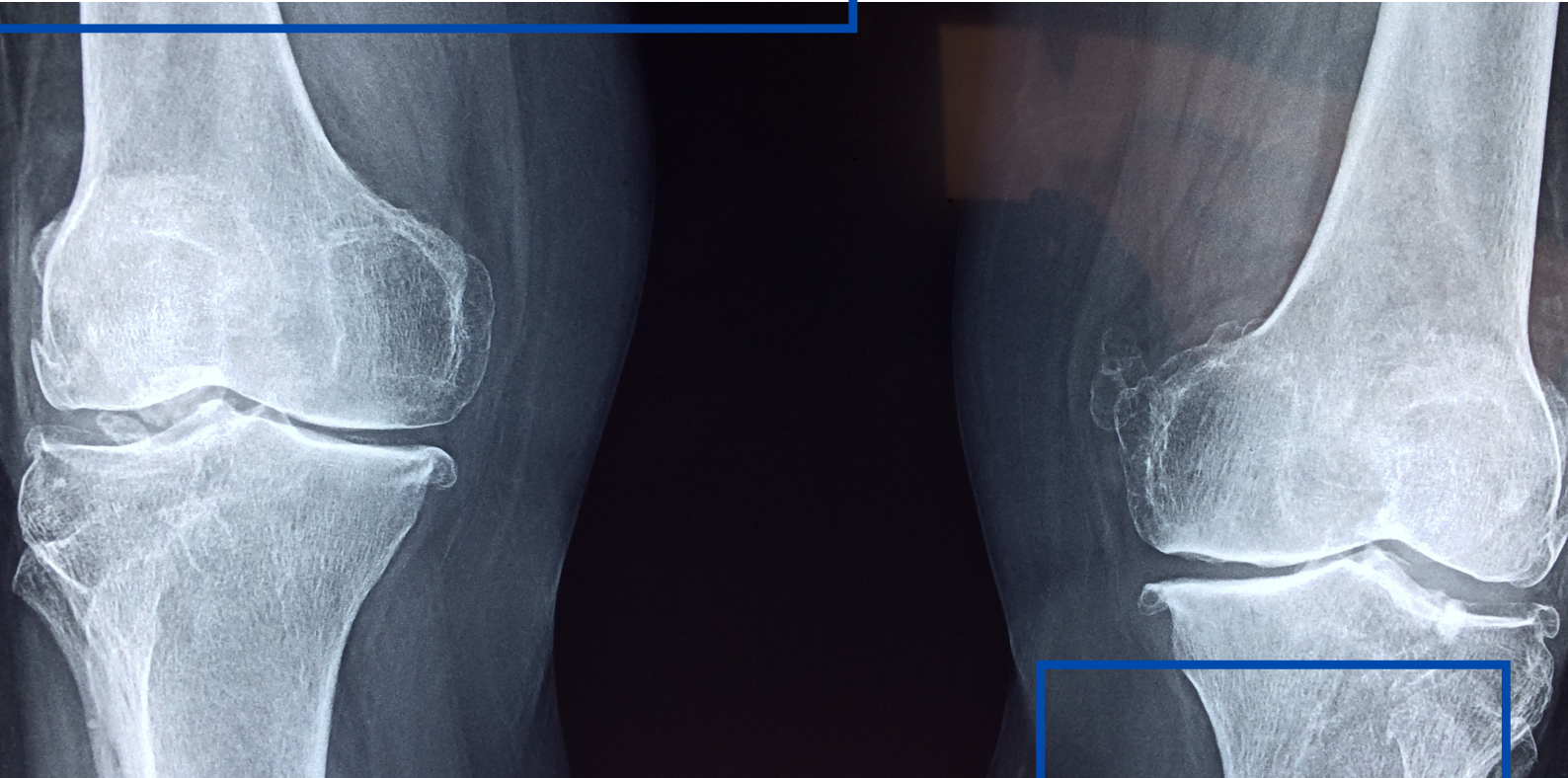


# ***OSTEOPOROSIS AWARENESS WORKBOOK***

PDHPE Stage 5 Teacher Workbook

STUDENT NAME:



## **INTRODUCTION**

### **WHY OSTEOPOROSIS AWARENESS?**

Osteoporosis is a common disease affecting over 1 million Australians. This disease makes bones become brittle leading to a higher risk of breaks than in normal bone. Osteoporosis occurs when bones lose minerals, such as calcium, more quickly than the body can replace them, causing a loss of bone thickness (bone density or mass). Thus, bones become more porous and less dense so that even a minor bump or fall can result in a fracture.

Bones have many critical functions in our body. For children, strong healthy bones assist in reaching their optimum growth level. Bones reach their peak bone mass in your 20s, which is when our bones are at their strongest. For adults, strong healthy bones mean you can maintain your bone density and lead a fit and active life well into old age. Strong bones reduce the risk of fractures in later life. This program hopes to educate our youth to ensure recognition of Osteoporosis occurs at an age where individuals have the capacity to build their peak bone mass!

