Bellerive FCJ Catholic College
KS3 Scheme of Learning 2020 (Reviewed 2020 DH) – 9A The Healthy Body

KS3 Unit Overview – Big Picture

Subject/Year group/Unit Title	**Big picture questions**	**Pupils will focus particularly on the following statements from the programme of study:**
9A – The Healthy Body Lesson 1: The Breathing System and lung volumes. Lesson 2: Gas exchange. Lesson 3: Mechanism of breathing. Lesson 4: Exercise. Lesson 5: Smoking. Lesson 6: Asthma. Lesson 7: Mini Progress test. Lesson 8: Skeletal system. Lesson 9: Model arm. Lesson 10: Biomechanics. Lesson 11: Drugs. Lesson 12: Alcohol. Lesson 13: Mini Progress test.	**7** Organisms are organised on a cellular basis. 8 Organisms require a supply of energy and materials for which they are often dependent on or in competition with other organisms. 11 Science assumes that for every action there is one or more causes. 14 Applications of science often have ethical, social, economic and political implications.	BSG1: the structure and functions of the gas exchange system in humans, including adaptations to function BSG2: the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume BSG3: the impact of exercise, asthma and smoking on the human gas exchange system BSS1: the structure and functions of the human skeleton, to include support, protection, movement and making blood cells BSS2: biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles BSS3: the function of muscles and antagonistic muscles. BSH1: the effects of 'recreational' drugs (including substance misuse) on behaviour, health and life processes.
Assessment tasks:	**As FCJ educators, we will focus on the FCJ values by:**	We will ensure students skills in reading, writing, communication and mathematics are enhanced by:
Classwork low stakes tests. Homework assignments.	Companionship – working and listening to others.	Student reading of texts. Questioning of pupils.

EoU Assessment. Doddle tasks. Questions from CGP KS3 Biology Workbook: Extended writing tasks on disorders of breathing, smoking, drugs. Presentations on drugs. Routine homework tasks. Graphing and data analysis. Model making of lungs and muscle action.	Dignity – views of others respected and respect for own health. Excellence – progression from KS2 and towards Secure and Extending levels.	Comprehension exercises, ensuring full sentences are used. Extended writing tasks by pupils and poster work. Presentations by pupils. Spellings corrected by staff and acted on by pupils. Data analysis, use of tables, graphs work. Calculation of means and use of %.
We are supporting progression from KS2 in this unit by:	**We are supporting progression to KS4 in this unit by:**	**Misconceptions and how they will be addressed:**
Review of organs and systems of the body. Development of K&U on health issues e.g. asthma, arthritis, smoking, drugs.	Studying drugs and effects on nervous system. K&U on respiration and breathing.	Marking by teachers. Pupils self-marking (use of green/purple pens). Peer assessment. Verbal corrections in Q&A sessions. EBI time.

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<tr><th>Lesson Number/Title</th><th>Statement from PoS</th><th>Lesson Objectives

“We are learning to ….”</th><th colspan="2">Differentiated Learning Outcomes</th></tr>
<tr><td rowspan="3">1 Breathing.</td><td rowspan="3">BSG1: the structure and functions of the gas exchange system in humans, including adaptations to function
BSG2: the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume.</td><td rowspan="3">Be able to recall the main parts of the breathing system in humans.
Be able to link structure to function.
Be able to measure own lung volume.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>All pupils to know the parts of the human breathing system.</td><td>Pupils able to research diseases of breathing.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils are able to label the diagram of the human breathing system.
Pupils able to explain the function of the main parts.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Discuss with pupils why do animals need to breathe. Establish that breathing is needed to provide oxygen for aerobic respiration and remove carbon dioxide. Link back to Y8 Unit 8A (Food and Energy). Slide 1 on the Doddle PPT discusses tiny organisms and fish.
<u>Main</u>:
1. Show pupils the torso model and go through the main parts of the breathing system. Use Y8 Text page 30 and Doddle PPT Gas Exchange Systems Part 1.
2. Label the diagram ‘The Breathing System’.
3. Discuss the route taken by air through the system.</td><td colspan="2">Resources required:
Y8 Exploring Science Text.
CGP Biology pages 39 & 43.
Doddle PPT Gas Exchange Systems Part 1
Sheet - The Breathing System.
8Bd(8) Lung diseases comprehension sheet.
8Bd(6) Breathing and Respiration 1.
Lung volume bags.
Sterilising solution.
Mouthpieces.
Elastic bags.
FEV meter.</td></tr>
</table>

4. Discus the role of the ciliated epithelial cells Y8 Text page 31.
5. Show lung dissection and discusse https://www.youtube.com/watch?v=Mb5AjzWnPIk
6. Use Lung volume bags to measure the size of the lungs and collect data for class (use excel spread-sheet). Pupils can work out average and discuss the factors which affect lung volume. Could demo. the Forced Expiratory Volume (FEV) meter.

