ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL TWO

INSTRUCTIONAL GUIDE

SECTION 5

EO M290.05 – IDENTIFY HIKING TECHNIQUES

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-802/PG-001, Chapter 4. Specific uses for said resources are identified throughout the Instructional Guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

PRE-LESSON ASSIGNMENT

Create slides or copy the handouts located at Annex A for each cadet.

The instructor may bring in examples of hiking footwear, if available, for demonstration purposes.

APPROACH

An interactive lecture was chosen for TP1 to TP3 to present background material to the cadets.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to identify hiking techniques. The cadets will be able to recognize how to monitor their daily water requirements, identify characteristics of hiking footwear and identify a personal hiking rhythm.

IMPORTANCE

It is important for cadets to know how to use hiking techniques to allow for a more comfortable and satisfying experience. Hiking is low-impact and this makes it suitable for virtually everyone; providing good aerobic exercise, toning muscles and improving general physical condition.

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Teaching point 1 **Explain Potable Water Requirements for Consumption During a Day Hike**

Time: 15 min Method: Interactive Lecture

DAILY WATER REQUIREMENTS

Performance-related Water Loss

- Water is lost from sweating, urinating, breathing, and defecating.
- When working hard and sweating heavily, a person can lose up to a litre of water per hour.
- At high altitudes where the air is dry, a person can dehydrate merely by breathing at rest.
- Under “normal” conditions, a person’s thirst mechanism, dry mouth and hormones in the kidneys, stimulates them to drink enough water to stay hydrated.
- If a person is working very hard or sweating profusely, if they are in a very hot or dry climate, or if they have an aggravating condition such as diarrhea or nausea that causes vomiting, they will have to drink water deliberately and regularly regardless of how thirsty they feel.
- Dehydration impairs humans, both physically and mentally.
- As a person becomes dehydrated, their blood plasma volume drops and, consequently, their hearts must work harder to keep body tissues supplied with blood. The result is a decrease in cardiovascular performance.
- When dehydrated, one’s body is also less able to dissipate heat through sweat (thermoregulation).
- Finally, the body’s ability to digest and metabolize food is impaired when it is low on water.

Daily Water Intake by Weight

- When as little as 1 percent of body weight in water is lost, a person’s physical performance begins to decline.
- If a 68 kg (150-pound) person is short just 0.95 litres (a quart) of water, heat regulation and exercise performance starts to decline.
- When a person is down 2.84 litres (three quarts) of water, that same 68 kg (150-pound) person will lose 20–30 percent of their exercise performance.



Present a slide or distribute a photocopy of Figure A-1.



Present a slide or distribute a photocopy of Figure A-2.

MAINTAINING SAFE HYDRATION LEVELS

Pre-hydrating

- Drink extra water before a strenuous activity.

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- The best thing to drink is plain, cool water.

Drinking Small Amounts Often

- Drink small amounts of cool water when possible.
- Cool water is absorbed more easily by the intestines than warm water.

Avoiding Sugar and Caffeine Drinks

- Sugar impedes the body's ability to absorb fluid.
- Alcohol and caffeine inhibit one of the kidney's hormones that regulates water loss, so drinking either alcohol or caffeine will accelerate dehydration.

Routinely Drinking Water

- Incorporate drinking water into your routine by keeping a water bottle in a convenient place or using a dromedary bag (e.g. camel pack).
- Make drinking water a habit. If only a sense of thirst is relied on, chances are a hiker will get behind in hydration.
- Make a point of drinking at least 0.24 litres (8 ounces) of water for every half hour of strenuous activity.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What is the best thing to drink when pre-hydrating?

Q2. What impedes the body's ability to absorb fluid?

Q3. How can you incorporate drinking water into your routine?

ANTICIPATED ANSWERS

A1. The best thing to drink when pre-hydrating is plain, cool water.

A2. Sugar impedes the body's ability to absorb fluid?

A3. Incorporate drinking water into your routine by keeping a water bottle in a convenient place or using a dromedary bag (e.g. camel pack).

