Recognise healthy body systems in a health care context (HLTAP301B)
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Before you begin

What you will learn

This learner guide is based on HLTAP301B Recognise healthy body systems in a health care context from Version 3.0 of the CHC08 Community Services Training Package.

Knowledge and skills required

The following is a list of the knowledge and skills required by the worker to recognise body systems and their components and to identify and refer alterations associated with the functioning of the human body in the context of health care work.

Knowledge

By the end of this unit students should know:
- Basic structure and functions of the body systems and associated components, including:
  - cardiovascular system
  - respiratory system
  - musculo-skeletal system
  - endocrine system
  - nervous system
  - digestive system
  - urinary system
  - reproductive system
  - integumentary system
  - lymphatic system
  - the special senses – smell, taste, vision, equilibrium and hearing
  - cells, tissues and organs
- Basic maintenance for a healthy body

Skills

At the conclusion of this unit it is critical that students demonstrate the ability to:
- Use and articulate accurately common health terminology related to human anatomy and physiology
- Apply required knowledge as outlined to own work role

Refer to the Training website (www.training.gov.au) for full details of the unit of competency.
How this unit is organised and what we expect of you

Throughout the learning material you will see the following:

**Practice Task**

A practice task is an activity that allows you to assess your own learning progress. It is an opportunity to determine the levels of your learning and to identify areas for improvement.

**PLEASE DON’T SUBMIT YOUR PRACTICE TASKS.**

**Discussion**

At the end of each chapter you will find a number of discussion topics. Whether this occurs in an online forum, through online messaging or in a face-to-face environment, discussions allow you to create and consolidate new, meaningful knowledge with your fellow students.

**Print students**

As a print student, you may wish to participate in the discussion forums to liaise with fellow students. Discussion forums constitute an important resource that enhances your learning and can be accessed via OpenSpace. To access OpenSpace, go to <http://www.opencolleges.edu.au/> The link to Login to OpenSpace is located on the top right hand side of the main Open Colleges web page.

Your theory assessments for this unit are located in the back of this student workbook and your workplace assessments are available in Study Period 4.

**Online students**

If you are an online student, you are expected to participate in the online discussions. Discussion forums constitute an important resource that enhances your learning.

As an online student, you may download a copy of this student workbook from your unit on OpenSpace. Please ensure that you save this workbook to your hard drive.

Your theory assessments for this unit can also be downloaded from your unit in OpenSpace. Your workplace assessments are available in Study Period 4.
If you have a question about this unit

If you have any questions or need further assistance with understanding concepts in the unit, please contact your trainer/assessor via the OpenSpace messaging system. Alternatively, if you have any enquiries regarding your course, please email studentsupport@opencolleges.edu.au or call the Student Services team (1300 650 011) for further assistance. You will receive a response to your enquiry within two (2) working days.

**Glossary:** A separate glossary of key words used in the learning material can be found in Study Period 1. This glossary also contains definitions of various terms used throughout your guide.

How to work through this unit

Understand the material

To successfully complete this unit, you need to make sure you read the material presented in each of the chapters. Should you come across material that is confusing or doesn't make sense to you, please contact your trainer via the OpenSpace messaging system. Most problems that you come across can be easily addressed by seeking clarification, and your trainer is in the best position to offer assistance. As a learner, it is very important that you take on some of the responsibility for the learning that you will undertake.

Do the practice tasks

As you read through the unit you will see a number of tasks. These give you an opportunity to:

› **use** your own experience
› **think** about what you have learnt
› **do** some research to enrich your learning
› **discuss** an issue with someone.

Minimum essential requirements for students in this unit

To pass the unit, you must attempt, complete and submit each of the assessment tasks and receive a satisfactory grade for each task.

Assessment procedures and advice

Students are expected to refer to the following information, along with “Open Colleges Assessment Policy and Procedures” available via the Open Colleges website at http://www.opencolleges.edu.au/policies.aspx#PoliciesProcedures

Please note that you will also have workplace assessment activities to complete for this unit. These activities will be undertaken either when you commence your work placement with a host organisation or if you are currently working when you decide to undertake your practical workplace assessment tasks. Workplace assessments are available in Study Period 4.
Theory Assessments

Instructions

Once you feel confident that you have covered the learning materials for this unit, you are ready to attempt this assessment.

To complete the assessment, please create a new MS-Word document and type your answers to each question or task in this document, noting the question number from the assessment.

To help Open Colleges manage your assessment, please use the following file-naming convention when you save your MS-Word document. Your file should be named and saved to your computer’s hard drive using your: [student number]_[assessment]_[assessment number].doc For example: 12345678_21850a_01.docx.

Assessment Submission

When you are ready to submit your assessment, upload the file in OpenSpace using the Assessment Upload links in the relevant Study Period of your course. The Student Lounge provides a ‘Quick Guide to Uploading Assessments’ if you need further assistance. Uploading assessments in OpenSpace will enable Open Colleges to provide you with the fastest feedback and grade on your assessment.

Alternatively, you can print and post your assessment to Open Colleges, PO Box 1568, Strawberry Hills, NSW 2012. Please ensure that you use the Open Colleges Assessment Cover Sheet (available in the Student Lounge in OpenSpace). Where assessments are submitted by post, grades will be released in OpenSpace. Please note that assessments submitted by post may take up to 21 days from the date received by Open Colleges to grade and are reliant on the efficiency of the postal service.

It is important that you keep a copy of all electronic and hardcopy assessments submitted to Open Colleges.

Resources

The following resources are suggested to assist you to gain the skills and knowledge required in this unit. They may be available online, at the Gale Library or your local library. You are not expected to read each one. Your trainer may suggest other resources to assist you in your learning.
Websites

Bartleby.com Anatomy of the human body www.bartleby.com/107/>

BBC Science: human body and mind <www.bbc.co.uk/science/humanbody/>

Dr Saul's biology in motion Cardiovascular system <www.biologyinmotion.com/cardio/index.html>


Intellimed InnerBody <www.innerbody.com/htm/body.html>


Virtual Medical Centre Cardiovascular system (Heart) <www.virtualrespiratorycentre.com/anatomy.asp?sid=16>

Tips to study success

» Below are some links that may help you to improve your study skills:


» Webspiration – free online mind mapping tool. Watch a video on how to use Webspiration on YouTube http://www.youtube.com/watch?v=ToEXlbQC_F8&feature=related

» Example of a mind map at MindMeister – http://www.mindmeister.com/23290325/western-philosophy

» Bubbl-us – free online mind mapping tool https://bubbl.us/

» Mind 42.com – free online mind mapping application http://mind42.com/signin


» Study Stack – Online flash cards: use the ones available or create your own http://www.studystack.com/

» Basic Study Skills - ALISON Online Training Course – http://alison.com/courses/Study-Skills

» Math Help and Tutorials by Subject and/or Topic – http://math.about.com/od/mathhelpandtutorials/Math_Help_and_Tutorials_by_Subject_and_or_Topic.htm

» Khan academy Maths – http://www.khanacademy.org/

» Computer basics – http://www.gcflearnfree.org/computers


» Writing essays – http://www.greatsource.com/iwrite/educators/e_forms.html

› Sense-Lang.org – Touch-typing and accuracy practice.
Introduction: Recognising healthy body systems in a health care context

It is likely that you are completing the unit HLTAP301B Recognise healthy body systems in a health care context as part of a course leading to a qualification in aged care or in home and community care. This unit is a prerequisite for many units in a number of qualifications in the community services field. If you decide that you want to extend your knowledge, or move into other areas of health care, such as nursing, paramedicine, funeral services, occupational therapy, podiatry or physiotherapy, a knowledge and understanding of how to recognise healthy body systems is a good starting point.

This learner guide offers you the chance to learn about anatomy and physiology. Anatomy refers to the structure of and relationship between body parts and systems. Physiology refers to the study of the body as a whole. In particular the aspects of anatomy and physiology covered are:

› the language and terminology
› principles for maintaining the body
› the relationship between the body’s systems
› holistic health care
› how the relationships within the body’s system support healthy functioning.

Aged care workers and home and community care workers can benefit from a basic knowledge of anatomy and physiology. This knowledge can help support workers:

› recognise and report signs that a client’s body systems are not working correctly, which can include changes in behaviour such as confusion, changes in appearance such as dried skin, changes in function such as an increased heart rate and difficulty breathing, pain and weight gain
› assist with transfers of clients with minimal harm to their musculoskeletal system
› assist clients with rehabilitative exercises
› support the client in developing and maintaining healthy habits
› assist the client to enjoy optimal physical and mental health.

You will be given a chance to understand how the body protects itself, maintains stability,
fights infection and nourishes itself. Furthermore you will learn how the body’s systems impact on one another. This will help illustrate the importance of maintaining the body’s overall state of health.

This unit can be quite challenging as it does include medical terminology and some advanced concepts. To get the most benefit from this resource it is worthwhile to:

› read and review the material a number of times
› complete all activities
› use diagrams and models of the human body to help understand where the various body parts are located and how they work together to maintain a functional whole.

Skills and knowledge

There are two main knowledge requirements that your learning will meet:

› the basic structure and functions of the body systems and associated components, including the cardiovascular system, respiratory system, the special senses (smell, taste, vision, equilibrium and hearing)
› basic maintenance for a healthy body.

Likewise, the two main skills that should be developed are:

› being able to use and explain common health terminology related to human anatomy and physiology
› applying required knowledge as part of your work role.

As a support worker, you work in close contact with clients, so you are well placed to notice any signs that the client’s body may not be functioning healthily. Your knowledge of what makes for a healthy body allows you to report any abnormal signs and to offer your clients advice on how to maintain their health.
Chapter 1: Applying knowledge of the basic structure of the healthy human body

If you are currently working as a home and community care worker, as a personal care assistant (PCA) or aged care worker, or intend to gain employment in one of these roles, you need to have and apply a basic knowledge of the structure of the human body.

By understanding the structure, function and location of the major body systems, the terminology (words and phrases) used and the principles for maintaining a healthy body you will be able to play an active role in assisting the older person, or person with a disability, improve their health and prevent illness and disease. In addition you will be able to communicate appropriately with other medical, allied health and welfare professionals involved in the care of the client.

In this chapter you will learn about:

1.1 Using appropriate health terminology to describe major body systems
1.2 Applying the principles of maintaining a healthy body
1.3 Using the knowledge of how major components of each body system and their location links to other structures
1.1 Using appropriate health terminology to describe major body systems

The tasks and duties associated with your role as a PCA or home and community care worker may vary depending upon the size and type of organisation you work for. Typical duties can include: providing personal care; conducting assessments; developing care plans; participating in case conferences and other meetings; as well as recognising and reporting issues that may represent a threat to the client’s physical or mental health and wellbeing.

When carrying out these tasks, you need to be familiar with medical terminology used to describe body parts and medical conditions. Support workers who have no knowledge of medical terminology are at risk of misunderstanding information given to them in written form or verbally by other health professionals. They may also use incorrect terms when discussing a client with other relevant health professionals. At best, the incorrect use of medical terminology could lead to misunderstandings and confusion. At worst it could result in delays in treatment, which could result in the client becoming unwell, or, in extreme cases, dying.

