Senior 1

2. Fitness Management

The student will demonstrate the ability to develop and follow a personal fitness plan for lifelong physical activity and well-being.

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **K.2.S1.A.1 Identify the skill-related fitness components** (e.g., balance, agility, power, reaction time, speed, coordination...) **and relate their importance to sport/physical activity performance** (e.g., reaction time in goalkeeping...).	

♦ Fitness Components in the Wide World of Sports

Arrange students in small groups. Review with them the definitions of the six skill-related fitness components and have them identify a general physical activity or a sport-specific activity that relates to each component. (For example, balance is important in the sport-specific activity of cross-country skiing, as well as in a general physical activity such as balancing on balance boards or skateboards.) Each group completes a chart such as the following and posts it for all students to view.

The Wide World of Sports		
Skill-Related Fitness Components	**Examples of General Physical Activities and Sport-Specific Activities**	
	General	**Sport-Specific**
• agility		
• balance		
• coordination		
• power		
• reaction time		
• speed		

♦ Demonstration of Fitness Components

Arrange students in small groups (as for the previous activity). Each group selects one of the six skill-related fitness components and sets up a physical-activity station in the gym, where students demonstrate to the class the selected component.

♦ Sport Connections

For each physical activity or sport performed in class, students identify the skill-related fitness component(s) that connect with that particular activity or sport.

TEACHER NOTES

Glossary

- agility
- balance
- coordination
- power
- reaction time
- speed

Tip

- Individual sports/physical activities contribute to the development of more than one skill-related fitness component.

  Examples:

  — Ballet: balance, coordination, flexibility

  — Fencing: agility, balance, coordination, reaction time, speed

  — Sprinting: agility, balance, coordination, power, reaction time, speed

SUGGESTIONS FOR ASSESSMENT

♦ Paper and Pencil Task: Fitness Components in the Wide World of Sports

Self-Assessment: Inventory

Groups view each other's responses and compare them to the answer key provided.

The Wide World of Sports: Answer Key

Skill-Related Fitness Components	Examples of General Physical Activities and Sport-Specific Activities	
	General	Sport-Specific
• agility	• beanbag shuttle-run test	• soccer footwork • basketball (person-to-person defence) • hockey (stop, start, change direction)
• balance	• balance board activities	• unicycle • balance beam gymnastics
• coordination	• juggling three tennis balls	• basketball layup • volleyball bump, set, spike • serving in racquet sports • hockey stick handling
• power	• medicine ball toss	• running long jump • power lift (as in weightlifting)
• reaction time	• metre stick drop	• goalkeeping for floorball, ice hockey, soccer, field hockey • juggling
• speed	• tire run	• sprinting (e.g., 100 metres) • pitching a fastball

♦ Paper and Pencil Task: All Activities

Peer Assessment: Inventory

Have students write a quiz that measures their knowledge of the six skill-related fitness components and how each component relates to a physical activity or sport performance (see Teacher Notes).

Display an answer key on an overhead. Students exchange papers and mark each other's responses.

PRESCRIBED LEARNING OUTCOMES

Students will...

❑ **K.2.S1.B.1 Differentiate between the benefits of active living and physical fitness development, based on a health and fitness continuum** (e.g., mild activity for health benefits, moderate to vigorous activity for fitness benefits...).

Curricular Connections
ELA:
GLO 5—Celebrate and build community.

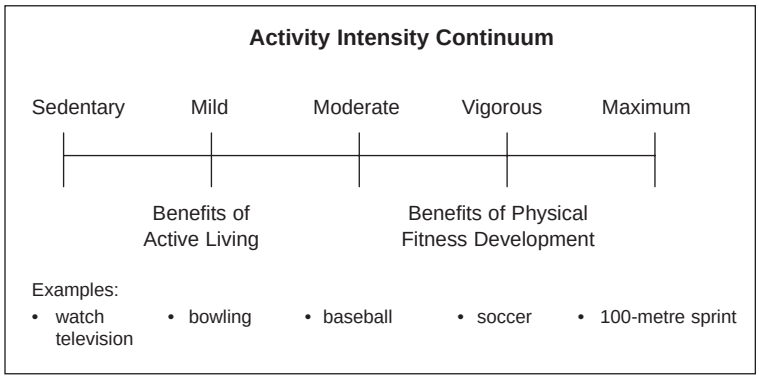
SUGGESTIONS FOR INSTRUCTION

♦ Health and Fitness Benefits

Students brainstorm to create a master list of health and/or fitness benefits that may be achieved as an individual participates in exercise of various intensity levels. Encourage class discussion after the master list has been created.

♦ Knowing the Difference: Health Versus Fitness

Designate areas of the gym to represent various intensity levels of activity, with the health benefits of active living at one end of the room and the benefits of physical fitness development at the other end.



Have students line up in the centre of the gym. Call out different sports or physical activities. Students move toward either end of the gym according to where they would place the activity on the Activity Intensity Continuum. Students defend their decisions in a class discussion.

TEACHER NOTES

Glossary

- active living

Tip

- As one moves toward the vigorous end of the Activity Intensity Continuum, the fitness components (e.g., muscular strength and endurance) will usually develop. There will usually be an improvement in health (e.g., decrease in blood pressure) as well, but increasing intensity does not necessarily cause the same increase in health benefits (or make one healthier).

