State 3 reasons for warming up	Name 2 phases of a cool down
What does DOMS stand for?	State 3 reasons for cooling down	Describe the second phase of the training season	How would you prevent injury in weight training?	Name 2 methods of collecting qualitative data
Describe the first phase of the training season	Name 2 methods of collecting quantitative data	Name 3 phases of a warm up	Describe the third phase of the training season	Name a disadvantage of altitude training

Optimise Training, Prevent Injury, Warming Up & Cooling Down and Use of Data

Anaerobic training zone	220-AGE = MHR	Aerobic training zone	High weight/low rep would improve which component of fitness?	Low weight/high rep would improve which component of fitness?
Pre season Playing season Post season	Increase number of red blood cells	Warm up Remain hydrated Appropriate clothing / footwear Appropriate rest and recovery Technique should be correct	Increased body temperature Increased heart rate Range of movement increased Psychological preparation Prevent injury	Elevated breathing Gradual reduction in intensity Stretching
Delayed onset muscle stiffness/soreness	Allowing the body to recover Removal of lactic acid Prevent DOMS Heart rate and body temperature to gradually return to normal state	Taking part in matches every week, maintain fitness levels and concentration on skill ability	Wear tape and bracing to support the back	Interviews Observations
This is the period leading up to the playing season, usually involving training sessions to improve aerobic fitness and weight training to improve strength. Technique development also takes place	Questionnaires Surveys	Pulse raiser Stretches Mental preparation Skill practices	Period of rest / active recovery / light aerobic work after the competition period (season).	Location Funding Accessibility