Teaching point 2 **Explain the Optimum Characteristics of Hiking Footwear**

Time: 15 min Method: Interactive Lecture

CHARACTERISTICS OF HIKING FOOTWEAR

The most important factor to consider when selecting hiking footwear is the fit. It should provide protection for the feet and a firm foundation for walking and scrambling. Today's boots are derived from athletic shoe technology. They are light, comfortable and functionally suited. Common characteristics to look for when selecting a hiking boot are:

Sturdy and Lightweight

- The boot should support the feet and ankles from twisting on uneven surfaces.
- Higher boots with stiff ankle support provide lateral rigidity.

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- The boot should also support the foot from over bending when placing too much weight on the toe or heel.
- The lighter the boot the easier walking will be.
- Every extra kg of footwear weight can be compared to 2.27 kg (5 pounds) of added backpack weight.

Comfortable (Snug Fit). When worn, footwear shall fit snugly with the heel snug against the wall of the shoe and a small amount of space for the toes to move.

Sized Correctly (Can Wiggle Toes). Boots that fit will ensure comfort during the hike. A boot fits correctly when:

- it is wide enough so that the boot matches the width of the foot with a little extra room;
- the tongue rests comfortably along the top of the foot; and
- the toes have room to wiggle.

SOCKS

The boot is only one part of the footwear system; socks are the first line of defence for the feet. A two sock system is common in many activities. Unless regularly hiking in hot, damp conditions, consider wearing one pair of heavy socks and one pair of light inner socks.

Inner Socks. This is a thin layer that helps wick, or pull moisture away from the foot. They are usually made of polypropylene material.

Outer Sock. This layer is most often made of thick wool, which can absorb moisture. This layer cushions the foot and provides insulation.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. What is the most important factor when selecting hiking footwear?

Q2. Every extra kg of footwear can be compared to what?

Q3. What is the first line of defence for the feet?

ANTICIPATED ANSWERS

A1. The most important factor to consider when selecting hiking footwear is the fit.

A2. Every extra kg of footwear weight can be compared to 2.27 kg (5 pounds) of added backpack weight.

A3. Socks.

Teaching point 3 **Explain Personal Hiking Rhythm**

Time: 20 min Method: Interactive Lecture

DETERMINING STRIDE RHYTHM AND SPEED

A steady hiking rhythm is generally more enjoyable as hikers overexert themselves less and generally keep the physical strain at enjoyable levels. Having a steady rhythm will enable a hiker to stick to a fixed schedule and lessen the strain put on the feet, legs, lungs and overall body. This allows a hiker to travel while being less fatigued.

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Developing a Hiking Rhythm. A hiking rhythm is very personal and is developed over the course of many hikes. To develop a rhythm there are some guidelines to follow:

- Choose a specific stride rhythm and speed and keep to it. A comfortable rhythm is one that allows a hiker to walk at the same intensity level for at least one hour without having to take a break.
- Adjust rhythm to terrain, weather and weight. The point where a person can no longer carry on a conversation indicates the hiker has gone beyond a comfortable tempo.
- Make the rhythm a full body movement where breathing and the swing of the arms happen in harmony with the body.
- Uneven surfaces like uphill and downhill slopes of varying incline can make it difficult to maintain a steady hiking rhythm.

CONTROLLING FATIGUE

The purpose of resting is to slow down the heart rate and breathing, thereby allowing the heart and lungs to rest. Resting gives the body time to get rid of the lactic acid built up in the muscles, and to recover from hot spots or sores.

Resting Guidelines

- Rest in regular intervals; try 10 minutes for every hour hiked (make the rest intervals part of the rhythm).
- Stick to 10 minute rest breaks. Use only lunch and supper breaks as extended rest periods.
- Ten minutes is the most effective rest duration for body recovery.
- Ensure to take off backpacks, rest in the shade, and sit down during rests.
- During the extended rest breaks, allow feet to rest and dry by removing shoes and airing out footwear.

ADJUSTING RHYTHM

Generally, hiking rhythm on a flat surface can be maintained easily; however, when weather and additional weight are included, hiking becomes more difficult. Speed depends on the fitness level of the entire group, the terrain, the altitude and pack weight. One of the best ways to measure and regulate pace is to pay close attention to the tempo of breathing.