SUGGESTIONS FOR ASSESSMENT

♦ **Journal/Reflection: Health and Fitness Benefits**

Teacher Assessment: Anecdotal Notes

Students reflect, in their journals, on the following questions:

1. What defines a physical activity as "active living" or as "physical fitness development"?
2. At what level on the Activity Intensity Continuum do you participate when involved in the following activities?
   a. intramural activities
   b. physical education class
   c. after-school activity
3. How can you maintain or improve your position on the continuum?
4. What are the benefits of moving toward the high (vigorous) end of the continuum?

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **K.2.S1.C.1a Explain the structure of skeletal muscle** (i.e., belly, bundle, fibre, myofibril) **as it relates to muscular development.**	

♦ Structure of Skeletal Muscle

Students identify the structure of skeletal muscle, using the unlabelled illustration provided.

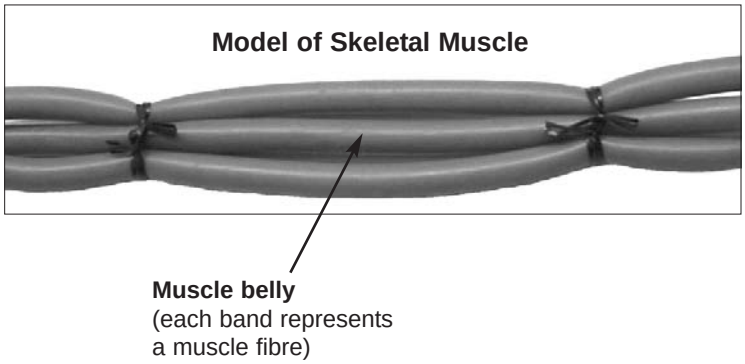
Refer to BLM S1-1: Skeletal Muscle Cross-Section (Unlabelled and Labelled).

♦ Band Together

Provide each student with a stretchy band or tubing. Have students perform a series of exercises that include the major muscle groups as part of a resistance or flexibility training program.

Upon completion of the exercise routine, have students form groups of four. Ask each group to

- tie bands or tubing together to represent the structure of a skeletal muscle
- illustrate and explain their model



TEACHER NOTES

Resource

Blackline Master

- BLM S1–1: Skeletal Muscle Cross-Section (Unlabelled and Labelled)

SUGGESTIONS FOR ASSESSMENT

♦ **Paper and Pencil Task: Structure of Skeletal Muscle**

Peer Assessment: Inventory

On an overhead transparency, show a labelled diagram of the structure of skeletal muscle. Arrange students in pairs and have them check each other's answers on their completed BLMs.

Refer to BLM S1–1: Skeletal Muscle Cross-Section (Labelled).

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **K.2.S1.C.1b Explain the structure of fibre types** (i.e., slow-twitch, fast-twitch) **as they relate to muscular development.**	

♦ The Way I Move

Students review the definitions of slow-twitch and fast-twitch muscle fibres and associated terms.

Refer to RM S1–1: Muscle Fibre Types.

Students identify (with a check mark) the muscle fibre types that predominate in each activity/sport listed in the following chart.

The Way I Move: Activity Chart

Activity/Sport	Slow-Twitch Fibre Types	Fast-Twitch Fibre Types
• running marathon (42 km; 26.2 miles)		
• lifting weights (power lifting)		
• canoeing		
• throwing a discus (one throw)		
• playing soccer		
• sprinting (100 m)		
• cross-country skiing (15 km)		

Arrange students in pairs and have them research and explain how the distribution of fast-twitch and slow-twitch muscle fibres differs between athletes in various sports (e.g., aerobic activities rely primarily on slow-twitch fibres).

TEACHER NOTES

Glossary

- fast-twitch muscle fibre
- slow-twitch muscle fibre

Resources

Publications

- Temertzoglou, Ted, and Paul Challen. *Exercise Science: An Introduction to Health and Physical Education*. Toronto, ON: Thompson Educational Publishing, Inc., 2003.
- Wilmore, Jack H., and David L. Costill. *Physiology of Sport and Exercise*. 3rd ed. Windsor, ON: Human Kinetics, 2004.

Resource Master

- RM S1–1: Muscle Fibre Types

SUGGESTIONS FOR ASSESSMENT

♦ **Paper and Pencil Task: The Way I Move**

Teacher Assessment: Checklist

Students complete The Way I Move: Activity Chart. Students could outline a weekly and a monthly activity plan for improving muscular development, keeping in mind that an individual who enjoys and succeeds in aerobic activities such as long-distance running presumably has a greater percentage of slow-twitch fibres.

PRESCRIBED LEARNING OUTCOMES

Students will...

❑ **K.2.S1.C.1c Identify types of strength exercises** (i.e., isometric, dynamic) **and stretching exercises** (i.e., static, ballistic, passive) **for personal fitness development** (i.e., strength, endurance, range of motion).

Curricular Connections
PE/HE:
K.2.S2.A.1

SUGGESTIONS FOR INSTRUCTION

♦ Strength and Stretching Exercises

Students brainstorm to create a list of strength and stretching exercises.

