



COMMON TRAINING INSTRUCTIONAL GUIDE



SECTION 1

EO M204.01 – PERFORM THE PACER

Total Time:	60 min
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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. Review the PACER information located on Test Admin Manual DVD. The CD/tape for the PACER can be found in The Cooper Institute, *Fitnessgram 8.0 Stand-Alone Test Kit*, Human Kinetics. Information on the PACER can be found in The Cooper Institute, *Fitnessgram/Activitygram Test Administration Manual*, Human Kinetics, pp. 27 to 29.

Set up the training area for the PACER.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for TP1 and TP2 to present basic information on heart rate/pulse and cardiovascular endurance.

A practical activity was chosen for TP3, TP5, and TP6 as it is an interactive way to introduce cadets to cardiovascular activities in a safe and controlled environment. This activity contributes to the development of cardiovascular endurance in a fun and challenging setting.

Demonstration and performance was chosen for TP4 as it allows the instructor to explain and demonstrate how to perform the PACER while providing an opportunity for the cadets to practice the PACER under supervision.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall have performed the PACER.

IMPORTANCE

It is important for cadets to increase their physical fitness levels, beginning with their cardiovascular fitness. Performing the PACER for the first time will give each cadet an indication of where they currently are in relation to cardiovascular fitness and how they would like to improve.

Teaching Point 1

Time: 5 min

Describe Heart Rate/Pulse

Method: Interactive Lecture

DETERMINING HEART RATE/PULSE

An individual's heart rate/pulse may be taken in two locations. It can be taken at the radial artery and the carotid artery. To find the heart rate/pulse, count the number of beats in a 30-second time frame and multiply that number by two.

Radial Pulse

The first is the radial pulse, which is the pulse found on the inside of the wrist just below the base of the thumb. This pulse is taken by placing the tips of the index and middle fingers gently at the radial artery.



RCMP Recruiting – Physical Abilities Requirement Evaluation (PARE). Retrieved 21 March 2007, from http://www.rcmp-grc.gc.ca/recruiting/pare_partb_e.htm

Figure 4-1-1 Radial Pulse

Carotid Pulse

The second is the carotid pulse, which is found on both sides in the groove of the neck. This pulse is taken by placing the tips of the index and middle fingers gently at the carotid artery in the groove of the neck.



RCMP Recruiting – Physical Abilities Requirement Evaluation (PARE). Retrieved 21 March 2007, from http://www.rcmp-grc.gc.ca/recruiting/pare_partb_e.htm

Figure 4-1-2 Carotid Pulse



The thumb should never be used to take a pulse as the thumb has its own pulse.



Have the cadets find their radial or carotid pulse and practice taking their heart rate/pulse.

NORMAL RANGE FOR RESTING HEART RATE

Resting heart rate is the heart rate of an individual when they are at rest and are relaxed. The normal range for an adult (in this case an adult is considered anyone over the age of eight) is between 60 and 80 beats per minute.

TARGET HEART RATE

The target heart rate is the optimum heart rate at which an individual should train in order to get an effective workout. To calculate an individual's target heart rate, the maximum heart rate (MHR) must first be determined. The MHR is the maximum number of times that the heart is designed to beat in one minute. This is calculated by subtracting an individual's age from 220. The MHR is then multiplied by 0.6 to get the lower exercise range and by 0.8 to get the higher exercise range. The target heart rate for training should fall within this range.

$$220 - \text{Age} = \text{MHR}$$

$$\text{MHR} \times 0.6 = \text{Lower Exercise Range}$$

$$\text{MHR} \times 0.8 = \text{Higher Exercise Range}$$

Example for a 12 year old:

$$220 - 12 = 208$$

$$208 \times 0.6 = 125$$

$$208 \times 0.8 = 166$$

The following table lists the exercise ranges for 12 to 18 year olds.