WITHIN THIS  
WORKBOOK:

**02** *LESSON ONE*

**07** *LESSON TWO*

**10** *LESSON THREE*

**15** *LESSON FOUR*

**LESSON  
ONE**

# **THE IMPORTANCE OF BONES**

## **ACTIVITY ONE (core)**

### **1(a) Osteoporosis Awareness video**

Please watch the Osteoporosis Awareness video - [https://youtu.be/pkGX\\_RJ\\_sXA](https://youtu.be/pkGX_RJ_sXA)  
You can also view it in 360 degrees on the Youtube App - <https://youtu.be/TeCXhin4koE>

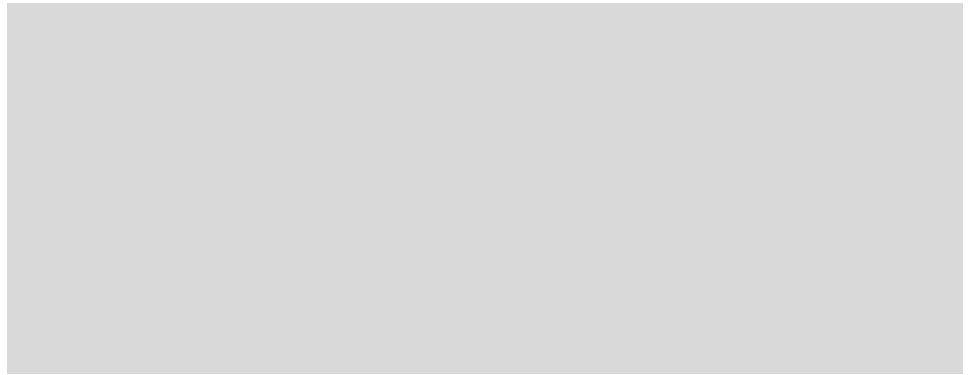
Complete the first two activities online in Lesson one with Mrs Cooper (<https://mshkhealthresearch.com/osteoporosis-lesson-1>). Once completed, using these websites to assist you, research, and answer the following questions:

- <https://www.osteoporosis.foundation/health-professionals/about-osteoporosis/bone-biology>
- <https://www.healthline.com/health/bone-health/bone-function>
- <https://sciencing.com/five-main-functions-skeletal-system-5084078.html>



*To thrive in life  
you need three  
things: a  
wishbone, a  
backbone and a  
funny bone."*

### **1(b) What are bones??**



### **1(c) Why are bones important to us??**

1. ....
2. ....
3. ....
4. ....
5. ....
6. ....



# LESSON ONE

## ACTIVITY TWO (core)

Using this video (<https://youtu.be/vDjW00S29I0>) as well as the activities 'different Types of Bones and Bone Functions' with Mrs Cooper (<https://mskhealthresearch.com/osteoporosis-lesson-1>), record the main types of bones presented and their function in the table.

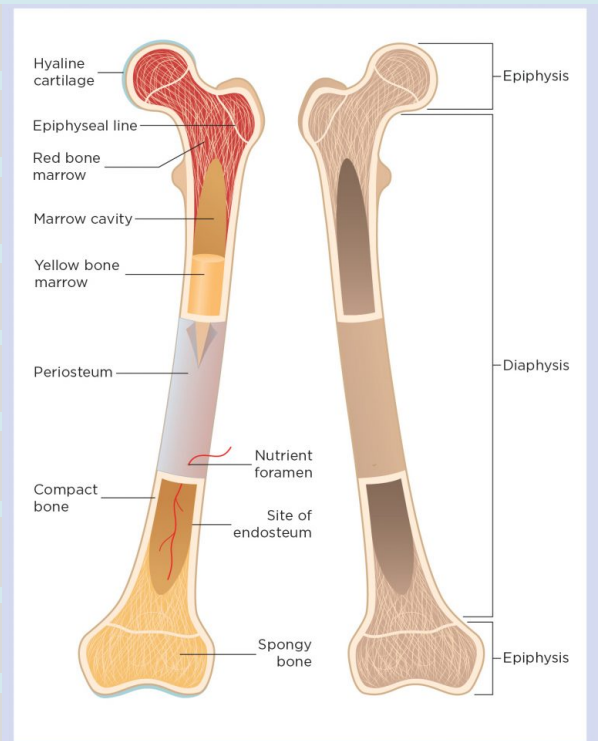
Type of bone:	Function of bone:



## ACTIVITY THREE (core)

Complete the next two activities with Mrs Cooper (<https://mskhealthresearch.com/osteoporosis-lesson-1>), watching the 'Parts of a Long Bone' video (<https://youtu.be/6PQ5Rv6ONfY>) as well as the diagram drop box. Using this information, outline the main function of each part of the bone below and complete the diagram with the missing parts:

Part of bone:	Main function of bone:
Diaphysis (The Shaft)	
Epiphysis	
Osteoclasts	
Osteocytes	
Osteoblasts	
Bone Marrow	
Collagen	
Periosteum	



# LESSON ONE

## ACTIVITY FOUR (core)

Using the Osteoporosis Australia website (<https://healthybonesaustralia.org.au/your-bone-health/about-bones/>), research what actions people can take to maintain and improve bone health. Identify the potential impacts on individual's lifestyles if they experience a decrease in bone health.

Factors that maintain bone health	Impact of factor on bone health if not adequately maintained
eg: Calcium intake	eg: Calcium is required for building and maintaining bone, without it your bones lack strength and structure, reducing your bone density and increasing potential osteoporosis risk



## ACTIVITY FIVE (core)

Using this website link (<https://mskhealthresearch.com/evaluating-web-resources>), discuss why the information from Osteoporosis Australia could or could not be a credible source for information. Create your own class checklist for identifying credible sources when conducting research.