Plenary: Practice Qs. 1 page 40 and Q2. Page 44 can be used or spelling check of main structures using white-boards/back of book.
Homework: – Produce an A4 display on a lung disease e.g. asthma, CF, lung cancer, emphysema, TB etc.

Reading, writing, communication and mathematics:
Reading of the text.
A4 display using IT – EBI opportunity.
Data collection and analysis.

Key Words:
Trachea, bronchus, bronchiole, alveoli, intercostal muscles, diaphragm, ciliated epithelial cells, spirometer.

Key Questions:
How do other organisms obtain oxygen for respiration?

Risk Assessment (Practical subjects):

Hazard	Risk	Control Measure
Lung volume bag	Infection, asthma attack	Ensure bags and mouth pieces are clean, advise pupils not to over exert. Check medical lists.
FEV meter	Infection, asthma attack	Ensure meter and mouth pieces are clean, advise pupils not to over exert. Check medical lists.
Sterilising solution	Harmful.	Check dilution, advise pupils to wash skin if in contact. Wear safety glasses.

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“We are learning to ….”</td><td colspan="2">Differentiated Learning Outcomes</td></tr>
<tr><td rowspan="3">2 Gas Exchange.</td><td rowspan="3">BSG1: the structure and functions of the gas exchange system in humans, including adaptations to function</td><td rowspan="3">K&U of the role of the alveoli.
K&U of the adaptations of the gas exchange surface.
Ability to test for composition of inhaled and exhaled air.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>All pupils know how the lungs are adapted for efficient gas exchange.</td><td>Pupils able link SA, thickness of surface and concentration gradient to gas exchange.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils know why exhaled and inhaled air has different compositions and link to aerobic respiration in cells.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Demonstrate diffusion – air freshener/potassium manganate crystal in large beaker of water. Ensure that pupils know what diffusion is and why important in gas exchange. Links to work done on diffusion in Y7.
<u>Main</u>:
1. Structure of the alveolus. Pupils label a diagram of the alveolus. Emphasis on: large SA, thin layer, large concentration gradient. Use Doddle PPT.
2. Demonstrate to pupils how exhaled air contains less oxygen using tea light and candles. See Y8 text page 32.
3. Pupils can use ‘Suck blow tubes’ to show that exhaled air contains more carbon dioxide than inhaled.</td><td colspan="2">Resources required:
Y8 Exploring Science Text.
CGP Biology page 39.
Doddle Gas Exchange Systems Part 1.
2 gas jars, trough, rubber tubing, timer, tea lights – Demo.
Suck blow tubes x14 sets
Sterilising solution.
Fresh lime water.
Pulse oximeter demo.</td></tr>
</table>

4. Demonstrate the pulse oximeter that measures the oxygen level in the blood (normal = 95-99%). Pupils may have seen these in hospital on fingertips/ear lobes.
5. Pupils to draw out table B Y8 Text page 32. Answer Qs. Page 32.

Plenary:
Discuss how diseases can affect gas exchange – link to homework from previous lesson on lung diseases.
Qs. 4 & 5 CGP Biology page 40-41.

Reading, writing, communication and mathematics:
Reading of the text.
Completion of questions provided in full sentences.

Key Words:
Diffusion, surface area, concentration gradient, lime water, exhaled, inhaled, alveolus.

Key Questions:
How is a gas exchange system adapted for diffusion?

Risk Assessment (Practical subjects):

Hazard	Risk	Control measure
Glassware	Breakage, cuts.	Wear safety glasses, advise to take care.
Candles	Fire, burns	Teacher to use only.
Lime water	Harmful	Advise not to take deep breaths.
Mouth pieces	Infection, cuts.	Sterilise mouth pieces, check glass for cracks.
Pulse oximeter	Pupils' anxiety.	Advise about range of values are normal. Probe needs to pass through thin skin. Can be hard with darker skin tones.