Age	Lower Exercise Range	Higher Exercise Range
12	125	166
13	124	166
14	124	165
15	123	164
16	122	163
17	122	162
18	121	162

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Figure 4-1-3 Target Heart Rate

Those individuals who are just beginning to work out, should work within the lower end of the exercise range and build up. As an individual increases their level of fitness, they can work within the higher end of the exercise range.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What are the two locations that can be used to take heart rate/pulse?
- Q2. What is the normal range for an adult's resting heart rate?
- Q3. What is Maximum Heart Rate (MHR)?

ANTICIPATED ANSWERS

- A1. Radial pulse and carotid pulse.
- A2. Between 60 and 80 beats per minute.
- A3. The maximum number of beats the heart is designed to beat in one minute.

Teaching Point 2**Introduce Methods to Increase Cardiovascular Endurance**

Time: 5 min

Method: Interactive Lecture

PACING

Proper pacing is essential to every runner. Pacing is the speed that should be run in order to cover the distance. Knowing a runner's pacing speed is essential to understanding their personal level of fitness. Each individual should pace themselves based on the signs felt from the body and the environmental conditions. Not everyone will be able to run as fast or as long as everyone else in the group. An individual who cannot speak as they are running is considered to be running too fast or too long. This will prevent an individual from being able to run as long as runners who pace themselves correctly.



The "talk test" can be used to determine if someone is running at a proper pace for their level of fitness. An individual who is not able to maintain a conversation is running too fast.

RUNNING FORM

Having a proper running form can make running easier on the body and can increase individual performance. Many of the strategies will come with practice. Basic strategies to help an individual become more efficient include:

- standing upright with the head, shoulders, and hips lined up over the feet;
- keeping the head up and focusing on something ahead of you;
- keeping the chest out in a position that will allow the lungs to gain maximum breathing efficiency;
- keeping the hips slightly forward in a natural alignment;
- allowing the arms to move to the front with the elbows in and the arms coming up in a straight motion; and
- planting the feet directly under the body at the centre of gravity.

PROGRESSION

Progression is the ability to increase the pace and distance that can be run in a specific amount of time. This will increase endurance over time. Participating in any cardiovascular activity will help increase the level of cardiovascular endurance in an individual.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. Why is pacing important?
- Q2. What are some basic strategies to improve an individual's running form?
- Q3. How can you build up cardiovascular endurance?

ANTICIPATED ANSWERS

- A1. A well-paced runner will be able to run for a longer amount of time than someone who is running too fast for their level of fitness.
- A2. Basic strategies are:
- standing upright with the head, shoulders, and hips lined up over the feet;
 - keeping the head up and focusing on something ahead of you;
 - keeping the chest out in a position that will allow the lungs to gain maximum breathing efficiency;
 - keeping the hips slightly forward in a natural alignment;
 - allowing the arms to move to the front with the elbows in and the arms coming up in a straight motion; and
 - planting the feet directly under the body at the centre of gravity.
- A3. Cardiovascular endurance can be built up by participating regularly in cardiovascular activities.

Teaching Point 3

Conduct a Warm-up Session Composed of Light Cardiovascular Exercises

Time: 5 min

Method: Practical Activity



The following information will be explained to the cadets during the warm-up activity.

PURPOSE OF A WARM-UP

A warm-up is composed of stretches and light cardiovascular exercises designed to:

- stretch the muscles;
- gradually increase respiratory action and heart rate;

- expand the muscles' capillaries to accommodate the increase in blood circulation which occurs during physical activity; and
- raise the muscle temperature to facilitate reactions in muscle tissue.

GUIDELINES FOR STRETCHING

The following guidelines should be followed while stretching to prepare for physical activity and to help prevent injury:

- Stretch all major muscle groups, including the back, chest, legs, and shoulders.
- Never bounce while stretching.
- Hold each stretch for 10 to 30 seconds to let the muscles release fully.
- Repeat each stretch two to three times.
- When holding a stretch, support the limb at the joint.
- Static stretching, which is stretching a muscle and holding it in position without discomfort for 10 to 30 seconds, is considered the safest method.
- Stretching helps to relax the muscles and improve flexibility, which is the range of motion in the joints.
- As a guide, allow 10 minutes to warm-up for every hour of physical activity.