Arrange students in pairs and have each pair

- select a muscle/muscle group from the following list, which includes both the anterior and its corresponding posterior muscle/muscle group (Ensure that all muscles/muscle groups are selected.)
- demonstrate to the class what isometric and/or dynamic strength exercises are appropriate to develop strength and endurance
- identify the appropriate stretching exercise to develop range of motion around the selected muscle/muscle group

Muscles/Muscle Groups	
Anterior Muscle/Muscle Group	**Posterior Muscle/Muscle Group**
• trapezius	• trapezius
• deltoid	• deltoid
• pectoralis major	• latissimus dorsi
• bicep	• tricep
• rectus abdominus	• erector spinae
• quadriceps/iliopsoas	• hamstring/gluteus maximus
• tibialis anterior	• gastrocnemius/soleus

TEACHER NOTES

Glossary

- ballistic stretching
- dynamic contraction
- isometric contraction
- muscular endurance
- muscular strength
- passive stretching
- range of motion (see flexibility)
- static stretching

Resources

Publications

- Anderson, Bob. *Stretching*. 20th anniversary rev. ed. Illus. Jean Anderson. Bolinas, CA: Shelter Publications, 2000.
- Stark, Steven D. *The Stark Reality of Stretching: An Informed Approach for All Activities and Every Sport*. 4th ed. Richmond, BC: Stark Reality Corp., 1999.

Blackline Master

- BLM G–1a and G–1b: Skeletal Muscles: Anterior View, Posterior View (Unlabelled and Labelled)

Resource Master

- RM G–3: Exercise Do's and Don'ts

SUGGESTIONS FOR ASSESSMENT

♦ **Performance Task: Strength and Stretching Exercises**

Teacher/Peer Assessment: Checklist

Assess student presentations, using the following checklist/criteria.

Strength and Stretching Exercises: Presentation Checklist

Students

- ❑ identify anterior muscle strength exercise
- ❑ identify posterior muscle strength exercise
- ❑ differentiate between isometric and dynamic contraction for the selected exercise
- ❑ identify anterior muscle stretching exercise
- ❑ identify posterior muscle stretching exercise
- ❑ differentiate between static, ballistic, and passive methods of stretching for the selected exercise

PRESCRIBED LEARNING OUTCOMES
Students will...
❑ **K.2.S1.C.2 Describe the principles of training and conditioning for physical activities** (i.e., progressive overload, specificity, reversibility, regularity, individual variability, starting point).

SUGGESTIONS FOR INSTRUCTION

♦ Discovering What We Know

To identify what students know about the principles of training and conditioning for physical activities, have them match the following words with their correct descriptor.

Discovering What We Know: Match-Up

Term	#	Descriptor
• progressive overload		1. the highly trained individual who achieves small incremental performance gains through repeated training
• specificity		2. prevention of over-training
• reversibility/ regularity		3. stop training a muscle or muscle group and muscles lose the benefits that were achieved through training
• diminishing return		4. reducing training frequency but maintaining intensity and duration
• stress/rest		5. a minimum of three or more times a week for 45 to 60 minutes to develop and/or sustain cardiovascular fitness
• ceiling		6. a muscle-training program in which the amount of resistance is systematically increased as the muscles gain strength
• maintenance		7. a baseline from which to develop a fitness program and assess results
• individual variability		8. no two individuals respond the same to a particular training/exercise program
• starting point		9. a plateau
• FITT principle		10. developing the leg muscles by performing squats would benefit the execution of the basketball jump shot

(continued)

TEACHER NOTES

Tip

- Encourage students to incorporate the principles of training and conditioning in their personal fitness plans.

Resources

Publications

- Manitoba Education, Citizenship and Youth. *Guidelines for Fitness Assessment in Manitoba Schools*: *A Resource for Physical Education/Health Education.* Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2004.
- Manitoba Fitness Council. *Active Healthy People: Fitness Theory Manual*. Winnipeg, MB: Manitoba Fitness Council, n.d.
- ---. *Resistance Training Manual*. Winnipeg, MB: Manitoba Fitness Council, n.d.
- Temertzoglou, Ted, and Paul Challen. *Exercise Science: An Introduction to Health and Physical Education*. Toronto, ON: Thompson Educational Publishing, Inc., 2003.

Resource Masters

- RM G–2: Active Learning Strategies
- RM G–4: Principles of Training and Conditioning for Physical Activities
- RM G–5: FITT Principle Guidelines

SUGGESTIONS FOR ASSESSMENT

♦ **Paper and Pencil Task: Discovering What We Know**

Self-Assessment: Inventory

Students assess their responses, using the answer key provided.

