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# Developing a fitness program

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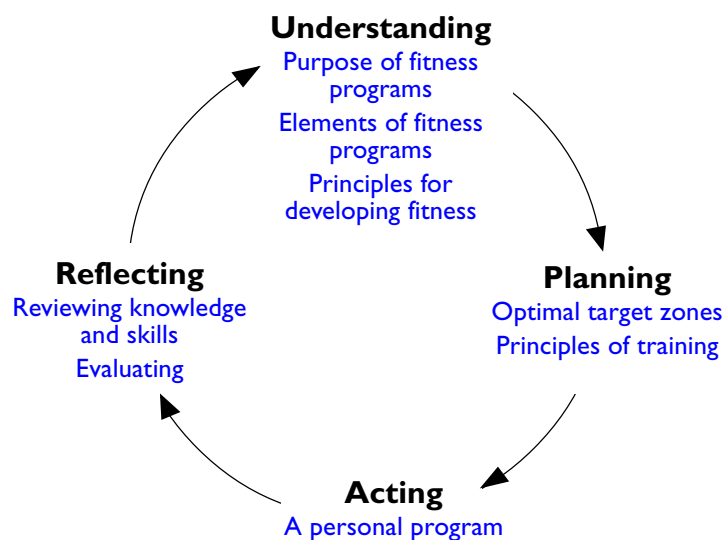
Developing Concepts and Skills for Physical Activity

## Purpose

Students examine fitness programs and actively participate in fitness sessions to learn to apply the principles of training to bring about improvements in each of the components of health-related fitness. They learn that the development of each of the components of fitness requires specific types of exercises, with a minimum frequency, intensity and time (duration).

## Overview of activities

Activities in this module are based on a learner-centred approach with an emphasis on decision making and problem solving. As the following diagram shows, activities are sequenced in **understanding**, **planning**, **acting** and **reflecting** phases.



## Core learning outcome

This module focuses on the following core learning outcome from the Years 1 to 10 Health and Physical Education Syllabus:

### Developing Concepts and Skills for Physical Activity

5.3 Students devise and implement a health-related fitness program applying principles of training.

## Core content

This module incorporates the following core content from the syllabus:

### Developing Concepts and Skills for Physical Activity

- relationship between health, physical activity and fitness, including benefits of health-related fitness, components of fitness, principles of fitness and skills for participation in fitness activities.

## Assessment strategies

The following are examples of assessment tasks that provide opportunities for students to demonstrate the core learning outcome identified in this module.

### Developing Concepts and Skills for Physical Activity 5.3

- Students present a health-related fitness log that contains a personal health-related fitness program they have devised and a diary to show how they have implemented it.
  - (a) The personal health-related fitness program should show warm-up and cool-down routines and a series of work-out schedules that have been devised to develop the components of health-related fitness. The work-out schedule should show application of the principles of training.
  - (b) The diary should contain evidence of implementation of the program including the principles of training. The dates of participation, the intensity of effort (perceived exertion, heart-rate monitoring, load) and the duration of work-outs should be recorded. Reflections on physiological and psychological benefits, adjustments made to the program and barriers to completing sessions could also be noted.
    - Can the student devise a health-related fitness program?
    - Does the program reflect the types of exercises conducive to developing each of the health-related fitness components?
    - Can the student apply the principles of training?
    - Can the student show evidence of implementing the program?
    - Can the student show evidence of having applied the principles of training?
    - Does the student implement the program regularly (frequently)?
    - Can the student show evidence of increasing and monitoring intensity of effort?
    - Can the student show evidence of overloading and increasing the time (duration) of effort?

## Background information

### Health-related fitness programs

If students are to maintain or develop health-related fitness across their lifespan, they require the knowledge and skills that enable them to devise and implement programs tailored to developing each of the components of health-related fitness.

Teachers should be aware that the core learning outcome does not warrant students to undergo fitness testing. This module has been designed to build on the knowledge and skills students are expected to have acquired at Level 4 and, therefore, assumes a basic understanding of each of the health-related fitness components and the activities that promote each of these. Emphasis is on students gaining an understanding of, and applying the principles of, training to develop health-related fitness programs capable of bringing about fitness improvement.

