APPENDICES

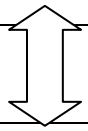
Appendix A

CAREER AND LIFE MANAGEMENT (CALM)

Program of Studies

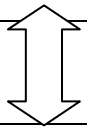
Aim

The aim of senior high school Career and Life Management (CALM) is to enable students to make well-informed, considered decisions and choices in all aspects of their lives and to develop behaviours and attitudes that contribute to the well-being and respect of self and others, now and in the future.



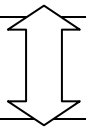
General Outcome 1 – Personal Choices

Students will apply an understanding of the emotional/psychological, intellectual, social, spiritual and physical dimensions of health, and the dynamic interplay of these factors, in managing personal well-being.



General Outcome 2 – Resource Choices

Students will make responsible decisions in the use of finances and other resources that reflect personal values and goals and demonstrate commitment to self and others.



General Outcome 3 – Career and Life Choices

Students will develop and apply processes for managing personal, lifelong career development.

Learning Opportunity 8: How can we share our understanding of heart health with the community? is connected to the CALM program. These activities identify the achievable outcomes in a chart form.

Appendix B

Questions to Guide Inquiry-based Learning

Inquiry possibilities for students in physical education classes could include the following.

- What is my resting heart rate and what does it mean to my fitness?
- What is my maximum heart rate for various activities? What is the maximum heart rate of others my age?
- What is the range of maximum heart rates in my class, school, city or the world?
- Is there any formula that can accurately predict maximum heart rate? Can we create our own maximum heart-rate formula?
- What methods appear to be best for determining maximum heart rates in youth and children?
- Am I receiving health/fitness benefits from participating in physical education?
- What are the barriers that prevent me from being more active? How can these barriers be overcome?
- What action projects could I initiate to increase the physical activity of my peers, family and society? Could we make them reality?
- What are the correlations between my own and my parents/guardians' levels of physical activity?
- How does nutrition, sleep, stress, smoking and caffeine impact my heart health?
- What methods or strategies are most beneficial for me in managing life's stresses; e.g., breathing exercises, visualization, music, yoga, exercise, positive self-talk?
- What does it feel like to be working in each of the five training zones? What words can I use to describe how I feel in each zone? How soon do I notice a change in my physical and mental feelings in each of the five training zones?
- How can I measure my own cardiovascular fitness? How does my cardiovascular fitness change over the years? What types of cardiovascular assessments do I enjoy most?
- What types of activities will I include in a personal fitness test that addresses the aspects of functional fitness (cardiovascular, flexibility, muscular endurance, muscular strength)?
- Am I active enough for optimal growth and development?
- How much do I really move in the course of a day? How can I measure this?

Appendix C

Pedometers

A pedometer is a motion sensor that detects vertical movement of the body which is then expressed as steps taken during walking or running. With the added input of stride length, it can calculate distance walked and approximate calories burned. Students can learn how much movement they complete in a day as a result of all their activities by keeping track of their steps. Students can set and achieve goals through the use of pedometers. They are simple, inexpensive, lightweight and easy for students to use and interpret.

Pedometers are available for purchase from the Learning Resources Centre at 780–427–2767 (http://www.lrc.education.gov.ab.ca) and equipment suppliers. Purchase a class set to share within the school and promote different types of student activities from walking programs to physical education classes in order for students to track their results.

Most pedometers are designed to be worn on the waistband aligned directly above the knee. The pedometer should be positioned as straight as possible, not leaning forward, backward or sideways as that will affect the accuracy of the mechanism that counts the steps. Pedometers are equipped with belt clips, however, adding a safety strap prevents loss and damage due to dropping. Pedometers are durable but a fall on a hard surface can cause damage.