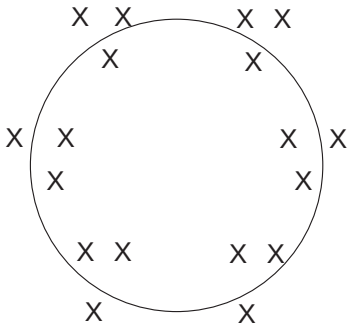
Discovering What We Know: Match-Up (Answer Key)

Term	Descriptor #
• progressive overload	6
• specificity	10
• reversibility/regularity	3
• diminishing return	1
• stress/rest	2
• ceiling	9
• maintenance	4
• individual variability	8
• starting point	7
• FITT principle	5

(continued)

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **K.2.S1.C.2** *(continued)*	*(continued)*

♦ Rotating Reel



Have students form groups of three and assign each person a number (e.g., 1, 2, 3). Ask each small group to distribute themselves evenly on a large circle.

Ask the class a question about the principles of training and conditioning for physical activities and have each group discuss the question to determine a small-group answer. Choose a number and ask students with that number to move in a clockwise direction to the next group, share their answer with the new group, and generate further discussion. As groups share their answers with the class, clarify and correct answers as needed. Continue the sequence of asking and answering a question, identifying the persons who will move to the next group in the circle, and sharing the answer.

Refer to Rotating Reel in RM G–2: Active Learning Strategies. For background information, refer to RM G–4: Principles of Training and Conditioning for Physical Activities.

♦ Designing a Fitness Program

Arrange students in groups of two or three and have each group design a fitness program that incorporates the principles of training and conditioning for either a thrower (shot put, discus, hammer, or javelin) or a long-distance runner (cross-country or marathon runner). (Ensure that both thrower and long-distance runner are selected.) Groups post their programs and view each other's work.

TEACHER NOTES

SUGGESTIONS FOR ASSESSMENT

(continued)

♦ **Observation: Designing a Fitness Program**
Peer Assessment: Inventory

Groups compare and contrast their fitness programs with those of other groups that selected the same athlete. Then, as a class, students identify the differences between programs for the two athletes.

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **K.2.S1.C.3 Design and implement effective warm-up and cool-down routines for specific team-related physical activities** (e.g., volleyball, soccer, rugby...).	♦ **Sport-Specific Stretches** Students collect diagrams or pictures of various flexibility exercises and post them around the gym. Students visit each diagram or picture and record two or three team sports for which the illustrated exercise could be used as a warm-up and/or cool-down routine. Encourage an open classroom discussion in which students share their information. ♦ **Designing Warm-up and Cool-down Routines** Arrange students in groups of four and ask each group to • choose a team sport (e.g., volleyball, basketball, soccer, rugby) • research, design, and implement effective warm-up and cool-down routines for their chosen team sport • justify why they chose the particular exercise they did and explain its relationship to their sport • demonstrate and relate the importance of their exercises to the class

Curricular Connections
ELA:
GLO 3—Manage ideas and information.

TEACHER NOTES

Review

- Review the importance of participating in appropriate warm-ups and cool-downs before and after physical activity. Explain that warm-ups should be designed with the specific physical activity in mind.

Tip

- Encourage students to lead warm-up and/or cool-down routines during physical activities performed in class.

Resources

Publications

- Anderson, Bob. *Stretching*. 20th anniversary rev. ed. Illus. Jean Anderson. Bolinas, CA: Shelter Publications, 2000.
- Heyward, Vivian H. *Advanced Fitness Assessment and Exercise Prescription.* 4th ed. Champaign, IL: Human Kinetics, 2002.
- Stark, Steven D. *The Stark Reality of Stretching: An Informed Approach for All Activities and Every Sport*. 4th ed. Richmond, BC: Stark Reality Corp., 1999.

Resource Master

- RM G–3: Exercise Do's and Don'ts

SUGGESTIONS FOR ASSESSMENT

♦ Performance Task: Designing Warm-up and Cool-down Routines

Group Assessment: Rating Scale

Groups assess each other's presentations using the following rating scale and criteria.

Assessment of Warm-up and Cool-down Routines	
Rating Scale	The student
3 Exemplary	• identified numerous team-specific exercises • provided clear and detailed demonstrations of the exercises • provided strong justification for the selection of exercises in relation to the sport
2 Satisfactory	• identified some team-specific exercises • provided clear demonstrations of the exercises • provided some justification for the selection of exercises in relation to the sport
1 Developing	• identified a few team-specific exercises • provided somewhat unclear demonstrations of the exercises • provided limited justification for the selection of exercises in relation to the sport

PRESCRIBED LEARNING OUTCOMES

Students will...

❑ **K.2.S1.C.4 Identify the factors related to health and fitness development** (e.g., health benefit, physical attributes, interpersonal interaction, influence of family, availability of facilities/equipment, competition, cooperation, personal success, time management...) **that affect choices of physical activities for self and others.**

Curricular Connections

ELA:
GLO 5—Celebrate and build community.

SC (Biology):
S3B-3-18 Identify personal lifestyle choices that contribute to cardiovascular and respiratory wellness.

SUGGESTIONS FOR INSTRUCTION

♦ Factor Analysis

Arrange students in groups of four or five and have them brainstorm to create a master list of factors that affect choices of physical activities for self and others (e.g., influence of family). Have them discuss the master list and share with others how some factors would affect students differently.

Encourage class discussion by asking how students might deal with (i.e., change or avoid) negative influences.

