The Sutton Academy

Knowledge Rich Curriculum Plan

BTEC Extended Certificate in Sport / Unit 2

Fitness Training and Programming for Health, Sport and Well-being

Learning Aim A - Positive and negative lifestyle factors and health screening tests

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 1 Positive Lifestyle Factors Benefits of exercise and physical activity	• *the 6 lifestyle factors - **physical activity, smoking, alcohol consumption, sleep, stress and diet*** • *Categorise the benefits of physical activity into: physical, psychological, social and economic benefits* • ***Physical*** - strengthens bones, improves posture, reduces the risk of chronic diseases and improves body shape • **Psychological** - relieves stress, reduces depressions, improve mood, improves concentration • **Social** - Encourages social interaction, improves social skills, reduces isolation, improves self-esteem and confidence • **Economic** - reduces NHS costs, creates employment, supports local businesses and reduces absenteeism from work • Understand that the term chronic means - long term / happens over a prolonged period of time • Understand that the term acute means - instant / happens quickly	Chronic Acute Psychological Economic	•	
Lesson 2 Healthy diet • Sections of the Eatwell plate • Benefits of a healthy diet • Strategies to improve diet	• **The description of a healthy diet is**: *This provides the correct amount of nutrients required by your body.* • The sections of the **Eatwell plate** are: **starchy carbohydrates, fruit and vegetables, proteins, dairy, oils and spreads** (section not in EWP - high in sugar - chocolate, sweets) • **Benefits** of a healthy diet are: improve *immune function, maintaining a healthy body weight, reducing risk of chronic diseases,* • **Strategies** to improve diet are: timing of meals, eating less or more of certain foods groups, five a day, reducing salt intake, healthy alternatives		• ***PSHE - balanced diet*** • ***Eatwell plate*** • ***GCSE PE pupils (Y10/11) – diet and nutrition unit***	
Lesson 2 / HWK Positive risk-taking activities Government recommendation	• **The description of positive-risk taking activities** - Activities that take you out of your comfort zone and have a bigger risk of danger/failing. • **The benefits of positive risk-taking activities are**: outdoor adventurous activities, endorphin release, improved confidence • **Government recommendation for physical activity** - Adults (19-64) - 150 mins mod-vig exercise per day + 2 x strength activities, Children (5 -18) – 60mins exercise every day, Elderly adults (65+) – active daily, 150 mins mod-vig exercise per day + 2 x strength activities • **Government recommendation for alcohol** - 14 units • **Government recommendation for sleep** - 8 hours (7-9) for adults • **Government recommendation for calorie intake** - men 2500kcal / women 2000kcal • **Government recommendation for water intake** - 2 litres / 4 pints / 6-8 glasses per day • **Government recommendation for caffeine intake** - 4-5 cups a day			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment

Lesson 3 and 4
 	
Negative lifestyle factors
 	
Risks associated with smoking
 	
Risks associated with excessive alcohol consumption
 	
Risks associated with stress
	• **The smoking health risks are**: Coronary Heart Disease (CHD), Cancer, lung disease, acute/chronic bronchitis, infertility
	• **Coronary Heart Disease (CHD)** means **-** *Coronary heart disease is the term that describes what happens when your heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries.*
	• **Cancer means -** *a disease caused by an uncontrolled division of abnormal cells in a part of the body*
	• **Lung disease** - *Lung disease is any problem in the lungs that prevents the lungs from working properly. There are three main types of lung disease,*
	  ○ **Airway diseases** - diseases that effect the tubes (airways) asthma, bronchitis, COPD - chronic obstructive pulmonary disease
	  ○ **Lung tissue diseases** - scarring and inflammation of tissue - e.g - emphysema
	  ○ **Lung circulation diseases** - clotting, scarring and inflammation of the blood vessels e.g. pulmonary hypertension
	• The airways of the lungs refer to the *bronchi (bronchus), bronchioles*
	• The term pulmonary refers to the lungs
	• The term obstructive means that something is causing a blockage
	• Bronchitis is an *infection of the main airways of the lungs (bronchi), causing them to become irritated and inflamed.*
	• Emphysema is a disorder affecting the alveoli (tiny air sacs) of the lungs. The transfer of oxygen and carbon dioxide in the lungs takes place in the walls of the alveoli. In emphysema, the alveoli become abnormally inflated, damaging their walls and making it harder to breathe.
	
	• **The alcohol health risks are**: stroke, cirrhosis of the liver, hypertension, depression
	• **Stroke** is a *serious life-threatening medical condition that happens when the blood supply to part of the brain is cut off*
	• **Cirrhosis of the liver** - *a chronic disease of the liver marked by degeneration of cells, inflammation, and scarring of tissue. It is typically a result of alcoholism or hepatitis. This condition can result in* **jaundice.**
	  ○ **Jaundice** is when your skin or the whites of your eyes turn yellow. It can be a sign of something serious, such as liver disease, so you need to get urgent medical help.
	• **Hypertension -** High blood pressure, or hypertension, rarely has noticeable symptoms. But if untreated, it increases your risk of serious problems such as heart attacks and strokes.
	• **Depression** - feelings of severe despondency and dejection.
	
	• **The stress health risks are**: hypertension, angina, stroke, heart attack, stomach ulcers, depression
		Coronary Heart Disease (CHD)
		
		Cancer
		
		Circulation
		Airways
		Pulmonary
		Obstructive
		
		Bronchitis
		
		Emphysema
		
		Stroke
		
		Cirrhosis
		
		Jaundice
		
		Hypertension
		
		Depression
			• *GCSE PE – respiratory system content*
			  ○ *Pulmonary refers to lungs*
			  ○ *Bronchus/bronchioles are airways leading to the alveoli in the lungs*
			  ○ *Alveoli are air sacs where the process of gaseous exchange takes place in the lungs*
			
			• *GCSE PE students know that high blood pressure is a long term negative effect of leading a sedentary lifestyle and excessive alcohol consumption*
			
			• *Depression (GCSE PE link) to emotional consequences of leading a sedentary lifestyles*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment

Risks associated with poor diet	• **Hypertension -** High blood pressure, or hypertension, rarely has noticeable symptoms. But if untreated, it increases your risk of serious problems such as heart attacks and strokes.
	• **Angina** - a condition marked by severe pain in the chest, often also spreading to the shoulders, arms, and neck, owing to an inadequate blood supply to the heart
	• **Stroke** is a *serious life-threatening medical condition that happens when the blood supply to part of the brain is cut off*
	• **Heart attack** - is a serious condition where the supply of blood to the heart is suddenly blocked. It needs to be treated as quickly as possible
	• **Stomach Ulcers** - (gastric ulcers) are open sores that develop on the lining of the stomach.
	• **Depression** - feelings of severe despondency and dejection.
	
	• **Poor diet health risks are**: Type 2 diabetes, obesity, osteoporosis, hypertension, high cholesterol
	• **Type 2 diabetes** - is a condition that causes too much sugar in your blood. It can cause serious health problems if not treated.
	• **Obesity -** The term obese describes a person who's very overweight, with a lot of body fat**.** It's a common problem in the UK that's estimated to affect around 1 in every 4 adults and around 1 in every 5 children aged 10 to 11.
	• **Osteoporosis** - is a health condition that weakens bones, making them fragile and more likely to break. It develops slowly over several years and is often only diagnosed when a fall or sudden impact causes a bone to break (fracture).
	• **Hypertension -** High blood pressure, or hypertension, rarely has noticeable symptoms. But if untreated, it increases your risk of serious problems such as heart attacks and strokes.
	• **High Cholesterol** - is when you have too much of a fatty substance called cholesterol in your blood. It's mainly caused by eating fatty food, not exercising enough, being overweight, smoking and drinking alcohol. It can also run in families. You can lower your cholesterol by eating healthily and getting more exercise.
	  ○ **Low density lipoproteins (LDL) -** cholesterol, **sometimes called "bad" cholesterol**, makes up most of your body's cholesterol. High levels of LDL cholesterol raise your risk for heart disease and stroke
	  ○ **High density lipoproteins (HDL)** - cholesterol, sometimes called "good" cholesterol, **absorbs cholesterol in the blood and carries it back to the liver**. The liver then flushes it from the body. High levels of HDL cholesterol can lower your risk for heart disease and stroke
		Hypertension
		
		Angina
		
		Stroke
		
		Heart Attack
		
		Stomach Ulcers
		
		Depression
		
		Type 2 diabetes
		
		Obesity
		
		Osteoporosis
		
		Hypertension
		
		High cholesterol
		
		Low density lipoprotein (LDL)
		
		High density lipoprotein (HDL)
			• ***Depression (GCSE PE link) to emotional consequences of leading a sedentary lifestyles***
			
			• ***GCSE PE link – pupils know that obesity, type 2 diabetes and osteoporosis are physical consequences of a poor diet/sedentary lifestyle***	

Risks associated with lack of sleep	• **Lack of sleep health risks are**: depression and over eating • **Depression** - feelings of severe despondency and dejection. • **Overeating** - Overeating occurs when an individual consumes more calories in relation to the energy that is expended via physical activity, leading to weight gain and often obesity. Overeating is the defining characteristic of binge eating disorder.	Depression Overeating		

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 5 Health Screening methods 1. Blood pressure 2. Resting heart rate 3. Body Mass Index (BMI) 4. Waist to Hip Ratio	• The 3 methods of health screening are: lifestyle questionnaires, physical activity readiness questionnaire (PAR-Q) and health tests such as: o Blood pressure o Resting heart rate o Body mass index (BMI) o Waist to hip ratio • **Blood pressure** - is the pressure of blood pushing against the walls of your arteries. Arteries carry blood from your heart to other parts of your body. Your blood pressure normally rises and falls throughout the day. Blood pressure is measured in millimetres of mercury (mmHg) and is given as 2 figures: • **systolic pressure** – the pressure when your heart pushes blood out • **diastolic pressure** – the pressure when your heart rests between beats and fills • For example, if your blood pressure is "140 over 90" or 140/90mmHg, it means you have a systolic pressure of 140mmHg and a diastolic pressure of 90mmHg • **ideal blood pressure** is considered to be between **90/60mmHg** and **120/80mmHg** • **high blood pressure (hypertension)** is considered to be **140/90mmHg or higher** • **low blood pressure** is considered to be **90/60mmHg or lower** • **Resting heart rate** - the number of times the heart beats at rest • **Body Mass Index (BMI) -** is a measure that uses your height and weight to work out if your weight is healthy. The BMI calculation divides an adult's weight in kilograms by their height in metres squared. For example, A BMI of 25 means 25kg/m2. • For most adults, an ideal BMI is in the 18.5 to 24.9 range. • Muscle is much denser than fat, so very muscular people, such as heavyweight boxers, weight trainers and athletes, may be a healthy weight even though their BMI is classed as obese. • **Waist to Hip ration -** compares your waist measurement to your hip measurement. Higher ratios can mean you have more fat around your waist. This can lead to a higher risk for CHD, heart disease or type 2 diabetes	Blood pressure Systolic Diastolic Hypertension Resting heart rate Body Mass Index Waist to hip ratio	• *GCSE PE link – pupils know how to work out their own heart rate (resting, working, recovery). GCSE pupils would know how to work out their maximum heart rate 220-AGE*	
Lesson 6 Linking lifestyles and health results	• **Risks if results are poor - blood pressure / resting heart rate** o Strain on heart and blood vessels o Increased risk of heart attack o Increased risk of stroke o Kidney disease • **Risks if results are poor - BMI and waist to hip ratio** o **Too high:** Hypertension, Heart disease, Type 2 diabetes, Sleep problems, Osteoporosis, Infertility o **Too low:** Brittle bones, No periods in women, Anaemia (low iron)			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Recommendations to improve results	**Recommendation to improve diet from lesson 2 are same as the recommendations to improve health test results/lifestyle:** • Eat less salt, eat more fruit and veg, maintain healthy weight, drink less, stop smoking, more active, reduce caffeine intake		Recommendation to improve diet from lesson 2 Eat less salt, Eat more fruit and veg, Maintain healthy weight, Drink less, Stop smoking, More active, Reduce caffeine intake	
Lesson 7 Interpreting lifestyle factors and screening results	Pupils given a scenario • What are the **positive and negative lifestyle factors?** • What are the **health risks?** • What are the **government guidelines for the person in the scenario, based on their gender and age**? • What are the **health ranges for the client (age and gender) for the four tests and their health risks?** • Can you make **predications? Do we think they smoke? Drink to much? Poor diet? Lack of physical activity? Lack of sleep? Suffer from stress?**		•	
Lesson 8	SSS Feedback Lesson - Question 1 attempted (Helen Jones)			