Support workers who understand how the body works will be able to carry out a range of tasks more effectively and efficiently.

The following table lists some examples of tasks that require a basic understanding of medical terminology.

<table>
<thead>
<tr>
<th>Task</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client questioning</td>
<td>A support worker is responsible for finding out about a client’s needs on intake. These needs may change so the support worker must continue to find</td>
</tr>
<tr>
<td></td>
<td>out about a client’s needs while providing care, and if relevant, on discharge. Questioning can be used to assess these needs. Forms are used on</td>
</tr>
<tr>
<td></td>
<td>intake; these usually include questions about all aspects of the person’s health and wellbeing including their medical history, living arrangements, diet,</td>
</tr>
<tr>
<td></td>
<td>psychological and physical health and wellbeing. Support workers are also required to communicate with clients throughout their stay or during care.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Task</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| **Documenting medical history**           | It is important to maintain an accurate record of a person’s medical history including current and past illnesses, injuries and diseases. There are many reasons for this.  

The effects of some conditions can be made worse or changed by the presence of other disease or illnesses. Therefore it is important to be aware of all of a person’s conditions. For example, consider Sarah, aged 67, who has depression and also the problem of alcoholism. Sarah drinks to feel better. While this works in the short term, in the long term excessive use of alcohol makes her feel worse.  

Both the depression and alcoholism need to be treated together as these conditions are related.  

The use of prescription, non-prescription, legal and illegal drugs should also be documented. The effects of some drugs change when used with other drugs or produce adverse effects when administered (given) to people with specific medical conditions.  

Consider the following example: Bob, 87, has hypertension. He also has depression. A doctor reading his medical history would not prescribe Methyl dopa, a medication used to treat hypertension, as this medication is also known to make the effects of depression worse. |
| **Preparing admission forms**             | Admission forms are used to record personal information about a client. This information is used to help determine the type of care provided. Many medical terms sound similar but have quite different meanings. An example of two words that look and sound similar is dysphagia and dysphasia. A person with dysphagia has trouble swallowing. A person with dysphasia may have trouble understanding words and/or choosing the appropriate words to express themselves. Clearly dysphagia and dysphasia are quite different conditions requiring markedly different treatments.  

A support worker must make sure that they use the right medical term when preparing admission forms and other documents. It is equally important to spell every term correctly. This can avoid confusion and prevent inappropriate care. |
| **Assisting other health care professionals** | A support worker may be required to assist other health professionals by:  

- conducting transfers  
- lifting and turning patients in beds  
- observing changes in a person’s condition, environment or behaviour  
- applying and changing dressings  
- taking and recording blood pressure  
- monitoring self-medication or assisting with medication.  

An understanding of health and the body’s structures can help a support worker contribute more effectively and safely while carrying out these duties. |
| **Participating in case conferences**     | A case conference is a formal meeting involving all stakeholders. These formal meetings offer all stakeholders the chance to share information about the person’s condition, consider possible solutions and determine a care plan. |
| **Providing care**                        | When providing personal care, support workers can note changes in the condition of a client’s skin, weight, appearance and mental state. Support workers who are familiar with the body’s systems and structures can recognise changes that are abnormal or of concern and report these changes to their supervisor promptly. |
The following example demonstrates how to go about ensuring that a client’s medical condition is clearly understood.

**Example**

Marita works as a personal care worker at a low-care hostel. She is interviewing Bill, a new client who has been admitted. She asks Bill about his medical history. Bill tells her, ‘I had a bit of trouble with a hypa-active thyroid’. Marita questions Bill, ‘A hypoactive or hyperactive thyroid?’ Bill replies, ‘I’m not really sure. All I know is that made me put on weight’. Marita responds, ‘It sounds like you had a hypoactive thyroid’. Marita notices that Bill appears to be a healthy weight. She says, ‘Are you currently taking any medication for your thyroid?’ Bill tells Marita that he is currently taking medication. Marita records this information on his admission form.

In this situation Marita used her knowledge of medical terms and the body’s function a number of times. First she used questioning to help establish whether Bill had a hyperactive or hypoactive thyroid. While Bill was unsure about the correct term, Marita used probing questions to help establish the correct term. Marita also showed knowledge of how problems with the thyroid affect the body and common treatments. She noted that Bill was now a healthy weight and asked about medications. Other health professionals using the information gathered by Marita will:

- continue to monitor the status of Bill’s thyroid
- take care not to prescribe or administer medications known to have adverse effects for people with thyroid conditions
- take care not to prescribe or administer medications that will interfere with the effectiveness of Bill’s thyroid medication.

**The basic structure and functions of the body systems**

The human body is an incredibly complicated unit. The various systems work together to ensure the body:

- has sufficient nutrition
- has sufficient oxygen
- expels toxins
- deals effectively with diseases and other pathogens
- recognises and responds to pain
- can ambulate
- is in balance.

If one or more of the systems is not functioning correctly, the other systems can be affected. In this section you will learn about the body’s various systems. In particular you will focus on the following systems:

- cardiovascular system
- respiratory system
- musculoskeletal system
- endocrine system
- nervous system
- digestive system
Chapter 1: Applying knowledge of the basic structure of the healthy human body

- reproductive system
- integumentary systems
- lymphatic system.

First you will learn about cells, tissues and organs, and the smaller units that make up each of the systems.

Cells, tissues and organs

Each of the body’s systems is made up of a number of organs. In turn organs are made up of tissues. Tissues are comprised of cells.

The following table summarises information about cells, tissues and organs.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Cells    | A cell is the smallest unit of living matter. Tissues and organs are collections of a large number of cells. The human body is made up of trillions of cells. The five main cell types are:  
- red blood cells, which move oxygen throughout the body  
- white blood cells, which protect the body from pathogens  
- nerve cells, which help transmit information to and from the brain  
- bone cells, which generate bones  
- stomach cells, which help break down food. |
| Tissues  | Cells and extracellular materials form together to make up tissues. There are four types of tissues:  
- epithelial tissue, which provides a covering to organs  
- connective tissue, which links other tissues  
- muscular tissue, which assists with the movement of limbs and other body parts as well as the contraction and expansion of major organs such as the heart, stomach and lungs  
- nervous tissue, which helps transmit messages to and from the brain. |
| Organ    | An organ is a unit that:  
- is made up of at least two different types of tissues  
- is recognisable as a separate part  
- can be distinguished from other structures  
- has a specific function or functions.  
Examples of organs include the:  
- brain  
- voice box  
- lungs  
- heart  
- liver  
- spleen  
- stomach  
- gall bladder  
- kidneys  
- pancreas  
- large intestines  
- small intestines  
- bladder  
- genitals  
- skin. |

Each of the body’s major systems is made up of a number of these organs.
**Cardiovascular system**

The cardiovascular system seems deceptively simple. It is made up only of two main parts:

- the heart
- the blood vessels leading to and from the heart.

The heart in turn is made up of:

- heart walls
- chambers
- valves.

The cardiovascular system is responsible for transporting blood throughout the body. It works in conjunction with the respiratory system to help move oxygen throughout the body.

Personal care workers, especially those working with the client in their home, need to be aware of:

- signs of heart failure
- appropriate actions to take.

Signs the cardiovascular system is not working efficiently or of cardiac problems include:

- dizziness
- lack of energy
- chest pains
- tingling arms
- numbness
- weakness
- headaches
- pain in the limbs and other body parts.

If you suspect a client is having a heart attack, you should call emergency services immediately by dialling 000. Immediate medical attention can lessen the likelihood of a stroke, other negative side effects or death.

Support workers also need to be aware of actions that can help prevent problems with the cardiovascular systems. These include lifestyle choices such as:

- maintaining a healthy body weight
- eating a healthy range of foods
- avoiding or limiting foods high in saturated fat
- taking regular exercise
- not smoking or being exposed to tobacco smoke.

The following table identifies the main features of the cardiovascular system and provides information about them.
Chapter 1: Applying knowledge of the basic structure of the healthy human body

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina</td>
<td>Angina may indicate the presence of coronary artery disease. Discomfort is caused by an insufficient flow of blood to the heart.</td>
</tr>
<tr>
<td>Aorta</td>
<td>The aorta is an artery attached to the left ventricle of the heart. Oxygenated blood flows from the heart to the rest of the body via the aorta.</td>
</tr>
<tr>
<td>Atria</td>
<td>The heart has two atria – the left atrium and the right atrium. The left atrium receives oxygenated blood whereas the right atrium receives deoxygenated blood. The left atrium pumps blood into the left ventricle. Likewise the right atrium pumps blood into the right ventricle.</td>
</tr>
<tr>
<td>Cardiac arrest</td>
<td>Cardiac arrest occurs when the heart fails to work properly and blood flow is stopped.</td>
</tr>
<tr>
<td>Cardiomyopathy</td>
<td>Cardiomyopathy means that a person’s heart muscle is not working efficiently and effectively. The signs and symptoms of cardiomyopathy vary depending on the severity of the disease.</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>This condition is caused by narrowed arteries, slowing the flow of blood to the heart.</td>
</tr>
<tr>
<td>Heart murmur</td>
<td>This occurs when there is an additional sound made by the heart. A heart murmur can indicate that a person has a defective heart valve. Common causes include old age or pathogens.</td>
</tr>
<tr>
<td>Pulmonary circuit</td>
<td>A pulmonary circuit consists of the blood vessels located between the right ventricle and left atrium of the heart.</td>
</tr>
<tr>
<td>Stroke</td>
<td>A stroke occurs when the flow of blood to the brain is stopped and brain damage occurs.</td>
</tr>
<tr>
<td>Ventricles</td>
<td>The heart is divided up into four chambers. The lower two of these chambers are called the left and right ventricles. Blood is pumped from the atria into the ventricles.</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Note the location of the heart in relation to other major organs such as the lungs.

Respiratory system

The respiratory system is made up of the:

- upper respiratory tract, which includes the nose, mouth, tongue, voice box (larynx) and windpipe (trachea)
- lungs.

The respiratory system is responsible for ensuring the body has sufficient oxygen intake to oxygenate the blood and that it expels carbon dioxide.

As people age they are more likely to experience the long-term effects of choices such as smoking, obesity and a sedentary lifestyle. In addition their lung function and overall inspiration and expiration abilities decrease. In other words the condition of the parts of the upper respiratory tract and lung declines over time. People who smoke, are overweight and/or inactive are more likely to experience respiratory problems.

Whether you are working in aged care or as a disability support worker, you should be
aware of your client’s lung function and any problems they have with their respiratory system.

You can play an active role in promoting a healthy respiratory system by:

› helping the client keep their living environment and clothing free from dust, which can cause difficulties in breathing
› encouraging clients to quit smoking and to avoid areas where they are likely to inhale smoke
› encouraging clients to maintain a healthy weight
› encouraging clients to exercise
› ensuring that clients have access to prescribed preventative and relief medications
› ensuring that clients have access to and are using prescribed anti-inflammatory medications and/or bronchodilators
› helping clients with their breathing exercises
› reporting changes in lung function/breathing.