♦ Support Your Choice

Students select a fitness facility, a physical activity, or a sport team that they would like to join and identify the factors that affected their choice. Using the factors identified in the previous exercise (Factor Analysis), students identify which factors influenced them in their choice. Each student shares his or her information with a peer.

TEACHER NOTES

Tips

- Look at this learning outcome from the point of view of "throughout life."
- For more ideas, see *The Canadian Active Living Challenge: Leader's Resource Tool Kit, Program 3* (CAHPERD/CIRA).
- Remind students that increasing physical activity increases level of fitness and aids in the prevention of disease. Note that one still might be genetically predisposed to disease.

Aboriginal Link

- For information, refer to the following resources (see Aboriginal Websites in Bibliography):
  - — Manitoba Aboriginal Sport and Recreation Council (MASRC) Inc. provides opportunities for Aboriginal youth and adults in Manitoba to sustain/improve their physical, emotional, mental, and spiritual well-being through sport, fitness, recreation, and social and leisure activities. This organization also focuses on the development and enhancement of Aboriginal culture.
  - — Winnipeg Aboriginal Sport Achievement Centre (WASAC) provides opportunities for Aboriginal children and youth to participate in sport and recreation activities and build the self-esteem and self-confidence necessary to any person's success in life.

SUGGESTIONS FOR ASSESSMENT

♦ Performance Task: Support Your Choice

Peer Assessment: Checklist

Peers assess whether or not students are able to identify the factors that influence their choices.

♦ Interview/Questioning: Support Your Choice

Teacher Assessment: Inventory

Have students complete the following chart, reflecting on their own choice of physical activities and noting interview responses from a friend and a family member.

Physical Activity Choices: What and Why?		
Self and Others	**What physical activity do you like to do?**	**Why? What factors affect your activity choice?**
Self		
Friend		
Family Member		

TEACHER NOTES *(continued)*

Resource

Publication

- The Canadian Association for Health, Physical Education, Recreation and Dance and Canadian Intramural Recreation Association (CAHPERD/CIRA). *The Canadian Active Living Challenge: Leader's Resource Tool Kit, Program 3: Ages 12 to 14: Theme: Making Choices and Setting Goals*. Gloucester, ON: CAHPERD/CIRA, 1994.

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **S.2.S1.A.1a Participate in physical activities at a level that contributes to the goals of an individualized fitness plan.**	♦ **Personal Fitness Plan**

Curricular Connections
PE/HE:
S.2.S1.A.1b
ELA:
GLO 3—Manage ideas and information.

Students identify their goal(s) for a personal fitness plan (e.g., increase cardiovascular endurance to allow running 1600 metres [1 mile] without stopping) that they could achieve by the end of a six-week program. Using a Progress in Motion chart such as the one below, students

- state their goal(s) for a six-week personal fitness plan
- identify the physical activities in which they plan to participate each week to accomplish their goal(s)
- record what they did each week (in and out of class) that demonstrated a level of participation contributing to their fitness goal(s)

Progress in Motion

Name: _____ **Length of Time:** Six weeks

Goal Statement: _____

_____

Progress Log	In what physical activities do I plan to participate?	What did I do?
Week 1		
Week 2		
Week 3		
Week 4		
Week 5		
Week 6		

Did I achieve my goal(s)? Explain.

♦ **Fun and Fitness**

Students participate in a variety of fitness-related activities (e.g., resistance training circuits, walking, obstacle courses, paarlauf, scavenger hunts, step-bench activities, aerobics or group fitness activities). Following the activities, students indicate how each activity contributes to their personal fitness goals.

TEACHER NOTES

Tip

- Encourage weekly check-ins to discuss how students are progressing with their personal fitness plans.

Resource

Resource Master

- RM G–5: FITT Principle Guidelines

SUGGESTIONS FOR ASSESSMENT

♦ **Performance Task: Personal Fitness Plan**

Self-Assessment: Rating Scale

Students complete their six-week fitness plan and use the following rating scale to assess their physical activity participation in terms of how it contributed to their goal(s).

Progress in Motion:
Personal Participation Rating

Rating Scale:
- **4 – consistently** participated in physical activities (on task)
- **3 – usually** participated in physical activities
- **2 – sometimes** participated in physical activities
- **1 – rarely** participated in physical activities (not on task)

Progress Log	Weekly Rating			
	4	3	2	1
Week 1				
Week 2				
Week 3				
Week 4				
Week 5				
Week 6				

♦ **Performance Task: All Activities**

Teacher/Self-Assessment: Scoring Rubric

With teacher direction, students develop criteria for assessing physical activity participation in class activities.

PRESCRIBED LEARNING OUTCOMES

Students will...

❑ **S.2.S1.A.1b Participate in planned and self-directed activities that maintain heart-rate levels in various zones** (e.g., general health, basic fitness, healthy heart...).

Curricular Connections

PE/HE:
K.2.S1.B.1
S.2.S1.A.1a
S.2.S1.A.2

SUGGESTIONS FOR INSTRUCTION

♦ Personal Fitness Journal

Before participating in activities that maintain the heart-rate levels in various training zones, students review the heart-rate zone levels and formula. Using this information, students determine their maximum heart rate and calculate the five target heart-rate zones.