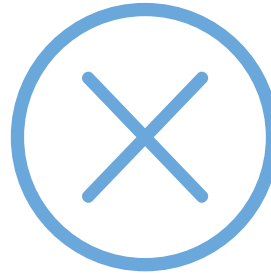
- eg: the author is clearly identified on the website
- 
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- 



# LESSON ONE

## ACTIVITY SIX (extension)

**6(a)** Using the class created 'credible checklist', find three more credible sources of information on Osteoporosis as well as one source of information that doesn't meet the 'credible checklist', and compare the information.



**6(b)** Is all the information the same? How is it different? Discuss with the class and record important points below.

## ACTIVITY SEVEN (extension)

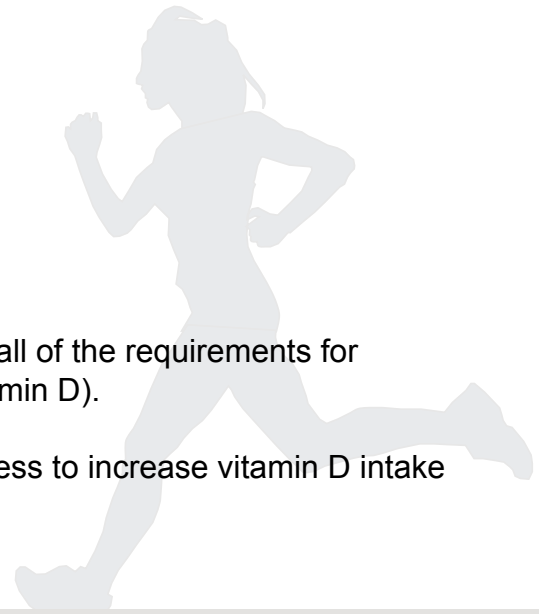
**7(a)** In groups, using credible sources, research policies for physical activity in Australian schools, transferring them into the table below. Use the example and this website (<https://policies.education.nsw.gov.au/policy-library/policies/sport-and-physical-activity-polic>) as a starting point.

Policy	Policy Component
<i>VIC Government Physical and Sport Education Delivery</i>	<i>100 minutes of PE per week, 100 minutes of sport per week. Meets partial exercise requirements.</i>

**7(b)** Do the policies above meet the requirements for increasing and maintaining bone health if so, why??If not, why not?



# LESSON ONE



## ACTIVITY EIGHT (extension)

Create five guidelines for a future school policy if it was to meet all of the requirements for increasing and maintaining bone health (Exercise, Calcium, Vitamin D).

For example: You do not have to wear a hat in winter during recess to increase vitamin D intake

Guideline 1:

Guideline 2:

Guideline 3:

Guideline 4:

Guideline 5:

## QUICK QUIZ!

Remember to complete the online quiz with Mrs Cooper at the end of the lesson!  
<https://mskhealthresearch.com/osteoporosis-lesson-1>

Once you have completed Lesson 1 please complete this short survey  
<https://redcap.sydney.edu.au/surveys/?s=47YFAH49EHXPLE3KK>

# LESSON ONE



## ACTIVITY ONE: ANSWERS

### 1(b) What are bones??

Bones have many critical functions in our body. Bones in our body are living tissue. They have their own blood vessels and are made of living cells, which help them to grow and to repair themselves.

### 1(c) Why are bones important to us??

1. Structural support.
2. Enable movement.
3. Protection. Your skeleton helps protect your internal organs and fragile body tissues. The brain, eyes, heart, lungs and spinal cord are all protected by your skeleton. Your cranium (skull) protects your brain and eyes, the ribs protect your heart and lungs and your vertebrae (spine, backbones) protect your spinal cord.
4. Provide an environment for marrow where your blood cell production takes place.
5. Storage of minerals (such as calcium)
6. Endocrine regulation: collection of glands that produce hormones that control growth and development, metabolism, etc.

## ACTIVITY TWO: ANSWERS

Type of bone:	Function of bone:
Long bones	Act as levers, as in the arms and legs.
Flat bones	Shield and protect, as in the sternum and ribs.
Short bones	Span spaces and give added flexibility, as in small bones in wrist.
Irregular bones	Vary in shape and protect organs or are attached to tendons (knee cap).



# LESSON ONE



## ACTIVITY THREE: ANSWERS

Part of bone:	Main function of bone:
Diaphysis (The Shaft)	The main part of the bone.
Epiphysis	Forms the joint at either end of the bone.
Osteoclasts	Bone absorbing cells. The cells that break down old bone tissue.
Osteocytes	The cells that maintain bone tissue by controlling the mineral and calcium content.
Osteoblasts	The bone building cells that build bone tissue.
Bone Marrow	Produces blood cells.
Collagen	Provides support and elasticity.
Periosteum	Involved in bone growth and repair.

## ACTIVITY FOUR: ANSWERS

Factors that maintain bone health	Impact of factor on bone health if not adequately maintained
<i>Calcium intake</i>	<i>Calcium is required for building and maintaining bone, without it your bones lack strength and structure, reducing bone density and increasing potential osteoporosis risk.</i>
<i>Vitamin D</i>	<i>Vitamin D helps absorb calcium, supports the growth and maintenance of the skeleton and regulates calcium levels in the blood.</i>
<i>Regular exercise</i>	<i>Exercise assists in maintaining and improving bone density as well as increasing our muscle size, strength and capacity.</i>

## ACTIVITY FIVE: SUGGESTIONS

Possible checklist items could include: is the author identified, is the information reliable, does the site present a range of viewpoints on the topic, is the page updated regularly, does the site include links to other reputable sites on the topic.



