

# VITAMIN D: THE SUNSHINE VITAMIN



## Key Stage 3 Lesson Plan

**This resource will provide an outline for an assembly/lesson plan that can be adapted to fit with your school priorities and age group. The plan is presented as a 25-30-minute lesson plan, ideal for KS3 pupils.**

Target Audience: Key Stage 3 pupils

Resources: PowerPoint, Screen, flip chart and pen (optional), examples of vitamin D fortified food packaging (optional)

Curriculum links: PSHE, Health Education, Science

Duration: 25-30 minutes

| Time    | Slide(s) | Topic                     | Notes/script                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| 30 secs | 1        | Introduction              | Introduce the session and remind pupils that if they have a question to raise their hand.                                                                                                                                                                                                                                                                                                                                            |
| 1 min   | 2        | Learning outcomes         | Read out the learning outcomes from the slide.                                                                                                                                                                                                                                                                                                                                                                                       |
| 2 mins  | 3        | What are vitamins?        | Explain to the pupils that vitamins (and minerals) are nutrients your body needs in small amounts to work properly and stay healthy and that most people should get all the nutrients they need by having a varied and balanced diet, although some people may need to take extra supplements. Vitamins all have different functions and are found in a variety of food and drink sources. Ask pupils if they can name any vitamins. |
| 2 mins  | 4        | What are vitamins? (cont) | Explain to pupils the role of vitamin C and calcium by reading through the bullet points.                                                                                                                                                                                                                                                                                                                                            |
| 1 min   | 5        | What about vitamin D?     | Ask pupils if they have heard of vitamin D. Explain to pupils that vitamin D is unique because it is found in both sunlight and food. It requires a special process in the body for it to be useful, so even though we call it a vitamin it is in fact a hormone. A hormone is a chemical made by special cells, that is released into the bloodstream to send a message to another part of the body                                 |
| 1 min   | 6        | The sunshine vitamin      | Explain to pupils that we make vitamin D under our skin when we are out in sunlight, which is why vitamin D is called the 'sunshine vitamin'. Sunshine, not food, is where most of our vitamin D comes from.                                                                                                                                                                                                                         |

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| 2 mins | 7  | The sunshine vitamin                           | Read through the bullet points on the slide.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2 mins | 8  | Be sun smart!                                  | <p>Explain to the pupils most people can make enough vitamin D from being out in the sun daily for short periods with their arms, hands and legs uncovered and without sunscreen from late March to October, especially between 11am and 3pm, but we must be careful not to burn in the sun.</p> <p>Explain to the pupils it is important that we -</p> <ul style="list-style-type: none"> <li>✓ Make sure to cover up or protect your skin with sunscreen before your skin starts to turn red or burn.</li> <li>✓ Wear sunglasses, a hat and try and find shade.</li> <li>✓ Do not spend too much time in the sun around mid-day in June and July</li> </ul> |
| 1 mins | 9  | Importance of vitamin D                        | <p>Explain to the pupils that the main function of vitamin D is to help the body absorb calcium. Calcium and vitamin D work together to make sure our teeth and bones are strong.</p> <p>Ask pupils if they can remember some of the foods that contain calcium?</p> <p>Even if you have a calcium-rich diet, you cannot absorb the calcium into your bones without enough vitamin D.</p>                                                                                                                                                                                                                                                                     |
| 2 mins | 10 | Importance of vitamin D                        | <p>Explain to the pupils that vitamin D is also important for muscle function as a lack of vitamin D can make the muscles weak. It is also thought that vitamin D may also have a role in immune function and protecting the body from nasty infections.</p>                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2 mins | 11 | What happens if we don't get enough vitamin D? | <p>Explain to the pupils that two of the conditions that can occur as a result of a lack vitamin D in the diet are rickets and osteomalacia.</p> <p>In children - a deficiency of vitamin D is called <u>rickets</u> – a condition affecting bone development that can lead to deformity of the skeleton.</p> <p>In adults – this is called <u>osteomalacia</u> – a very painful condition caused by the bones being weak or soft.</p> <p>Explain that the number of children having to go to hospital with rickets is now the highest in FIVE decades!</p>                                                                                                   |

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| 1 min  | 12 | Vitamin D and immunity                  | Explain to the pupils that the current Covid-19 pandemic has highlighted more than ever the importance of a strong immune system and that research has suggested low vitamin D levels are associated with an increased risk of becoming very ill with Covid-19, but as the Covid-19 virus is still quite new, the evidence is still emerging                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1 min  | 13 | Our immune system                       | Explain to the pupils that we are surrounded by millions of bacteria, viruses and germs that can enter our bodies, some of which can cause harm.<br>Explain that our immune system is the body's defence against harmful germs, also known as microbes and pathogens.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1 min  | 14 | Our immune system                       | Explain to the pupils that the immune system is made up of lots of defences such as your skin (acting as a barrier), strong acid stomach juices, and white blood cells that work to protect your body against infection. Explain that if someone is deficient in vitamin D, they may be more susceptible to infection.<br>Remember - a healthy, balanced diet including a variety of fruits and vegetables helps to support normal immune function.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2 mins | 15 | Vitamin D in the lifecycle              | Read through the boxes on the slide, starting with babies and infants and ending with the elderly.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3 mins | 16 | Who is at risk of vitamin D deficiency? | Explain to the pupils that certain groups of people are more at risk of vitamin D deficiency than others. It is important for these groups to make sure they are taking a vitamin D supplement, or eating more sources, both natural and fortified, of vitamin D.<br><br>Read through the list -<br><ol style="list-style-type: none"> <li>1) Babies and young children</li> <li>2) Pregnant and breastfeeding women</li> <li>3) People who cover most of their skin when they are outside</li> <li>4) People with darkest skin tones living in the UK or other Northern climates – people of African, Asian, Afro-Caribbean and Middle Eastern descent</li> <li>5) Anyone who spends a lot of time indoors – the housebound, shop and office workers, night shift workers</li> <li>6) People over 65 years old</li> </ol> <p>On the next slide, we will go on to understand why children and adults with darker skin are at a greater risk of Vitamin D deficiency.</p> |