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Fitness Training and Programming for Health, Sport and Well-being

Learning Aim B - Lifestyle Modification Techniques

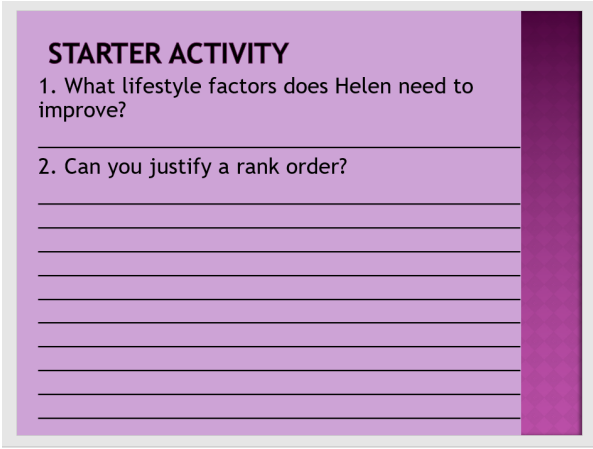
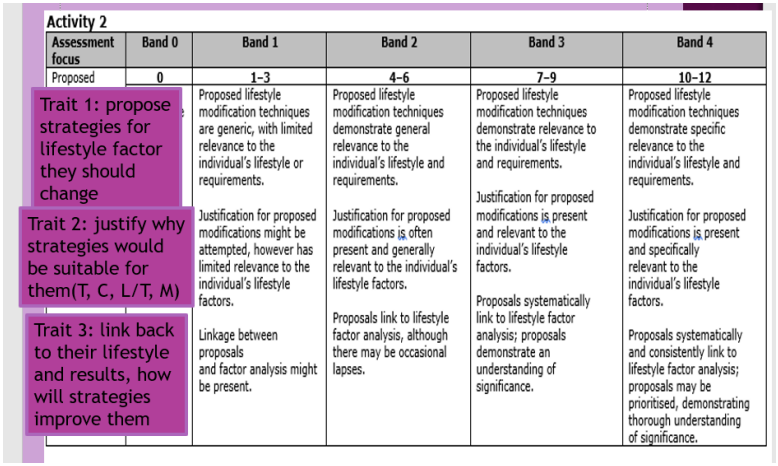
Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 1 Barriers to change	• Recap / reinforce negative lifestyle factors and how they can be improved? And what could prevent her from improving her lifestyle? • Each lifestyle factor can be improved in many different ways known as strategies • Strategy: 'a plan of action designed to achieve a long-term or overall aim'. • Not every strategy will work for an individual • There are many barriers that hinder an individual's commitment to change their lifestyle • Hinder: 'make it difficult for (someone) to do something or for (something) to happen' • It's important to have a number of strategies in mind to suit personal circumstances • Physical and personal barriers to exercise - pupils mindmap • Barriers to change: **cost, time, transport, location, motivation and family obligations** • <u>Barriers to change - task</u> • Some people find it hard to make changes to their lifestyle particularly when it comes to getting enough exercise into a weekly routine. This is due to the many 'barriers' that get in the way. It is important that strategies are used to overcome these barriers. <u>Task</u> • Consider how the barriers to change could prevent these individuals from improving their lifestyle. • Suggest a strategy to overcome the barrier. • **Scenario 1:** • Julie is a single mum with 3 children. She works 8am-4pm and visits her elderly parents three times a week. She wants to exercise more. • **Scenario 2:** • Simon is retired and lives on his own in the countryside. He has smoked 15 cigarettes a day for 30 years. He wants to give up but has tried many times before with no success. • <u>Feedback using visualiser</u> - **students work and using PPT with answers - pupils stop and jot** • Disposable income is the amount of money that a person or household has to spend or save after bills/living costs are deducted. •	Strategies Barriers Hinder Disposable income	• Negative lifestyle factors from unit A	

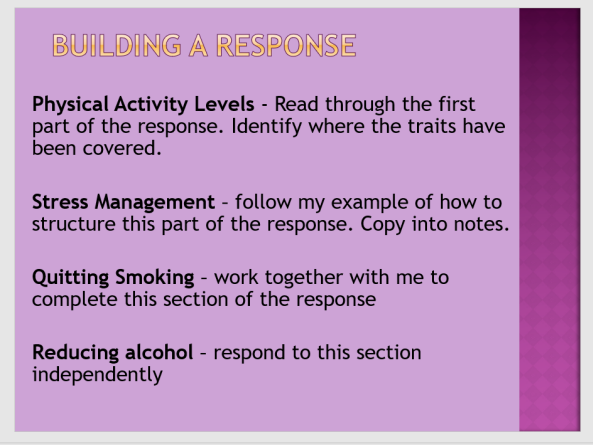
Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 2 Lifestyle medication techniques 1 - increasing physical activity	• Rapid retrieval - low stakes quiz - pupils green pen • Lifestyle improvement strategies ◉ **Increasing physical activity levels** ◉ **Quitting smoking** ◉ **Reducing alcohol consumption** ◉ **Stress management techniques** **Increasing physical activity levels** • At home • At work • During leisure time • Method of transport **Quitting smoking** • Acupuncture • NHS stop smoking helpline • NHS smoking services • Nicotine replacement therapy • Quit Kit support packs **Reducing alcohol consumption** • Self-help groups • Counselling • Alternative treatments • Drink Less: • Alcohol free/low alcohol drinks • Alternating with soft drinks **Stress management techniques** • Assertiveness training • Goal setting • Time management • Physical activity • Positive self-talk • Relaxation • Alternative therapies • Changes to work-life balance Tier 2 Vocab - Assertiveness: 'the quality of being confident and not frightened to say what you want or believe' • Not every strategy will work for an individual • Each strategy comes with pros and cons • You need to know which ones would be suitable depending on the client's lifestyle and personal situation • You must consider the **BARRIERS TO CHANGE**.	Assertiveness	•	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Pupils complete the strategy info sheet using the following resources: **Pages 72-76 in the text book, Revision guide, NHS Live well site, Cancer Research UK, Rethinking Drinking** Complete information for increasing PA strategy from our spec. Assign a strategy to a pupils / pair / group: • **At home** • **At work** • **During leisure time** • **Method of transport** • Include • **Lifestyle factor associated with** • **What the strategy involves** • **Advantages and disadvantages – link to the barriers to change** SSS - green pen (Self-assessment) - Stop and jot - Show pupils the completed example of increasing physical activity - photocopy the sheets for the group so everyone has a copy for revision purposes			
Lesson 3 Lifestyle modification techniques 2 - smoking	Recap task to identify lifestyle modification strategies - fill in the blanks **Pupils complete the strategy info sheet using the following resources:** **Pages 72-76 in the text book, Revision guide, NHS Live well site, Cancer Research UK, Rethinking Drinking** • Complete information for strategies quitting smoking from our spec: SSS - green pen (Self-assessment) - Stop and jot - Show pupils the completed example of **acupuncture** Assign a strategy for quitting smoking to a pupil / pair in the class: then photocopy them when completed for everyone in the group • **NHS stop smoking helpline** • **NHS stop smoking services** • **Nicotine replacement therapy** • **Quit Kit support packs**		•	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 4 Lifestyle modification techniques 3 - alcohol and stress	<u>Reducing alcohol consumption</u>: **Pupils complete the strategy info sheet using the following resources:** **Pages 72-76 in the text book, Revision guide, NHS Live well site, Cancer Research UK, Rethinking Drinking** • Complete information for strategies that reduce alcohol consumption from our spec: SSS - green pen (Self-assessment) - Stop and jot - Teacher live models an example for **self-help groups** with the pupils (I DO, WE DO, YOU DO) Assign a strategy for reducing alcohol consumption to a pupil / pair in the class: then photocopy them when completed for everyone in the group: • **Counselling** • **Alternative treatments** • **Drink Less:** • **Alcohol free/low alcohol drinks** • **Alternating with soft drinks** <u>Task:</u> Alcohol strategy example - matching exercise SSS - pupils shares and explains completed table with the class - pupils stop and jot (green pen work) <u>Stress management techniques</u> **Assign a stress management technique to a pupil each (depending on the numbers in the group)** • Assertiveness training • Goal setting • Time management • Physical activity • Positive self-talk • Relaxation • Alternative therapies • Changes to work-life balance **Complete the stress management template for each strategy - one per pupil if possible**		•	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 5 LO: To learn how to prioritise areas for change and which strategies are most suited to clients.	• Can you remember all the strategies? • 2 mins to remember on your own • 1 min to share with a partner Print off blank strategies table from the PPT / SSS feedback pupils green pen **YOUR TASK** **Client 1: Annie** • Drinks every Saturday - 20 units • Doesn't smoke • Drives 1.5 miles to work every day • Works as a teacher • Does no physical activity • Workload stresses her out - has to do extra work most evenings and weekends • Likes to chill out during spare time **Client 2: David** • Works as a brick layer 6 days a week • Goes to the gym everyday to do weights for 2 hours • Smokes 20 cigarettes a day • Drinks 24 units of alcohol a week • Doesn't really get stressed **Client 3: Tracy** • Retired secretary • Looks after grandchildren 3 days in the week • Drinks a couple of glasses of wine every day • Doesn't smoke • Lives in the country side • Doesn't drive • Hasn't done any physical activity since developing arthritis • Stresses about money after having to retire early *For each client…* 1. Identify the lifestyle factors that should be changed in a rank order. 2. Choose 2 strategies that you would suggest the clients use to improve their lifestyle 3. Choose 1 strategy that you would not recommend them to use 4. Extension: Justify why you have made your decisions for 1-3 **Remember the barriers to change** TIME COST TRANSPORT LOCATION MOTIVATION **Teacher: Print off a blank copy for each pupils of David's and Tracey's strategy sheet** **Model of Annie's strategy sheet needs to be printed for each pupils - teacher discusses Annie's completed strategy sheet with the group**			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 6 Building a response to question 2 (Question is marked out of 12)	Helen Jones - scenario - share Part A again  Teacher - shares how you gain the marks - question 2 is out of 12 marks  **1. What do we already know about Helen Jones? Analyse info.** Physical Activity – None, sedentary job and lifestyle Stress – increased workload and amount to complete Smoking – 5 a day Alcohol – 18 units <u>Health Tests</u> HR = Poor BP = Pre high BP		•	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	BMI = Obese Waist – Hip Ratio = High Risk 2. Decide a rank order of what lifestyle factors to improve. • **Increasing PA, reducing alcohol consumption, quitting smoking, stress management techniques** **3. Start to look at strategies - what are suitable startegies for Helen Jones considering her barriers to change?** Building a response - I DO, WE DO, YOU DO See the teacher template 			
Lesson 7 How to produce notes for question 2 (Pupils can complete for homework if not completed)	Share Mr Mann scenario with the group (Part A) only **What to include:** 1. How to answer the question - structure (see last lesson) 2. List of strategies including some brief details and +/- 3. List of barriers to change 4. Possible rank order and why 5. Choose potential strategies for Mr Mann and why		•	
Lesson 8	Assessment - pupils complete question 2 (Mr Mann scenario) /12 (Pupils can take up to 35 minutes to complete the question. SSS - feedback using marking criteria and examiner report - SA and teacher marks - marks entered into class tracker			

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Fitness Training and Programming for Health, Sport and Well-being

Learning Aim D - Fitness Training

<table>
<tr><th>Lesson/Learning Sequence</th><th>Intended Knowledge:
Students will know that…</th><th>Tiered Vocabulary</th><th>Prior Knowledge:
In order to know this students, need to already know that…</th><th>Assessment</th></tr>
<tr><td>Lesson 1

Components of Fitness</td><td>
Split the components of fitness into physical and skills related components
Whats the difference?
<u>Task</u>
On your sheet, describe what you think each component is based on prior knowledge.
Write down the definition from our specification.
Identify sporting examples
<u>Diamond 9 Task</u>
Choosing one of the activities and rank order on a diamond 9 sheet
Using <u>structured talk</u> - justify your rank order to the class - see the sentence starter template to aid pupils
<table>
<tr><td>Captain instigates and introduces the discussion and makes the first point.