Through opportunities to examine fitness programs and to participate in fitness sessions modelled from those programs, students can gain the knowledge and skills to help them develop effective personal fitness programs around enjoyable activities.

Teachers should be aware that physiological improvements in health-related fitness can take several weeks to become apparent. However, psychological benefits may be more immediate. In addition, due to the influence of chronological age, physical maturation, motivation and other factors, such as nutrition, learnt skills, medical conditions and environmental factors, it is inappropriate for teachers or students to engage in social comparison of performance in fitness activities. It is more important that students begin to evaluate their own fitness-related health needs and monitor their own participation and performance in physical activity.

Students should also be given opportunities to consider the health and safety and time-management issues associated with implementing their programs. Students need the knowledge and skills to make decisions about appropriate dress, footwear, fluid replacement and scheduling of fitness sessions into their daily lives. Such knowledge and skills, together with the strategies to overcome the potential barriers to implementing their program, can further empower students to devise and implement programs. These programs should meet not only the guidelines advocated by health and exercise professionals but also their own individual health needs and circumstances.

### Terminology

Learning activities in this module involve use of the following language in the context of Health and Physical Education:

aerobic fitness	flexibility	principles of training
cool-down	health-related fitness	specificity
duration	intensity	threshold of training
fitness program	muscular endurance	warm-up
fitness session	muscular strength	work load
fitness target zone	overload	work-out phase

## School authority policies

Teachers need to be aware of and observe school authority policies that may be relevant to this module.

Safety policies are of particular relevance in ‘Developing a fitness program’. Some safety issues that teachers should consider are:

- appropriate warm-up and cool-down activities;
- use of an area suitable for the activity — for example, large enough for the number of students participating, level surface and free of loose objects;
- selection of activities appropriate to the skill and ability levels of students;
- opportunities for students to replace fluids after vigorous physical activity;
- appropriate time of day and suitable climatic temperatures;
- medical conditions of individual students.

## Social justice principles

This module provides opportunities for students to increase their understanding and appreciation of supportive environments and diversity. It includes activities that encourage students to:

- accept that levels of exertion will be unique to individuals;
- understand that commitment to developing health-related fitness is affected by motivation, sociocultural factors, environment;
- recognise the barriers and enablers experienced by individuals or groups who wish to participate in health-related fitness programs.

Students with disabilities or learning difficulties may require some activities to be modified to optimise both their participation and their ability to demonstrate the outcomes. Teachers should consult with parents/carers and specialist support staff to determine whether modification is necessary.

## Support materials and references

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## Activities

### Understanding

#### PURPOSE OF FITNESS PROGRAMS

#### Establishing the purpose for and the components of health-related fitness programs

- ▶ Students review their prior learning of health-related fitness, in particular, the benefits of regular participation in physical activity, the components of health-related fitness and the activities that can promote each of those components.
- ▶ Students discuss the range of fitness programs followed by individuals and groups in the community. They distinguish between a 'sport-related fitness program' and a 'health-related fitness program' and compose a class definition for each of those terms.

#### Teaching considerations

Ensure students understand that health-related fitness programs target individual health and wellbeing rather than enhancing sporting performance.

Programs will vary depending on physical and sociocultural aspects — for example, abilities and gender, cultural background, geographic location and socioeconomic circumstances.

- ▶ Students discuss the relevance of enjoying and participating in health-related fitness programs throughout one's life. They suggest ways individuals can make sessions an enjoyable part of their daily routine and how they can be motivated to participate in them regularly.

#### ELEMENTS OF FITNESS PROGRAMS

#### Understanding the elements of fitness programs and the phases of a fitness session

- ▶ Students discuss the relationship between fitness programs and fitness sessions. They also discuss the place of fitness assessments and fitness monitoring in these programs.

#### Teaching considerations

Clarify to students that fitness programs comprise a series of fitness sessions, which are planned in sequence to bring about progressive improvement in fitness.