The stretches chosen should focus on the areas of the body that will be used the most during the sports activity.

ACTIVITY

OBJECTIVE

The objective of this warm-up activity is to stretch the muscles and perform light cardiovascular exercises to prepare the body for physical activity and to help prevent injuries.

RESOURCES

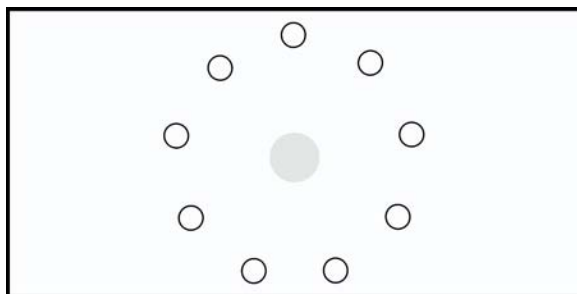
N/A.

ACTIVITY LAYOUT

N/A.

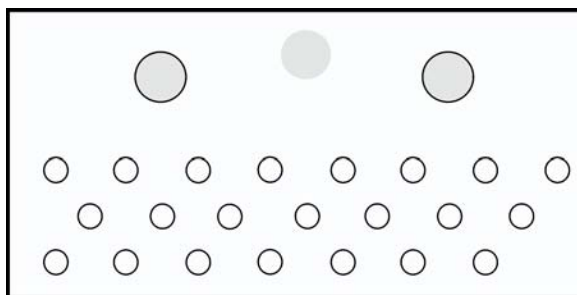
ACTIVITY INSTRUCTIONS

- Arrange the cadets in either a warm-up circle or in rows (as illustrated in [Figures 4-1-4](#) and [4-1-5](#)).



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Figure 4-1-4 Instructor in the Centre of a Warm-up Circle



D Cdts 3, 2006, Ottawa, ON: Department of National Defence

Figure 4-1-5 Instructor at the Front With Two Assistant Instructors

- Demonstrate before having the cadets attempt each stretch/light cardiovascular exercise.
- Assistant instructors can help demonstrate the exercises and ensure the cadets are performing them correctly.
- Have cadets perform each stretch/light cardiovascular exercise.



Light cardiovascular exercises should be done to warm-up the muscles prior to stretching to avoid injury to or tearing of the muscles. For example, running on the spot for 30 seconds or performing jumping jacks should be performed prior to conducting the stretches located at [Annex A](#).

SAFETY

- Ensure there are at least two arm lengths between the cadets so they can move freely.
- Ensure the cadets perform the stretches and light cardiovascular exercises in a safe manner, following the guidelines for stretching listed in this TP.

CONFIRMATION OF TEACHING POINT 3

The cadets' participation in the warm-up will serve as the confirmation of this TP.