Team mate can add further points to what the captain has raised.</td><td>Opponent can use these words to contrast and oppose the points made by the captain and team mate.</td><td>The captain, team mate and opponent can add ‘weight’ to their argument / point by using these words.</td><td>The captain, team mate and opponent can justify points made by giving examples and support their opinion by using these words.</td><td>Highlights – job is to conclude the discussion by summarising the main points made. These words will help start your summary.</td></tr>
<tr><td>First</td><td>But</td><td>So that</td><td>For example</td><td>In conclusion</td></tr>
<tr><td>Second</td><td>However</td><td>Due to</td><td>For instance</td><td>To conclude</td></tr>
<tr><td>Furthermore</td><td>In contrast</td><td>Because</td><td>For this reason</td><td>In summary</td></tr>
<tr><td>Moreover</td><td>Conversely</td><td>Consequently</td><td>Particularly</td><td>Ultimately</td></tr>
<tr><td>In addition</td><td>On the contrary</td><td>Therefore</td><td>Significantly</td><td>Lastly</td></tr>
<tr><td>Equally</td><td>On the other hand</td><td>In the event of</td><td>In other words</td><td>Finally</td></tr>
<tr><td>Likewise</td><td>Nevertheless</td><td>As a result</td><td>Notably</td><td>In short</td></tr>
</table>
</td><td></td><td></td><td></td></tr>
<tr><td>Lesson 2

Aerobic Training

a. Thresholds of Training</td><td>
Task - pupils to complete page 1 of the ‘Thresholds of training worksheet’, including:
Their own MHR = 220 - AGE = MHR
Training zones - names
% of Maximum heart rate (MHR)
Purpose of the training zone (meaning)
Pupils work out their own training zone in bpm
Training Zones are the intensity in which you would exercise to improve fitness#
Maximum heart rate (MHR) 220-Age = MHR (bpm)
</td><td>Threshold

Training zone

Maximum heart rate</td><td></td><td></td></tr>
</table>

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Pupils can use the text book to help them **Warm up / cool down training zone - 50% MHR** - mainly unfit individuals, new to training **Activity recovery training zone - 60% of** MHR - useful to aid in recovery, removing waste products, next step to those new to training **Fat burning zone - 60 - 70% of MHR** - athletes training for long distances and fat burning management **Aerobic fitness zone - 70 - 80% of MHR** - development of aerobic endurance / suitable for trained athletes **Target heart rate - 60 - 75% of MHR** - greatest benefit for cardiovascular health **Peak performance zone - 80 - 90% of MHR** - highest zone of cardiovascular training, geared towards competitive sport and improving speed **Anaerobic Threshold - 90 - 100% of MHR** - this is the point that you can no longer meet aerobic requirements, so the body uses anaerobic systems. Training at this level is only suitable for advanced athletes **Page 2 task**- Pupils need to select the appropriate training zone for individuals depending on the type of fitness they require and what they want to improve. Explain which training zone you would suggest the following individuals train within: • **Helen Jones: 48-year-old who needs to lose weight, does no physical activity.** • **22-year-old athlete starting training again after a pulled hamstring** • **19-year-old semi-pro footballer training regularly wanting to improve their speed** • **Mo Farah (38yrs) training for a marathon** • **Member of a running club (55yrs) training as a hobby** • **61-year-old who was obese but is still trying to lose weight and gain more fitness** • **Pupils need to give the % of MHR and training zone identified for each individual above**			
Lesson 3 Aerobic Endurance b. Methods of aerobic training	Starter activity What is the equation for calculating a person's maximum heart rate? Can you calculate your own warm up/cool down zone? Can you calculate Mr Langford's Target Heart Rate Zone? I am 40 years old <u>Aerobic Endurance Training</u> • Continuous Training • Fartlek Training • Interval Training • Circuit Training Remember that your intensity levels should be in the training zone suitable for the individual's sport/ability		•	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment

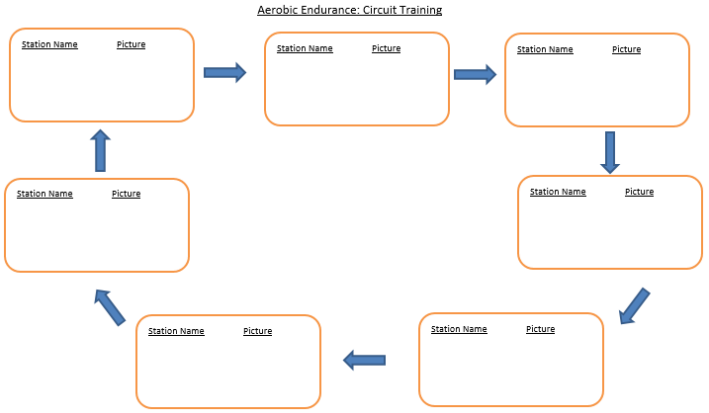
	What you need to know for each one:
	• **Characteristics –** what the training involves, facts about the method
	• **Example of Sessions –** the type of exercise e.g. running, cycling and what it involves (**how FITT is used – timings, intensity)**
	• **Equipment/Location –** what equipment may be needed and where could a session take place
	• **Advantages –** the good points about the method, reasons for choosing it
	• **Disadvantages -** the bad points about the method, reasons you would avoid it
	
	Continuous training
	• Continuous Training is where you keep doing the same type of exercise without having a rest.
	• The exercise needs to last for 20 minutes or longer.
	• You need to keep going at the same steady pace.
	• The intensity is moderate (medium). This means you don't go too fast. 70% VO2 Max
	• You can do this method by either running, cycling or swimming
	• It is the easiest to perform so good for beginners and burns fat so also good for losing weight.
	• It can get boring though as you are doing the same thing for a long time.
	
	Fartlek Training
	• **Fartlek** training involves **changes** in intensity.
	• There are **no rest periods** within this method.
	• You can change the intensity of training by:
	• Changing the **speed** (e.g. fast, moderate and slow paces).
	• Changing the **type** or **steepness** of the ground for example:
	  • Flat surfaces, grassy surfaces, soft sand (Changing **terrain**)
	• Intensity can be increased by using equipment such as:
	  • Weights, weighted backpack, harness
	Example sessions: walk for one minute, run for one minute, sprint for 30 seconds. Repeat this 10 times
	Example sessions: Sprint up the hill, run along the path, walk down the hill. Repeat this 10 times.
	
	• Fartlek training is good because it can be made easy or hard to match your fitness level.
	• You can also use it in many **different activities**.
	• For example running, cycling, swimming and rowing.
	• Good for **games players** that need to change their speed during a game.
	• It can be hard to keep motivated to do the harder sections.
	• Coaches can't tell if you are trying your hardest in the difficult sections.
	
	Interval Training
	• Interval training is where you have a work period followed by a rest or recovery period.			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• In the work period you exercise hard for about 30 seconds to five minutes. • In the rest or recovery period you can sit down, stand still, walk or jog. • To develop aerobic endurance you need to: • Decrease the number of rest or recovery periods. • Increase the exercise intensity. • The intensity in the work period should be above 60% of Max HR. • This session can be adjusted to suit the individual (ability/sport) • E.g. beginners could jog for one minute and walk for one minute. Experienced runners could run hard for 3 minutes and fast walk for one minute **Circuit training** • In **circuit** training you do one exercise consecutively in a set order. • Circuit training is used to develop **aerobic endurance, muscular endurance and muscular strength**. • The type of fitness that it develops depends on which exercises you do. • For example, to develop aerobic endurance you might do skipping, star jumps, shuttles and step ups. • To develop strength you would use weights. • You can also vary circuit training to change the intensity. You can vary: • The number of **stations** (exercises). • The time you spend doing each exercise. • How long you rest for between stations. • The number of circuits. • The number of circuit training sessions you do in a week. • You can adapt a circuit to suit many abilities and sports (can even include skills like shooting, dribbling) • It can be motivating to perform to music and train with a group • But it can involve setting up lots of equipment which takes time			

Minute	Interval
1 -- 5	Warm-Up
6 -- 7	Interval
8	Recovery
9 -- 10	Interval
11	Recovery
12 -- 13	Interval
14	Recovery
15 -- 16	Interval
17	Recovery
18--19	Interval
20	Recovery
21--22	Interval
23--25	Recovery
25--30	Cool-down