Highlight that community fitness programs often involve fitness testing to determine current levels of fitness and to monitor progressive improvements.

- ▶ Students identify the three phases of fitness sessions and discuss the purpose of each phase.

**Focus questions could include:**

- What are the common terms used to refer to the three phases of a fitness session?
- What is the purpose of the warm-up phase? Work-out phase? Cool-down phase?
- What are some exercises for preparing the skeletal muscles for more vigorous physical activity? What exercises prepare the heart muscle?
- What level of effort will be required in the work-out phase if the aerobic component of health-related fitness is to be developed?
- How does body temperature and blood flow change throughout the three phases?
- How and where could the rate of blood flow around the body be monitored?

- ▶ Students learn an exercise routine appropriate for the warm-up and cool-down phases of a fitness session and take part in a work-out designed to develop all or specific components of health-related fitness. They identify the physiological changes that take place as they work through the different phases of the fitness session and any psychological effects they experience. They discuss the importance of individuals not overexerting themselves in fitness sessions.

**Focus questions could include:**

- How do you know when your skeletal muscles and joints are ready for more vigorous exercise?
- How do you know when your aerobic system is ready for more vigorous activity?
- How did you feel mentally and emotionally while participating in the session? How did you feel after the session?
- Did you exert yourself sufficiently in the work-out phase to achieve fitness benefits or did you underexert or overexert yourself? How were you aware of this?
- Would your efforts have had an effect on your aerobic fitness? On your muscular strength or endurance? On your flexibility?
- Why is it important that individuals deciding to begin a health-related fitness program do not overexert themselves?

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**Teaching considerations**

- To develop the aerobic component of health-related fitness the work-out bout might include:
    - a fixed-dose exercise circuit designed to develop the range of components of health-related fitness;
    - a seven-minute jog-walk;
    - interval runs over 60 metres, progressively increasing effort (from 60 per cent effort to 75, 90 and 100 per cent).
  - At early stages in the unit of work advise students to perform work-out bouts in their comfort zone or at a moderate level of intensity and not to overexert themselves.
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► Students investigate what health and exercise professionals (for example, from the National Heart Foundation or Sports Medicine Foundation) advocate about appropriate dress and footwear, fluid intake, safety factors and ways to cope with changes in circumstances (travel, illness, injury).

**Focus questions could include:**

- Who are health and exercise professionals?
- What do these professionals recommend?
- How are these recommendations communicated?
- For which social groups are their recommendations made?

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**Teaching consideration**

Encourage students to use critical literacy skills to evaluate the recommendations being made.

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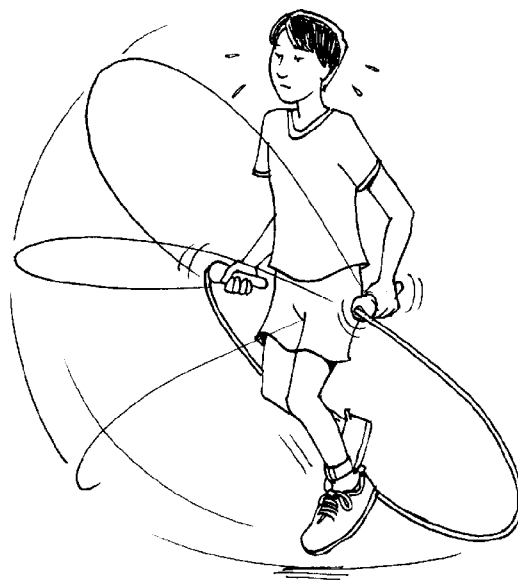
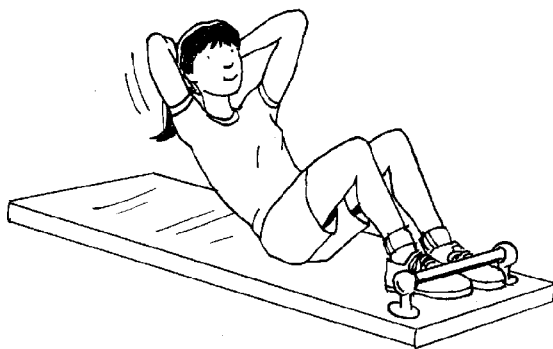
**PRINCIPLES FOR DEVELOPING FITNESS**

**Developing an understanding of the principles of training applied to health-related fitness programs**

► Students hypothesise as to the effectiveness of a health-related fitness program that involves engaging in the same activities with the same level of effort in every fitness session.