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<tr><td rowspan="3">3 Mechanism of breathing.</td><td rowspan="3">BSG2: the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume.</td><td rowspan="3">K&U of the mechanism of breathing.
Be able to build a model to show how the lungs are ventilated.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>Knowledge of the mechanism of breathing.</td><td>Pupils able to understand pressure and volume changes involve in the breathing process.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils are able to describe the actions of the diaphragm and intercostal muscles in ventilation of the lungs.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Show pupils the Bell Jar model. Ask how this is like the human breathing system.
<u>Main</u>:
1) Discuss with the pupils how the lungs are ventilated.
2) Discuss the role of the diaphragm and the intercostal muscles in changing the volume/pressure in the ribcage. Doddle PPT good here and CGP text. Link back to the Bell Jar model as a good/bad model.
3) Use the Breathing Worksheet to summarise the process of breathing. Page 42 & 43 CGP.
<u>Plenary:</u>
Use Y9 Text page 22 to reinforce the mechanism of gas exchange. Qs. 3/4/5/6 can be used here also.
CGP QS. 1, 2 & 3 are useful here.
<u>Homework:</u></td><td colspan="2">Resources required:
Y9 Exploring Science Text.
CGP Biology page 42 & 43.
Sheet 9Bb (6) Model lungs.
Sheet 8Bd(7) Breathing & Respiration 2
Doddle PPT gas Exchange 1.
Sheet Breathe Easily Worksheet.</td></tr>
</table>

Pupils can use sheet 9Bb(6) Model Lungs to build a lung which can be ventilated to reinforce pressure and volume changes.	
Reading, writing, communication and mathematics: Reading of the text. Completion of questions provided in full sentences.	**Key Words:** Diaphragm, intercostal muscles, pressure, volume, ventilation, breathing.
Key Questions: What causes inhalation and what causes exhalation?	**Risk Assessment (Practical subjects)** Plastic bottle/Scissors – risk of cuts to skin – advise pupils to take care when completing homework.

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<tr><td rowspan="3">4 Exercise on breathing.</td><td rowspan="3">BSG3: the impact of exercise, asthma and smoking on the human gas exchange system</td><td rowspan="3">Know that during exercise breathing rate increases and depth of breathing increases.
Know that respiration in cells increases during exercise.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>Pupils know that exercise increases respiration which requires more oxygen from breathing.</td><td>Pupils know that exercise requires that more carbon dioxide removed. Pupils can analyse data related to exercise.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils can complete own investigation, plot results and explain them.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Use Sheet 9Ba(10) to discuss the S – factors. Strength, Stamina, Suppleness and Speed and how they relate to fitness.
<u>Main</u>:
1. Complete investigation on Exercise and Breathing using sheet 8Bc(4).
2. Pupils to plot results and explain results.
3. Discuss with pupils how increases in breathing rate/depth allows more oxygen to be delivered to the muscle cells and more carbon dioxide to be taken away from the muscle cells. This allows more aerobic respiration in them – link to Y8.
4. Record effects of exercise on breathing in books.
<u>Plenary:</u>
Qs. 4 page 47 CGP Biology Effect of Training on Exercise or use Sheet 9Ba(1) Fighting Fit to summarise the effects of exercise on the body.</td><td colspan="2">Resources required:

Y9 Exploring Science Text.
CGP Biology Text page 45.
Sheet 9Ba(10) S-Factors
Sheet 9Ba(1) Fighting Fit
Sheet 8Bc(4) Exercise and Breathing.
Sheet 9Ba(9) Breathing rates.
Doddle PPT Gas Exchange Systems 2.
Stop clocks.
Pupils to wear trainers.</td></tr>
<tr><td colspan="3">Reading, writing, communication and mathematics:
Completion of work sheets.</td><td colspan="2">Key Words:</td></tr>
</table>

<table>
<tr><td>Reading of the text.
Data collection and analysis.</td><td>Aerobic respiration, breathing rate, depth of breathing, strength, stamina, suppleness, speed.</td></tr>
<tr><td>Key Questions:
How does breathing change during exercise?
Why does breathing change during exercise?</td><td>Risk Assessment (Practical subjects):
<table>
<tr><th>Hazard</th><th>Risk</th><th>Control measure</th></tr>
<tr><td>Exercise</td><td>Over-exertion/asthma attack/falls.</td><td>Advise pupils, check medical lists, monitor throughout.</td></tr>
</table></td></tr>
</table>