# LESSON ONE



## ACTIVITY SIX SUGGESTIONS

Websites such as National Osteoporosis Foundation, Healthy Bones Australia, [healthdirect.gov.au](http://healthdirect.gov.au)  
Comparison websites: Wikipedia, Forteo (US Treatment), [mydr.com.au](http://mydr.com.au)

## ACTIVITY SEVEN SUGGESTIONS

Policy	Policy component
NSW Government Physical Activity Policy for education	1.5 - 2.5 hours per week of physical activity in school. Meets partial exercise requirements.
ACT Government Physical Education and Sport Policy	Minimum of 150 minutes of moderate to physical activity per week. Meets partial exercise requirements.
VIC Government Physical and Sport Education Delivery	100 minutes of PE per week, 100 minutes of sport per week. Meets partial exercise requirements.

## ACTIVITY EIGHT SUGGESTIONS

It is important to have regular weight-bearing and resistance exercise as well as adequate calcium intake and sufficient Vitamin D.

Guidelines could include:

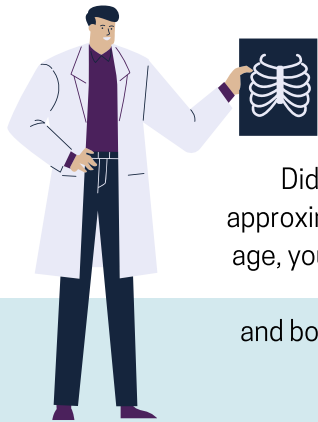
- Integration of the importance of nutrition across the curriculum, regarding the importance of balanced diets for healthy development. 1300mg/day of calcium is the recommended intake for a Year 9 - 10 student. Guidelines could be that canteens implement a 'calcium aware' menu, etc.
- Encouragement of students spending parts of their school day outside, with slip, slop, slap in mind. To get enough vitamin D, generally, you should try to get 10–20 minutes of sun exposure to your bare skin (face, hands, and arms) outside peak sunlight hours (before 10 AM and after 2 PM) daily. Guidelines could therefore be that roll call is taken outside.
- It is recommended that children exercise at least 40 minutes a day. This should include sports with a weight-bearing element (cycling and swimming are non-weight-bearing) and/or activities such as dancing, skipping, running, jumping or walking. Guidelines could therefore be that there are structured weight-bearing activities to be run in schools at lunchtimes.

## LESSON TWO

### ACTIVITY ONE (core)

Join Mrs Cooper online (<https://mskhealthresearch.com/osteoporosis-lesson-2>) and complete 'Building Blocks to HealthyBones', then complete the activity below.

Our bones require calcium, Vitamin D, and regular weight-bearing and resistance exercise for growth, development, and continued maintenance. In pairs, research the importance of each of these requirements and write why they are important in the boxes. Then rank them from most important (1) to least important (3)



Did you know? At approximately 30 years of age, you reach peak bone mass and bone density starts declining

Adequate calcium intake:

Rank: 1/2/3

Sufficient Vitamin D:

Rank: 1/2/3

Regular weight-bearing and resistance exercise: Rank: 1/2/3

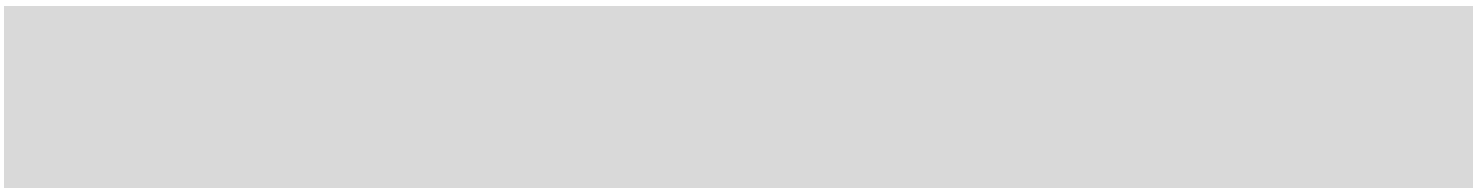
### ACTIVITY TWO (core)

Brainstorm 'ways to keep our bones healthy', using Mrs Cooper's 'What About Unhealthy Bones?' (<https://mskhealthresearch.com/osteoporosis-lesson-2>) as a starting point. Then add 'what might happen if our bones aren't kept healthy?' to your brainstorm. There is space below for your brainstorm. Record the most important points below:

## **LESSON TWO**

### **ACTIVITY THREE (core)**

**3(a)** Watch the video on Osteoporosis as a class, recording any interesting points as you go!  
[https://youtu.be/pkGX\\_RJ\\_sXA](https://youtu.be/pkGX_RJ_sXA)



**3(b)** Using the information from the video, Mrs Cooper's 'Osteoporosis Fact Sheet' (<https://mshhealthresearch.com/osteoporosis-lesson-2>) and the websites below as a starting point, research Osteoporosis, and identify the key points to present to another group, explaining the following:

1. What is the cause of Osteoporosis?
2. What parts of a bone are affected by Osteoporosis?
3. What are the effects of Osteoporosis?
4. How can Osteoporosis be prevented?

<https://www.iofbonehealth.org/osteoporosis>

<https://healthybonesaustralia.org.au>

Cause?

Parts of bone affected?

Effects?

Prevention?