**Focus questions could include:**

- Why would health-related fitness not be developed effectively if a fitness program included activities that concentrated only on muscular fitness? Which health-related fitness components would not be developed?
- If the same activity and fixed dose were prescribed for every session of a fitness program, what would be the possible consequence for an individual's motivation to participate?
- How might health-related fitness gains be affected?





► Students examine fitness programs to identify the principles of training that are applied to enable individuals to both improve their health-related fitness across the range of components and to maintain their motivation to participate for the long term.

**Focus questions could include:**

- How frequently do the programs recommend that individuals participate in fitness sessions?
- Why is frequent, rather than infrequent, participation encouraged?
- Do the programs offer a variety of activities? What is the importance of this?
- Do the activities in the programs promote development of all the components of health-related fitness?
- Which specific activities in the programs are there to improve flexibility? Aerobic fitness? Muscular fitness (strength and endurance)?
- How much time is allocated for a fitness session? How much time is allocated to each of the phases of the session?
- Is the work load or effort in each work-out phase varied? How is the work load varied? Why is it varied?

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**Teaching considerations**

Ensure that students become aware of the following principles of training:

- Frequency: how often a fitness session should be engaged in. Three to four times a week are recommended.
- Intensity: the amount of effort or exertion during exercise. For aerobic work-outs, 70–85 per cent of maximum heart rate is recommended.
- Time: the duration of the work-out phase, for which 20 to 30 minutes is recommended.
- Type: what sort of physical activity. Physical activities chosen should be specific to the health-related fitness component to be developed.

Explain that these principles are often referred to as the FITT formula.

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## Planning

### OPTIMAL TARGET ZONES

#### Investigating optimal target zones and planning ways to monitor intensity of effort

► Students read articles or view a video to identify the optimal target zones within which to exercise if the components of health-related fitness are to be developed. They discuss the value of optimal target zones to suit a variety of individuals and identify ways of monitoring their intensity of effort for each of the components.

#### Focus questions could include:

- What are the optimal target zones of exercise for developing aerobic fitness, flexibility and muscular fitness?
- How can you monitor whether your effort to develop aerobic fitness, flexibility or muscular fitness is in the optimal target zone?
- How useful would optimal target zones be for the elderly? How useful for individuals with respiratory or heart conditions?

#### Teaching considerations

Highlight to students that, if fitness gains are to be realised, individuals must exercise in the target zones.

Explain that target zones are likely to vary for individuals with medical conditions.

### PRINCIPLES OF TRAINING

#### Applying the principles of training to develop the components of health-related fitness



► Students investigate ways the principles of training are applied in programs to develop aerobic fitness. They learn how to calculate their target heart-rate zone for aerobic activities (see Resource Sheet 1) and how to monitor their resting, exercise and recovery heart rate. They learn how to tune into their perceived levels of exertion and adjust them accordingly.

#### Focus questions could include:

- What is your maximum heart rate?
- What is your target heart rate during aerobic fitness work-outs?
- What are the lower and upper limits of your target heart rate?
- Can you run 1–1.6 kilometres at a level of effort that feels comfortable to you?
- What was your exercise heart rate at the end of your run?
- What do you need to do if your heart rate is below your target heart rate?
- What type of activities specifically develop aerobic fitness?

#### Teaching consideration

Students could run, swim or pedal on a bicycle ergometer for five to seven minutes at a steady and comfortable pace and monitor their heart rate.

► Students investigate ways the principles of training are applied in programs to develop muscular fitness (strength or endurance). They decide what weights to use and the number of repetitions required. They also monitor their effort and reflect upon their perceived levels of exertion.