Teaching Point 4

Demonstrate and Have the Cadets Practice Performing the PACER

Time: 10 min

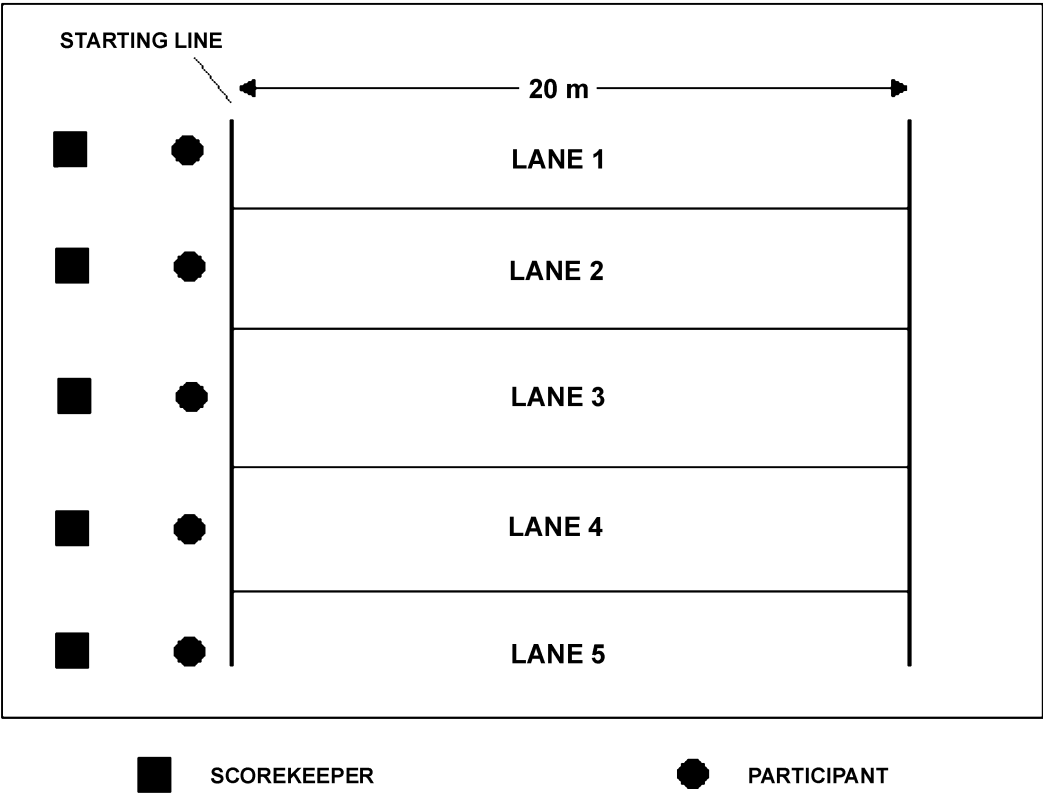
Method: Demonstration and Performance

OBJECTIVE

The objective of this activity is to run the PACER. The PACER consists of running back and forth a distance of 20 m, at a specified pace that increases each minute. Each cadet will be expected to continue as long as possible.

PACER LAYOUT

The PACER will be set up with two lines (pylons) a distance of 20 m apart. A number of 40 to 60 inch lanes will be set up for the run, as illustrated in [Figure 4-1-6](#).



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Figure 4-1-6 PACER Layout

RESPONDING TO THE BEEPS

When running the PACER, cadets will begin after the five-second countdown when the initial beep sounds. The cadets must then run to the opposite line and touch the line by the time the beep sounds. At the sound of the single beep they must turn around and then run back to the opposite line. This continues with the sound of each beep. Every minute, a triple beep will sound that alerts the cadets the pace will increase. If a cadet reaches the line before the beep, they must wait at the line for the next beep to sound before continuing in the other direction. If a cadet does not reach the line before the beep, they must turn around where they are and

return to the other line to get back on pace. The second time a cadet does not cross the opposite line before the beep, the cadet has completed the run.



At this time, play the audio CD/cassette and demonstrate how the PACER is to be conducted.

RECORDING THE RESULTS

The results will be recorded on the PACER *Individual Score Sheet A* located in The Cooper Institute, *Fitnessgram/Activitygram Test Administration Manual*, Human Kinetics, Appendix B. Cadets will be divided into pairs for the PACER. One cadet will run while their partner records their results. Once the first group has finished running, the groups will switch.



Allow cadets to do a practice run of a couple lengths with the audio CD/cassette.

CONFIRMATION OF TEACHING POINT 4

The cadets' participation in practicing the PACER will serve as the confirmation of this TP.

Teaching Point 5

Supervise While the Cadets Perform the PACER

Time: 25 min

Method: Practical Activity

ACTIVITY

OBJECTIVE

The objective of this activity is for the cadets to perform the PACER.