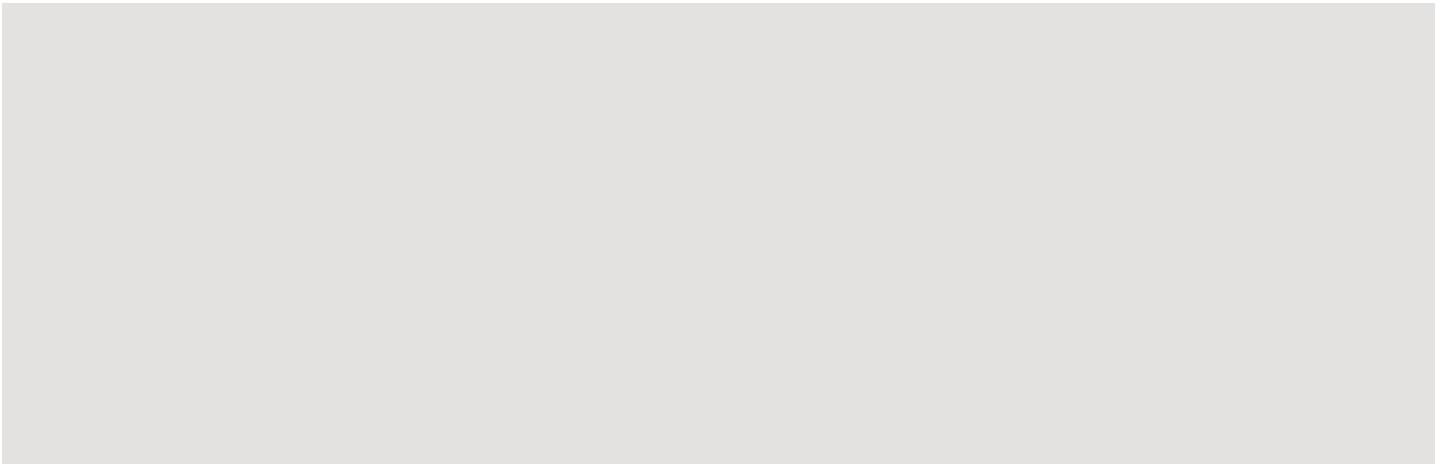


## **LESSON TWO**

### **ACTIVITY FOUR (extension)**

1. Read the Know Your Bones Survey: <https://start.knowyourbones.org.au/home>.
2. After reading the survey, critique and create a pro and con list on the appropriateness of the survey. This should be based on your age group, outlining what is likely to be applicable to you and what is not.
3. Then develop an age-appropriate survey that is more relevant for you and your peers. Include the following: age-appropriate questions, information on barriers to healthy bones as outlined by Mrs Cooper, creative and interesting format, ways to communicate results, and recommendations of local services available to improve results. This can be created in an online quiz format or in your workbooks.

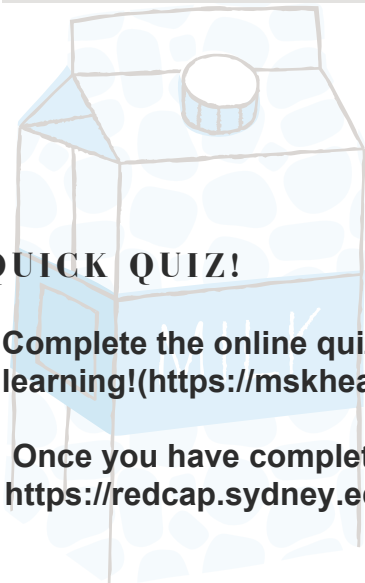
#### **Brainstorming and planning space for Activity Four:**



#### **QUICK QUIZ!**

Complete the online quiz with Mrs Cooper at the end of the lesson to demonstrate your learning! (<https://mskhealthresearch.com/osteoporosis-lesson-2>)

Once you have completed Lesson 2 please complete this short survey  
<https://redcap.sydney.edu.au/surveys/?s=DCDLFAXDXKW7F9NF>



## ACTIVITY ONE ANSWERS

Our bones require calcium, Vitamin D, and regular weight-bearing and resistance exercise for growth, development and continued maintenance. The three components are ranked below from most to least important:

1. Regular weight-bearing and resistance exercise to assist in maintaining or improving bone density.
2. Adequate calcium intake, to build and maintain bones strength and flexibility, which enables the body to gain the most it can out of exercise.
3. Sufficient Vitamin D through the exposure of the skin to sunlight, small amounts of dietary sources, and supplementation. Vitamin D is important for bone health because it helps absorb calcium. It also plays a role in supporting growth and maintenance of the skeleton and regulating calcium levels in the blood.

## ACTIVITY TWO ANSWERS

**Ways to keep our bones healthy can include:** adequate calcium intake, sufficient vitamin D, and keep active through regular weight-bearing and muscle-strengthening exercise.

**What might happen if our bones aren't kept healthy can include:** decrease in blood cells, decreased bone density, bones become brittle, increased risks of fractures, and falls.

## ACTIVITY THREE ANSWERS

3(b)

**What is the cause of Osteoporosis?**

Osteoporosis occurs when bones lose minerals, such as calcium, more quickly than the body can replace them, causing a loss of bone thickness (bone density or mass). When bone resorption happens at a greater rate than bone-forming, bone loss occurs, which leads to osteoporosis. Many factors determine how much old bone is resorbed and how much new bone is made. Some factors people have control over (such as diet), but some factors are out of their control (such as age).

Risk factors include family history, coeliac disease, low consumption of calcium, low exposure to sunlight, lack of weight-bearing exercise, low body weight, high caffeine consumption, high alcohol consumption, smoking, taking certain medications such as corticosteroids.

**What parts of a bone are affected by Osteoporosis?**

Any bone can be affected by osteoporosis, but the most common sites are the hip, spine, and wrist.