**Focus questions might include:**

- What load should you lift if you want to improve your muscular strength?
- What load should you lift if you want to improve your muscular endurance?
- How many repetitions should you perform?
- How many sets of these repetitions should you perform?
- How can you bring about improvement once this work load becomes easy?
- What activities specifically develop muscular strength?
- What activities specifically develop muscular endurance?
- How would these activities vary according to age, medical conditions and ability or disability?

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**Teaching considerations**

Students could participate in partner-resistance exercises, medicine-ball activities, treadmill walking, jogging up a hill, ergometer cycling/rowing or a gym circuit.

Isometric and isotonic exercises could be taught.

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► Students investigate ways the principles of training are applied in programs to develop flexibility. They practise recommended flexibility exercises for the major muscles and joints of the body. They learn how far to stretch (intensity), how long to hold a stretch (time) and how to monitor their effort and reflect upon their perceived levels of exertion.

**Focus questions could include:**

- How far should you stretch a joint?
- Should stretches be done quickly or slowly? Why?
- How long should a stretch be held?
- How can flexibility be improved?
- What exercises would develop flexibility specifically at the hip joint? At the shoulder joint?

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**Teaching consideration**

Students could participate in a range of individual and partner exercises, static and dynamic, with and without the use of equipment.

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## Acting

### A PERSONAL PROGRAM

#### Devising and implementing a personal fitness program



► Students devise their own personal health-related fitness program, using Resource Sheets 2 and 3 to assist their planning.

#### Focus questions could include:

- How will you include each of the health-related fitness components in your program?
- What specific activities will you schedule to develop your aerobic fitness? Your flexibility? Your muscular strength? Your muscular endurance?
- When and at what time of the day will you schedule sessions?
- What format will you present this program in?
- How long will you schedule each session? How could you show this on your program?
- How have you allowed for an increase in your intensity of effort?
- What strategy will you use to monitor the work load you accomplished in each session and to record your progress?
- What warm-up and cool-down activities will you do?

► Students implement their personal health-related fitness program in their own time and in scheduled class time. They monitor their exertion, maintain a diary of their participation and exertion and include comments — for example, how they felt during each session and why, why they missed sessions or why they did not achieve the work load set.

#### Focus questions could include:

- Did you implement the session(s) as scheduled?
- What barriers did you face?
- How did you overcome the barrier or how might you deal with it another time?
- How hard did you work out?
- Did you work at a sufficient intensity? Why?
- Why did you miss a session?
- Can you reschedule or make up for the missed session? When?
- Do you need to adjust your program? Why? How will you adjust it?

#### Teaching considerations

Encourage students to exercise with a partner for encouragement and peer support.



Refer to Resource Sheets 4 and 5 for samples of a personal fitness program and a fitness diary.

## Reflecting

### REVIEWING KNOWLEDGE AND SKILLS

#### Reviewing learning about developing health-related fitness programs

► Students reflect upon what they have learnt about devising and implementing health-related fitness programs and the principles of training.

**Focus questions could include:**

- What did you learn about devising health-related fitness programs?
- What are the principles of training and how did you learn to use them?
- How devoted are you to improving your health-related fitness? Why?
- How has your attitude to health-related fitness changed? Why?
- How have your health-related fitness behaviours changed? Why?
- What have you learnt about ways you and others can achieve health-related fitness?
- What skills have you acquired to enable you to develop the components of health-related fitness?
- What skills have you acquired to enable you to monitor your participation in health-related fitness activities?
- How confident are you that you will pursue physical activity for health-related fitness reasons throughout the year and then throughout your life?
- What other skills do you need to develop your health-related fitness?
- What barriers may impede you in maintaining health-related fitness? How might these barriers be challenged?
- What support do you need to maintain your participation in a health-related fitness program?

### EVALUATING

#### Reflecting upon the teaching–learning process

► Students reflect upon the effectiveness of using the inquiry approach in the teaching–learning process.