How to Use a Pedometer

- Recording the number of steps students take during an average day allows them to track their progress or establish a daily average.
- Most pedometers are electronic and are activated when the foot hits the ground, producing an impulse that transfers to the pedometer case recording a step. Just like a clock, there is a pendulum arm that must be in an upright position to work properly.
- To see if a pedometer is working properly:
  - open the face of the pedometer and reset the reading to 0
  - take 20 normal walking steps
  - open the face and read how many steps were recorded
  - if the reading is 20 (or close to it), it is working fine
  - if not, test again.
- Instruct students to put pedometers on in the morning, wearing them while going to school, playing with friends or walking the dog, and take them off at night before going to bed.
- Pedometers should not be worn during extracurricular sport activities.
- Pedometers should be kept dry.

Average Steps

- Eight–10-year-olds: 12 000–16 000 steps per day
- Young adults: 7000–13 000 steps each day

Resources

For more information on pedometer use, see "WellSpring" by the Alberta Centre for Active Living at http://www.centre4activeliving.ca/Publications/WellSpring/index.html#03Spring. The Spring 2003 edition is dedicated to pedometer use with articles such as:

- Watch Your Steps: Pedometers and Physical Activity
- How Do Pedometers Work?
- The 10,000 Steps Rockhampton Physical Activity Project
- Buyer Beware: The Pros and Cons of Pedometers.

Appendix D

Strategies to Promote Cardiovascular Benefits

Below are some strategies for increasing cardiovascular endurance activities in physical education classes.

- For beginning classes, students should move as soon as they enter the activity area. Provide a variety of equipment to assist them. Stress the importance of safety, and awareness of and respect for other students' physical spaces.

- Have sufficient equipment available for every student to minimize wait time and line-ups.

- Create small teams to increase the opportunity for movement; e.g., three-team volleyball creates more opportunities than six-team volleyball.

- Create a work-to-rest ratio of 2:1 when it is not conducive for the entire class to move at the same time. A relay team with two people will create twice as much movement opportunity as a relay team of four.

- Modify the rules or equipment so students increase the intensity of their activities, and can measure progress and achievement.

- Be solutions orientated with students so they can identify ways to create more movement time, and less management and transition time.