Refer to RM G–6: Heart-Rate Zone Levels and RM G–7: Heart-Rate Zone Formula.

Students create a Heart-Rate Zone Participation chart in their journals, as shown below. They participate in and chart both planned and self-directed activities that maintain their heart rates in the five target heart-rate zones. Either heart-rate monitors or the rate of perceived exertion method can be used to identify heart-rate zones. Students keep their participation charts in their journals and add to them daily or weekly.

Heart-Rate Zone Participation

My maximum heart rate: _____

My target heart-rate range:

Zone 1	Zone 2	Zone 3	Zone 4	Zone 5

Date	Activity	Heart-Rate Zone Level	Approximate Time in Zone Level
Example: • Monday, March 3	• intramural basketball game	• Zone 3: moderate	• 20 minutes

TEACHER NOTES

Glossary

- rate of perceived exertion and category-ratio pain scales (Borg)

Tips

- Research suggests that maximum heart rate (MHR) has more to do with leg strength than with anything else, as stronger legs pump more blood to the heart, which results in a faster heart rate.
- The popular formula for MHR of 220 for males (or 226 for females) minus age tends to overestimate heart rate in "younger" people and underestimates heart rate in "older" people. Therefore, a new formula that is applicable to both males and females should be used: MHR = 208 minus (70% of age) (Tanaka 153-56).

  For example, see step 2 (b) in RM G–7: Heart-Rate Zone Formula.
- Simplify the five heart-rate zone levels into three zones:
  1. easy (mild) zone: 60% to 75% MHR
  2. moderate zone: 75% to 85% MHR
  3. hard (vigorous) zone: 85% to 100% MHR
- Explain to students that target heart-rate zone levels serve as guidelines, since determining one's target heart rate is individual, depending on individual fitness levels, physical abilities, age, and so on.

SUGGESTIONS FOR ASSESSMENT

♦ Performance Task: Personal Fitness Journal

Self-Assessment: Inventory

At the end of every week, students assess their level of participation in all five heart-rate zones, using the following inventory.

Level of Participation in Heart-Rate Zones					
Date	**Number of Times I Participated In**				
	Zone 1	**Zone 2**	**Zone 3**	**Zone 4**	**Zone 5**
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

TEACHER NOTES *(continued)*

Resources

Publications

- Borg, Gunnar. *Perceived Exertion and Pain Scales.* Windsor, ON: Human Kinetics, 1998.
- Howard, Mike. "Cardiovascular Programming." *Fitness Trainer Canada* (February/March 2003): 26-29.
- Kirkpatrick, Beth, and Burton H. Birnbaum. *Lessons from the Heart: Individualizing Physical Education with Heart Rate Monitors*. Windsor, ON: Human Kinetics, 1997.
- Manitoba Education, Citizenship and Youth. *Guidelines for Fitness Assessment in Manitoba Schools: A Resource for Physical Education/Health Education*. Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2004.
- Tanaka, H., K.D. Monahan, and D.R. Seals. "Age-Predicted Maximal Heart Rate Revisited." *Journal of the American College of Cardiology* 37.1 (2001): 153-56.

Resource Masters

- RM G–6: Heart-Rate Zone Levels
- RM G–7: Heart-Rate Zone Formula

PRESCRIBED LEARNING OUTCOMES

Students will...

❑ **S.2.S1.A.2 Demonstrate use of heart-rate monitoring** (e.g., pulse points, heart monitors, software programs...) **to compare exertion level in a variety of activities.**

Curricular Connections
PE/HE:
S.2.S1.A.1b

SUGGESTIONS FOR INSTRUCTION

♦ The Fartlek Training Method

To demonstrate heart-rate monitoring during activities of different exertion levels, have students do the following in the suggested sequence:

1. Participate in an appropriate warm-up for a walking, jogging, or running activity.
2. Set monitors to a Zone 2 (mild activity level: 60% to 70% MHR) (as identified in RM G–6: Heart-Rate Zone Levels).
3. Walk, jog, or run for five minutes within the Zone 2 level.
4. Pick up the pace to a Zone 3 (moderate activity level: 70% to 80% MHR) for as long as possible, up to a maximum of five minutes, and then return to the Zone 2 level for five minutes.
5. Pick up the pace again to a Zone 4 (vigorous activity level: 80% to 90% MHR) for as long possible, up to a maximum of five minutes, and then return to the Zone 2 level for five minutes.
6. Participate in an appropriate cool-down before downloading the information from the heart-rate monitor to a computer and generating a printout.

♦ In the Zone

Students set their heart-rate monitors to the training zone of their choice. After an appropriate warm-up, they start a workout of their choice at the low end of the training zone. They then pick up the pace to the high end of the training zone. Once they reach the high end of the zone, they slow down their workout to the low end of the zone and continue to move from low to high to low for 20 minutes. They download the information from the monitor to a computer and create a printout.

TEACHER NOTES

Review

- Review the heart-rate zone formula and the use of heart-rate monitors.