**Focus questions could include:**

- Did the inquiry process help you identify the information you needed?
- Did the inquiry process broaden your knowledge about health-related fitness programs?
- Did the inquiry process challenge your current attitudes and broaden your perspective about health-related fitness for all?
- Did the activities help you to develop useful skills? If so, how? If not, what activities might better assist you to develop these skills?

# Calculating target heart-rate zone



*It is generally recommended that the target heart rate for aerobic training be 60 to 75 per cent of your maximum heart rate. Your maximum heart rate is established by subtracting your age from 220.*

Following is an example for a 12-year-old:

$$220 - 12 = 208 \text{ (maximum heart rate)}$$

$$60\% \text{ of } 208 = 125$$

$$75\% \text{ of } 208 = 156$$

Thus the target heart rate for this 12-year-old student is 125 (60 per cent) to 156 (75 per cent).

Now calculate your own target heart-rate training zone.

1. Calculate your maximum heart rate given your age:  $220 - \text{your age} =$
2. Calculate your target heart-rate zone so that it is 60 per cent to 75 per cent of your maximum heart rate:

The lower limit is  $\frac{60}{100} \times \quad =$

The upper limit is  $\frac{75}{100} \times \quad =$

A key figure in the formula for calculating your heart rate is 220 as this is the maximum rate at which your heart is likely to beat in its lifetime. During infancy your heart beats at the rate of 220 beats per minute. Your resting heart rate then falls as you grow and develop. Aerobic training will bring about a further reduction in your resting heart rate. The reason is that aerobic training makes your heart muscle stronger and hence more efficient at squeezing blood from the heart each time it beats.

## Resource Sheet 2

# Principles of training for improvement in health-related fitness



Complete this table to ensure fitness components and principles of training are part of your personal fitness program.

Fitness components	Principles of training				Type What activities specifically develop this component?
	Frequency How many times per week?	Intensity What work load should you aim for? How can you bring about improvement when this work load becomes easy?	Time For how long should you work out?		
1. Aerobic endurance					
2. Flexibility					
3. Muscular strength					
4. Muscular endurance					

# Developing my health-related fitness program



## Resource Sheet 3

Complete the following table to help you plan your fitness program.

Health-related fitness component	Type of activities (preferred activities to develop this component)	Ways I will monitor my work load and improvement
<b>Aerobic endurance</b>		
<b>Flexibility</b>	Neck Shoulders Wrist Trunk  Hips Legs Ankles	
<b>Muscular strength</b>	Neck  Arms, shoulders  Spine/trunk  Upper leg  Lower leg	
<b>Muscular endurance</b>	Arms, shoulders  Abdomen  Upper leg  Lower leg	



Resource Sheet 4

# Sample personal fitness program



1. Shade in those blocks of time to which you must commit — for example, for school, meal breaks, music instruction.
2. Identify free blocks of time that are suitable for you to schedule physical activity sessions.
3. Mark in time blocks to be used for your fitness program.

**Schedule of health-related fitness sessions**

Time of day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6.00 a.m.							
7.00 a.m.							
8.00 a.m.							
9.00 a.m.							
10.00 a.m.							
11.00 a.m.							
12.00 noon							
1.00 p.m.							
2.00 p.m.							
3.00 p.m.							
4.00 p.m.							
5.00 p.m.							
6.00 p.m.							
7.00 p.m.							
8.00 p.m.							
9.00 p.m.							

# My fitness diary



## Resource Sheet 5

To monitor your fitness program, complete the tables below.

Name: \_\_\_\_\_ Week: \_\_\_\_\_

Day/Date	Session (Activity and load)	Monitoring (Heart rates)	Comments (Perceived level of exertion, barriers, progress, enjoyment)

Name: \_\_\_\_\_ Week: \_\_\_\_\_

Day/Date	Session (Activity and load)	Monitoring (Heart rates)	Comments (Perceived level of exertion, barriers, progress, enjoyment)



**This sourcebook module should be read in conjunction with the following Queensland School Curriculum Council materials:**

*Years 1 to 10 Health and Physical Education Syllabus*

*Years 1 to 10 Health and Physical Education Sourcebook: Guidelines*

*Health and Physical Education Initial In-service Materials*

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