## **LESSON TWO**

### **ACTIVITY THREE ANSWERS (cont)**

#### **What are the effects of Osteoporosis?**

When you are young, most broken bones heal quickly and almost completely. People with osteoporosis fractures don't heal as well. In fact 20% of people with hip fractures die within 12 months, most are unable to walk unassisted ever again.

#### **How can Osteoporosis be prevented?**

Building a strong skeleton in early life is the best insurance against developing osteoporosis. Maintaining good bone health to prevent fracture is a life-long project, but the very best window of opportunity to build a strong and resilient skeleton is in childhood and adolescence. 90% of bone growth occurs between the ages of 10-20.

### **ACTIVITY FOUR NOTES**

Bone health is an important part of general health. Osteoporosis is common in Australia and results in over 165,000 fractures (broken bones) annually. People with risk factors for osteoporosis should be investigated by their doctor and the Know Your Bones assessment can help people understand their risk. But because Osteoporosis typically impacts individuals in older age categories, the importance isn't communicated to young individuals at a point where it is most important to build a strong skeleton. Use this website for reference: <https://www.knowyourbones.org.au>.

## **LESSON THREE**

### **ACTIVITY ONE (core)**

Using the World Health Organisation's definition of health provided by Mrs Cooper (<https://mskhealthresearch.com/osteoporosis-lesson-3>), develop your own personal definition of health and record it below:



*It is health that  
is real wealth  
and not pieces of  
gold and silver"*

*Mahatma  
Gandhi*

### **ACTIVITY TWO (core)**

Using your definition above as a guide, find three marketing campaigns or influences that would positively impact health and three that would negatively impact health. Justify why these have been chosen and how they impact in the space provided on the following page.



# LESSON THREE

## ACTIVITY TWO (continued)

Positive health impact  
e.g Slip.Slop, Slap



Negative health impact  
e.g. fast foods company ads




## ACTIVITY THREE (core)

**3(a)** Complete Mrs Cooper's 'Good Health vs Poor Health' table (<https://mskhealthresearch.com/osteoporosis-lesson-3>) and brainstorm the characteristics of someone who shows good physical health, compared to someone who does not. Record these on the post-it notes below.

Good health  
e.g gets 8+ hours of sleep



Poor health  
e.g. doesn't exercise



**3(b extension)** Compare the developed lists above to other countries around the world where good and poor physical health may be impacted by social or cultural practices within different communities and discuss what these may be with the class.



## LESSON THREE

### ACTIVITY FOUR (core)

**4(a)** Complete Mrs Cooper's 'Physically Healthy Day' (<https://mskhealthresearch.com/osteoporosis-lesson-3>), identify what a physically healthy student's day would look like and record the examples in the table provided. Once you've filled the table in, complete the 'Sedentary Activities' slide with Mrs Cooper. This website might help (<https://www.health.gov.au/health-topics/physical-activity-and-exercise>)

Activity/ Health Dimension	How much time should be spent doing this each day (Guideline):
Physical Activity	
Screen time	
Sedentary activities	
Sleep	

**4(b extension)** In pairs, research what these guidelines look like in other countries across the globe. Compare the guidelines of two other countries and record the differences below:

Country 1

Country 2

### ACTIVITY FIVE (core)

**5(a)** Using the recommended physical activity guidelines completed in Activity Four as well as Mrs Cooper's 'Activity Ideas', complete the table on the next page. You will need to identify and outline the following:

- What types of physical activities could be completed to meet the guidelines?
- What kind of physical responses the body would have to each of the activities?



# LESSON THREE



## ACTIVITY FIVE CON'T

<b>Physical Activity Guideline</b> (from Activity 4)	<b>Activities to meet guideline</b> Eg: running.	<b>Physical responses of the body to activity.</b> Eg: improved cardiovascular endurance.

**5(b extension)** Outline how the guidelines about physical activity could be incorporated into a student in Australia's week compared to one the countries selected in Activity Four.

**Australian student:**

**Student from selected country:**



## **LESSON THREE**

### **ACTIVITY SIX (core)**

Using the research of recommended physical activity guidelines, combined with the information about the importance of exercise for reducing Osteoporosis in the website provided, create a recommended training program for yourself or a young family member of yours (brother/sister/cousin), selecting five activities and exercises best suited for building healthy bones. The program needs to outline:

- The age of the family member,
- Five varied types of activities/exercises suited to the family member,
- Why the activities are good for building healthy bones,
- Location suggestions for activities/exercises,
- Further recommendations and suggestions for the future.

Present this program in a presentation program of your choice: Microsoft Publisher, Canva, Adobe Sparke.

**Remember to complete the online quiz with Mrs Cooper at the end of the lesson!  
(<https://mskhealthresearch.com/osteoporosis-lesson-3>)**

**Once you have completed Lesson 3 please complete this short survey  
<https://redcap.sydney.edu.au/surveys/?s=TEWXXTR3XEPEPJMW>**

## LESSON THREE

### ACTIVITY ONE SUGGESTIONS

The extent of an individual's continuing physical, emotional, mental, and social ability to cope with his or her environment. Combination of a range of dimensions including physical, emotional, spiritual, intellectual, environmental and social that impact an individual's overall wellbeing. Holistic view of individuals wellbeing, recognising that to be healthy, you can't simply focus on one aspect of an individual's life. Rather, it is vital that there is a positive combination of all components such as physical, emotional, mental.