Tips

- Refer to the Suggestions for Instruction for learning outcome S.2.S1.A.1b before addressing this learning outcome.
- Fartlek is a Swedish term meaning speed play.
- If a class set of heart-rate monitors is not available either by purchase or loan through the school division, these activities may need to be done on an individual rotation basis with only a limited number of monitors.
- Explain to students that target heart-rate zone levels serve as guidelines, since determining one's target heart rate is individual, depending on individual fitness levels, physical abilities, age, and so on.

Resources

Publications

- Borg, Gunnar. *Perceived Exertion and Pain Scales*. Windsor, ON: Human Kinetics, 1998.
- Kirkpatrick, Beth, and Burton H. Birnbaum. *Lessons from the Heart: Individualizing Physical Education with Heart Rate Monitors*. Windsor, ON: Human Kinetics, 1997.

Resource Masters

- RM G–6: Heart-Rate Zone Levels
- RM G–7: Heart-Rate Zone Formula

SUGGESTIONS FOR ASSESSMENT

♦ Performance Task: The Fartlek Training Method

Self-Assessment: Checklist/Inventory

Once students have completed the Fartlek Training workout and downloaded their results to create a printout, they use the following checklist/inventory to assess their use of heart-rate monitors through various exertion levels.

Self-Assessment of Heart-Rate Monitoring

I was

- successful in creating a printout that showed my heart rates from Zone 2 to Zone 4, back to Zone 2 and up to Zone 4, and back to Zone 2 Yes ___ No ___
- active in Zone 3 for _____ minutes (maximum five)
- active in Zone 4 for _____ minutes (maximum five)

♦ Questioning/Interview: All Activities

Teacher Assessment: Checklist

Use the following checklist to assess whether students used the heart-rate monitors through various exertion levels, with an analysis of their printouts.

Heart-Rate Monitoring Checklist

The student was able to identify on the printout

- ❑ the figure showing that he or she successfully worked in various heart-rate zone levels
- ❑ the various zone levels and the length of time in each

PRESCRIBED LEARNING OUTCOMES

Students will...

❑ **S.2.S1.A.3a Assess the level of ability in one or more skill-related components** (e.g., balance, agility, power, reaction time, speed, coordination...) **of physical fitness.**

Curricular Connections
PE/HE:
S.2.S1.A.3b

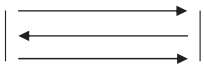
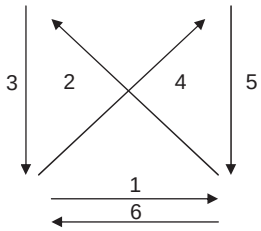
SUGGESTIONS FOR INSTRUCTION

♦ Skill-Related Physical Fitness Components

Students perform one task for each of the six skill-related fitness components: agility, balance, coordination, power, reaction time, and speed. They record and analyze their results on the BLM provided.

Refer to BLM G–2: Skill-Related Physical Fitness Components.

Skill-Related Performance Tasks

Skill-Related Components	Tasks
Agility	• Agility Run  • King's Crown (use basketball key)  1 side shuffle 2 run diagonally to corner 3 run backwards to corner 4 run diagonally to corner 5 run backwards to corner 6 side shuffle
Balance (Time)	• Stork Stand (L-R) • Balance Board with —Ball —Ridge
Coordination	• Juggling (use beanbags or foam balls) • Kick-Sack • Sepak Takraw
Power	• Running Long Jump
Reaction Time	• Metre Stick Drop and Catch (work in pairs) — Partner A holds stick at one end, with the lowest end of the measure pointing down. — Partner B holds hand at 0 cm. — Partner A drops stick. — Partner B grabs stick. — Measure where stick was grabbed.
Speed	• Run/Sprint a Chosen Distance (50 m, 100 m)

TEACHER NOTES

Glossary

- agility
- balance
- coordination
- power
- reaction time
- speed

Tips

- Other reliable fitness tests may be substituted for the ones identified.
- Refer to *Guidelines for Fitness Assessment in Manitoba Schools* (Manitoba Education, Citizenship and Youth) for selected tests that provide valid and reliable measures of fitness, and for specific task instruction.
- Avoid using fitness tests for grading purposes or for student competition. Self-assessment is encouraged, based on individual improvement.
- To allow for individualized testing, set up stations through which students can rotate, recording their own scores. Provide alternative tasks at the stations for students who may not feel comfortable participating in a specific fitness-testing activity.

Resources

Publication

- Manitoba Education, Citizenship and Youth. *Guidelines for Fitness Assessment in Manitoba Schools: A Resource for Physical Education/Health Education.* Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2004.

SUGGESTIONS FOR ASSESSMENT

♦ **Journal/Reflection: Skill-Related Physical Fitness Components**

Self-Assessment: Inventory

Students regularly record and assess their results for all skill-related components of physical fitness, using the BLM provided.

Refer to BLM G–2: Skill-Related Physical Fitness Components.

TEACHER NOTES *(continued)*

Blackline Master

- BLM G–2: Skill-Related Physical Fitness Components

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
Students will...	
❑ **S.2.S1.A.3b Analyze own fitness test results** (e.g., using information technology...) **to establish personal fitness goals.**	♦ **How Fit Am I?**

Curricular Connections
PE/HE:
S.2.S1.A.3a

Students complete tasks related to the major physical fitness components.