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Task • Complete the templates attached to the homework • Use bullet points to get the key facts about each method • Try to give at least two examples of sessions			
Lesson 4 Aerobic Endurance c. Applying FITT	**Starter:** • Complete the **Matching Methods worksheet** • Self-assess and give a mark out of 12 adding any corrections **Extension Challenge** 1. Which method would be the most appropriate for an 800m runner? HINT: this is a middle-distance race lasting 2 laps of the track! 2. Explain your answers. **FITT Principle** • **FREQUENCY** – how often you train, the number of sessions in a week e.g. 3 sessions a week • **INTENSITY** – how hard you train, the effort you put in. Should be matched to your fitness/training needs e.g. 60% of Max HR • **TIME** – how long you train for, the length of each session. Or the timings used within a session e.g. work and rest periods. • **TYPE** – the activity and method of training you do e.g. continuous training on a treadmill. • To improve fitness you must '**Overload**' your body • **'Overload is an increased stress or load placed on the body for training adaptations to take place'.** • FREQUENCY can be increased over time and you can choose the best TYPE of training you do BUT… • INTENSITY and TIME are the key principles needed to really achieve OVERLOAD **Task - Complete the FITT Principle page of your 'Applying FITT' worksheets** **Applying Overload/FITT** • Realistic starting point • Make gradual increases in overload (INTENSITY/TIME) • Don't do too much too soon (progressive) **Task** • Complete the Apply the FITT Principle activities on your worksheet • Make sure you complete one for each of the methods of Aerobic Training - **Continuous** - **Interval** - **Fartlek** - **Circuit** • Choose a Type and Location for the session • Decide what the Intensity and Time should be in Week 1 • Show how you would apply appropriate Overload in Week 2	Frequency Intensity Time Type Overload	•	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 5 Aerobic Endurance d. Aerobic circuit training	**Starter activity** • Knowledge retrieval activity • Complete the components of fitness tables to show what you have remembered • Mark your answers using the definitions sheet • Make any improvements required **<u>Circuit training</u>** • Perform exercises at stations one after the other • Similar to interval training you work then rest throughout the session • You can develop a range of fitness components depending on stations performed • Adapt circuit for range of abilities and sports • Motivating to perform to music and train with a group • Can involve setting up lots of equipment which takes time • You can also vary circuit training to change the intensity to achieve overload. • You can vary: • Number of stations • Work time • Rest time • Number of circuits • Number of sessions **Applying FITT for circuit training** • **FREQUENCY –** how often you train • **INTENSITY** – how hard you train, the effort you put in • **TIME** – how long you train for, the timings used within a session e.g. work and rest periods. • **TYPE** – the activity and method of training you do e.g. continuous training on a treadmill **<u>Designing an effective circuit</u>** • Design a circuit training session to improve aerobic endurance for a someone starting a training programme • Select appropriate stations • Remember they should raise the heart rate not focus on a muscle group • Apply FITT principle to 3 future sessions • If extra stations added, state the new stations		• *GCSE PE and BTEC Tech Award link – FITT principle covered on both courses. Names, explanation of each of the principles covered* • *GCSE PE and BTEC Tech Award link – FITT principle covered on both courses. Names, explanation of each of the principles covered and links to types of training and how it would be applied*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	 **Justification of the FITT principle** • Justify how you applied the FITT principle throughout the programme to achieve overload • I have given you the details of the first session and justified why I have chosen the intensity and times. • Remember: overload should push them harder but be *gradual*. • You don't need to make everything harder about the session but it needs to make them work so they progress.		• *ABCD of PE, GCSE PE and BTEC Tech Award in Sport link – students design their own circuit and vary the muscle groups used so fatigue does not set in early in the workout* • *GCSE PE and BTEC Tech Award link – FITT principle covered on both courses. Names, explanation of each of the principles covered and links to types of training and how it would be applied*	
	Aerobic endurance method consolidation lesson - if needed			
Lesson 6 Aerobic Endurance e. Planning a series of lessons	**Recap - aerobic endurance methods** 1. **Continuous** – steady pace, no rest, long period 2. **Interval** – work followed by rest period, repeated a set number of times 3. **Fartlek** – exercise at different intensities by changing speed or terrain, no rest involved 4. **Circuit** – stations performed at high intensity consecutively with rest in between • **Perform at the correct training zone for ability and/or sport.** **Recap - FITT principle application** ◉ FREQUENCY – how often you train, the number of sessions in a week e.g. 3 sessions a week ◉ INTENSITY – how hard you train, the effort you put in. Should be matched to your fitness/training needs e.g. 60% of Max HR ◉ TIME – how long you train for, the length of each session. Or the timings used within a session e.g. work and rest periods. ◉ TYPE – the activity and method of training you do e.g. continuous training on a treadmill.		• *GCSE PE and BTEC Tech Award link – all methods covered on both courses. Names, explanation of the types of training* • *GCSE PE and BTEC Tech Award link – FITT principle covered on both courses. Names, explanation of each of the principles covered*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Applying the FITT principle to a series of sessions • First week must show a realistic starting point • Make gradual increases in overload • Don't do too much too soon • For example, the following week: • + 5% Max HR intensity • If performed over a number of minutes: + 5 mins • If performed over a number of seconds: + 10secs work - 10secs rest • + 1 extra circuit station • One extra session every week or fortnight **Using the Helen Jones scenario - share Part A again** • **What were her physical activity levels?** • **What was her job?** • **How long did she work each day?** • **How did she travel to work?** • **Did she have a lunch break?** • **Did she has any health concerns?** **Planning Week 1, 3 and 6 of the training programme (Q5 in exam)** **Consider the following for Week 1:** • **Frequency** – When Helen will train? • What will her starting **intensity** be? • How much **time** will she spend exercising? • What **type** of training would be suitable? **Suggestions for Week 1:** • **Frequency** – On way to/from work, lunch, weekends, evenings • I**ntensity** – 50% MHR • T**ime** – 150mins spread out (20min sessions) • T**ype** – continuous walking, basic home circuit, very basic core strength exercises **Consider the following for Week 3 and 6:** • What **overload** will be applied? • How much overload is appropriate? • Don't forget Week 2, 4 and 5 will have taken place too • Could you **vary** the training methods? **Task - Plan week 1, 3, 6 of training** • Use the templates to plan your training programme • You have space to write some notes before you plan • Remember they can have rest time too!		• *GCSE PE and BTEC Tech Award link – FITT principle covered on both courses. Names, explanation of each of the principles covered*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Week 1 **Justification of using FITT principle** Justify the application of the FITT Principle throughout Week 1, 3 and 6 of Helen Jones' training programme **Share teacher examples of Helen Jones week 1, 3 and 6 with the class - SSS, green pen**		• *GCSE PE and BTEC Tech Award link – FITT principle covered on both courses. Names, explanation of each of the principles covered*	

Physical Activity	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Morning							
Afternoon							
Evening							

Principle	Week 1	Week 3	Week 6
Frequency (sessions in the week)			
Intensity (% Max heart rate, pace)			
Time (length of session or work time)			
Type (most appropriate methods, start easy)			

Planning week 1, 3 and 6 training sessions (programme design) consolidation if needed

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 7 Flexibility training Methods and Types of Flexibility training	**What sports performers would include flexibility sessions in their training?** <u>Main Methods</u> • Static stretching – performing a stationary stretch • Dynamic stretching – performing a stretch with movement • Proprioceptive Neuromuscular Facilitation – partner helps you stretch further each time <u>Principles of flexibility training</u> • Aim to increase range of motion (ROM) and reduces injuries • Overload muscle by stretching beyond usual position • Need to target muscles/joint that needs improving • Do not exceed tolerance level as injuries can occur • To improve flexibility, increase the time of the stretch and the reps completed • Best completed at the end of training when muscles are warm or after aerobic training <u>Types of stretching</u> 1. <u>Maintenance Stretching</u> • *Purpose*: returning worked muscles to normal length, maintaining general flexibility • *When*: after exercise during a cool down • *How long*: 10-15 seconds • **Maintenance stretching** can reduce the risk of injury, reduce muscle tension and improve coordination of muscles. 2. <u>Developmental Stretching</u> • *Purpose*: improve muscle flexibility/length and ROM • *When*: after exercise • *How long*: **6**-10 seconds initially, then repeat for a further 20-30 seconds • **Developmental stretching** primarily improves flexibility and increases the range of movement but can also improve posture and general well-being. <u>Over to you - what do you think? (Structured talk opportunity)</u> **Discuss what type of stretches and examples of stretches the following individuals would complete:** 1. A footballer 20mins before kick off 2. A member of a running club who trains for fun 3. A gymnast in training for competition **1. A footballer 20mins before kick off - Pre activity stretches** **2. A member of a running club who trains for fun - Maintenance stretches** **3. A gymnast in training for competition - Developmental stretches**	Static Dynamic PNF Flexibility Maintenance Developmental	• *GCSE PE – GCSE PE pupils and BTEC Tech Award in sport pupils know and understand that the definition of flexibility is 'the range of movement around a joint' They would also know that the fitness test for flexibility is the sit and reach test (lower back and hamstrings) GCSE PE pupils know that stretching during a warm up and cool down will help improve flexibility and reduce the risk of injury.*	

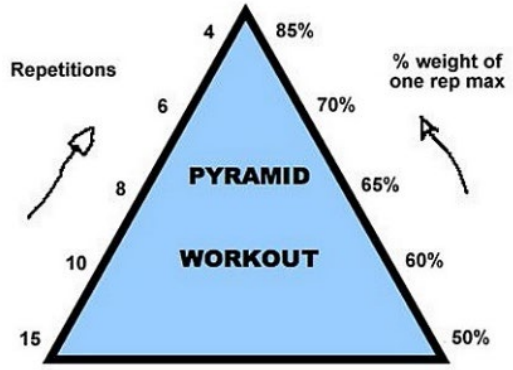
Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	STATIC STRETCHING • Controlled and slow • Used to lengthen muscles to improve flexibility • Stretch and hold still in one position	Static		
	ACTIVE -Perform individually -Use own muscles to hold the position. -Increases ROM and functional mobility **PASSIVE** -Assisted stretching -Use someone else or an object to help hold the position. -One of the safest methods and helps with relaxation	Active Passive		
	DYNAMIC STRETCHING • Stretches performed through movement • Stretches should be matched to your sport • Prepares muscles/joints for the movements that are going to be performed • Good for sports with high speed movements e.g. football, rugby, tennis, volleyball, sprinting	Dynamic		
	PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION stretching (PNF) • You need a partner or object to help you with this type of stretching. **HOW THIS IS CARRIED OUT:** • The performer stretches the muscle as far as it can go. • A partner helps to hold the muscle in that position. • The performer pushes against the partner for 6-10 seconds (Isometric contraction) • The performer relaxes the muscle. • The partner helps to stretch the muscle a little bit more. • Muscles have a stretch reflex that stops them being stretched too far • PNF works by stopping the stretch reflex and then the muscle can stretch further than it's normal range • This method is an advanced form of stretching • It can be used to help people recover from injuries.	PNF (Proprioceptive Neuromuscular Facilitation)		
	EQUIPMENT REQUIRED FOR STRETCHING • A range of equipment can be used during flexibility training • Some equipment can replace the need for a partner			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• This can allow an individual to perform a bigger range of stretches on their own • Improves ROM but also adds variety to a flexibility session to reduce boredom. - Towel - Mat - Belt - Partner - Band **Task** • Complete the set of questions to get your mark (Flexibility training questions) • Green pen your work, comparing to the answers I will give you. **EXTENSION TASK** • Plan a flexibility session for a netball player • Ensure you answer all questions on the sheet and upload completed sessions to Satchel One.			
Lesson 8 **Strength Training** **Purpose of it** **Principles of it** **Pyramid sets**	**Muscular Strength Training** Can be performed using the following methods: 1. Resistance machines 2. Free weights 3. Circuit training 4. Medicine balls 5. Core stability training **What you need to know:** **1. Purpose of training** 2. **Principles of strength training** - reps, sets, rest 3. **Example of Sessions** – Pyramid sets 4. **Type of exercises** e.g. shoulder press, dead lifts, bench press 5. **Equipment** – what equipment may be needed and where could a session take place 6. **Advantages/Disadvantages** – of the types of strength training used - (resistance machines vs free weights) **Purpose of strength training** • Increases muscle tone **(definition of muscles)** • **Increases muscular hypertrophy (muscle fibres increase in size)** • Most **beneficial** for sports like weight lifting, throwers, sprinters, rugby but any where explosive movements are performed *Beneficial - worth having or wanting* **Principles of strength training** • High weight, low repetitions, high sets • Fast twitch muscle fibres are targeted (type IIa and type IIx) for powerful contractions but tire quickly • Find one repetition maximum first (1RM) = max amount of weight lifted in one attempt • Then use this to work out the correct % of weight you should lift • 50-90% of 1RM depending on fitness levels/experience	Strength Muscle tone Muscular hypertrophy Beneficial **Repetitions / sets** **Fast twitch muscle fibres** **1RM**	• *GCSE PE and BTEC Tech award in Sport students link – know the definition of muscular strength is 'the ability of muscles to exert a force over a short period of time'.* • *GCSE PE and BTEC Tech award in Sport students link – know that weight training consists of using resistance machines, dumbbells, barbells, medicine balls, resistance bands etc. They know that the long-term adaptations that take place due to weight training are:* o *Increased muscular strength* o *Increased muscle size (muscular hypertrophy)* o *Increased muscular endurance* o *Increased flexibility* o *Stronger tendons* • *GCSE PE and BTEC Tech award in Sport students link – know that to work out how much to lift is a % of your 1RM.* • *GCSE PE and BTEC Tech award in Sport students link – heavier weights/load and fewer repetitions increases muscular hypertrophy and strength*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Reps and sets • 6-10 reps = 1 set • Larger muscles (e.g. legs, chest) = 5-8 sets • Smaller muscles (arms, lower leg) = 4-6 sets **Rest between sets** • 2-4 minutes • Higher weight = more rest, lower weight = less rest **Order of exercises** • Larger muscles first • Smaller muscles second • Core/abdominals last – why should these be last?		• *GCSE PE and BTEC Tech award in Sport students link –lighter weights/load and higher numbers of repetitions improves muscular endurance*	

