

How Does Your Heart Rate?

LESSON PLAN

RECOMMENDED FOR YEARS 3 - 6

Lesson summary

In this lesson, students measure their pulse rate to investigate how physical activity affects the heartbeat. By the end of this lesson, students will be better at finding, measuring and recording their pulse rates, as well as identify ways to improve their physical activity levels.

Learning objectives

Students can measure and record their pulse rate.
Students can identify ways to improve their physical activity levels.

Possible Australian Curriculum links

Science Understanding / Biological sciences
Health and Physical Education / Movement and Physical Activity / Understand movement



STARTER

1. Discuss with students what physical activity means and have each student share with the class one form of physical activity or exercise that they enjoy doing (e.g. skipping, playing footy, swimming). Using Think, Pair, Share, have students brainstorm some reasons why they think physical activity is important for our wellbeing.
2. On the whiteboard or a large sheet of butcher's paper, draw a table with two columns. Write the words 'Before' in one column and 'After' in the other. Explain to students we are going to describe and compare what happens to our bodies before and after we engage in physical activity. Ask students to describe how their bodies and heart are feeling now and record some of these responses on the table for 'Before' (some ideas students might come up with include cool, calm, bored, relaxed and peaceful).
3. Now explain to students they are going to engage in physical activity for 1 minute, after which they will describe if they feel any changes happening to themselves and their bodies. Ensure students do some warm-up stretches first before engaging in any movement activities. Using a timer, ask students to do as many star-jumps as they can in 1 minute. At the end of the minute, tell students to stop and describe how they feel now, recording these responses in the 'After' column (some ideas students might come up with include hot, sweaty, energised, excited and warm). Ask students to find their heart and see if they can feel their heartbeats. Invite students to describe how their heartbeats feel, now they've done some physical activity.

Resources

- Timers or stopwatches – one for each pair
- Clay or playdough (optional)
- Matchsticks (optional)

Health and safety

Ensure students have enough space to move around without bumping into one another. You may like to do this activity outside or in an open area.

Don't forget to teach students warm-up and cool-down stretches before and after doing vigorous exercise movements.



Not only can students feel their pulse, but they can also see their pulse with this little experiment! Pinch off a small amount of clay or playdough and roll it into a ball. Insert a matchstick securely into the ball of clay/playdough. Ask students to find their pulse on their wrists and place the ball over the area where they found the strongest pulse. Make sure students press down the ball firmly, so it stays in place without having to hold it. The matchstick should vibrate with each pulse and students can count the vibrations to determine their pulse rate in a minute.

BODY

1. Explain to students when our bodies need more energy, such as when we are doing physical activity or exercise, the heart beats faster to pump more oxygen around the body through the **arteries** (the vessels that carry blood around the body). As your heart beats, it sends a wave of pressure through all the arteries in your body. You can feel this pressure in some areas of the body (such as when the artery passes over a piece of bone) and we call this your **pulse**.
2. Show students how to find their pulse on their necks by asking them to put three fingers on their left hand onto their Adam's apple in their throat (the part that sticks out and goes up and down when you

swallow). Ask students to push gently down on one side of it and they should find their pulse beating (it might be a bit tricky to find this pulse, so some students might not be able to feel it).

3. Explain to students for the activity they are about to do, they will measure their pulse rates on their wrists. Show students how to do this, by asking them to hold their left hand out in front of them with the thumb pointing up. Using the first two fingers on their right hand, ask students to gently place these two fingers on their left wrist, just under their thumb, and press down gently. Explain to students that each 'thump' they feel is actually their heartbeat!
4. Have students work in pairs to conduct this activity and give each pair a timer/stopwatch. Using the activity sheet to guide the process, have students predict, then measure, their pulse rate as they engage in different types of physical activity for 1 minute. To measure their pulse rate, immediately after engaging in the physical activity, students need to use the timer/stopwatch to count the number of heartbeats in 1 minute. (For older year levels and to add a Maths challenge, you could ask students to count how many beats in 30 or 15 seconds, then double or quadruple the number to work out the number of beats per minute.) You may wish to model this a few times with the whole class, so students are able to conduct the rest of the activity in pairs at their own pace.

Question prompts

Why is physical activity good for your body?
How does your body feel before exercise?
How does your body feel after exercise?
Why do you think your heartbeat increases after doing physical activities?