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“We are learning to ….”</td><td colspan="2">Differentiated Learning Outcomes</td></tr>
<tr><td rowspan="3">5 Smoking</td><td rowspan="3">BSG3: the impact of exercise, asthma and smoking on the human gas exchange system</td><td rowspan="3">K&U of the health and social problems of smoking.
Appreciate why smokers need to give up smoking or not start.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>All pupils know the chemicals present in cigarettes and the harm they cause to the body.</td><td>Pupils can attribute chemicals in smoke to particular affects in the body.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils can complete sheets on smoking with little support.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Can show warnings on cigarette packets to stimulate discussion of harmful effects of smoking. (Needs sensitivity as shocking!)
https://tobaccolabels.ca/countries/united-kingdom/
<u>Main</u>:
1. Demonstrate the smoking machine using Sheet 9Bb(8). Emphasise how cigarettes contain: tar, acid gases, carbon dioxide/monoxide. Need a fume cupboard.
2. Or use You Tube clip.
3. Use Y9 Text page 23 to discuss the health and social problems of smoking. Doddle PPT covers this well.
4. Must know that:
Nicotine = stimulant (addictive), Tar = causes cancer, Carbon monoxide = affects growth of embryos, Irritants = irritate the airways.
Discuss how smoking affects ciliated epithelial cells.
5. Discuss giving up smoking. Use Y9 Text page 23 – picture C and Qs. 2.
6. Discuss with pupils use of e-cigarettes, nicotine patches, passive smoking.
<u>Plenary:</u></td><td colspan="2">Resources required:

Y9 Exploring Science Text.
CGP Biology page 46.
Doddle PPT Gas exchange systems Part 2.
Sheet 9Bb(8)
Sheet 9Bb(2)
https://tobaccolabels.ca/countries/united-kingdom/
Smoking Machine set up in fume cupboard.
https://www.youtube.com/watch?v=ghrmFrTSlW8 - If fume cupboard unavailable.</td></tr>
</table>

<table>
<tr><td>Use Sheet 9Bb(2). Smoke signals crossword to summarise the issues related to smoking.
Practice Qs. 1 page 46 CGP Biology.
Homework: Poster to encourage people to give up smoking or not start.</td><td></td></tr>
<tr><td>Reading, writing, communication and mathematics:
Reading of the text.
Completion of questions provided in full sentences.
Analysis of data on smoking.</td><td>Key Words:
Tar, nicotine, carbon monoxide, cancer, emphysema, heart attacks, stroke, chronic bronchitis, irritants.</td></tr>
<tr><td>Key Questions:
How does smoking damage the body?
How can smokers be encouraged to stop smoking?</td><td>Risk Assessment (Practical subjects):
<table>
<tr><td>Hazard</td><td>Risk</td><td>Control measure</td></tr>
<tr><td>Images of effects of smoking.</td><td>Upset pupils</td><td>Sensitivity needed.</td></tr>
<tr><td>Glassware</td><td>Breakages, cuts</td><td>Teacher demo. only.</td></tr>
<tr><td>Lime water</td><td>Harmful</td><td>No contact with pupils</td></tr>
<tr><td>Harmful gases</td><td>Inhalation</td><td>Use a fume cupboard.</td></tr>
<tr><td>Universal indicator</td><td>Harmful</td><td>No contact with pupils.</td></tr>
<tr><td>Matches</td><td>Fire, burns.</td><td>Teacher to use only.</td></tr>
<tr><td>Cigarettes</td><td>Acquired by pupils</td><td>Teacher to use only.</td></tr>
</table></td></tr>
</table>