Order	Muscle groups	Muscles
1	Chest	Pectorals
2	Back	Latissimus dorsi, trapezius
3	Legs	Quadriceps, hamstrings, glutes, calves
4	Shoulders	Deltoids
5	Arms	Biceps, triceps
6	Core	Abdominals, erectus spinae

PYRAMID SETS
- Useful way to maximise strength goals
- Work in an upward then downward sequence
- Start at low weight to warm up muscles then increase weight to overload muscles
- As they get fatigued (tired) the weight reduces back down but the reps increase again



<table>
<tr><th>Lesson/Learning Sequence</th><th>Intended Knowledge:
Students will know that…</th><th>Tiered Vocabulary</th><th>Prior Knowledge:
In order to know this students, need to already know that…</th><th>Assessment</th></tr>
<tr><td></td><td>
<u>PYRAMID SETS SESSION STRUCTURE</u>
<table>
<tr><th>Set Number</th><th>Reps</th><th>%1RM</th><th>Weight (1RM = 80kg)</th><th>Rest</th></tr>
<tr><td>1</td><td>12-15</td><td>50%</td><td>40kg</td><td>2 mins</td></tr>
<tr><td>2</td><td>10-12</td><td>70%</td><td>56kg</td><td>2 mins</td></tr>
<tr><td>3</td><td>8-10</td><td>80%</td><td>64kg</td><td>2 mins</td></tr>
<tr><td>4</td><td>4-6</td><td>90%</td><td>72kg</td><td>2 mins</td></tr>
<tr><td>5</td><td>8-10</td><td>80%</td><td>64kg</td><td>2 mins</td></tr>
<tr><td>6</td><td>10-12</td><td>70%</td><td>56kg</td><td>2 mins</td></tr>
<tr><td>7</td><td>12-15</td><td>50%</td><td>40kg</td><td>2 mins</td></tr>
</table>
<u>Task</u>
• Complete the notes sheet for Strength Training
• Include a completed diagram explaining how pyramid sets are performed
</td><td></td><td></td><td></td></tr>
<tr><td>Lesson 8

Strength Training 2

Free weights v Machines

Examples of exercises

(Opportunity for practical lesson - using free weights)</td><td>
Muscular strength and muscular endurance
• To learn about free weights and resistance machines
Today you will look at:
1) Key characteristics of the two strength training methods
2) Advantages and disadvantages

<u>FREE WEIGHTS EQUIPMENT</u>
• Bar bells, dumb bells
• Provide constant resistance during the movement
• Increase strength quickly
• Increase range of movement allowed
• Can focus on more than one muscle
• Increased risk of injury
• For more advanced performers

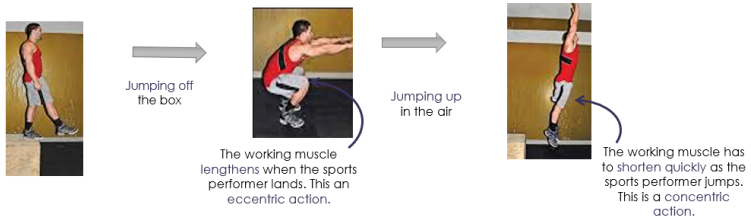
<u>RESISTANCE MACHINES EQUIPMENT</u>
• Machine in fixed position
• 0-100kg can be lifted
• Gyms usually have large range of machines
• Easier to use so safer for beginners
• Focus on one muscle only

Advantages and disadvantages
</td><td></td><td>
• GCSE PE and BTEC Tech award in Sport students link – know that weight training consists of using resistance machines, dumbbells, barbells, medicine balls, resistance bands etc. They know that the long-term adaptations that take place due to weight training are:
○ Increased muscular strength
○ Increased muscle size (muscular hypertrophy)
○ Increased muscular endurance
○ Increased flexibility
○ Stronger tendons

• GCSE PE and BTEC Tech award in Sport students link – know that to work out how much to lift is a % of your 1RM.

• GCSE PE and BTEC Tech award in Sport students link – heavier weights/load and fewer repetitions increases muscular hypertrophy and strength
</td><td></td></tr>
</table>

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	<u>Task</u> • **Complete the notes sheet for free weights vs resistance machines** **Question:** Would you recommend a beginner to use free weights or resistance machines? Explain your answer.			
Lesson 9 Skill Related Components of Fitness POWER CRAB! Power training methods Co-ordination training methods Reaction time training methods Agility training methods Balance training methods	POWER <u>CRAB</u> C - Co-ordination R - Reaction Time A - Agility B- Balance Power - **The ability to produce a maximal force in the shortest period of time possible.** Coordination - **The ability to control movement of two or more body parts, smoothly and efficiently to perform a motor task.** Reaction Time - **The time taken for a sports performer to respond to a stimulus and the initiation of their response.** Agility - **The ability of a sports performer to quickly and precisely move or change direction without losing balance or time.** Balance - **Static and dynamic balance, the ability to maintain centre of mass over a base of support.** • These components are more likely to be including in the training programme of a sports person as opposed to someone wanting to improve their health. • When creating a training programme, you should use the training method(s) that will help to achieve your goal. • Each of the following training methods is relevant to one or more components of <u>skill-related</u> fitness and will help to develop them accordingly. <u>TASK:</u> • You have a range of activities that are used to train skill related components. • Write next to each which component it will improve • Kneeling sprint - Power • Box jumps - Power • Alternate hand ball toss - Co-ordination • Stork stand - Balance • Ladders - Agility • Medicine ball throw - Power • Pilates - Balance • Jump rope training - Power	Power Co-ordination Reaction Time Agility Balance Box Jump Pilates	• *GCSE PE and BTEC Tech award in Sport students link – pupils know simplified definitions of power, co-ordination, reaction time, agility, and balance. <u>These will need to be checked and reinforced as they maybe slightly different due to the OCR and Pearson specifications using different wording.</u>*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Wobble board - Balance • Hurdles - Power • Ball drop and catch - Reaction Time • Push up with clap - Power • One legged squat - Balance • Reaction ball - Reaction Time • Yoga - Balance <u>Power training methods</u> • **Principles:** Stretches muscle eccentrically before a powerful concentric contraction (explosive action) • **Methods:** • Plyometrics - movements that are explosive and repeated. Should always replicate the specific movements to the sport. • **Equipment:** ladders, cones, jumps ropes, medicine ball, hurdles, benches. <u>Plyometrics</u> • It is important to careful with this kind of training as it can make your muscles sore. • In the exercises the sports performer uses maximal force (as much power as possible). • This force is needed to lengthen and then quickly shorten the muscle. For example, in the box jumping exercise below:  <u>Who would use plyometrics?</u> • List sports that require a sudden burst of power and would benefit from this training • Would they focus on upper or lower body exercises? <u>Designing a plyometrics Session</u> Using the resources and Youtube clip, design a plyometrics session that includes: • Name of exercise • Order of exercise completion • How many reps/sets should be completed • Rest time between sets https://www.youtube.com/watch?v=dvggf9hPwtM <u>CHALLENGE ACTIVITY</u> Add the following to your plan: • Sport designed for	Yoga Plyometrics Concentric Contraction Plyometrics	• *GCSE PE link – pupils know that a concentric contraction involves the muscle contracting and changing length (e.g. a bicep curl – the bicep changes length during the movement of a bicep curl)* • *GCSE PE link – pupils know that plyometrics is a form of (interval) training to improve power for explosive ANAEROBIC activities. Pupils know that movements such as hopping, bounding and jumping (depth jumps) actions are used to improve power.* • *ABCD of PE link – pupils experienced plyometrics activities in Y9 – pupils know that rest is required after performing plyometric exercises.*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Ability level • Show how overload could be achieved in future sessions SUPER CHALLENGE ACTIVITY • How could your session be adapted for a different sport? Co-ordination training methods • **Principles:** Exercises which involve the use of two or more body parts together. • **Methods:** • Sport specific activities- for example, racquet drills, juggling and ball catching. • **Equipment:** Sport specific equipment e.g. tennis ball. Reaction time training methods • **Principles:** Training to initiate a response in the quickest time possible. • **Methods: Reaction drills**- initiating a response to an external stimulus e.g. reaction ball, ball and drop, kneeling to sprint. • **Equipment**: Stopwatch, whistle, visual stimulus, auditory stimulus, reaction ball. Agility training methods • **Principles:** Exercises that will involve changing the body position quickly and with control. • **Methods: SAQ**- speed, agility and quickness. Often conducted with the use of ladders. **Sport specific drills**- involving a change of direction. • **Equipment:** SAQ ladders, markers, cones, sport specific equipment. Balance training methods • **Methods:** • **Static Balance**- exercises focused on retaining the centre of mass above the base of support when stationary (can use a stable surface such as the floor for this). • **Dynamic balance**- focus on retaining the centre of mass above the base of support when moving (can use unstable surfaces such as a balance board for this) • **Equipment:** Stable and unstable surfaces. Training methods for skill related fitness • TASK: • Complete the templates to create **fact sheets** about training methods for **Co-ordination, Reaction Time, Agility and Balance.** • Use your text book and the revision guide • REMEMBER: the **key facts** are your bread and butter!! CHALLENGE TASK (finish for homework): • You have been asked to work with a local **Basketball** club who play in the National League and are looking to improve their **skill related fitness.** • Design a **Circuit Training** session that focuses on the different components of skill related fitness. • The session must include:	Co-ordination Reaction time Agility Balance Static Dynamic	• *ABCD of PE link – pupils encouraged to prepare for KS3 assessments to practice alternate hand ball toss as it'll prepare pupils for taking the test. Pupils also giving task of 'keepy ups' in football unit – pupils shown how to perform them and how to improve co-ordination for football.* • *ABCD of PE link – 'rats/rabbits reaction time games, sprint start drills are examples of reaction time drills we perform in KS3.* • *ABCD of PE link – in KS3 pupils do ladders warm ups when doing hockey unit (sticks use as the SAQ ladder. Drills are delivered and developed throughout the hockey unit. SAQ drills are also delivered when teaching athletics warm ups (e.g. A-Skips, B-Skips, split steps, hollow sprints, bounding).*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Stations for each of the 5 skill related components • Description of station (what players must do) • Details of reps to be completed/work time at stations • Appropriate diagrams to guide players • The session should last at least 20 minutes **SUPER CHALLENGE TASK!** Justify why each station will help the basketball players' performance. Use examples from the game to support your opinions			
SRF Circuit task and consolidation lesson if needed Prepare notes for Helen Jones Q4 (out of 8 marks)				
Assessment lesson - Attempt Q4 - Helen Jones scenario Pupils have 30 minutes to produce answer to Helen Jones scenario Examiner report and feedback session - last 30 minutes - mark each other's work - teacher assesses - marks entered into class tracker				

The Sutton Academy

Knowledge Rich Curriculum Plan

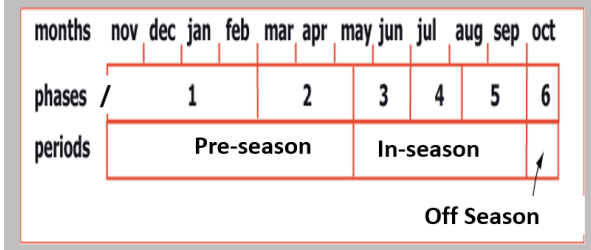
BTEC Extended Certificate in Sport / Unit 2

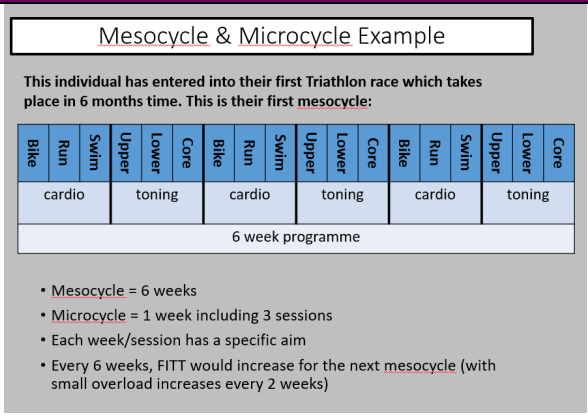
Fitness Training and Programming for Health, Sport and Well-being