PLENARY

Explain to students to improve their stamina and endurance, they should be aiming to do at least an hour of aerobic exercise every day. Aerobic exercise is physical activity which uses your whole body and increases your heart rate, such as jogging, running, swimming, cycling, dancing, training for sport, etc. Using this information, ask students to create a diary to log the amount of aerobic exercise they currently do in a typical week. Ask students to reflect on how they can improve their current physical activity levels and use a different colour to add aerobic activities they could try in the future into their diary.

THE SCIENCE BEHIND THE ACTIVITY

The heart is a muscle which functions as a very powerful pump and transports blood around the body. It is divided into four parts called chambers – the left ventricle, right ventricle, left atrium and right atrium. These chambers work together to oxygenate the blood and pump the blood to all other organs in the human body. There are two kinds of vessels that carry the blood from the heart and transport it to every part of the body – veins and arteries. Arteries carry blood away from the heart and veins bring blood back to the heart. This process is called circulation.

When we need more energy, for example to run, the heart beats faster to pump more oxygen around the body. By increasing the heart rate, the body is able to increase cardiac output and deliver the necessary blood flow to the muscles. You can feel the blood pumping where the arteries are close to your skin (such as on your neck or wrists). These are your pulse points, and if you feel gently with your fingertips, you can count how fast your heart is beating.

Doing aerobic exercises ("cardio") will get your heart pumping faster, which will strengthen your heart and make it more efficient at delivering oxygen to the rest of the body. Your heart is a muscle, and it gets stronger and healthier if you lead an active life. At the Telethon Kids Institute, our researchers recognise the importance of physical activity for kids and the many health benefits it brings, including developing healthy bones, maintaining a healthy weight and improving cognitive and social-emotional development. [Our Child Physical Activity, Health and Development team](#) works to uncover the best environments, policies and programs to improve children's physical activity levels, health and development to support lifelong health and wellbeing.

[The PLAYCE Policy Project](#) is our flagship three-year project which commenced in 2019. The project aims to develop, implement, and evaluate early childhood education and care (ECEC) specific physical activity related policy and programs. One of the Project's highlights include the [PLAYCE 2 School Study](#), which follows up over 2000 children's physical activity behaviours from early childhood years to now as they commence full time school.

Have you checked out the **Telethon Kids Discovery Centre**? Enrich this lesson with an excursion to our interactive Discovery Centre, full of fun games designed to get kids excited about science, health and research. Check out [our website](#) or [send us an email](#) for more information and to book your next school visit!

How does your Heart Rate?

Name: _____ Date: _____

You are going to work with a partner for this activity. Measure how different types of activities can change your pulse rate by following these steps:

1. Decide who will go first.
2. Make your prediction and guess how many heart beats per minute you think you will count for the activity. Record your prediction on the table.
3. Do the activity while your partner times 1 minute on a timer/stopwatch.
4. As soon as the minute ends, ask your partner to reset the timer/stopwatch. Quickly find your pulse and count the number of beats you can feel in 1 minute. This is your Actual Pulse Rate. Record this number on the table using bpm (for example, 112 bpm).
5. Repeat Steps 2 - 4 for the next activity. When you have completed all the activities, swap roles with your partner.

Activity (You will need to do this activity for 1 minute.)	Prediction	Actual Pulse Rate (How many heart beats per minute? We record this as bpm.)
Jog on the spot		
Star jumps		
Lay down on the ground		
Hop on one leg		
Walking at a normal pace		
Sitting on a chair		

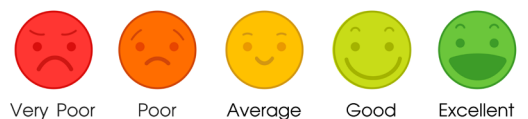
Which activity caused your heartbeat to beat the fastest?

Which activity caused your heartbeat to beat the slowest?

What was your highest pulse rate? _____ What was your slowest pulse rate? _____

How do you feel about your current physical activity levels?

(Circle how you feel.)



How could you improve your physical activity levels?

My Physical Activity Diary

Name: _____

Date: _____

Use **blue** pen to record all physical activity that you currently do (some ideas include: after school or weekend sports clubs, movement games at lunch or recess, school Sports classes, walking or cycling...).

Use **red** pen to record the physical activity that you would like to do in the future.



	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
MORNING							
AFTERNOON							
EVENING							

To improve your stamina and endurance, you should be aiming for at least an hour of **aerobic exercise** (exercise that uses your whole body and increases your heart rate) every day.

Which of the physical activities recorded in your diary are also a form of aerobic exercise? Can you underline them?