Appendix E

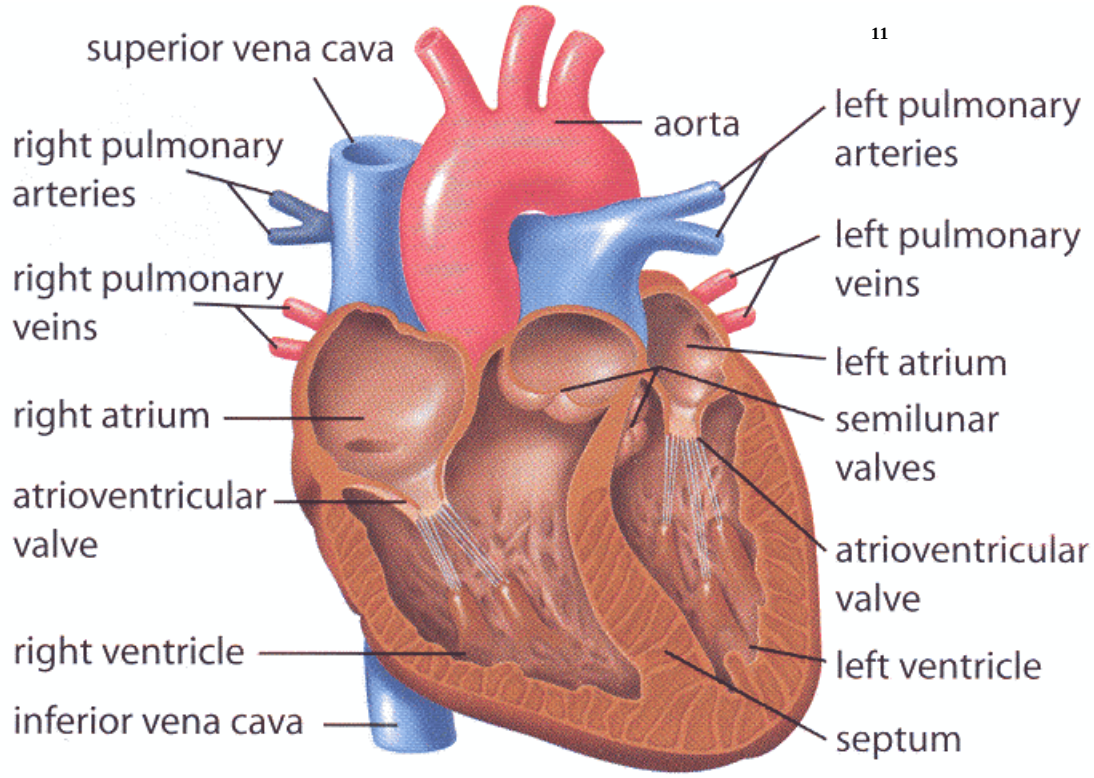
The Heart Muscle

The heart is the most important muscle in the body. It is an efficient, resilient pump making blood flow through the body for an entire lifetime.

The heart muscle itself is made up of four chambers, two valves and two separate pumps. There are two sides to the heart allowing it to function as a dual action pump. The heart's job is to contract and force blood into the chambers, through the valves, to send blood to the lungs for oxygen, and then back to the heart through valves and chambers, to be pumped out to all the cells of the body.

The rhythm of a complete heartbeat is driven by electrical activities originating from the pacemaker, a bundle of specialized nerve tissue that receives messages. It independently creates its own electrical signals beating away until there is a need to make a change in the heart rate, measured in beats per minute (bpm). For example, if cells need more oxygen, the brain automatically speeds up the contraction rate of the heart, which in turn increases blood flow.

Exercise induces such a need for more oxygen, increasing the heart rate in order to supply the harder working cells in the muscles and lungs. Improving your fitness level allows your heart to work at high levels longer and more efficiently.



11. Illustration reproduced with permission from McGraw-Hill Ryerson, *Inquiry into Biology* (Toronto, ON: McGraw-Hill Ryerson, 2006).

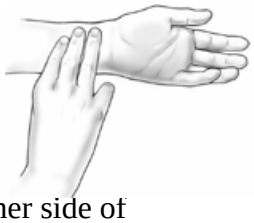
Appendix F

Tips on Taking Your Heart Rate while Exercising

Keep moving while taking your heart rate. Your heart rate will drop within 15 seconds if you stop moving.[12]

Where to find your pulse[12]

Wrist: Find the tendon running down the centre of the inside of your arm. Take your pulse on the thumb side of that tendon. Use your index and middle fingers to take your pulse, not your thumb as there is also a pulse in your thumb.



Neck: Take your pulse on the carotid artery on either side of your Adam's apple. Your carotid artery is pressure sensitive so do not press too hard and do not try to take your pulse on both sides at once.

Determining Your Heart Rate

Using radial or carotid pulse (palpation method)

You will need a stopwatch, watch or wall clock that displays time in seconds. Encourage students who are using the palpation method to use their own watches.

Have students practise taking their resting pulse first. If they are familiar with finding their pulse while sitting or lying quietly, it will be much easier to find during exercise when the heart is beating more vigorously: six-second count × 10 = bpm, 10-second count × six = bpm, 15-second count × four = bpm (bpm = beats per minute).

If students have a hard time finding their pulse while exercising, have them find it before they begin exercising and draw an **x** on the pulse spot.[12]

When gathering heart-rate data via palpation during exercise, use the six-second count instead of the 15-second count. During exercise, students will need to stop briefly to locate their carotid or radial pulse. Then they should be provided with a six-second count. Upon stopping physical activity, the heart starts to relax and the heart rate quickly slows down. If students count for 15 seconds, the heart rate will not be as accurate because of the recovery factor.

Alternative methods for determining heart health information

Use Student Worksheet 8: Perceived Intensity Scales on page 37 and/or the description of various intensities identified in the chart on pages 28–29 to help guide students in listening to their hearts.

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12. Adapted with permission from Kaleida Health Cardiovascular Services, "Target Heart Rate," *Kaleida Health Cardiovascular Services*, 2003–2005, www.cardiovascularservices.org/HeartRate.html (Accessed July 2005).