RESOURCES

- The Cooper Institute, *Fitnessgram 8.0 Stand-Alone Test Kit*, Human Kinetics,
- Pylons (four or more),
- Measuring tape,
- Cassette/CD player,
- Photocopies of the *PACER Individual Score Sheet A*,
- Pens/pencils, and
- First aid kit.

ACTIVITY LAYOUT

- Set up the training area with 40 to 60 inch lanes, and

- Mark a 20 m course with pylons at the ends of each lane.



This activity may be conducted outside.

ACTIVITY INSTRUCTIONS

1. Divide cadets into pairs.
2. Distribute photocopies of the PACER Individual Score Sheet A and pens/pencils to one cadet from each pair.
3. Have the cadets with the score sheet write their partner's name on the score sheet and sit behind the starting line ready to record results.
4. Have the cadets running the PACER line up in their respective lanes at the starting line and wait for instructions to begin.
5. Play the audio CD/cassette.
6. The PACER is complete when all cadets have not reached the line before the beep for the second time.
7. Once completed, have the cadets who ran the PACER become the scorekeepers and the scorekeepers become the participants.
8. Distribute photocopies of the PACER *Individual Score Sheet A* and pens/pencils to the second cadet from each pair.
9. Have cadets with the score sheet write their partner's name on the score sheet and sit behind the starting line ready to record results.
10. Have cadets running the PACER line up in their respective lanes at the starting line and wait for instructions to begin.
11. Play the audio CD/cassette.
12. The PACER is complete when all cadets have not reached the line before the beep for the second time.

SAFETY

- Ensure a designated first aider and first aid kit are available.
- Ensure water is available for the cadets after they complete the PACER.

CONFIRMATION OF TEACHING POINT 5

The cadets' participation in the PACER will serve as the confirmation of this TP.

Teaching Point 6**Conduct a Cool-down Session Composed of Light Cardiovascular Exercises**

Time: 5 min

Method: Practical Activity



The following information will be explained to the cadets during the cool-down activity.

PURPOSE OF A COOL-DOWN

A cool-down is composed of stretches and light cardiovascular exercises designed to:

- allow the body time to slowly recover from physical activity and to help prevent injury;
- prepare the respiratory system to return to its normal state; and
- stretch the muscles to help relax and restore them to their resting length.



The stretches chosen should focus on the areas of the body that were used the most during the sports activity.

ACTIVITY**OBJECTIVE**

The objective of the cool-down is to stretch the muscles and perform light cardiovascular exercises that allow the body time to recover from physical activity, and to prevent injury.

RESOURCES

N/A.

ACTIVITY LAYOUT

N/A.

ACTIVITY INSTRUCTIONS

- Arrange the cadets in either a warm-up circle or in rows (as illustrated in [Figures 4-1-4](#) and [4-1-5](#)).
- Demonstrate before having the cadets attempt each stretch/light cardiovascular exercise.
- Assistant instructors can help demonstrate the movements and ensure the cadets are performing them correctly.
- Have cadets perform each stretch/light cardiovascular exercise.

SAFETY

- Ensure there are at least two arm lengths between the cadets so they can move freely.

- Ensure the cadets perform the stretches and light cardiovascular exercises in a safe manner, following the guidelines for stretching listed in TP3.

CONFIRMATION OF TEACHING POINT 6

The cadets' participation in the cool-down will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' participation in the PACER will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

The results of the PACER are not to be used for evaluation of the cadets. The results are for each cadet to track their own progress in cardiovascular fitness when they perform the PACER again in M204.05 (Perform the PACER) and in C204.01 (Perform the PACER), for those squadrons that choose to conduct this EO.

CLOSING STATEMENT

Assessing cardiovascular fitness will allow you to identify your present level of fitness and how you can strive to increase it.

INSTRUCTOR NOTES/REMARKS

Assistant instructors may be used for extra supervision or to record the results of cadets.

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