If a client is experiencing severe breathing difficulties you should contact a health care professional or the emergency services immediately.

The following table lists some common terms and meanings in relation to the respiratory system.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphysema</td>
<td>A person with emphysema has damaged lungs (often as a result of the long-term effects of smoking), which can’t process gases efficiently and effectively. The person will probably have trouble breathing and may suffer from fatigue.</td>
</tr>
<tr>
<td>Asthma</td>
<td>Asthma is caused by blocked or narrowed airways. Asthma makes breathing difficult.</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>The trachea (windpipe) leads into two bronchi. Bronchi help conduct gas into the lungs. In some cases, infection or disease can cause the bronchi to become inflamed, resulting in coughing, wheezing and general difficulty in breathing.</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>Chronic obstructive pulmonary disease (COPD) is a general term that can refer to any one of many respiratory conditions. Emphysema and bronchitis are both examples of COPD.</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>Lung cancer is more common in middle-aged and older adults. It is most often caused by lifestyle choices such as smoking or exposure to toxins such as asbestos.</td>
</tr>
<tr>
<td>Sleep apnoea</td>
<td>Apnoea refers to a period where a person doesn’t breathe. Sleep apnoea refers to any one of a number of conditions that prevent people from breathing for a short period of time while they are sleeping.</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Identify the location of the lungs and the upper respiratory tract.
Chapter 1: Applying knowledge of the basic structure of the healthy human body

Musculoskeletal system

The musculoskeletal system incorporates two major systems: the muscular system and the skeletal system.

The skeletal system is made up of all of the bones in the body from the skull down to the lower limbs and toes. The skeleton and bones play a number of roles. Some bones, such as the skull and the rib-cage, play a protective role shielding the brain and the lungs respectively. Other bones help a person stay upright. The skeleton acts as a frame for the body’s tissues and skin; it also makes ambulation and movement possible.

The muscular system is comprised of muscular tissue. The muscular system works with the skeletal system to enable people to move around. In addition the muscular system helps:

- to support a person, enabling them to stay upright
- to enable effective communication; facial muscles are used to smile and to frown; to create rapport and to show disapproval
- regulate the flow of food from our mouths to our sphincter (anus) and control the movements of the lungs
- regulate temperature.

A working knowledge of the muscular system is essential. As a support worker you may find yourself working with:

- clients with low **bone density**
- clients who complete exercises as part of their care plan
- clients who have trouble communicating due to problems with their facial muscles
- clients who, due to a loss of muscle strength:
  - experience trouble lifting or moving objects, such as shopping bags
  - have an increased risk of injury around the house
  - experience problems maintaining a house and garden
  - have an increased risk of falls.

You can use knowledge of the musculoskeletal system to:

- make sure a client’s environment is free from hazards that could lead to trips and falls
- make sure a client's environment is well lit to prevent falls
- provide appropriate care to compensate for muscle or bone weakness
- assist with safe transfers
- assist clients to complete rehabilitation exercises
- communicate effectively with clients with limited facial movement.

The following example illustrates how support workers use their knowledge of the musculoskeletal system to provide appropriate care.
**Example**

Jenna has limited movement on the right side of her face due to a stroke that caused partial paralysis. As a result she has trouble communicating pleasure or displeasure. Support workers are unable to use visual cues to determine whether Jenna is unhappy or happy. As a strategy, workers ask additional open-ended questions to make sure the care they are providing is in line with Jenna’s preferences.

The following table lists the main terms you may come across in relation to the musculoskeletal system.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skull</td>
<td>The large bone mass protecting the brain</td>
</tr>
<tr>
<td>Clavicle</td>
<td>The two bones extending from the shoulder down to the sternum</td>
</tr>
<tr>
<td>Humerus</td>
<td>The bone located in the upper arm</td>
</tr>
<tr>
<td>Ulna</td>
<td>The smaller of the two bones in between the upper arm and the hand</td>
</tr>
<tr>
<td>Radius</td>
<td>The larger of the two bones in between the upper arm and the hand</td>
</tr>
<tr>
<td>Carpus</td>
<td>The bones connected to the forearm and the finger bones</td>
</tr>
<tr>
<td>Phalanx</td>
<td>The bones in the fingers and toes</td>
</tr>
<tr>
<td>Sternum</td>
<td>The breast bone</td>
</tr>
<tr>
<td>Ribs</td>
<td>The bones located in the torso that protect the lungs and other vital organs</td>
</tr>
<tr>
<td>Vertebrae</td>
<td>The bones in the spinal column</td>
</tr>
<tr>
<td>Pelvis</td>
<td>The large bones located in the hip region at the base of the spine</td>
</tr>
<tr>
<td>Femur</td>
<td>The bone located in the upper leg</td>
</tr>
<tr>
<td>Patella</td>
<td>The knee bone</td>
</tr>
<tr>
<td>Tibia</td>
<td>The larger of the two bones in the calf region</td>
</tr>
<tr>
<td>Fibula</td>
<td>The smaller of the two bones in the calf region</td>
</tr>
<tr>
<td>Muscular dystrophy</td>
<td>A condition that arises when the muscles waste away caused by a genetic disorder</td>
</tr>
<tr>
<td>Superficial muscles</td>
<td>Muscles located close to the surface, whose movements are visible to the eye. Examples of superficial muscles include the facial muscles, biceps and triceps (arm muscles) and the abdominal (stomach) muscles.</td>
</tr>
<tr>
<td>Deep muscles</td>
<td>Muscles located closer to the internal organs and further from the skin</td>
</tr>
</tbody>
</table>

Turn to the diagrams at the end of this section. You should also conduct your own research on the Internet using the key words ‘skeletal system’ and ‘diagram’ to see how the bones and muscles are arranged.
Endocrine system

One of the major functions of the body’s systems is to keep the body in balance. The medical term that describes the processes used to regulate the body is **homeostasis**. One of the systems that plays a major role in homeostasis is the endocrine system.

The endocrine system produces and secretes **hormones** that are distributed throughout the body. These hormones regulate:

- growth
- **metabolism**
- heart rate
- organ function
- bone density
- mood.

Some of the organs included in the endocrine system are the:

- pineal gland
- hypothalamus
- pituitary gland
- thyroid gland
- parathyroid gland
- thymus
- adrenal gland
- pancreas
- gonads.

If these glands are overactive or underactive, the client may suffer from:

- a slowed or racing heart
- trembling
- changes in temperature that don’t relate to external temperature
- feelings of anxiety
- depression
- reduced quality of life
- weight gain or weight loss unrelated to food intake and/or levels of exercise
- diminished interest in sex.

In some cases, clients will take medication to help regulate the level of hormones distributed throughout the body. In these cases support workers may be required to assist with medication and document medication taken. Support workers should also be able to recognise the signs that the endocrine system is not working properly so they can record and report these changes to personnel who can act on and monitor the client’s condition.
The following table lists some terms you may come across in relation to the endocrine system.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>This is also known as type 2 diabetes, in which a person has insufficient levels of insulin. In the long term this can damage the heart, kidneys, nerves, eyes and blood vessels. It can be managed through a modified diet, exercise, weight loss and in some cases medication.</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Oestrogen levels affect bone mass. Post-menopausal women have reduced levels of oestrogen. As a result, they often have reduced bone density. This condition is known as osteoporosis.</td>
</tr>
<tr>
<td>Hyperthyroidism</td>
<td>Hyperthyroidism occurs when a person has an overactive thyroid, which can cause an increase in heart rate, weight loss and feelings of exhaustion.</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>Hypothyroidism occurs when people have an underactive thyroid, which can lead to depression, exhaustion and weight gain.</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Identify the parts of the body that form part of the endocrine system. You can also further research the endocrine system on the Internet.

**Nervous system**

The nervous system is responsible for:

- communicating information received by the senses (sight, smell, touch, hearing and taste) to the brain
- processing information
- communicating required responses to the muscles and bones.

The following example describes how the nervous system works.

**Example**

Lila, a client, is sitting outside. The sun moves behind a cloud and the wind picks up. Lila’s skin feels cold. This change in temperature is communicated from the skin and nerve endings to the brain through a series of chemical and electrical impulses. Lila, processing this information, decides she needs a jumper. Her brain, using a series of chemical and electrical impulses, directs her arms to take her cardigan from her bag.

The nervous system is divided into two parts:

- the central nervous system, including the brain and the spinal cord
- the peripheral nervous system, including nerves, ganglia (which are collections of cells) and major organs such as the skin, eyes and ears.

Disorders of the nervous system are caused by conditions such as spina bifida or cerebral palsy. These conditions typically arise during gestation.
People with spina bifida may have:

- difficulty with movement
- difficulty sensing sensations such as pain
- urinary and/or faecal incontinence (control of urine and/or faeces)
- spinal deformities
- learning difficulties.

Support workers assisting clients with spina bifida:

- may be required to assist with toileting
- must pay particular attention to any wounds or cuts on the client’s extremities when providing personal care; the client may not realise that they have cuts or wounds due to impaired sensation, which means that cuts and wounds are more likely to be become infected
- may be required to assist with exercises designed to prevent further or control curvature of the spine.

People with cerebral palsy may have difficulty controlling the movement of their limbs and head and/or may experience tremors and shakiness. Support workers may need to:

- use **augmentative and alternative communication**
- assist the client to use and maintain aids such as braces and other walking aids
- provide straws so that a person can drink without spilling their beverage.

The nervous system can also be damaged later in life. One example is an acquired brain injury (ABI). An ABI can arise as a result of an accident, or from exposure to toxins (for example through excessive alcohol use). This can affect perception and sensation depending upon the location and the severity of the head injury.

Some of the terms associated with the nervous system and nervous disorders are listed in the following table.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| Cerebellum  | The cerebellum, also known as the little brain, is located at the back of the head under the cerebrum. The cerebellum controls:  
  - balance  
  - voluntary movement of the limbs and muscles  
  - facial control  
  - speech. |

---

15
<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebrum</td>
<td>The cerebrum is the largest part of the brain. The cerebrum is responsible for higher-level intellectual activities such as:</td>
</tr>
<tr>
<td></td>
<td>· planning</td>
</tr>
<tr>
<td></td>
<td>· reasoning</td>
</tr>
<tr>
<td></td>
<td>· perception</td>
</tr>
<tr>
<td></td>
<td>· problem-solving</td>
</tr>
<tr>
<td></td>
<td>· using and understanding language.</td>
</tr>
<tr>
<td>Motor control</td>
<td>The term motor control refers to a person’s ability to direct and control their movements. These can include fine motor skills, such as writing and sewing and gross motor skills such as walking, running and swinging a golf club.</td>
</tr>
<tr>
<td>Motor disorder</td>
<td>A motor disorder arises as a result of any one of a number of conditions (HIV, Huntington’s disease and Parkinson’s disease) that reduces a person’s ability to control and regulate their movements.</td>
</tr>
<tr>
<td>Scoliosis</td>
<td>This is a congenital disease, also known as curvature of the spine, because of the way the spine curves from side to side.</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Identify the parts of the body that form the nervous system.