Learning Aim E - Training programme design

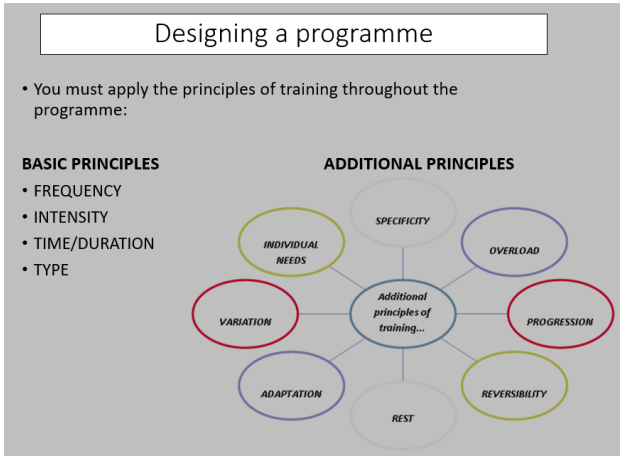
Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 1 Principles of training	<u>Basic principles of training</u> • To progress and overload the body appropriately, use the FITT principle to increase the demand on the body • **FREQUENCY** – how often you train (beginners start at 3 times a week, progress to 5 sessions) • **INTENSITY** – the effort needed to complete the activity (e.g. %HR, weight lifted, reps) • **TIME/DURATION** – how long the session is • **TYPE** – what methods of training are used <u>Principles of training</u> • **SPECIFICITY** – plan for what you want to improve (component of fitness, muscle groups, sporting action) • **PROGRESSION** – making training gradually harder - not too little (no improvement - PLATEAU) or too much (injuries) but challenging – • **OVERLOAD** – pushing the body harder than usual to gain positive training results (use FITT to achieve this) • **REVERSIBILITY** – losing fitness gains due to stopping training. Aim to not 'detrain' and revert back to previous levels of fitness (injury/illness/lack of motivation, not enough overload) <u>Structured talk and stop and jot opportunity</u> Q – What would happen to fitness levels if someone maintained a programme but didn't apply overload? • **REST & RECOVERY** – give the body enough rest so it can recover before next session. Include rest days and spread sessions out throughout the week. • **ADAPTATION** – this happens during recovery periods. The muscles start to get used to the demands of exercise so it can cope with more next time. The muscles repair themselves but become stronger each time. This is when strength/muscular endurance is improved and also the heart and lungs are stronger/larger to transport more O2 around the body, improving aerobic endurance. • **TEDIUM/VARIATION** – vary the training you do to prevent boredom • **INDIVIDUAL NEEDS** – tailor the training programme for the individual as everyone is different. Depends on gender, age, fitness levels and training goals. <u>Structured talk and stop and jot opportunity</u> Q – What would be the similarities and differences in training for two people training for a marathon where one person is a beginner running for charity and the other is an experienced runner competing for a club?	FREQUENCY INTENSITY TIME (DURATION) TYPE SPECIFICTY PROGRESSION OVERLOAD REVERSIBILITY RECOVERY ADAPTATION TEDIUM VARIATION	• *BTEC Tech award in Sport and GCSE PE link – FITT principle taught in Y11 on both courses* • *BTEC Tech award in Sport and GCSE PE link – definitions of principles of training delivered on both courses. Pupils how these terms*	

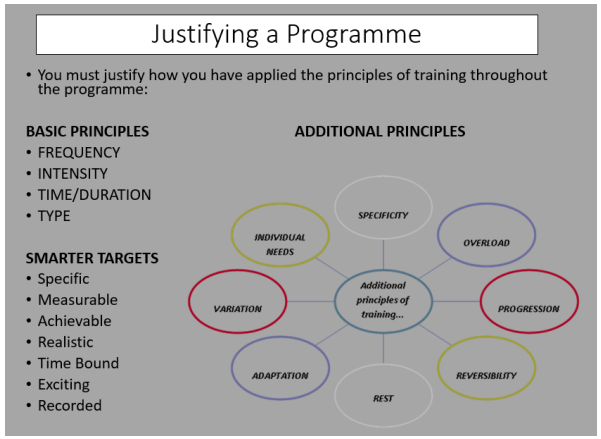
Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 2 Periodisation To learn about periodisation and how it is used when designing a training programme.	<u>Recap questions</u> 1. Name 6 lifestyle factors 2. What is the maximum units recommended for consumption of alcohol per week? 3. What are the 4 barriers to change? 4. Names all 11 components of fitness 5. What components of fitness can be improved using circuit training? <u>What is Periodisation?</u> • A training programme with a **structured** cycle • Organised in periods and **cycles** of training • Each will have a **specific aim or objective** within the overall training plan • The main purpose is to achieve **peak performance** at the right time e.g. in time for competition • Prevents over training injuries, boredom and therefore boosts motivation so peak performance is achieved <u>Main phases of a full cycle</u> **Off season** – transition or recovery period from previous season, individual is not competing, need to maintain fitness, fitness more likely to drop during this time. **Pre-season** – preparation phase before the season starts, chance to build back up to full fitness. Training often focusses on physical components of fitness first e.g. aerobic fitness, before the more sports specific goals as the competition approaches. **In season** – competition period aiming for peak performance <u>Different cycles in a programme</u> <u>MACROCYCLE</u> • First layer of cycle over the largest time • Phase lasts between 1 year (e.g. Footballers) and 4 years (e.g. Olympic athletes) <u>MESOCYCLE</u> • Phase lasting about 4-24 weeks which would be part of a macrocycle. • Controlled with work:rest ratios e.g. a ratio of 3:1 would mean 3 weeks of full training followed by 1 active rest week. This would be repeated but intensity increased next time. • Beginners = work:rest ratio of 2:1 • Advanced = work:rest ratio of up to 6:1 <u>MICROCYCLE</u> • Phase usually lasting 1 week • Individual sessions using FITT principle • Should include appropriate warm up, main session and cool down each time • Sometimes daily cycles of up to 3 sessions may be required for elite performers	PERIODISATION PEAK PERFORMANCE OFF SEASON PRE SEASON IN SEASON MACROCYCLE MESOCYCLE MICROCYCLE		

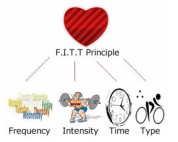
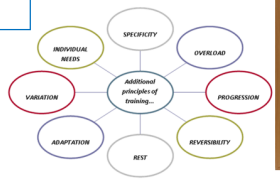
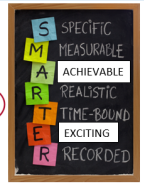
Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Questions 1. What is the purpose of periodisation? 2. What are the three main **cycles or phases** used when planning for periodisation? 3. What are the shortest **cycles** called? 4. How long does a mesocycle usually last? 5. What is the average work:rest ratio when planning a mesocycle? 6. What type of activities may be included in an 'active rest week'? **This diagram shows how periodisation is used for a trained individual:**  Use this to help you answer the questions on the following slide. **Questions (based on previous slide example)** 1. How long is the macrocycle? 2. What months of the year does the pre-season phase cover? 3. What will be different about the training goals in phase 1 and 2? 4. For a games player, what activities would you expect to see in each of these phases? 5. Why is it important to allow for a recovery month where the individual doesn't follow their training programme? 6. What are the risks involved during this recovery period?			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	 **What should a session include?** • **Warm up** - pulse raiser, stretch, mobilise • **Main session** – focus on goals, FITT principle applied, use methods of training • **Cool down** – less intense than warm up, return body to normal, aerobic activity, stretching at this point will improve flexibility			
Lesson 3 Applying the principles of training and periodisation	**Remember the principles: They spell SPORTIA!** **Specificity (links to Type)** **Progression** **Overload (links to Frequency, Intensity, Time)** **Rest and recovery** **Tedium/Variation** **Individual needs** **Adaptation** Don't forget **Reversibility** which we don't want to occur! **TASK - complete the sheet** **1) What principle of training has been applied in these scenarios?**		• *BTEC Tech award in Sport and GCSE PE link – definitions of principles of training delivered on both courses. (SPORT) Pupils how these terms.* • *Extra terms pupils will need to learn and develop an understanding of are: Individual needs and adaptation*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	2) Justify your answer as if you had designed the programme. This also includes the FITT principle. I've done an example to start you off. **<u>Task - Principles of training questions - complete the sheet</u>**			
Lesson 4 Aims, objectives and SMARTER Targets	**Use page 80 of the revision guide and 117 of the text book to answer the questions** The two key questions you must ask yourself when designing a training programme are: 1. 2. The two areas of knowledge needed to answer the above are: 1. 2. The main principle of training associated with setting individual goals and meeting personal needs is Goal setting benefits on performance include: 1. 2. Aims are what you intend to achieve. Examples in training could be 1. 2. 3. Aims and objectives should be broken down further. Short term goals time frame = Medium term goals time frame = Long term goals time frame = Complete the table on the sheet using the test book (p117) and the revision guide (p 80) Goals should be SMARTER: SMARTER Principle / Definition / Example	SPECIFIC MESURABLE ACHIEVEABLE REALISTIC TIMEBOUND EVALUATED RECORDED	• *GCSE PE link – SMART targets* • *S* *- Specific: Clearly define what you want to achieve. Instead of "get better at my sport," a specific goal would be to "improve my free-throw shooting percentage in basketball".* • *M* *- Measurable: Establish criteria to track your progress and determine if you've succeeded. A measurable goal would be "to improve my shooting percentage by 10% over the next month". Usually involve s a number to be able to track performance. Sprinter (traying to improve time), jumper/thrower (trying to improve distance), striker in football (trying to improve number of chances-scored), weight lifter (trying to improve weight lifted) etc.* • *A* *- Achievable: Set a goal that is challenging but also realistic and within your abilities. For example, improving a 100m time by 0.1 seconds is achievable, but 3 seconds is not.* • *R* *- Realistic/Relevant: Ensure the goal is practical and relevant to your overall training objectives and current circumstances. It should also be realistic and not too easy.* • *T* *- Time-bound: Set a specific deadline for achieving your goal. For example, "by the end of this week" or "within six weeks".* • *E* *- Evaluated (or Enjoyable): This can mean the goal should be evaluated to see how it went or that it should be something you find exciting and motivating.* • *R* *- Recorded: Keep a written record of your goals, such as in a training diary, to monitor your progress and stay motivated.*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 5 Designing a training programme To learn about how to design a training programme to suit an individual.	 **Question 5 Mark scheme – 6 marks** Activity 5 Assessment focus: Six-week training programme Band 0: 0 — No rewardable material Band 1: 1–2 — The training programme is generic, with limited relevance to the fitness requirements of the individual. Certain requirements may be omitted. The training programme demonstrates a limited understanding of the principles of fitness training, in the context of the individual's lifestyle or training requirements. Band 2: 3–4 — The training programme demonstrates relevance to the fitness requirements of the individual, although not all requirements are covered. The training programme demonstrates an understanding of the principles of fitness training, in the context of the individual's lifestyle or training requirements. Band 3: 5–6 — The training programme demonstrates specific relevance to all fitness requirements of the individual. The training programme demonstrates a thorough understanding of the principles of fitness training, in the context of the individual's lifestyle or training requirements. • **Study the response that received 6 marks (full marks)** • Highlight good examples of when you think the principles of training have been applied well **(GREEN)** • Also highlight anything you may disagree with (RED) • Make a note to show examples of when the principles are applied **Challenge Task** • Annotate the programme to explain why • Compare the 3 weeks **Share Mr Mann Scenario - Part A again** • Design Week 1, 3 and 6 for Mr Mann • Make sure you consider all the principles of training when you design each week • Select methods that are specific to the individual • Include all necessary details for each session e.g. activity, time, intensity (%MHR/%1RM/sets/reps/rest)			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Remember that Week 2, 4, 5 would be carried out too but don't have to be written **Complete for homework** - spend no longer than 30minutes completing this piece of work - print of sheet 1, 3 and 6 of Mr Mann's blank training programme			
Lesson 6 To learn how to justify a training programme.	**Justifying the training programme - question 6 = 14 marks**  **All the above needs to be included plus - periodisation** • **Showing you know what the principle means and why it is used will help you gain marks** • **But making it specific to the individual will boost your marks even more** • **Relate your programme back to the person's:** - Goals - Fitness levels - Lifestyle **Quick check: - What principle has been applied and why?** 1. The programme includes different cycling and running routes after each week of training - variation 2. Sessions have been included as a way of travelling to and from work to fit in with a busy life - individual needs 3. The sprinter performs acceleration sprints in their programme - specificity 4. The reps have increased from 15 per set in week 1 to 25 by week 6 - overload (intensity) 5. The individual's fitness and muscle mass has increased over the programme - adaptation occurs due to progression taking place			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Task 1. Read the full mark response for Helen Jones 2. Highlight when a principle of training / SMARTER target has been justified **Task - complete the 'Justifying a Training Programme' sheet** 3. You have **35 mins** to justify your programme for Mr Mann 4. Tick off the principles as you justify them. **Designing a Training Programme - 20mins** ***THE QUESTION*** ***Question 5: Design Week 1, 3 and 6 of a training programme for an individual – 6 marks*** • Specific to individual's fitness requirements – comps of fitness/methods of training • Thorough understanding of all principles of training • Suits the individual's lifestyle ***TOP TIPS*** ✓ Split into AM and PM sessions ✓ Keep it to the facts – no sentences ✓ Include sessions details (training method/activity, % intensity, timings) ✓ Consider the individual's daily life (time at work, lunch break, commitments) ✓ Apply every principle of training ✓ Show gradual progressions (get week 1 right!) ✓ Remember Week 2, 4 and 5 will happen ✓ Include a range of suitable sessions over the 6 weeks ✓ Make sure all fitness goals are covered ✓ Ensure the training programme is SMARTER    **Justifying a Training Programme – 30mins** ***THE QUESTION*** ***Question 6: Justify the training programme design – 14 marks (HIGHEST VALUE!)*** • Justify how you have applied each principle of training • Justify why it meets the training requirements of the individual • Justify how you have made it SMARTER ***TOP TIPS*** ✓ Recap individual's fitness goals again ✓ Justify how you applied each principle of training and FITT ✓ Justify why it is suitable for the individual ✓ Justify how it meets the SMARTER Targets ✓ Link back to their lifestyle and fitness goals to strengthen your point ✓ Explain how have you planned for periodisation (if appropriate) ✓ Could write about each week in turn or each principle in turn ***POSSIBLE SENTENCE STARTERS*** - The individual's fitness goals were… - I applied the principle of _____ by… - The programme started with…but by Week 6 this progressed to… - Week 1 involved…but to reduce boredom by Week 3 I added… - This was relevant to their fitness goals because… - I considered periodisation by…			