### ACTIVITY TWO/THREE RESPONSES

- Positive/Negative impact ad suggestions: Move it AUS, "Measure Up", Swap it don't stop it, smoking advertisements, Find Your 30.
- Good physical health: exercises often, eats a well-balanced diet, sleeps well, no smoking and limited alcohol consumption, lack of sickness, lack of injuries.
- Poor physical health: doesn't exercise often, doesn't have a balanced diet, poor sleep, often sick, often injured

### ACTIVITY FOUR ANSWERS

<b>Activity/ Health Dimension</b>	<b>How much time should be spend doing this each day (Guideline):</b>
Physical Activity	Accumulating 60 minutes or more of moderate to vigorous physical activity per day involving mainly aerobic activities. Activities that are vigorous, as well as those that strengthen muscle and bone should be incorporated at least 3 days per week. Several hours of a variety of light physical activities should also be incorporated.
Screen time	Limiting sedentary recreational screen time to no more than 2 hours per day.
Sedentary activities	Breaking up long periods of sitting as often as possible.
Sleep	An uninterrupted 9 to 11 hours of sleep per night for those aged 5–13 years and 8 to 10 hours per night for those aged 14–17 years and consistent bed and wake-up times.

# LESSON THREE

## ACTIVITY FIVE RESPONSES

Physical Activity Guideline	Activities to meet guideline Eg: running.	Physical responses of the body to activity. Eg: improved cardiovascular endurance.
60min moderate to vigorous activity, involving mainly aerobic.	Running, cycling, zumba.	Improve cardiovascular endurance.
Activities that strengthen muscles and bones 3 days/week.	Weights sessions, pilates.	Improved bone strength, stability and muscular endurance.

## ACTIVITY SIX IDEAS

Exercise must be regular (at least 3-5 times per week, 30 minute minimum). It should progress over time (amount of weight used, degree of exercise difficulty, height of jumps) to challenge bones and muscles. Sessions should be varied and be performed in short, intensive bursts.

Weight-bearing exercise. For example: brisk walking, jogging, skipping, basketball / netball, tennis, dancing, impact aerobics, stair walking. Progressive resistance training (becomes more challenging over time). For example: lifting weights - hand / ankle weights or gym equipment.

The ability of an exercise to build bone (osteogenic capacity) depends on the specific way that stress is applied to the bone during the exercise.

The impact of selected exercises on bone health

Highly osteogenic	Moderately osteogenic	Low osteogenic	Non-osteogenic*
Basketball/Netball	Running/Jogging	Leisure walking	Swimming
Impact aerobics	Brisk/Hill walking	Lawn bowls	Cycling
Dancing/Gymnastics	Resistance training	Yoga/Pilates/Tai Chi	
Tennis	Stair climbing		
Jump rope			

\* While certain exercises may have low to no osteogenic benefits, this does not imply that these exercises do not offer a wide range of other health benefits.

## **LESSON FOUR**

### **ACTIVITY ONE (core)**

**1(a)** Discuss and identify on the post-it notes below what is needed to supplement a child's health, in addition to components outlined in Lesson Three (physical activity, restricted sedentary time, sleep and reduced screentime), to ensure bones are healthy. Research what community or school programs exist in metropolitan areas to encourage and support these choices, record these below.

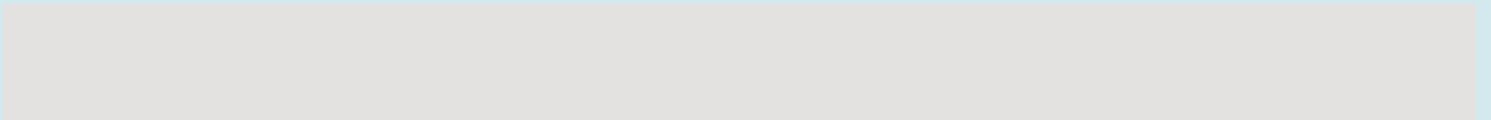
What programs exist?



Other things which improve health?



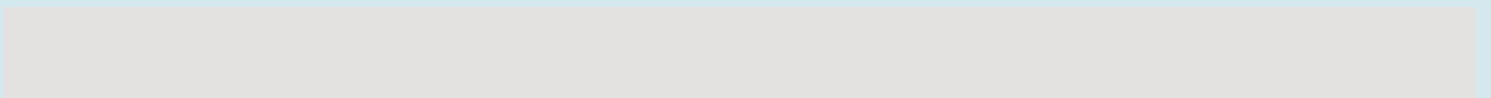
**1(b extension)** Compare these programs to other programs rurally and internationally, outlining the similarities and differences between metropolitan, rural and international programs. As a class, discuss why you think these differences occur and record the most common responses below:



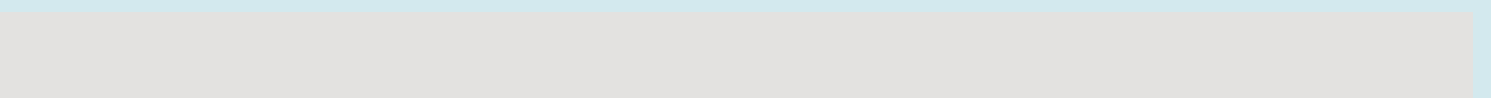
### **ACTIVITY TWO (core)**

Compare and contrast the Australian Guide to Healthy Eating with the Aboriginal and Torres Strait Islander Guide to Healthy Eating using Mrs Cooper's 'Cultural Differences' (<https://mskhealthresearch.com/osteoporosis-lesson-4>) slides and answer the following:

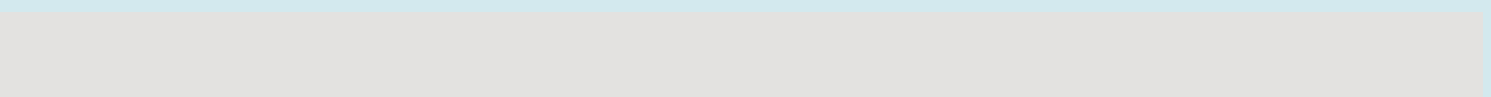
What are the similarities?