**Digestive system**

The digestive system helps:

- break down and process food
- distribute nutrients throughout the body
- excrete waste products.

Some of the organs in the digestive system are the:

- mouth
- teeth
- oesophagus
- stomach
- pancreas
- liver
- bile duct
- intestines
- rectum
- anus.
As people age, their systems can wear down. In the case of the digestive system wear and tear can be caused as a normal part of the ageing process, or from:

- poor hygiene
- poor or inadequate nutrition
- disease and illness
- disability.

If the gastro-digestive system is not working properly clients may experience:

- the ill effects of inadequate food intake, which can include weight loss, reduced bone mass density, damage to the brain and/or nervous system
- embarrassment and social isolation due to poor dental hygiene or inability to maintain healthy bowel function
- increased risk of heart attack
- discomfort associated with constipation
- fatigue.

Support workers can assist by ensuring that clients:

- eat small, regular meals
- eat balanced meals that include fibre
- avoid acidic foods
- have access to a toilet
- are assisted, when required, with toileting.

The following table explains terminology related to the digestive system.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cirrhosis</td>
<td>Disease of the liver causing a change in bowel habits, nausea, vomiting and stomach pain</td>
</tr>
<tr>
<td>Constipation</td>
<td>Difficulty expelling faeces</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>Difficulty swallowing</td>
</tr>
<tr>
<td>Faecal incontinence</td>
<td>Difficulty maintaining bowel control</td>
</tr>
<tr>
<td>Gastroenteritis</td>
<td>Inflammation of the gastrointestinal tract resulting in diarrhoea</td>
</tr>
<tr>
<td>Gingivitis</td>
<td>Diseased, damaged or inflamed gums</td>
</tr>
<tr>
<td>Reflux</td>
<td>Heart burn/vomiting</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Identify the parts of the body related to gastro-digestive functions.
Urinary system

The urinary system:

› processes and expels waste fluids from the body
› deals with and expels toxins
› helps maintain
  › blood pressure
  › required levels of chemicals in the blood
  › blood volume.

The urinary system is made up of the:

› kidneys
› ureter
› urinary bladder
› urethra.

The function of these organs is described in the following table.

<table>
<thead>
<tr>
<th>Organ</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidneys</td>
<td>The body has two kidneys: the left and right kidney. These are located in</td>
</tr>
<tr>
<td></td>
<td>the middle of the torso just below the rib cage toward a person’s back.</td>
</tr>
<tr>
<td></td>
<td>The kidneys process fluids and toxins.</td>
</tr>
<tr>
<td>Ureter</td>
<td>The ureter connects the kidneys to the urinary bladder. Fluids are</td>
</tr>
<tr>
<td></td>
<td>transported from the kidneys to the urinary bladder through the ureter.</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>Once the fluids have been processed by the kidneys they are stored in the</td>
</tr>
<tr>
<td></td>
<td>urinary bladder.</td>
</tr>
<tr>
<td>Urethra</td>
<td>The urethra connects the bladder to an external opening that allows the</td>
</tr>
<tr>
<td></td>
<td>urine to be passed from the body. The structure of the body varies slightly</td>
</tr>
<tr>
<td></td>
<td>between men and women. A man’s urethra is located in his penis while the</td>
</tr>
<tr>
<td></td>
<td>opening to a woman’s urethra is located in front of the vaginal opening.</td>
</tr>
</tbody>
</table>

Signs and symptoms of an inefficient or ineffective urinary system are:

› urinary incontinence
› high blood pressure
› oedema of the eyes, feet and hands
› a burning sensation when urinating.

You may encounter people with kidney disease. You can help by:

› assisting the client to follow the diet as described on their care plan
› ensuring the client has adequate fluid intake
› transporting clients to and from medical centres for dialysis.

Personal care attendants can also support their clients maintain continence by following the toileting regime and assisting them to use toileting and incontinence aids.

Urinary system terminology is explained in the following table.
<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute incontinence</td>
<td>Acute loss of control of the bladder (or bowel) can occur as a result of an injury or illness; it can be cured.</td>
</tr>
<tr>
<td>Chronic incontinence</td>
<td>Chronic incontinence develops over time and can be managed.</td>
</tr>
<tr>
<td>Cystitis</td>
<td>Cystitis is an infection of the urinary tract that can be caused by sexual activity or poor hygiene.</td>
</tr>
<tr>
<td>Dialysis</td>
<td>Dialysis is a process involving removing blood from the body, removing waste from the blood and then returning the blood to the body.</td>
</tr>
<tr>
<td>Enuresis</td>
<td>Enuresis means bed wetting. People with dementia may begin to wet their beds as their cognitive ability declines. Clients with physical disabilities may wet their beds as they are unable to get to a toilet in time.</td>
</tr>
<tr>
<td>Haematuria</td>
<td>This occurs when there is blood in the urine.</td>
</tr>
<tr>
<td>Incontinence</td>
<td>Incontinence is when a person cannot control their bowels or bladder.</td>
</tr>
<tr>
<td>Renal</td>
<td>This word is used in relation to the kidneys (for example, patients with kidney problems will see a doctor at a renal clinic).</td>
</tr>
<tr>
<td>Urologist</td>
<td>A urologist is a doctor who specialises in the urinary tract.</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Identify the organs illustrated that form part of the urinary system.

**Reproductive system**

As the name suggests the male and female reproductive systems are responsible for reproduction. These systems also help with development – in particular with the development of secondary sex characteristics such as pubic hair in both males and females, and breasts in females.

The male reproductive system is made up of:

- testicles
- a duct system
- accessory glands including the prostate gland
- a penis.

The female reproductive system is made up of:

- genitalia (including the vagina, vulva and clitoris)
- ovaries
- fallopian tubes
- a uterus.

According to stereotypes only young healthy people participate in sexual activities. This is not the case. Like all people, those with disabilities and older people can enjoy sex. People have sex for a range of reasons. Reproduction is one of these reasons. People also have sex to make a connection, experience physical touch and for pleasure.
The sexuality of clients is a difficult issue. Clients have as much right to express their sexuality in a socially acceptable way as all members of the community. Yet people, including support workers, often feel embarrassed when considering the sexuality of clients. There are also boundaries to consider.

Support workers can assist by:

- providing clients with privacy
- referring clients to an appropriate professional, such as a counsellor, therapist or psychologist, if they express concerns about their attractiveness, sex life or relationships
- making sure that clients participate in a full range of social activities enabling them to find a partner
- not being judgmental.

Those working with people with disabilities may encounter younger people who express a desire to have children. Support workers can help by:

- referring the client to an appropriate health care professional such as a GP
- not being judgmental.

Common terms relevant to the human reproductive system are listed in the following table.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ectopic pregnancy</td>
<td>This occurs when a fertilised egg has implanted outside the uterus usually in the fallopian tubes.</td>
</tr>
<tr>
<td>Endometriosis</td>
<td>This condition occurs when the tissue from the uterus is lodged on other organs causing bloating, pain and, if not treated, infertility.</td>
</tr>
<tr>
<td>Ovarian tumours</td>
<td>An ovarian tumour can be malignant (cancerous) or non-malignant (non-cancerous).</td>
</tr>
<tr>
<td>Ovarian cysts</td>
<td>These are sacs of fluid found on the ovaries. Cysts can range in size. Typically they are benign (non-malignant) but can be malignant. They can be painful. In some instances cysts can be removed with surgery.</td>
</tr>
</tbody>
</table>
| Polycystic ovary syndrome    | This is a hormonal condition that can lead to women:  
  - developing the male sex characteristic of facial hair  
  - gaining weight and becoming obese  
  - ceasing menstruation  
  - becoming infertile. |
| Erectile dysfunction        | This occurs when a man has difficulty gaining or maintaining an erection. The cause can be psychological, such as stress, or physical, such as diabetes, problems with the prostate or cardiovascular conditions. |
| Prostate                    | The prostate forms part of the male reproductive system. Australian statistics suggest that the number of men who die from prostate cancer each year is equal to the number of women who die from breast cancer. |

Refer to the diagrams at the end of this section. Label where the male and female reproductive systems are located.
Chapter 1: Applying knowledge of the basic structure of the healthy human body

Integumentary system

The integumentary system is made up of the skin, glands, hair and nails. This system plays a number of roles. The skin in particular:

- acts as a barrier protecting internal organs
- helps make use of vitamin D, an essential vitamin that helps build and maintain bones
- is a major organ that allows us to sense heat, cold, sharp surfaces and other environmental factors that need to be acted upon.

The appearance of a person’s hair, nails and skin can also indicate illness or disease.

Clients in aged care and in home and community care settings may spend much of their time inside. As a result, they may miss out on spending time in the sun, which means they may not get enough vitamin D. Support workers can assist by transporting and accompanying clients outside. Obviously sun protection measures (a hat, sunscreen and sunglasses) should be used to prevent the client from being exposed to dangerous levels of UV radiation.

Support workers can help maintain the condition of the integumentary system by ensuring the client:

- eats a variety of foods
- maintains their personal hygiene, including keeping their hair, nails and skin clean
- changes position (if they spend much of the day sitting or lying) to prevent bed sores (also known as pressure sores).

Support workers must also look for, record and report any changes to the condition of a client’s skin.

The following table lists some terms common to the skin.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcinoma</td>
<td>Cancer that begins in the skin or in tissues that line or cover body organs</td>
</tr>
<tr>
<td>Epidermis</td>
<td>The outer layer of the skin</td>
</tr>
<tr>
<td>Fungal infection</td>
<td>Common infections include tinea and athlete’s foot</td>
</tr>
<tr>
<td>Lesions</td>
<td>Damaged skin tissue</td>
</tr>
<tr>
<td>Melanoma</td>
<td>A type of skin cancer</td>
</tr>
<tr>
<td>Sebum</td>
<td>Oily secretions</td>
</tr>
<tr>
<td>Ulcer</td>
<td>An inflamed lesion</td>
</tr>
</tbody>
</table>
Lymphatic system

The lymphatic system plays an important role in defending the body and its cells against pathogens. It filters, removes and reacts to pathogens. The lymphatic system forms part of the immune system.

The lymphatic system is made up of:

- nodes located at various places throughout the body, including on the neck, under the arms, in the abdomen and intestines, near the genitals and near the knees
- ducts
- capillaries and blood vessels
- thymus
- spleen
- red bone marrow.

Clients with compromised immune systems or inefficient lymphatic systems need special care. In particular, clients must not be exposed to people with the flu, or other contagious diseases and allergens.