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“We are learning to ….”</th><th colspan="2">Differentiated Learning Outcomes</th></tr>
<tr><td rowspan="3">6 Asthma.</td><td rowspan="3">BSG3: the impact of exercise, asthma and smoking on the human gas exchange system</td><td rowspan="3">Know what asthma is.
Understand how symptoms of asthma can be treated or prevented.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>All pupils know what can cause asthma and how it can be managed.</td><td>Pupils can interpret data on asthma.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils are able to produce a presentation which focuses on an aspect of asthma and feedback to class.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Show Animation – What happens in an asthma attack Doddle KS3 animation.
or https://www.asthma.org.uk/advice/understanding-asthma/what-is-asthma/
Discuss with pupils taking care as many pupils suffer from asthma.
<u>Main</u>:
1. Use booklet/poster on asthma as a resource and own K&U.
Pupils to produce a poster on an aspect of asthma:
• What is asthma
• What can trigger it
• Asthma medicines
• Living with asthma.
IT suite could be booked for this task.
<u>Plenary:</u>
Pupils give feedback on presentations.</td><td colspan="2">Resources required:
Asthma and my child booklet.
IT suite.
Doddle PPT Gas Exchange Systems 2.
CGP Biology page 45.
https://www.asthma.org.uk/advice/understanding-asthma/what-is-asthma/</td></tr>
<tr><td colspan="3">Reading, writing, communication and mathematics:
Reading of the booklet.
Presentations by pupils to whole class.</td><td colspan="2">Key Words:
Asthma, trigger, spacer, inhaler, attack, reliever, preventer, steroids, triggers.</td></tr>
</table>

Key Questions:	**Risk Assessment (Practical subjects):**
How does asthma affect the breathing system? Why has asthma increased in recent years?	Consideration as pupils may be sufferers or know people affected by the condition.

Lesson 7 – Mini Progress Test 1 (40 mins.)

Pupils should be set revision homework in preparation for this.

The Mini Quizzes on Doddle can be set for homework or done in class to prepare for this assessment.

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<tr><td rowspan="3">8 The skeletal system.</td><td rowspan="3">BSS1: the structure and functions of the human skeleton, to include support, protection, movement and making blood cells</td><td rowspan="3">Know that functions of the skeleton.
Be able to label a diagram of the human skeleton.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>All pupils know the 4 functions of the skeleton and can know the main bones in the body.</td><td>Pupils are able to use the correct anatomical names for the skeleton.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils are able to label a diagram of the human skeleton and know the role of joints in the body.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Use the skeleton and ask pupils to label as many bones as they can. Use the labels from Taster Day.
<u>Main</u>:
1. Use Y9 Text page 28 and Sheet ‘Human skeleton’ to label the main bones. Use the skeleton to show the main bones and explain their role.
2. Describe the functions of the skeleton emphasising that it is made of living cells. Use Doddle PPT to help with this. Pupils must know that there are 4 jobs of the skeletal system.
3. Discuss bone structure and breaking bones.
4. Define what a joint is and show on skeleton. Pupils to label the diagram of a joint Sheet – Joint diagram. Need to know: Tendons, ligaments, cartilage and synovial fluid.
<u>Plenary:</u>
Qs. 1, 2, 3, 5 & 6 CGP Biology.
<u>Homework</u>:
Sheet 9Bd(8) Wearing away – links the structure of joints to arthritis and hip replacement.</td><td colspan="2">Resources required:
Y9 Exploring Science Text.
Skeleton.
Laminated labels of the bones and blu-tack.
Doddle PPT Skeletal and muscular systems Part 1
CGP Biology Page 32-33
Sheet Human Skeleton.
9bd(5) Skeleton cut and stick
Sheet Joint structure
Sheet 9Bd(8) Wearing away
Skeleton
Joints to demonstrate to pupils.</td></tr>
</table>

Reading, writing, communication and mathematics: Labelling diagram. Comprehension task.	**Key Words:** Skeleton, bone marrow, ligaments, tendons, synovial fluid, cartilage.
Key Questions: How do you know that bones are living? How can worn joints be treated?	**Risk Assessment (Practical subjects):** None.