Attempt Q6 for the Mr Mann Scenario - 30 minutes to complete it

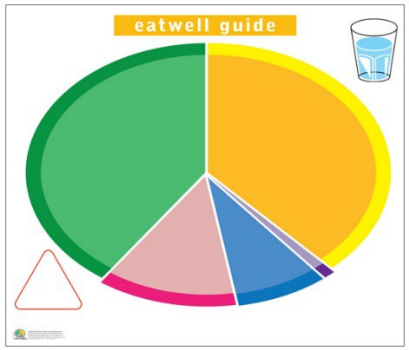
Other 30 mins - use examiner report from Mr Mann scenario to help self assess / peer assess with green pen - teacher marks and inputs scores into class tracker

Knowledge Rich Curriculum Plan

BTEC Extended Certificate in Sport / Unit 2

Fitness Training and Programming for Health, Sport and Well-being

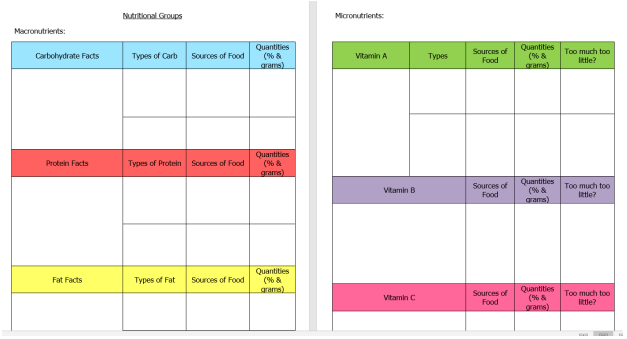
Learning Aim C - Understand programme-related nutritional needs

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
Lesson 1 LO – To learn about nutritional common terminology	<u>STARTER</u>: * What are the components of the Eat Well Plate?  <u>C1 - Common terminology</u> • Use pages 84 -87 in the text book and 58-59 of the revision guide • Create a 'Glossary of Terms' for all common terminology • Produce on computer so you can use it when you make preparation notes • Copy out the definition from the book. Then add further explanation in your own words. • Use colours and other tools to make the terms stand out and easy to revise from e.g. CAPITALS, **bold,** *italics.* <u>Glossary Sections</u> Use the following headings to split up your glossary and cover each point: • <u>Dietary Reference Values (DRVs)/ Recommended Daily Allowance (RDA)</u> • Reference Nutrient Intake - the best estimate of the amount of nutrient considered to be sufficient for 97% of people in the group • Estimated Average Requirements - the nutrient intake needed to meet the average (median) requirements of the group. About half of these people will usually need more than the EAR and about half will need less • Lower Reference Nutrient Intake - the amount of a nutrient that is sufficient for only a few members of the group who have exceptionally low requirements • Safe Intake - the range of intakes of a nutrient for which there is not enough information to establish RNI, EAR, LRNI. It is the amount sufficient for the majority of the group but not so large that it causes negative side-effects.	Eat well plate Dietary reference values Estimated average reuirements Lower reference nutrient intake Safe intake Energy	• *GCSE PE link: pupils know the 7 components of a balanced diet:* o Carbohydrates o Fats o Proteins o Water o Fibre (roughage) o Minerals o Vitamins	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Energy • Macronutrient - nutrients required in large amounts (carbohydrates, fats and proteins) to maintain health and well-being. • Micronutrients - nutrients required in small amounts (vitamins and minerals) to maintain health and wellbeing • Basal Metabolic Rate (BMR) - minimum rate of metabolism in an individual who is not digesting or absorbing food. BMR represents the lowest rate of energy usage that life can sustain. • Calories - one calorie is the energy needed to raise the temperature of 1 gram of water 1 degree C. • Joules - 1 joule of energy moves a mass of 1 gram at a velocity of 1m per second. Approximately 4.2 joules = 1 calorie. • Kilocalories (kcal) - one kilocalorie is the energy required to raise the temperature of 1 litre of water by 1 degree C. It is equal to 1000 calories and used to state the energy value of food. Kilocalories are often simply referred to as calories. • Kilojoules - (kj) - a unit of energy, equivalent to 1000 joules • Energy Balance - You are in energy balance when the amount of energy you take in as food and drink (your energy input) is the same as the amount of energy you expend (your energy output). You will neither lose or gain weight. **The 4 main components of energy expenditure are:** • Resting Metabolic Rate (RMR) - this is the metabolic rate of a person at rest and accounts for 60 - 75 % of total energy output. It represents the largest component of the total daily energy expenditure. • Dietary Thermogenesis (DT) - refers to any energy expended over RMR for digestion, absorption, transport and food storage. It is influenced by the calorie content and composition of your diet and your own nutritional needs. High energy intakes and a regular eating pattern help maintain higher rates of dietary thermogenesis. • Physical Activity (PA) - represents the most variable component of your total energy expenditure. This is the additional energy expended above RMR and DT, and in active individuals it can be the highest total daily energy use. • Adaptive Thermogenesis - this is the energy expended that comes from environmental or physiological stresses that may require you to respond by shivering, or stress that causes anxiety or fidgeting. • Basal Metabolism - to estimate energy requirements, you first need to calculate basal metabolic rate (BMR) in kilocalories per day. See table is text book (p86) • How is this affected by: age, gender, climate, physical activity • Age - basal metabolism decreases with age. After the age of 30, it falls by approximately 2% per decade • Gender - males generally have a greater muscle mass than females, so generally have a higher basal metabolic rate	Macronutrient Micronutrient Basal metabolic rate Calories Joules Kilocalories Kilojoules Energy Balance Resting metabolic rate Dietary thermogenesis Physical activity Adaptive thermogenesis Basal Metabolism		

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Climate - exposure to hot or cold climates causes an increase in basal metabolism to maintain the body's internal temperature. • Physical Activity - to estimate total requirements total energy requirements you also need to consider your physical activity and training. This involves taking account of the calories used in different physical activities and the intensity and length of time over which you did the activity. Energy Balance Questions 1) Explain what energy balance is 2) Describe how is weight loss and weight gain is achieved 3) Use diagrams to show each of these stages Homework • Using the equations and information in your text book: • Work out your own BMR • Work out Helen Jones' BMR Teacher each other • I will go through the first section on DRV's • In 2's or 3's split up the rest of the terms in each section between you • Learn your terms then take it in turns to teach the others about it (up to one minute on each!) • Listeners to fill in any gaps in information using their resources Relating to the scenario • When looking at these terms, start to think how they would relate to Helen Jones • You will be expected to comment on daily recommended calories and intake of each nutrient • Also how the individual's diet could be changed			
Lesson 2-4 LO – to learn about macronutrients and micronutrients	Low stakes quiz 1. What does RDA stand for? **Recommended Daily Allowance** 2. BMR is dependent on four factors: age, climate and what other two? **Gender and physical activity** 3. What nutrient is the main energy source for the body? **Carbohydrates** 4. How many calories should the average woman consume per day? **2000kcals** 5. How many *glasses* of water should you drink in a day? **6-8 glasses** 6. Which type of fat should only be consumed in very small amounts? **Saturated fat** 7. What are proteins required for in the body? **Growth and repair of muscles** 8. Milk contains an excellent source of which mineral? **Calcium** 9. Which non-food source do we gain most of our Vitamin D from? **Sunlight** 10. Which deficiency/disease can be caused by a lack of Vitamin C? **Scurvy**			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Understand the requirements of a balanced diet. • Macronutrients (carbohydrates, fats, protein), sources of food for each macronutrient, quantities. 1. Carbohydrates -two types a. simple carbohydrates (simplest carbohydrate unit is monosaccaride (mono=one) and saccharide=sugar) - easily digested - quick release (e.g. fruit, fruit juices, honey) b. Complex carbohydrates - broken down slowly and found in bread, pasta, rice, potatoes, beans, lentils. Unrefined sources such as **wholemeal bread, wholegrain rice and wholemeal pasta** are best as they contain a high nutritional value from macronutrients and provide a source of fibre. After you eat carbohydrates your blood sugar rises. This causes the pancreas to release insulin. Insulin normalises blood sugar levels and helps transport glucose from the blood to cells. Glucose is then used directly by the cells for energy or stored as glycogen for fuelling activity. 80% of glycogen is stored in the muscles and rest is stored in the liver. Glucose - a monosaccaride that is converted to glycogen in the body Glycogen - type of blood sugar and major fuel source that the body converts from dietary carbohydrates. Glycaemic Index - The glycaemic index (GI) is **a rating system for foods containing carbohydrates.** It shows how quickly each food affects your blood sugar (glucose) level when that food is eaten on its own. **High GI Foods** Carbohydrate foods that are broken down quickly by your body and cause a rapid increase in blood glucose have a high GI rating. Some high GI foods are: • sugar and sugary foods • sugary soft drinks • white bread • potatoes • white rice **Low and medium GI foods** Low or medium GI foods are broken down more slowly and cause a gradual rise in blood sugar levels over time. Some examples are: • some fruit and vegetables • pulses • wholegrain foods, such as porridge oats **Can low GI foods help me lose weight?** Low GI foods, which cause your blood sugar levels to rise and fall slowly, may help you feel fuller for longer. This could help control your appetite and may be useful if you're trying to lose weight. However, as mentioned above, not all foods with a low GI are healthy. Therefore, relying on GI alone is not a good way to decide whether foods or combinations of foods are healthy.	Macronutrients Simple Carbohydrates Complex Carbohydrates Wholemeal Insulin Glucose Glycogen Glycaemic Index High GI Foods Low GI Foods	• *GCSE PE link – pupils know the difference between simple and complex carbohydrates. Pupils should be able to names examples of foods for both categories of carbohydrates.*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Micronutrients (vitamins A, B, C and D, minerals calcium, iron), sources of food for each micronutrient, quantities. • Hydration (different requirements of fluid intake: climate, levels of exercise, programme type, time of year). • The effects on performance of dehydration and hyperhydration and the signs and symptoms of each. <u>Nutritional tables - one per person</u> • Complete the tables on the components of a balanced diet • Use pages 87-91 in the text book and 60-62 in the revision guide • Keep contents clear and concise • However, make sure you understand any other key facts that could be important when relating to your individual.  Nutritional Groups Macronutrients: Carbohydrate Facts / Types of Carb / Sources of Food / Quantities (% & grams) Protein Facts / Types of Protein / Sources of Food / Quantities (% & grams) Fat Facts / Types of Fat / Sources of Food / Quantities (% & grams) Micronutrients: Vitamin A / Types / Sources of Food / Quantities (% & grams) / Too much too little? Vitamin B / Sources of Food / Quantities (% & grams) / Too much too little? Vitamin C / Sources of Food / Quantities (% & grams) / Too much too little? **Misconception madness - spot the misconceptions - print off one per person** **Misconception Madness!!** 	Micronutrients Hydration Dehydration Hyperhydration		