The following table lists some terms common to the lymphatic system.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunity</td>
<td>The body’s ability to fight disease, illness, viruses and other pathogens</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>Swollen lymph nodes</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>White blood cells that fight infection</td>
</tr>
<tr>
<td>Lymphomas</td>
<td>Cancer of the lymph nodes</td>
</tr>
<tr>
<td>Node</td>
<td>Small organs that filter lymphatic fluid</td>
</tr>
<tr>
<td>Red bone marrow</td>
<td>Red bone marrow produces lymphocytes</td>
</tr>
<tr>
<td>Spleen</td>
<td>The organ located in the abdomen that removes diseased cells and other harmful matter from the bloodstream</td>
</tr>
<tr>
<td>Splenomegaly</td>
<td>An enlargement of the spleen</td>
</tr>
<tr>
<td>Thymus</td>
<td>The organ located in the throat that helps cells develop and raise their immunity against pathogens</td>
</tr>
<tr>
<td>Tonsillitis</td>
<td>Inflamed tonsils</td>
</tr>
</tbody>
</table>

Refer to the diagrams at the end of this section. Identify the organs that form part of the lymphatic system. Further your understanding of the lymphatic system by searching the Internet for additional information.
The special senses

The special senses include smell, taste, vision, equilibrium and hearing. These senses are used to detect changes and react appropriately to external stimuli. Examples of external stimuli include:

- fumes and gases
- temperature.

Smell

The sense of smell is the ability to detect odours or smells. Smell is used to detect dangers such as fumes and gases.

A person with a diminished sense of smell may not notice their own odours, leading to embarrassment in social situations. Support workers can help by making sure that the client is showered and toileted on a regular basis and that their home or living environment is clean and tidy. Likewise, a support worker can help promote a client’s safety by ensuring that chemicals are stored safely, that gas appliances are working properly and that the client’s home has a functional smoke alarm. Batteries should be changed at least annually.

Some useful terms relating to smell are explained in the following table.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cilia</td>
<td>The tiny hairs in the nose</td>
</tr>
<tr>
<td>Nostrils</td>
<td>The two openings in the nose</td>
</tr>
<tr>
<td>Olfactory</td>
<td>Relating to the nose and smell</td>
</tr>
<tr>
<td>Septum</td>
<td>The walls between the nostrils</td>
</tr>
</tbody>
</table>

Smell is only one of the nose’s functions. Noses also help filter air and prevent foreign bodies from entering the respiratory system.

Taste

The sense of taste is the ability to detect the flavours of food and other substances. The tongue has a number of receptors (tastebuds) that detect whether food is pleasant, unpleasant, sweet, sour, salty or bitter.

These receptors allow people to detect whether food is off. In addition, taste buds enhance our enjoyment of food. As people age, these receptors become less effective. These changes can affect an older person’s enjoyment of food, which in turn can limit the items they select. A support worker can help by assisting the older person to select a healthy and varied range of food.
Support workers can also assist by helping the client maintain their oral hygiene through:

- regular brushing and flossing of teeth
- cleaning dentures, if they are used
- maintaining fluid levels
- using sugar-free gum to maintain moisture in the mouth, though care should be taken to ensure the client has the cognitive and physical ability to avoid choking on gum.

Some terms relating to taste are explained in the following table.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>By mouth</td>
</tr>
<tr>
<td>Xerostomia</td>
<td>Dry mouth</td>
</tr>
</tbody>
</table>

**Vision**
The eyes provide vision, which is another important sense. The main parts of the eye are the:

- cornea
- pupil
- iris
- lens
- macula
- vitreous
- retina
- sclera
- optic nerve.

Light enters the eye through the pupil (the large black dot in the centre of our eye is actually an opening) and is refracted by the lens through the vitreous (the liquid in our eyes). A signal is then sent to the brain from the retina via the optic nerve.

Vision allows us to sense the world around us. It allows us to:

- participate in communication by seeing nonverbal signs of communication such as gestures and facial expressions
- recognise danger
- participate in **activities of daily living**.

People's ability to see can be reduced as they grow older. Vision impairment can also arise as a consequence of disease or illness.
Support workers can play a role in assisting clients by:
› making sure that the floor and walkways are free from hazards
› arranging the environment in the same way
› promoting the use of adaptive devices and visual aids as listed in the care plan
› transporting clients to and from recreational events to prevent isolation.

Terminology related to vision is shown in the following table.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaucoma</td>
<td>A chronic eye disease</td>
</tr>
<tr>
<td>Ocular</td>
<td>Relating to the eye</td>
</tr>
<tr>
<td>Presbyopia</td>
<td>A condition in which the lens of the eye loses its ability to focus on near objects, which is associated with ageing</td>
</tr>
<tr>
<td>Hypermetropic</td>
<td>Far- or long-sighted</td>
</tr>
</tbody>
</table>

**Hearing**

The ears are responsible for processing aural (sound) information as well as maintaining balance. There are two main types of hearing impairment:
› conductive
› sensorineural.

Conductive hearing loss is caused by blockages or damage to the ear canal, or problems with the eardrum. Sensorineural hearing loss is a result of damage to the cochlea or the hearing nerves. Some people are born with sensorineural hearing loss. Others develop it as a normal part of the ageing process or through exposure to toxins and pathogens such as illness, disease and drugs. Head injuries are another cause of sensorineural hearing loss.

Hearing, like vision, is an important part in communicating. If you work with someone with a hearing impairment you should:
› speak directly to the client
› make sure that your mouth is visible
› speak naturally
› use alternative or augmentative aids as listed on the client’s care plan
› help maintain equipment such as hearing aids.

The following table shows terminology associated with hearing.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audiologist</td>
<td>A doctor specialising in the ear</td>
</tr>
<tr>
<td>Aural</td>
<td>By ear</td>
</tr>
</tbody>
</table>
**Equilibrium**

Equilibrium means balance. The ears play a role in creating and maintaining equilibrium. The inner ear contains fluid. This fluid, along with our vision, helps us determine whether we are moving, stationary, upright or lying down.

Balance can be affected by a range of illness, diseases and disorders including:

- Ménière's disease
- stroke
- ear infections
- leakage in the ear
- inflammation of the ear.

Balance disorders can cause vertigo, dizziness and nausea. Balance is particularly important for older people who are more susceptible to breaks and fractures when falling.

Support workers can help by:

- ensuring that the client adheres to any special dietary requirements
- assisting with rehabilitation exercises designed to promote a person’s sense of balance
- ensuring that the floor surface is flat and free from hazards
- asking for adaptive devices such as bars for walkways, and in bathrooms and toilets.

Some terms you may need to know that relate to equilibrium are listed in the following table.

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vestibular</td>
<td>Relating to the inner ear</td>
</tr>
<tr>
<td>Ménière’s disease</td>
<td>A disorder of the inner ear</td>
</tr>
<tr>
<td>Vertigo</td>
<td>A condition relating to the inner ear that can make people feel as if the world is spinning about them</td>
</tr>
<tr>
<td>Labyrinthitis</td>
<td>An infection of the inner ear</td>
</tr>
<tr>
<td>Perilymph fistula</td>
<td>A tear or other opening between the middle and inner ear that produces adverse effects such as vertigo</td>
</tr>
<tr>
<td>Otolaryngologist</td>
<td>A doctor who specialises in the ear, nose and throat</td>
</tr>
</tbody>
</table>
Senses and the brain

The nose, ears, eyes and mouth are responsible for sensing external stimuli. This stimulus (the smell, sound, image or taste) is interpreted by the brain. Damage to the brain or certain brain disorders may alter the way the smell, taste, aural or visual information is perceived. Sensation and perception are interlinked but different processes.

Learning basic health terminology

As you work through this learner guide you may come across a number of medical terms. Medical terms communicate a precise meaning. If you misinterpret a medical term or use it incorrectly, the consequences could range from misunderstanding through to death.

To help you learn medical and health terminology you can:

› Ask your supervisor
› Listen to others
› Break down the word
› Refer to a medical encyclopaedia
› Refer to anatomical models, charts and labelled diagrams
› Keep a notebook

Ask your supervisor

There are a number of benefits of asking your supervisor, and, more often than not, they will be pleased that you are consulting with them. They will also be able to explain the medical terms in plain language.

Listen to others

When you first start working in aged care or home and community care, you may be overwhelmed with terms, jargon and acronyms. As you progress, your vocabulary of key words will start to build. In some instances you will be able to use terms that you are familiar with to make sense of new words and terms. By listening to how others use medical terms you will gain a sense of the meaning. If you are unsure about the meaning of a word or a term, don’t be afraid to ask for clarification.

Break down the word

There are many similar medical terms. Each of these words is made up of a prefix, a root word and a suffix.
Root words form the basis of most medical terms. Roots are generally used to convey the following meanings:

<table>
<thead>
<tr>
<th>Medical area</th>
<th>Root example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body structures or anatomy; for example, the cells, tissues, glands, organs, c</td>
<td>'pneumon' means 'lung' as in 'pneumonia'</td>
</tr>
<tr>
<td>cavities and regions of the body</td>
<td></td>
</tr>
<tr>
<td>Body fluids; for example, blood, sweat, tears, salivum, pus, bile, urine, lymph</td>
<td>'sial' meaning 'saliva' as in 'sialogram'</td>
</tr>
<tr>
<td>Chemical compounds; for example, substances such as sugar, protein, fat,</td>
<td>'gluc' meaning 'sugar' as in 'glucose'</td>
</tr>
<tr>
<td>oxygen, poison, drug</td>
<td></td>
</tr>
<tr>
<td>Physical factors; for example, temperature, light, sound, electricity, radiation</td>
<td>'therm' meaning 'heat' as in 'thermometer'</td>
</tr>
<tr>
<td>Agents of infection; for example, bacteria, viruses, fungi</td>
<td>'myc' meaning 'fungus' as in 'mycosis'</td>
</tr>
<tr>
<td>Colours</td>
<td>'leuk' meaning 'white' as in 'leukaemia'</td>
</tr>
</tbody>
</table>

More examples of roots include:

- cardiovascular, which is made up of the roots 'cardio' meaning heart and 'vascular' meaning vessels
- bronchitis, which is made up of the root 'bronchia' meaning windpipe.

Prefixes (words parts that come before the start of the word) and suffixes (word parts that come at the end of the word) can alter the meaning of the root.

The following table shows common prefixes.
Chapter 1: Applying knowledge of the basic structure of the healthy human body

The following table shows common suffixes.

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
<th>Suffix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>- algia</td>
<td>pain</td>
<td>- itis</td>
<td>inflammation</td>
</tr>
<tr>
<td>- cele</td>
<td>swelling</td>
<td>- osis</td>
<td>disease or condition</td>
</tr>
<tr>
<td>- dema</td>
<td>swelling</td>
<td>- pathy</td>
<td>disease</td>
</tr>
<tr>
<td>- ectomy</td>
<td>surgical removal</td>
<td>- sclerosis</td>
<td>hardening</td>
</tr>
<tr>
<td>- ism</td>
<td>condition</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By breaking unfamiliar medical words down into parts, you may be able to establish the meaning of the word, as in the following example.

Example

Consider the following words:
- Tonsillitis can be broken down into ‘tonsil’ and ‘-itis’.
- Tonsillectomy can be broken down into ‘tonsil’ and ‘-ectomy’.

If you are aware that ‘itis’ means an inflammation, you can work out that the tonsillitis is an inflammation of the tonsils. Likewise if you are aware that ‘ectomy’ refers to surgery you can work out that tonsillectomy refers to surgical removal of the tonsils.