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<tr><td rowspan="3">9
How muscles work - a model arm.</td><td rowspan="3">BSS3: the function of muscles and antagonistic muscles.</td><td rowspan="3">Be able to model the antagonistic muscles in the arm.
K&U on the action of muscles.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>All pupils understand how the muscles of the forearm allow movement.</td><td>Pupils can apply K&U to other muscle system in the body.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils are able to build a model forearm and explain how it works.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Use the Doddle Mini Quiz Skeletal Systems to review the work done on bones and joints.
<u>Main</u>:
1. Use Sheet 9Bd(3) Antagonistic muscle model. Pupils to follow instructions and build a model arm. N.B. String to be knotted at ONE end only as otherwise the model does not work! Ensure that the brass pin moves freely to allow the card to move.
2. Pupils to attached to book and answer the questions Sheet 9Bd(1) – can be displayed to whole class.
3. Explain antagonistic action of the muscles in the forearm.
<u>Plenary:</u>
Use Qs. 6-8 to reinforce K&U
<u>Homework</u>:
Sheet 9Bd(7) Muscles and Joints – reinforces K&U.</td><td colspan="2">Resources required:
Y9 Exploring Science Text.
Doddle PPT Skeletal and muscular systems Part 1.
CGP Biology page 35.
Sheet 9Bd(3).
Sheet 9Bd(1)
Sheet 9Bd(7)

Thin string
A4 Card
Butterfly clip
Sharp scissors.
Mounted needle to make holes</td></tr>
<tr><td colspan="3">Reading, writing, communication and mathematics:
Questions on arm model.
Verbal feedback.
Comprehension exercise on muscles in the legs (Possible EBI)</td><td colspan="2">Key Words:
Biceps, triceps, elbow, contract, relax, antagonistic pair.</td></tr>
<tr><td colspan="3">Key Questions:</td><td colspan="2">Risk Assessment (Practical subjects):</td></tr>
</table>

What would happen to the joint if both muscles contracted?
Why are nerves important for our muscles?

Hazard	**Risk**	**Control measure**
Scissors	Cuts	Advise pupils to take care.
Brass butterfly clips	Sharp can cut.	Advise pupils to take care.
Mounted needle	Cuts.	Advise pupils to make hole over a book not on skin.

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<tr><td rowspan="3">10 Biomechanics.</td><td rowspan="3">BSS2: biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles</td><td rowspan="3">Pupils are able to measure the force applied by different muscles.
Pupils know how muscles and skeleton interact.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>Pupils know that the study of forces acting on the body is called biomechanics.
Understand the principle of moments.</td><td>Pupils can apply calculate the force applied by a muscle.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils can identify the pivot, the moment and the force in the joints of the elbow.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Show pupils a see-saw (draw on board) and remind them of the principle of moments from Y8 Science. Can use whiteboards for this – get them to draw a see saw and label the terms lever, pivot, force, moment (turning force).
<u>Main</u>:
1) Remind pupils of the Principle of Moments from Y8.
Moment = force x perpendicular distance.
2) Explain that Biomechanics is the study of forces acting on the body. Very important in Sports.
3) Explain that the bones and muscles of the body act as levers and the principle of moments applies to them.
4) Draw out the diagram page 36 CGP Biology (top of page) and clearly identify the weight (force), pivot and distance from the pivot and calculate the moment of the weight).
5) Explain that the muscle (biceps) must apply a force in the opposite direction to keep the weight still or a larger force to lift the weight up.</td><td colspan="2">Resources required:
CGP Biology pages 35-37.
Doddle PPT Skeletal and muscular systems Part 2.</td></tr>
</table>

6) Use the Doddle PPT to show that the force applied by the biceps must be very large as it acts very close to the pivot. 7) Show how to calculate the Moment and the Force using the Moment Equation. This is hard as the equation needs rearranging. Qs 2. CGP page 38. **Plenary:** Quick fire questions page 37.	
Reading, writing, communication and mathematics: Using the moment equation and re-arranging the formula.	**Key Words:** Lever, pivot, weight, force, moment, biomechanics, Newton.
Key Questions: What is biomechanics and why is it useful?	**Risk Assessment (Practical subjects):** See-saw demo – no hazards.

<table>
<tr><td>Lesson Number/Title</td><td>Statement from PoS</td><td>Lesson Objectives