What are the differences?



List three barriers Aboriginal and Torres Strait Islander Peoples may have to meeting the Guidelines:



## LESSON FOUR

### ACTIVITY THREE (core)

Using the Australian Dietary Guidelines (<https://www.eatforhealth.gov.au/guidelines/about-australian-dietary-guidelines>) and Mrs Cooper's 'Australian Dietary Guidelines' information (<https://mskhealthresearch.com/osteoporosis-lesson-4>), identify the five Australian dietary guidelines and record responses in the table:

Guideline	Australian Dietary Guideline explanation
Guideline 1	
Guideline 2	
Guideline 3	
Guideline 4	
Guideline 5	

### ACTIVITY FOUR (core)

Using this website (<https://healthybonesaustralia.org.au/your-bone-health/calcium/>) as well as Mrs Cooper's 'Calcium and Bones' slide (<https://mskhealthresearch.com/osteoporosis-lesson-4>), research how a person's calcium intake impacts their healthy bones, recording the answers below:



## **LESSON FOUR**

### **ACTIVITY FIVE (core)**

In pairs, based on the training plan developed in Lesson Three, create a dietary plan for the young student to supplement the outlined exercise regime, using the Australian Guide to Healthy Eating and the websites provided for assistance. Mrs Cooper's 'Making Healthy Choices' (<https://mskhealthresearch.com/osteoporosis-lesson-4>) will also help you. This can be presented in any format of choice.

<b>Meal</b>	<b>Meal options</b>
Breakfast	
Lunch	
Dinner	
Snacks	
Water	

### **ACTIVITY SIX (extension)**

In the table above, outline what barriers may exist within the dietary plan if it was applied rurally and internationally (eg: lack of clean water, no fresh fruit and vegetables). Add what modifications could be implemented to adapt to these potential barriers in the table above and highlight these.

**Don't forget to complete your end of lesson quiz with Mrs Cooper!**  
<https://mskhealthresearch.com/osteoporosis-lesson-4>

Once you have completed Lesson 4 please complete this short survey  
<https://redcap.sydney.edu.au/surveys/?s=87XE33Y9P97EEL3M>





# **LESSON FOUR**

## **ACTIVITY ONE RESPONSE EXAMPLES**

### **Diet**

- Healthy Harold: <https://www.lifeeducation.org.au/about-us/healthy-harold>
- 2&5: [https://healthywa.wa.gov.au/Articles/F\\_I/Go-for-2-and-5](https://healthywa.wa.gov.au/Articles/F_I/Go-for-2-and-5)
- Crunch and Sip: <https://www.crunchandsip.com.au/>

### **Vitamin D**

- PDHPE classes outside
- Access to health services
- Clean water accessibility
- Good hygiene

## **ACTIVITY TWO SUGGESTIONS**

Although diet varied widely depending on season and location, the traditional diet of Aboriginal and Torres Strait Islander people included many healthy plant and animal foods. Most bush foods are low in saturated fat and high in fibre. Foods eaten traditionally include: seasonal fruits, nuts, roots, vegetables, wild meats and game, fish and other seafood.

Similarities: five food groups, recommend to drink plenty of water.

Differences: representation of different products in each of the food groups, eg: different packaging, inclusion of different meats and vegetables.

Barriers: accessibility to range of shops with fresh produce, inability to keep items cold and fresh, cost of good produce.

## **ACTIVITY THREE ANSWERS**

Guideline 1: To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs.

Guideline 2: Enjoy a wide variety of nutritious foods from these five groups every day.

Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.

Guideline 4: Encourage, support and promote breastfeeding.

Guideline 5: Care for your food; prepare and store it safely.

## **LESSON FOUR**

### **ACTIVITY FOUR ANSWERS**

Calcium is essential for building and maintaining bone. Almost 99% of the body's calcium is found in the bones.

Calcium combines with other minerals to form hard crystals that give your bones strength and structure. Bones act like a calcium bank, if you do not take in enough calcium from your diet, the body will withdraw calcium from your 'bone bank' for use in other parts of the body.

If your body withdraws more calcium than it deposits, your bone density (bone strength) will gradually decline and you may be at risk of developing osteoporosis.

#### **Most important foods:**

Dairy foods, canned salmon or sardines, soy based products and tofu that contain calcium, broccoli, Bok Choy, silverbeet, cucumber, celery and chick peas, almonds, dried figs and dried apricots.

### **ACTIVITY FIVE SUGGESTIONS**

#### **Healthy Eating Recommendations:**

- Plenty of vegetables, including different types and colours, and legumes/beans
- Fruit
- Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
- Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
- Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years)
- And drink plenty of water.

#### **Specific Osteoporosis requirements**

- 1300mg of Calcium each day, made up of a combination of foods.

### **ACTIVITY SIX SUGGESTIONS**

**Barriers:** accessibility to clean water and shops, educational awareness, appropriate storage methods, safe preparation spaces, financial capacity.

**Modifications:** dependent on barriers, programs such as: community-based food and nutrition programmes e.g. 'Bread for the World'.