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| 2 mins  | 17 | Who is at risk of vitamin D deficiency?      | <p>Explain to the pupils that low Vitamin D status is very common in Black, Asian, Minority and Ethnic Groups because darker skin produces far less Vitamin D than lighter skin.</p> <p>Explain that this may also be because some groups wear clothing that covers the majority of the skin – such as a Niqaqs, Burkas, Hijabs, Abayas, Chadors and Thobes – meaning the sun's rays can't be absorbed!</p>                   |
| 1 min   | 18 | Where else can we get vitamin D?             | <p>Explain to the pupils that as sunlight in the Autumn and Winter is not strong enough for our bodies to make vitamin D, the Government recommends that everyone takes a daily vitamin D supplement (10µg micrograms) between October and March.</p>                                                                                                                                                                         |
| 30 secs | 19 | Where else can we get vitamin D?             | <p>Explain to the pupils that groups who are at risk of Vitamin D deficiency, such as those with dark-toned skin or who wear clothes that cover up their skin, are advised to take a supplement all year round!</p>                                                                                                                                                                                                           |
| 30 secs | 20 | Food for thought – can we eat our vitamin D? | <p>Explain to the pupils that whilst sunshine, not food, is where most of our vitamin D comes from – there are still some handy sources of Vitamin D that can help boost our intake.</p>                                                                                                                                                                                                                                      |
| 2 mins  | 21 | Game: Guess the food sources of vitamin D.   | <p>Tell the pupils that we are going to play a quick game before talking about food sources of vitamin D to see what the pupils may know already. (Go through answers after each question).</p> <ol style="list-style-type: none"> <li>1) Are potatoes OR fortified cereals a source of vitamin D?</li> <li>2) Are eggs yolk OR spinach a source of vitamin D?</li> <li>3) Is lamb or fruit a source of vitamin D?</li> </ol> |
| 2 mins  | 22 | Food sources of vitamin D                    | <p>Explain to the pupils that vitamin D is found in oily fish such as salmon, sardines and mackerel, chicken, lamb and egg yolks.</p>                                                                                                                                                                                                                                                                                         |
| 2 mins  | 23 | Foods fortified with vitamin D               | <p>Explain to the pupils that some foods are fortified with vitamin D, such as breakfast cereals, margarine spreads, yoghurts and juices.</p> <p>Ask the pupils to try and find a 'fortified with vitamin D' label next time they go to the supermarket.</p>                                                                                                                                                                  |

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| 30 secs | 24 | QUIZ                     | Explain to the class that you will now be doing a short quiz, to see what they can remember from the presentation. (After a few have shouted out an answer, reveal answer).                                                                                                                                                                                                                                                                                                                            |
| 30 secs | 25 | Question 1               | Even though we call it a vitamin, vitamin D is actually a _____.<br>*hormone.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 30 secs | 26 | Question 2               | Does most of our vitamin D come from food or sunlight?<br>*sunlight                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 30 secs | 27 | Question 3               | What is the main job of vitamin D?<br>*to help the body absorb calcium                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 30 secs | 28 | Question 4               | What does your immune system do?<br>*defends the body against harmful bacteria/germs                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 30 secs | 29 | Question 5               | In children, vitamin D deficiency can result in a condition called _____.<br>*rickets                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 30 secs | 30 | Question 6               | Name three groups of people at risk of vitamin D deficiency.<br>1) Babies and young children<br>2) Pregnant and breastfeeding women<br>3) People who cover most of their skin when they are outside<br>4) People with darkest skin tones living in the UK or other Northern climates – people of African, Asian, Afro-Caribbean and Middle Eastern descent<br>5) Anyone who spends a lot of time indoors – the housebound, shop and office workers, night shift workers<br>6) People over 65 years old |
| 30 secs | 31 | Question 7               | Name one food naturally high in vitamin D and one fortified product.<br>*Food – lamb, chicken, fish, eggs<br>*Fortified – cereal, yoghurts, spreads                                                                                                                                                                                                                                                                                                                                                    |
| 2 mins  | 32 | Key points               | Read through the bullet points on the slide.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2 mins  | 33 | Home activity (optional) | Read through the bullet points on the slide (maybe print out this slide to hand out to pupils to take home)                                                                                                                                                                                                                                                                                                                                                                                            |
| 1 min   | 34 | What we have learnt      | Read through the learning outcomes on the slide.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1 min   | 35 | End                      | Ask the pupils if they have any questions                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**This lesson plan was developed by Chloé Higham-Smith, Alex Holt and Beth Bradshaw on behalf of Food Active.**  
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