Suggested Task Options:

- **cardiovascular endurance**
  - — 1600-metre (1 mile) run
  - — 1600-metre (1 mile) walk
  - — Léger's 20-metre shuttle run (beep-test)
- **muscular strength and endurance**
  - — push-up
  - — pull-up
  - — modified pull-up
  - — flexed arm-hang
  - — abdominal curl-up
- **flexibility**
  - — modified sit and reach
  - — shoulder stretch
- **body composition (optional)**
  - — two-site skinfold
  - — four-site skinfold
  - — body mass index (BMI)

Students record and analyze their test results for three assessment periods, using the BLM provided. There should be at least six weeks between each of the three assessment periods.

Refer to BLM G–3: Major Physical Fitness Components.

TEACHER NOTES

Glossary

- body composition
- cardiovascular endurance
- flexibility
- muscular endurance
- muscular strength

Tips

- It is difficult to separate testing for muscular strength from testing for muscular endurance. Usually they are assessed together.
- For the purpose of assessing muscular strength and muscular endurance, use one task for the upper body (e.g., flexed arm-hang) and a different task for the abdominal muscle group (e.g., curl-up).
- Do not use fitness tests for grading purposes or for competition among students. Encourage student self-assessment based on change (i.e., improvement).
- Refer to *Guidelines for Fitness Assessment in Manitoba Schools* (Manitoba Education, Citizenship and Youth) for selected tests that provide valid and reliable measures of fitness and for specific task instruction.
- To allow for individualized testing, set up stations through which students can rotate, recording their own scores. Provide alternative tasks at the stations for students who may not feel comfortable participating in a specific fitness-testing activity.

SUGGESTIONS FOR ASSESSMENT

♦ Journal/Reflection: How Fit Am I?

Self-Assessment: Inventory

After students have completed the third assessment period, they answer the following question in their journals:

- Based on your analysis of your fitness-test results, what are your personal fitness goals for the duration of your high school years and into adulthood?

TEACHER NOTES *(continued)*

Resources

Publications

- Kirkpatrick, Beth, and Burton H. Birnbaum. *Lessons from the Heart: Individualizing Physical Education with Heart Rate Monitors*. Windsor, ON: Human Kinetics, 1997.
- Manitoba Education, Citizenship and Youth. *Guidelines for Fitness Assessment in Manitoba Schools: A Resource for Physical Education/Health Education*. Winnipeg, MB: Manitoba Education, Citizenship and Youth, 2004.

Blackline Master

- BLM G–3 Major Physical Fitness Components.

Fitness Management Outcomes: Senior 1

Knowledge

❑ **K.2.S1.A.1 Identify the skill-related fitness components** (e.g., balance, agility, power, reaction time, speed, coordination...) **and relate their importance to sport/physical activity performance** (e.g., reaction time in goalkeeping...).

❑ **K.2.S1.B.1 Differentiate between the benefits of active living and physical fitness development, based on a health and fitness continuum** (e.g., mild activity for health benefits, moderate to vigorous activity for fitness benefits...).

❑ **K.2.S1.C.1a Explain the structure of skeletal muscle** (i.e., belly, bundle, fibre, myofibril) **as it relates to muscular development.**

❑ **K.2.S1.C.1b Explain the structure of fibre types** (i.e., slow-twitch, fast-twitch) **as they relate to muscular development.**

❑ **K.2.S1.C.1c Identify types of strength exercises** (i.e., isometric, dynamic) **and stretching exercises** (i.e., static, ballistic, passive) **for personal fitness development** (i.e., strength, endurance, range of motion).

❑ **K.2.S1.C.2 Describe the principles of training and conditioning for physical activities** (i.e., progressive overload, specificity, reversibility, regularity, individual variability, starting point).

❑ **K.2.S1.C.3 Design and implement effective warm-up and cool-down routines for specific team-related physical activities** (e.g., volleyball, soccer, rugby...).

❑ **K.2.S1.C.4 Identify the factors related to health and fitness development** (e.g., health benefit, physical attributes, interpersonal interaction, influence of family, availability of facilities/equipment, competition, cooperation, personal success, time management...) **that affect choices of physical activities for self and others.**

Skills

❑ **S.2.S1.A.1a Participate in physical activities at a level that contributes to the goals of an individualized fitness plan.**

❑ **S.2.S1.A.1b Participate in planned and self-directed activities that maintain heart-rate levels in various zones** (e.g., general health, basic fitness, healthy heart...).

❑ **S.2.S1.A.2 Demonstrate use of heart-rate monitoring** (e.g., pulse points, heart monitors, software programs...) **to compare exertion level in a variety of activities.**

❑ **S.2.S1.A.3a Assess the level of ability in one or more skill-related components** (e.g., balance, agility, power, reaction time, speed, coordination...) **of physical fitness.**

❑ **S.2.S1.A.3b Analyze own fitness test results** (e.g., using information technology...) **to establish personal fitness goals.**

Attitude Indicators

2.1 Show an interest in and responsibility for personal fitness.

2.2 Appreciate the role and contribution of regular participation in physical activity for health and fitness.

2.3 Show respect and acceptance for physical and performance limitations of self and others.