Appendix G

Heart-rate Monitor Parts and their Functions

Heart-rate monitors pick up the electrical signals given off by the heart and report the average number of times the heart contracts in a minute. Heart-rate monitors typically consist of three parts:

- chest belt—an elastic belt worn across the chest that holds the transmitter comfortably, yet firmly, in the correct position
- transmitter—attached to the chest belt, worn in front of the body with the label centred on chest; picks up the signal of the heart rate and transmits it to the receiver
- wrist receiver—similar to a wrist watch; receives the transmitter signals.

Wearing Your Heart-rate Monitor[13]

- Attach the transmitter to the elastic strap.
- Adjust the chest belt strap length to fit snugly. Comfortably secure the strap around your chest just below the chest muscles and buckle it.
- Lift the transmitter off your chest and moisten the grooved electrode areas on the back.
- Check that the wet electrode areas are firmly against your skin and that the logo is in a central, upright position.

Tip

Men – chest strap and transmitter should sit across the nipple line.
Women – chest strap and transmitter should sit just below the bra line.

See your heart-rate manual for specific instructions.

Care and Maintenance of Heart-rate Monitors[13]

- Wash the transmitter regularly after use with mild soap and water. Dry it carefully after washing.
- Never store the transmitter wet. Sweat and moisture can keep electrodes wet and the transmitter activated, which shortens the battery life.
- Store the heart-rate monitor in a cool, dry place. If it is wet, do not store it in any kind of non-breathing material, such as a plastic bag or sports bag.
- Do not bend or stretch the transmitter. This may damage the electrodes.
- Keep the heart-rate monitor out of extreme cold (below –10°C/14°F) and heat (above 50°C/ 122°F).
- Do not expose the heart-rate monitor to direct sunlight for extended periods; e.g., leaving it in a car exposed to sunlight.
- Dry the transmitter with a towel or soft fabric. Hard handling may damage the electrodes.
- If the heart-rate monitor is water resistant, do not operate the buttons under water, as water pressure can cause the receiver to leak.

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13. Adapted with permission from Polar Electro Oy, *Polar F5™ Fitness Heart Rate Monitor: User Manual (ENG)* (Kempele, Finland: Polar Electro Oy, 2004), Sections 1, 11 and 12.

- Avoid dropping the receiver as this may break the crystal and buttons. Always put the receiver on first so it doesn't hit the floor. If already wearing a watch, place the receiver on the other wrist to reduce the possibility of interference.
- For some models, battery changes need to be performed by an authorized dealer to maintain the warranty.
- Elastic straps can be washed by machine on the gentle cycle provided they are placed inside a lingerie mesh bag. Hang to dry. With high usage, this would be the protocol once a week.

Transmitter and elastic strap

Receiver

How to Use Heart-rate Monitors

The heart rate provides an objective gauge of exertion. Heart-rate monitors are designed for wear during strenuous exercise. They measure and record the heart rate, giving instant feedback about the work level of the heart. Using a heart monitor helps prevent stressing the body too much and maximizes the efficiency of training while minimizing the opportunity for injury.

A strap, usually attached to the chest, continuously measures the heart rate during activity. This strap must have solid uninterrupted contact with the skin to operate correctly. Data is relayed to a receiver and provides feedback when the body is working outside the targeted heart-rate zone. Some monitors do not require chest straps, instead a finger touches the sensor to collect heart-rate data.

Heart-monitor training can be effective when the information collected is used to design and implement a personal workout regimen. To do this, an initial calculation of the various heart-rate zones for the heart is made. These zones are used to guide the exertion rate during workouts.

Troubleshooting Heart Monitors

Remember:

- moisten the electrodes
- adjust the chest straps to fit correctly
- place the receiver at least three feet away from another receiver to avoid cross-talk
- interference can also result from other electronic equipment, such as cell phones, wireless Internet, power lines and electronic consoles on cardio equipment
- position the wrist receiver and chest transmitter within one meter of each other
- the placement of the chest transmitter across the chest is important.

Heart-rate Monitor Check-in/Check-out System

HRM Number	Name of user

Students should use the same monitor for each session.