If breathing determines pace then, for example, on level ground one takes three steps per inhalation, and three steps per exhalation. Climbing a hill, while maintaining the same breathing rate, the steps per inhalation fall to two steps. A good rule of thumb to follow is to walk at a pace that still allows one to carry on a conversation.

When travelling in different conditions, one’s pace will change according to:

- **Weather.** Poor weather will reduce pace and force the hiker to reduce step size for safety.
- **Weight.** Weight will affect pace size as the more weight one carries, the more energy must be expelled.
- **Terrain.** Travelling uphill will reduce pace size and distance travelled.

EMPLOYING FULL BODY SYNCHRONIZATION

Hiking rhythm is a full body affair. Just like marching, hiking requires coordinated movements where every action has a reaction. The swing of arms provides momentum, breathing controls pace, etc. To control rhythm, one must first learn what body parts work in unison with each other.

To employ full body synchronization during movement, the arms should be in motion at a natural swing opposite the forward foot. The swing of the arms provides momentum to help carry the body forward for the next step. Breathing will control pace (keeping in mind that a comfortable rhythm allows a person to carry on a conversation while hiking).

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CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. What is involved with developing a hiking rhythm?

Q2. How long should a rest break be?

Q3. How does travelling in different conditions change one's pace?

ANTICIPATED ANSWERS

A1. A hiking rhythm is very personal and is developed over the course of many hikes. Choose a specific stride rhythm and speed and keep to it. A comfortable rhythm is one that allows a hiker to hike at the same intensity level for at least one hour without having to take a break. Adjust rhythm to terrain, weather and weight. The point where a person can no longer carry on a conversation indicates the hiker has gone beyond a comfortable tempo. Make the rhythm a full body movement where breathing and the swing of the arms happen in harmony with the body.

A2. Rest breaks should be 10 minutes.

A3. Poor weather will reduce pace and force the hiker to reduce step size for safety, weight will affect pace size as the more weight one carries the more energy must be expelled and travelling uphill will reduce pace size and distance travelled.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. Where can you dehydrate merely by breathing at rest?

Q2. How much water can you lose when working hard and sweating heavily?

Q3. What does comfortable footwear mean?

ANTICIPATED ANSWERS

A1. You can dehydrate merely by breathing at rest at high altitudes.

A2. You can lose up to a litre of water per hour when working hard and sweating heavily.

A3. When worn, footwear shall fit snugly with the heel snug against the wall of the shoe and a small amount of space for the toes to move.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

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CLOSING STATEMENT

It is important for cadets to know how to use hiking techniques to allow for a more comfortable and satisfying experience. Hiking is an opportunity for cadets to enjoy the outdoors while engaging in physical activity.

INSTRUCTOR NOTES/REMARKS

Examples of hiking footwear should be brought into the class for demonstration purposes.

REFERENCES

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WATER REQUIREMENTS

Water Loss as a Percentage of Body Weight Related to Performance and Symptoms

0%	Normal heat regulation and performance.
1%	Thirst is stimulated, heat regulation during exercise is altered, performance begins to decline.
2%-3%	Further decrease in heat regulation, increased thirst, worsening performance.
4%	Exercise performance cut by 20-30%.
5%	Headache, irritability, “spaced-out” feeling, fatigue.
6%	Weakness, severe loss of thermoregulation.
7%	Collapse is likely unless exercise is stopped.

M., Harvey, The National Outdoor Leadership School’s Wilderness Guide, Fireside (p. 140)

Figure A-1 Water Loss Table

Recommended Daily Water Intake According to Weight

Body Weight in Kg	**Litres H_2O at Rest**
36.29 (80 lb)	2.4
45.35 (100 lb)	3
54.43 (120 lb)	3.6
63.5 (140 lb)	4.2
72.58 (160 lb)	4.8
81.65 (180 lb)	5.4
90.72 (200 lb)	6

M., Harvey, The National Outdoor Leadership School’s Wilderness Guide, Fireside (p. 141)

Figure A-2 Daily Water Intake Table

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