Fact	True or False	Justification
BMR increases as you get older. After the age of 30 it increases approximately 2% per decade.	FALSE	BMR decreases with age. After 30 it falls by 2% per decade. This can result in people gaining weight as they older because they are used to eating the same food amounts as when they were younger but don't have the metabolism to burn it off.
Consuming more food than what you burn off will help you lose weight		
Recommended Daily Allowances are shown in percentages on food packets		
Around 70% of glycogen is stored in your liver ready to be broken down for energy		
Unsaturated fats are more likely to build up on artery walls		
Micronutrients are required in small amount by the body		

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment

	Hydration
	• Water is body's main transport mechanism
	• Carries nutrients, waste products and internal secretions
	• Regulates temperature and helps food pass through digestive system
	• 50-60% of body weight depending on age, gender and body composition. How does body type affect this?
	• Water is lost through urine, faeces, evaporated via skin and breathing out
	• High water loss can lead to dehydration.
	
	Different type of fluid intake
	• 10% of daily fluid requirements come from metabolic processes that release water into your body
	• 90% comes from diet (60% fluids, 30% food)
	• The amount of fluid needed is affected by:
	  • **Climate**
	  • **Levels of Exercise**
	  • **Programme Type**
	  • **Time of Year**
	Task - For each of the above explain how fluid requirements are affected. Make sure you include all key terms in bold.
	
	Dehydration
	* A reduction of normal water content in your body when you lose more than you take in.
	* Reduces strength, power and aerobic capacity
	* Can cause heat stroke and be fatal
	* A 2% loss of water in body mass can affect ability to perform
	
	Dehydration Signs (see) and Symptoms (feel)
	Signs (see) -
	Symptoms of dehydration in adults and children include:
	• feeling thirsty
	• dark yellow, strong-smelling pee
	• peeing less often than usual
	• feeling dizzy or lightheaded
	• feeling tired
	• a dry mouth, lips and tongue
	• sunken eyes
	
	Symptoms (Feel) -
	• you're feeling unusually tired (or your child seems drowsy)
	• you're confused and disorientated
	• you feel dizzy when you stand up and it does not go away
	• you have dark yellow pee or you're peeing less than normal (or your baby has fewer wet nappies)
		Hydration
		
		Dehydration
		
		Hyperhydration
		
		Dehydration
			• *GCSE PE link – pupils know the benefits of being hydrated and also know the physical consequences of being dehydrated in relation of sporting performance.*
			
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Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• you or your child are breathing quickly or has a fast heart rate • your baby or child has few or no tears when they cry • your baby has a soft spot on their head that sinks inwards (sunken fontanelle) Hyperhydration * An increase in normal water content in your body when you take in more than you lose. * Can be useful before starting exercise as it can improve thermoregulation (control body temp) but can also be dangerous. * Similar symptoms to dehydration that can lead to **hyponatremia** * What is this condition? Which athletes can it affect the most? Hyponatremia A condition where sodium levels in the blood are abnormally low. This causes nausea, vomiting, fatigue, headache or confusion. **Fluid intake when exercising** **Pre-Event Hydration** • **Amount**: Drink 300–500 ml of fluid approximately 10–15 minutes before exercise begins. • **Fluid Choices**: Water is a good choice, but a meal high in complex carbohydrates and fluid can also support hydration for the event. • **Timing**: Hydrate well before going to bed the night before a major event, and continue small, frequent intakes of fluid in the 45-60 minutes leading up to the event to avoid dehydration and allow for a final toilet stop. **During-Event Hydration** • **Amount**: Drink 150–200 ml of fluid every 15–20 minutes. • **Fluid Choices**: Small amounts of glucose-based sports drinks can be beneficial for exercises lasting longer than an hour to provide energy. • **Strategy**: Drink little and often, as it's the best way to stay hydrated and prevent symptoms of dehydration, which often occur if you start drinking too late. **Post-Event Hydration** • **Amount**: Replace losses by drinking 1.5 times the weight of fluid lost through sweat. • **Fluid Choices**:	Hyperhydration Hyponatremia		

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	Rehydration fluids should contain significant amounts of sodium and potassium to replenish salts lost through sweating and should be free from caffeine and alcohol. • **Benefits**: Proper hydration and electrolyte intake after exercise helps to restore fluid balance, maintain normal body temperature, and ensure efficient transport of oxygen and nutrients to muscles.	Electrolyte		
Lesson 5 <u>Nutritional Strategies</u>	Understand different strategies used on an individual basis by: • adapting diet to gain or lose weight. • **Diet can be adapted to lose or gain weight depending on your lifestyle or the requirements of your sport.** • Example 1 – a receptionist working for 10 years now needs to lose weight due to her inactive job • Example 2 – a sprinter needs to build muscle to develop her power so aims to gain weight • Example 3 – a boxer needs to lose weight ready for their next fight in the featherweight category. • Example 4 – Someone with a low BMI suffering from stress needs to gain weight **<u>Strategies to gain weight</u>** • Eat regularly • Don't drink before meals • Complete strength training • Treat yourself • Snack regularly • Eat nutritious foods • Add nutritious drinks to your diet **<u>Strategies to lose weight</u>** • Plan meals • Reduce alcohol • Don't stock junk food • Don't ban food groups • Use a smaller plate • Read food labels • Eat high fibre foods • Drink plenty of water • Get more active • Eat plenty of fruit and veg			

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Eat regular meals • Don't skip breakfast **Understand the use of ergogenic aids used in training programmes including positive and negative effects, and recommended timings:** • energy gels and bars • protein drinks • carbohydrate loading. **Task - questions - Strategies to use when training** • How are gains in lean body mass achieved? **Strength training programme** • What must be included in a diet to achieve these gains? **High protein, low fat diet** • What is optimal weight? **Optimal weight is an ideal weight for the body composition that enable an athlete to perform successfully in their sport/activity** • What sports are affected the most by optimal body weight? **Sports that involve competing in a weight category e.g. body building, horse racing, martial arts and rowing.** • What is a weight-controlled sport? Include examples. **Where a sport requires a person to be lower than their natural weight e.g. gymnastics, figure skating, distance running, diving.** • Why do they need to control their weight? **A lower body weight may help them perform more successfully e.g. less weight to carry over long distances or to get into the air.** • What dangerous ways do some athletes use to control their weight? **Fasting, skipping meals, laxative abuse, bingeing, purging, deliberate dehydration.** **Ergogenic Aids - 'Any aid that enhances physical performance'** • E.g. performing enhancing drugs, drinks, foods, clothing • Coaches and athletes look into ways of gaining advantage physically and mentally • Can be legal and acceptable to use	Ergogenic aids Energy bars/gels Protein drinks		

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• May have to get some on prescription • Some are illegal and if found out can lead to criminal charges and bans **Energy Gels and Bars** • Designed to replenish depleted carbohydrate stores after exercising • Must be consumed at least 30 minutes before exercising for best results • Light and easily digestible • Consumed on the go • But if consumed during exercise, the body wouldn't have time to digest the carbohydrate and turn it to glycogen so the working muscles can absorb it **Protein drinks** • Used to produce muscle, manufacturer hormones, enzymes and immune system components • Lack of protein means the body cannot put together important structures that makes cells, tissues and organs • Protein can also heal muscles and reduce chance of injury • Drinks are easier to absorb than solids so get to the muscles quicker • Drink after a workout • 30 minutes to take effect in the muscles **Carbohydrate loading** • Used by endurance athletes leading up to event • The body can usually stores enough glycogen to sustain 90 minutes of activity • After that you start to run out of energy and would need to refuel • Carbo loading helps to maximise glycogen stores in the muscles • Consume high carbohydrate diet and reduce training for about 3 days before event • 10g/kg extra carbs each meal • Eat more wholemeal bread, potatoes, rice, pasta, fruit juice **Understand the use of sports drinks for different types of training requirements including recommended timings and amounts:** • Hypotonic: For rapid fluid replacement without a significant energy source. • **Concentration**: Lower salt and sugar concentration than the human body. • **Purpose**: Quickly replaces fluids lost through sweat. • **Ideal For**: Short-duration, low-intensity exercise, or when rapid rehydration without a large carbohydrate boost is needed. • **Example**: Electrolyte drinks, sometimes with low carbs, providing hydration without a high energy load.	Carbohydrate loading Hypotonic	• *GCSE PE link – pupils should know the concept of carbohydrate loading and understanding why athletes do this before an endurance event takes place*	

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Prior Knowledge: *In order to know this students, need to already know that…*	Assessment
	• Isotonic: The preferred choice for most endurance athletes for a balance of hydration and energy. • **Concentration**: Similar salt and sugar concentration to the human body. • **Purpose**: Replaces lost fluids and provides some carbohydrates for energy. • **Ideal For**: Endurance activities lasting over an hour, such as middle- to long-distance running or team sports, offering a balanced approach to hydration and energy. • **Example**: Many common sports drinks fall into this category, providing a combination of electrolytes and carbohydrates. • Hypertonic: Primarily for post-exercise carbohydrate replenishment or during extreme endurance events, but should be used with caution. • **Concentration**: Higher salt and sugar concentration than the human body. • **Purpose**: Provides a concentrated dose of carbohydrates for maximum energy uptake. • **Ideal For**: Post-exercise to quickly replenish muscle glycogen stores or during very long ultra-distance events to meet high energy demands. • **Caution**: Can cause gastrointestinal discomfort like nausea or stitches if consumed during exercise. • <u>Aim to provide three nutrients:</u> • Carbohydrate – replace energy • Water – replace fluids • Electrolytes – replace important minerals e.g. sodium, potassium, magnesium lost through sweat	Isotonic Hypertonic		