“We are learning to ….”</td><td colspan="2">Differentiated Learning Outcomes</td></tr>
<tr><td rowspan="3">11 Recreational Drugs.</td><td rowspan="3">BSH1: the effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes</td><td rowspan="3">K&U on what a drug is.
K&U on what recreational drugs are and how they affect the body.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>Pupils know which drugs are legal/illegal. Pupils know the actions of different drugs.</td><td>Pupils can link drug action to activity in the nervous system. Pupils can consider the problems of drug use in society.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils able to make a correct summary of types of drug and their action and problems.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Ask pupils to write down as many drugs as they are familiar with using whiteboards. Discuss which are legal or illegal.
<u>Main</u>:
1. Use Y9 Text page 26 to discuss what a drug is and the difference between medicines and recreational drugs. Show samples of drugs (legal!). Use Doddle PPT Drugs Part 1.
2. Discuss the main actions of drugs on the body: Stimulants, depressants, painkillers, hallucinogens.
3. Discuss the problems associated with drug taking.
4. Use Sheet 9Bc(4) Drugs – pupils to produce a display in their books of the drugs discussed – to include type of drug and problems they cause.
<u>Plenary:</u>
Review pupils work – ensure drugs are correctly described.
Qs. 1, 2, 3 CGP Biology pages 56-57.</td><td colspan="2">Resources required:
Y9 Exploring Science Text.
Doddle PPT Drugs part 1 = Types of drug.
Doddle PPT Drugs part 4 = Addiction.
CGP Biology pages 55-56.
Sheet 9Bc(4)
Samples of drugs/medicines (empty packages).</td></tr>
<tr><td colspan="3">Reading, writing, communication and mathematics:</td><td colspan="2">Key Words:</td></tr>
</table>

Display of different types of drugs and their actions on the body.	Drug, medicine, recreational drug, stimulant, depressant, painkiller, hallucinogen, addiction, withdrawal.
Key Questions: Why do people take drugs? What problems can drug use present? Health and social.	**Risk Assessment (Practical subjects):** Drug display – pupils may take cigarettes – monitor any drugs at all times.

Bellerive FCJ Catholic College
KS3 Scheme of Learning 2020 (Reviewed 2020 DH) – 9A The Healthy Body

<table>
<tr><td>Lesson Number/Title</td><td>Statement from PoS</td><td>Lesson Objectives

“We are learning to ….”</td><td colspan="2">Differentiated Learning Outcomes</td></tr>
<tr><td rowspan="3">12 Recreational Drugs – Alcohol.</td><td rowspan="3">BSH1: the effects of ‘recreational’ drugs (including substance misuse) on behaviour, health and life processes</td><td rowspan="3">K&U on the effects of alcohol on the body and social problems.</td><td>Good progress looks like…..</td><td>Outstanding progress looks like ….</td></tr>
<tr><td>Pupils know that alcohol is a depressant and the organs of the body which are damaged by it.</td><td>Pupils can link alcohol to activity in the nervous system. Pupils can consider the problems of alcohol use in society.</td></tr>
<tr><td colspan="2">Assessment: How will you know students are making at least good progress in this lesson?
Pupils able to correctly answer questions on alcohol and plot a graph of the time line for alcohol in the body.</td></tr>
<tr><td colspan="3">Suggested Teaching Activities:
<u>Starter</u>:
Ask pupils to use Y9 text page 27 – picture D. Get them to work out how many drinks a person could have in a week to stay below the advised limit. Discuss results.
<u>Main</u>:
1. Use Y9 Text page 27 to discuss the problems of alcohol use.
2. Pupils to complete Sheet 9Bc(6) on Alcohol Abuse. Check answers with pupils.
3. Discuss the social problems of drinking in excess.
4. Use Sheet 9Bc(7) Blood alcohol concentration to consider how the body deals with alcohol. Plot graph from the data.
<u>Plenary:</u>
Debate – Alcohol be banned in the UK? Pupils to consider reasons for and against this.
<u>Homework</u>: Qs. 4 CGP Biology page 57 (Alcohol on reaction time).</td><td colspan="2">Resources required:
Y9 Exploring Science Text.
CGP Biology page 56.
Doddle PPT Drugs Part 3 – Alcohol.
Sheet 9Bc(6)
Sheet 9Bc(7)</td></tr>
<tr><td colspan="3">Reading, writing, communication and mathematics:
Comprehension task on alcohol.</td><td colspan="2">Key Words:
Alcohol, depressant, drug, cirrhosis.</td></tr>
</table>

Graphing and interpretation of data on how the body deals with alcohol.	
Key Questions: Why do people take drugs? What problems can drug use present? Health and social.	**Risk Assessment (Practical subjects):** None.

Lesson 13 – Mini Progress Test 2 (40 mins.)

Pupils to be set revision in preparation for the Progress test.

To prepare for tests the Mini Quizzes on Doddle can be set for pupils to complete or they could be done in lessons.