Practice task 1

Consider the example of hyperthyroidism and hypothyroidism. Break each of these words into a:
- prefix
- root word
- suffix.

The only difference between these words is the prefixes.
1. What does the root word mean?
2. Briefly describe how the prefixes change the meaning of these words.

Refer to a medical encyclopaedia

Breaking words down into prefixes, roots and suffixes is a good way to work out the meaning of medical terms. In some instances you will not be able to use this strategy, but you may like to use a medical encyclopaedia or dictionary. Many medical reference books can be found online, which provides ready access.
Refer to anatomical models, charts and labelled diagrams

The body is complex. Reading about the body’s systems is one way to gain knowledge. You may find it difficult to gain a good understanding of the body’s structures and systems through reading words alone. Some people find that accessing anatomical models, charts and labelled diagrams helps make the location of, and the relationship between the body’s various systems and structures much clearer.

Keep a notebook

Keeping a notebook provides two benefits. By making notes you reinforce the information and increase the likelihood that you will remember the information. The notebook also acts as a reference point and may prevent you from having to ask the same question twice.

Practice task 2

Read the case study, then complete the tasks that follow.

Case study

Sebastian is an aged care worker. He has been allocated to provide personal care for Mr Cave, an older man living in his home.

On reviewing the admission paperwork, Sebastian notes that Mr Cave has hypertension, diabetes mellitus, osteoarthritis and osteoporosis. Mr Cave has also experienced a number of falls recently.

1. a) Underline the medical terms.
   b) Identify the roots and other parts of each of these words. Define these terms.
   c) Identify the systems that would be affected by these conditions.
   d) Identify the conditions, diseases and impairments that could contribute to Mr Cave’s history of falling.
Chapter 1: Applying knowledge of the basic structure of the healthy human body

Anatomy diagram 1

- The nervous system
- The endocrine system
- The circulatory system
- The respiratory system
- The muscular system
- The digestive system
- The reproductive system
- The urinary system
- The lymphatic system
- The skeletal system
- The skin
Anatomy diagram 2

Skull
Eyeball
Lung
Liver
Stomach
Large intestine
Small intestine
Rectum
Bladder
Clavicle
Scapula
Ribs
Heart
Gall bladder
Humerus
Radius
Ulna
Femur
Tibia
Fibula
Tarsals
Chapter 1: Applying knowledge of the basic structure of the healthy human body

1.2 Applying the principles of maintaining a healthy body

In the past, people waited until they were ill or unwell before seeing a doctor. After all why would a healthy person possibly need medical attention? Many people still wait until they are ill or unwell before seeking medical advice or help.

In more recent times health care professionals have recognised that it is easier and more cost effective to help a person maintain their good health than it is to cure a person who is already unwell. This is called primary health care. Primary health care is also called preventative health care. Primary health care can be provided by:

» general practitioners (GPs) and nurses in medical clinics
» community educators
» aged care and home and community care supervisors
» allied health professionals such as physiotherapists, dietitians, psychologists and social welfare workers.

Other forms of health care are:

» secondary health care (also known as acute or emergency health care), which usually occurs in hospitals
» tertiary health care provided by private specialists.

Ideas about health and sickness have also changed. Health and sickness were once seen as being separate: a person was either sick or they were well. Now ideas about health and sickness are less fixed. There are different degrees of health ranging from death through to the highest possible levels of wellbeing.

A definition of health is required before moving on to discuss the principles of maintaining a healthy body. According to the World Health Organization:

‘Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.’

This definition tells us that merely being free from illness and disease is not enough to make a person healthy. A person must also enjoy good physical, mental and social health. As you will discover, these three elements of health are interrelated.

Older people who have active social lives, participate in a range of activities, have a good diet, consume a moderate amount of alcohol and maintain a healthy weight are more likely to enjoy good health and less likely to become disabled.

Illness is more likely to occur if a person is depressed, as poor mental health can suppress the immune system. Depression is more likely to occur in people who are sedentary as they miss out on the mood-improving benefits of exercise. Similarly, people with limited or no social lives are also more susceptible to mental health problems as they are denied the benefits of a social network.
Aged care and home and community care workers can play an active role in assisting
a client to maintain a healthy body. They cannot carry out this role effectively unless
they are aware of the principles of maintaining a healthy body. In turn, they can use this
knowledge to make sure that the care plan addresses all of the client’s needs and all
aspects of their lives.

The principles of maintaining a health body include:

- Smoking control
- Mind–body health
- Spiritual health
- Medical self-care
- Environmental health
- Nutrition
- Social health
- Weight maintenance

(Source: Meiner SE & Lueckenotte A 2006, Gerontology nursing, 3rd edn, Mosby Elsevier,
St Louis, p. 163.)

**Smoking control**

According to a report by the Cancer Council, smoking is the cause of between 8 per cent
and 10 per cent of deaths nationally. Tobacco smoking is responsible for around 80 per
cent of all lung cancer deaths and 20 per cent of all cancer deaths. Smoking can cause
lung, tongue and throat cancer, impacting on the digestive and cardiovascular systems.
In addition smoking can impact on the integumentary system, damaging collagen and
elastin in the skin, and accelerating the aging process, leading to premature wrinkles.

All work buildings must be smoke-free by law. Some facilities may allow smoking in
designated outdoor areas. Support workers should model good behaviour and should
never be seen smoking by clients, as this normalises smoking.

Support workers should also avoid allowing clients to smoke in their presence. In
addition support workers can support the client to reduce their tobacco use by:

- encouraging them to quit
- referring them to an appropriate specialist
- assisting them to quit by following relevant parts of their care plan
- providing positive reinforcement in the form of praise
- distracting the client
- encouraging the client to delay having a cigarette.
Mind–body health

People’s state of mind can influence their physical health. Research suggests that depression, like smoking, can increase the likelihood of heart disease. Similarly a positive outlook can improve health. Studies have found that optimistic people have a higher white-cell count than people with a negative outlook. This means that optimistic people have a stronger immune system and are less likely to become ill.

Likewise a person’s physical health can influence their state of mind. People who are unwell, or experiencing poor health, can experience mental illness, such as depression. A poorly functioning endocrine system can also create hormonal imbalances leading to depression.

Consider the following examples.

**Example**

1. Nina, 86, is optimistic. She starts each day with a smile and enjoys the company of others. Her optimistic outlook improves her immune system. As a result she is healthier than other members of her bowling club, who are less optimistic.

2. Jonah, 25, has Crohn’s disease. This means that he has to make frequent trips to the toilet to defecate. This is a source of embarrassment. He feels ashamed of his disease. To cope with this, he avoids social situations.

In the first situation, you can see how the mind can affect the body. In the second situation you can see how the body can affect the mind. It’s important to remember that seriously ill people can’t recover with just a positive outlook. Nor is it true that all people with an illness, disease, disorder or impairment have a negative outlook. The key point to remember is that the mind and body are connected.

The following tips can be used by support workers to help promote good mind and body health.

**Tips**

- Encourage clients to focus on positives.
- Encourage clients to make and maintain links within the community.
- Encourage clients to participate in activities that they enjoy.
- Provide referrals to GPs for diagnosis and treatment of mental health issues.
- Provide referrals to psychologists who can help clients challenge and change negative thought patterns.
- Assist the client with relaxation exercises.
- Encourage the client, where appropriate, to participate in yoga or other activities designed to enhance the body and mind.
Spiritual health

People often think of organised religion when the word spiritual is used. In a health context, spirituality refers to a person’s sense of wellbeing. In some cases a person’s sense of wellbeing can be enhanced by participating in organised religion. If your client is a churchgoer, it is important to make sure they can continue to attend the church, mosque or temple of their choice. Similarly, people who are not religious can also enjoy good spiritual health. This can be achieved by being comfortable with who they are and their place in the world.

Consider the following examples.

Example

1. Dorthea, 73, has been a member of the Lutheran church her entire life. She is admitted into a nursing home. As part of her care plan, she is taken to services at her church every Sunday morning. She also continues to attend other social activities at the church.

2. Jefferson, 24, has an acquired brain injury. The acquired brain injury occurred as a result of a motorbike accident. He can no longer ride his bike or work as a carpenter. He now does volunteer work at the local library. He has commenced an art course at TAFE. These activities give his life purpose and help promote his wellbeing.

In some cases carers are so busy focusing clients’ physical needs (such as eating, toileting, showering and grooming) that they overlook their spiritual needs. When developing care plans, special attention should be given to making sure that clients have an opportunity to participate in activities that give them a sense of meaning.

Medical self-care

Medical self-care refers to a person’s ability to manage and take responsibility for their own health and wellbeing. Examples of medical self care include:

- taking medication
- seeking help when required
- making healthy choices about:
  - meals
  - activities
  - relationships.

Medical self-care is important for a number of reasons:

- People who feel that they have control over their lives enjoy better mental health than those who do not. Therefore taking responsibility for one’s own health and wellbeing can promote feelings of control and good mental health.
- It prevents clients from becoming dependent on one service, service provider or medical support person.
- It encourages clients to develop and maintain life skills, such as showing initiative, self-management, problem-solving and communication.
Support workers can promote medical self-care by taking a client-centred approach. In particular clients should be supported to make choices relating to their own care. Where appropriate, support workers should remind clients about appointments and make suggestions about seeking additional help. Support workers should assist the client to take responsibility for their own health and wellbeing rather than doing things for the client on their behalf. Where possible, support workers should always assume that the client is competent.

Consider the following example.

---

**Example**

Lola is Charlie’s home and community care worker. Charlie has an intellectual disability and a mild physical disability. He also has a lesion on his arm.

Lola says, ‘Charlie, you have a mark on your arm’. Charlie responds, ‘Yes, I need to see a doctor’.

Lola replies, ‘That’s a good idea. Should we make an appointment now?’ Charlie agrees.

Lola then asks Charlie how he will make the appointment and what he will say. Charlie asks Lola to call the medical centre.

Lola replies ‘Charlie, I think you can make the call but I’ll stand with you’.

Charlie makes the call. Lola and Charlie record the appointment time together on Charlie’s calendar. Lola then arranges transport for Charlie.

---

In the example Lola encouraged Charlie to take as much responsibility as possible for his own health and wellbeing; however, she did not leave Charlie to sort out the situation on his own. She provided an appropriate level of guidance and support.

**Environmental health**

Environmental health refers to the health of the client’s immediate living quarters (their home or facility) as well as the health of the wider environment. Environmental health includes:

- air quality
- water quality
- the safety of buildings.

Poor air quality can compromise cardiovascular and respiratory systems. Diseases such as tuberculosis can be spread through the air. Poor water quality can lead to problems in the digestive system. Unsafe buildings and surrounds can increase the risk of trips, slips and falls.

All employees have a responsibility to report hazards. If you notice a hazard in the workplace, whether it is at a client’s home or in a facility, you must report it and follow organisational procedures.
Consider the following example.

**Example**

Jason is a home and community care worker. He visits a client with vision impairment in her new home. Jason notices that the tiles in the kitchen are uneven, so he informs the client and also calls his supervisor to report the matter verbally. Jason follows this up with an email to his supervisor. He records the hazard and his actions in the communications book kept at the client’s home.

You can also help with the quality of the air. If you have a **communicable disease** such as gastroenteritis you should inform your supervisor immediately. Follow organisational procedures and do not return to work without medical permission.

While there is little you can do about the quality of the air outside a person’s home, you should take particular care not to expose clients with respiratory conditions to smoke or pollution. You should also check that the water is safe to drink. If you are working with clients who have compromised immune systems, or clients who live in country areas where water may not be treated, you should boil water prior to consumption.

**Nutrition**

People eat for enjoyment; however, food plays a more important role in fuelling the body’s system. Your body’s needs are explained in the following table:

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>- Water:</td>
</tr>
<tr>
<td></td>
<td>- maintains body temperature</td>
</tr>
<tr>
<td></td>
<td>- transports nutrients throughout the body</td>
</tr>
<tr>
<td></td>
<td>- helps process waste.</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>Carbohydrates provide energy to the body’s systems.</td>
</tr>
<tr>
<td>Lipids</td>
<td>Lipids:</td>
</tr>
<tr>
<td></td>
<td>- provide energy</td>
</tr>
<tr>
<td></td>
<td>- improve nerve function</td>
</tr>
<tr>
<td></td>
<td>- maintain skin</td>
</tr>
<tr>
<td></td>
<td>- assist with vitamin D synthesis.</td>
</tr>
<tr>
<td>Vitamins</td>
<td>Vitamins:</td>
</tr>
<tr>
<td></td>
<td>- assist with growth</td>
</tr>
<tr>
<td></td>
<td>- improve metabolic activity.</td>
</tr>
<tr>
<td>Minerals</td>
<td>Minerals:</td>
</tr>
<tr>
<td></td>
<td>- assist with growth</td>
</tr>
<tr>
<td></td>
<td>- improve metabolic activity.</td>
</tr>
<tr>
<td>Protein</td>
<td>Protein:</td>
</tr>
<tr>
<td></td>
<td>- assists with growth, maintenance and repair of cells</td>
</tr>
<tr>
<td></td>
<td>- assists with immune-system function.</td>
</tr>
</tbody>
</table>
Clients need to consume a wide range of grains, fruits, vegetables, dairy products, meats and fish and oils and fats to make sure that their nutritional needs are properly addressed.

There are a number of reasons why clients don’t enjoy optimal nutrition, as detailed in the following table.

<table>
<thead>
<tr>
<th>Factors preventing optimal nutrition</th>
<th>What you should do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income</td>
<td>Refer the client to social welfare agencies. Encourage the client to access services such as Meals on Wheels.</td>
</tr>
<tr>
<td>Gum or teeth disease</td>
<td>Refer the client to a dentist. Provide a range of soft, easy to chew and processed food.</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>Assist the client with rehabilitation exercises designed to improve the strength of muscles involved with chewing and swallowing. Assist the client with an alternative eating system.</td>
</tr>
<tr>
<td>Difficulties carrying out activities of daily living such as shopping and cooking</td>
<td>Assist with shopping and cooking.</td>
</tr>
<tr>
<td>Depression</td>
<td>Encourage the client to eat. Refer the client to a GP or other relevant healthcare professional.</td>
</tr>
<tr>
<td>Changes to the digestive system preventing the absorption of food</td>
<td>Consider meal supplements. Refer the client to a dietitian.</td>
</tr>
<tr>
<td>Changes to the digestive system delaying defecation and causing discomfort</td>
<td>Provide small meals more often. Avoid acidic foods.</td>
</tr>
</tbody>
</table>

The following example describes how a client was assisted to meet his dietary needs.

**Example**

Bill, 86, has chronic obstructive pulmonary disease (COPD). His blood pressure is low. He has difficulty swallowing food and has lost interest in eating. He has lost 10 per cent of his body weight in the last month. He complains, ‘All of the food is so dry and tasteless’. His wife Isobel remarks, ‘It doesn’t matter what I cook, he won’t eat it. He won’t even touch his old favourites!’

Bill, his wife, his support worker, her supervisor, and his GP discuss the matter. They decide to refer Bill to a dietitian. The dietitian recommends a meal replacement and in conjunction with Bill and his wife, designs a dietary plan that includes a number of meals Isobel can cook and Bill is willing to eat. The support worker in conjunction with the district nurse monitors Bill’s weight.
Social health

People are social creatures. We like to be valued and to value others. Unfortunately as people age or become disabled, their social network diminishes. Friends pass away and relatives have less time for them. Society does not always value older people. Older people may lose confidence and feel worthless as they grow older. Those who once defined themselves through their work or through their role as parents may have lost their sense of self.

Older people may also feel embarrassed by the changes to their appearance and may avoid social contact.

Support workers can help clients maintain their social health by:
- encouraging clients to interact with others
- transporting clients to and from recreational events
- accompanying clients to social activities as listed on the care plan
- assisting clients with their grooming.

Weight maintenance

Maintaining a healthy weight can improve a person's health and prevent illness and disease. Being underweight or overweight increases a person's likelihood of poor health. A healthy weight varies according to a person's height. For example, Jessica is 60 kg, which seems like a reasonably healthy weight; however, as Jessica is 149 cm tall, she is actually overweight.

It is clear that a person's height and weight should also be considered. Body mass index (BMI) is one way to determine whether a person is under- or overweight.

You can calculate a person's BMI by using the following formula:

\[ BMI = \frac{\text{weight (kg)}}{\text{height (m)}^2} \]

A person with a BMI of less than 20 is considered to be underweight. A person with a BMI of 25 or more is considered to be overweight. The following example illustrates a BMI calculation.

Example

Jason weighs 75 kg. He is 184 cm tall or 1.84 m.

\[
\begin{align*}
\text{BMI} & = \frac{75}{1.84^2} \\
& = \frac{75}{3.3856} \\
& = 22.15
\end{align*}
\]

Jason's BMI places him in the healthy weight range.
People who are underweight have an increased risk of:

- malnutrition
- osteoporosis
- muscle wasting
- dementia.

People who are overweight have an increased risk of:

- cardiovascular problems including high blood pressure and heart attack
- cancer
- digestive problems
- respiratory problems
- diabetes
- arthritis
- incontinence
- depression.

Support workers can help clients who are overweight or obese by:

- referring them to a dietitian
- helping them with portion control
- encouraging them to exercise after seeking medical advice.

The following example illustrates how a support worker can assist a client to maintain a healthy weight.

---

**Example**

Nico, a home and community care supervisor, is in the initial stages of developing a care plan for Bob, a new client. The following is an excerpt from Bob’s completed admission questionnaire.

<table>
<thead>
<tr>
<th>NUTRITION</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have a BMI of less than 18?</td>
<td>☑️</td>
<td>✘</td>
</tr>
<tr>
<td>Do you have problems with your mouth or teeth?</td>
<td>☑️</td>
<td>✘</td>
</tr>
<tr>
<td>Do you have problems with swallowing?</td>
<td>✘</td>
<td>☑️</td>
</tr>
<tr>
<td>Do you enjoy eating?</td>
<td>✘</td>
<td>☑️</td>
</tr>
<tr>
<td>Have you lost weight recently?</td>
<td>☑️</td>
<td>✘</td>
</tr>
<tr>
<td>Are you able to shop for yourself?</td>
<td>✘</td>
<td>☑️</td>
</tr>
<tr>
<td>Are you able to cook for yourself?</td>
<td>☑️</td>
<td>✘</td>
</tr>
<tr>
<td>Do you drink at least six cups of fluids each day?</td>
<td>☑️</td>
<td>✘</td>
</tr>
<tr>
<td>Do you eat alone most of the time?</td>
<td>☑️</td>
<td>✘</td>
</tr>
</tbody>
</table>
Nico notes that Bob is underweight. Nico immediately consults with the district nurse who visits Bob. Nico also notes that Bob’s problems with his mouth may be preventing him from enjoying his food. She asks Bob about this and he reports that chewing causes pain. Nico refers Bob to a dentist.

Shopping is another barrier. After discussion with Bob, Nico finds that he no longer drives; he struggles to carry his groceries from the supermarket using public transport. Nico organises a support worker to assist Bob with his shopping.

She also notes the Bob eats alone; this suggests that his social health may be at risk. Nico approaches this diplomatically: ‘Bob, did you know that the senior citizens’ club meets at the pub each Friday for lunch? They’re always looking for new members’. Bob responds, ‘I’ve always meant to join. I’m a bit lonely. Do you reckon they’d have me?’

**Practice task 3**

Read the case study, then complete the tasks that follow.

**Case study**

Jessica meets with a new client Janice, who says, ‘I feel like I’m just going through the motions. My house is spotless. I don’t smoke. I don’t drink. I eat all the right foods. I exercise on a regular basis. In fact I am the perfect weight for my height. Yet I don’t feel that I have any real friends. In fact I wonder whether there is any point to my life.’

1. Identify the principles that are and are not being met for this new client by filling out the following questionnaire.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Met</th>
<th>Unmet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mind–body health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiritual health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical self-care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight maintenance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Propose a strategy for addressing the principles that are currently unmet.
1.3 Using the knowledge of how major components of each body system and their location link to other structures

The body systems you have just read about all work together. Each system impacts upon, and is impacted upon by, the other systems. Faults, failures or disorders of one system can cause problems with others. The body can react in unpredictable ways to illness, disease and toxins.

While you are not expected to have a full understanding of how the body systems work together it is important to have some knowledge of the interaction of the systems.

The following table provides a snapshot of how the body’s systems are interdependent.
<table>
<thead>
<tr>
<th></th>
<th>Cardiovascular</th>
<th>Respiratory</th>
<th>Musculo-skeletal</th>
<th>Endocrine</th>
<th>Nervous</th>
<th>Digestive</th>
<th>Urinary</th>
<th>Reproductive</th>
<th>Integumentary</th>
<th>Lymphatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>N/A</td>
<td>Transports gases</td>
<td>Delivers and removes material from and to this system</td>
<td>Transports hormones</td>
<td>- Delivers oxygen</td>
<td>Transports hormones to and from the brain and spinal cord</td>
<td>Transports nutrients</td>
<td>Helps maintain kidney function</td>
<td>Helps with the blood flow needed to maintain and sustain an erection</td>
<td>Controls sweat production</td>
</tr>
<tr>
<td>Respiratory</td>
<td>- Provides oxygen to the various organs</td>
<td>- Removes carbon dioxide</td>
<td>N/A</td>
<td>- Provides oxygen to the various organs</td>
<td>- Removes carbon dioxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interrelationships in the body’s systems
<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculo-skeletal</td>
<td>Helps move blood throughout the system</td>
</tr>
<tr>
<td></td>
<td>Helps the lungs function</td>
</tr>
<tr>
<td></td>
<td>Protects some of the organs in this system</td>
</tr>
<tr>
<td></td>
<td>Commands the limbs and body parts to move</td>
</tr>
<tr>
<td></td>
<td>• Allows the mouth to chew</td>
</tr>
<tr>
<td></td>
<td>• Protects some organs</td>
</tr>
<tr>
<td></td>
<td>Controls the movements of the bladder</td>
</tr>
<tr>
<td></td>
<td>• Facilitates the movement of the foetus through the birth canal</td>
</tr>
<tr>
<td></td>
<td>• Helps with penile erection and subsequent ejaculation</td>
</tr>
<tr>
<td></td>
<td>Moves the facial muscles to enable communication</td>
</tr>
<tr>
<td></td>
<td>• Helps with the flow of lymphatic fluid</td>
</tr>
<tr>
<td></td>
<td>• Helps with immunity</td>
</tr>
<tr>
<td>Endocrine</td>
<td>Makes hormones impact on heart rate</td>
</tr>
<tr>
<td></td>
<td>Hormones assist with air flow</td>
</tr>
<tr>
<td></td>
<td>Helps maintain and develop muscles</td>
</tr>
<tr>
<td></td>
<td>Makes sure the cells in the body have the required balance of minerals,</td>
</tr>
<tr>
<td></td>
<td>enabling the nervous system to function effectively</td>
</tr>
<tr>
<td></td>
<td>Hormones affect the way food is digested</td>
</tr>
<tr>
<td></td>
<td>Hormones regulate urinary excretion</td>
</tr>
<tr>
<td></td>
<td>Hormones facilitate puberty, impact on sex drive and regulate pregnancy</td>
</tr>
<tr>
<td></td>
<td>and lactation</td>
</tr>
<tr>
<td></td>
<td>Affects the growth and distribution of hair</td>
</tr>
<tr>
<td></td>
<td>Helps activate the lymphatic system's immune response</td>
</tr>
<tr>
<td>Nervous</td>
<td>Regulates heartbeat</td>
</tr>
<tr>
<td></td>
<td>Regulates respiration</td>
</tr>
<tr>
<td></td>
<td>Instructs the muscles how to move</td>
</tr>
<tr>
<td></td>
<td>Controls and stimulates glands in the endocrine system</td>
</tr>
<tr>
<td></td>
<td>Controls appetite and faecal movements</td>
</tr>
<tr>
<td></td>
<td>Controls urinary functions</td>
</tr>
<tr>
<td></td>
<td>Helps with lactation</td>
</tr>
<tr>
<td></td>
<td>• Regulates sweating</td>
</tr>
<tr>
<td></td>
<td>• Regulates temperature</td>
</tr>
<tr>
<td>Digestive</td>
<td>Provides nutrients</td>
</tr>
<tr>
<td>Urinary</td>
<td>Disposes of waste</td>
</tr>
<tr>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>Interrelationships in the body's systems</td>
</tr>
<tr>
<td>Reproductive</td>
<td>Cardiovascular</td>
</tr>
<tr>
<td>Pregnancy is associated with an increase in blood volume</td>
<td>Sexual arousal can place greater demands on the respiratory system</td>
</tr>
<tr>
<td>Integumentary</td>
<td>Cardiovascular</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>The skin ensures that blood stays within the system</td>
<td>Hairs in the nose help filter air</td>
</tr>
</tbody>
</table>

**Lymphatic**
- Deals with pathogens in the blood
- Removes waste from the lungs
- Production and repair of muscles
- Transports hormones used by the lymphatic system
- Transports digested fats
- Assists the kidneys
- Immunity is passed onto the baby via his or her mother’s milk

N/A
The following example considers how a home and community care worker is able to use his knowledge of the body’s systems to the client’s advantage.

**Example**

Lionel, a home and community care worker, visits Mrs Brown twice a week to assist with basic household tasks. Mrs Brown tells him, ‘I don’t go outside much now’. She then complains about muscle weakness and constant colds and illnesses. She also tells him that she has been for a bone density test. The results indicated that she is continuing to lose bone mass. She exclaims ‘I can’t understand why. I have been drinking and eating additional dairy products.’

Lionel recognises that there are several systems affected that may be contributing to the problem.

Mrs Brown is not getting sufficient Vitamin D because she is not spending much time outside. The skin (the integumentary system) is not able to take in Vitamin D if it’s not exposed to sunlight. The intestines (the digestive system) are not able to absorb calcium efficiently. This affects Mrs Brown’s bone density and her muscles (the musculoskeletal system). Her immunity is also lowered as the lymphatic system is not getting the required nutrients needed to perform effectively.

Lionel reports his conversation with Mrs Brown to his supervisor. After consulting with Mrs Brown, her GP and others involved in Mrs Brown’s care, the supervisor amends Mrs Brown’s care plan to allow for time outside.

**Practice task 4**

Read the following profiles and complete the questions that accompany each.

1. Polly, a person with a physical disability is pregnant.
   a) How might this impact on her urinary system?
   b) How might this impact on her cardiovascular system?

2. Bill, 80, has reduced lung function. He also experiences feelings of dizziness.
   a) Identify the body system that controls lung function.
   b) What other systems are affected by reduced lung function?
   c) Why might he be feeling dizzy?

3. Jemma, 45, has trouble maintaining balance. She also experiences difficulty hearing and feels nauseous. Furthermore she has difficulty keeping her food down, vomiting on a regular basis.
   a) What systems appear to be involved?
   b) What could happen if Jemma’s condition is not managed effectively?
Chapter 1: Applying knowledge of the basic structure of the healthy human body

Discussion topics

Below are a number of discussion topics relating to the learning in this chapter. You may like to discuss these topics in the online forum, through online messaging or in a face-to-face environment. Perhaps you are in a workplace and you can brainstorm these ideas with your colleagues. Remember, discussions allow you to create and consolidate new, meaningful knowledge with your fellow students and/or those working in your industry.

› I shouldn’t have to worry about the body’s systems. After all, my job is to help with showering and toileting.
› I don’t need to worry about updating my knowledge of the body’s systems. Someone else will tell me exactly what I need to know.
› Do you think some principles of maintaining a healthy body are more important than others?

Chapter summary

› When working in the aged care or home and community care sectors you need to be familiar with medical terminology.
› Support workers who understand how the body works will be able to carry out a range of tasks more effectively and efficiently.
› The body’s systems work together to ensure that the body has sufficient nutrients and oxygen, expels toxins and deals effectively with disease and other pathogens, can ambulate and is in balance.
› The major systems are the cardiovascular, respiratory, musculoskeletal, endocrine, nervous, digestive, reproductive, integumentary and lymphatic systems.
› Primary health care can help maintain the health of each of the body systems.
› The health of the systems can be promoted through smoking control, mind–body health, spiritual health, medical self-care, environmental health, nutrition, social health and weight maintenance.
› Each system impacts upon, and is impacted upon by, the other systems.

Checklist for Chapter 1

Tick the box when you can do the following.

☐ Use appropriate health terminology to describe major body systems
☐ Apply the principles of maintaining a healthy body
☐ Use the knowledge of how major components of each body system and their location link to other structures
Chapter 2: Applying basic knowledge of factors that support a healthy functioning body

Support workers are often involved in helping clients carry out activities of daily living. These activities include assisting the client with general mobility, such as moving in bed, or moving from bed to chair, to helping with grooming, showering, dressing or eating.

Undertaking these activities means that a support worker is in very close contact with the client. As a result, they will be able to notice changes in a client’s skin condition, respiration, swallowing, temperature, weight and behaviour. Support workers need to understand how the body systems function so they can recognise and report signs that suggest the client’s body is not functioning well.

Furthermore, support workers need to know about the factors that help people maintain a healthy body so they can help older people, and those in need of care, to maintain their health.

In this chapter you will learn about:

2.1 Applying knowledge of how to maintain a healthy body

2.2 Applying knowledge of the relationship between body systems and healthy functioning
2.1 Applying knowledge of how to maintain a healthy body

People often assume that disability and disease are a feature of the normal ageing process. This is not the case. Good primary health care can help ensure that a person maintains a healthy body and systems. However, there are certain changes that do take place as part of the ageing process, including:

- changes to the appearance of the skin and hair
- impaired vision or hearing
- reduced bone density
- decreased flexibility, damaged joints or decreased muscle strength.

These aspects of ageing refer to changes in the body’s systems. External factors also impact on the ageing process. For example, as people move towards retirement, they are sometimes seen as being less valuable in the workplace. Their behaviour is often influenced by the attitudes of others. This means that older people may start to view themselves as being less valuable or less worthy. Employment helps provide people with a sense of purpose. When people retire they may feel that their life no longer has purpose. Furthermore, they have lost one of their social networks.

Physical changes can also result in psychosocial changes. For example, a person who is losing their hearing may avoid social outings. A person who is losing their vision may reduce their outings to familiar places. As a result their world and networks narrow and diminish.

The mind–body connection discussed in Chapter 1 should not be overlooked. A support worker must make sure that the services delivered to the older person are holistic; that is, they address all factors that determine the quality of the client’s life.

Support workers can help by:

- supporting the client to participate in group exercises such as Pilates, water aerobics and walking groups
- transporting the client to social events such as those conducted by senior citizens, Probus, church, youth and disability services groups
- ensuring the client has regular check-ups
- ensuring the client has access to a healthy range of foods
- ensuring the client has, and can use, the necessary aids and adaptive devices.

The following examples help illustrate how support workers can help provide holistic care.
Example

1. Sara provides home and community care support to Tom, who is 80. On one visit, Sara says to Tom, ‘How was Probus?’
   Tom replies, ‘Don’t know, didn’t go’.
   Sara responds, ‘Were you not feeling well?’
   Tom mutters, ‘No – but I can’t understand them’.
   Sara gently clarifies, ‘Could you not understand them or not hear them?’
   Tom replies, ‘I can’t hear them’.
   Sara says, ‘Tom, perhaps we should get your hearing checked’.
   Tom agrees, so Sara arranges a hearing test. Tom is provided with a hearing aid. Sara and Tom’s other support workers assist with maintenance of the hearing aid. The support workers also encourage Tom to keep attending Probus meetings. In this situation Tom’s physical condition impacted upon his psychosocial state.

2. Mario is a personal care assistant. He works in a nursing home and cares for Jamie, a young man with a brain injury. Mario and James are in the home’s garden. Mario is pushing Jamie, who is in a wheelchair.
   Jamie says ‘I’d kill for a cigarette’.
   ‘I thought you had given up?’ says Mario.
   ‘I had, but I’m so bored, it sucks,’ says Jamie.
   Mario says, ‘It sounds like you need something to do. I know of young people with ABIs who meet on a regular basis’.
   ‘What for?’ asks Jamie.
   Mario responds, ‘Lots of things. Basketball, movies, having pizza …’
   Jamie tells Mario he is interested, so Mario arranges for Jamie to join the group in conjunction with Jamie’s mother, the director of nursing and others involved in Mario’s care.

You will notice that in both of the examples the support workers provided support and were responsive to the specific needs of the client. When providing care, you should always listen to the client and follow their instructions, providing they fall within the boundaries of your job role, your organisation’s policies and procedures and the law.

Maintaining a healthy body
A number of simple strategies can help a client maintain a healthy body. These include:

- Having regular medical check-ups
- Eating well
- Exercising physically
- Exercising mentally
- Not smoking
- Drinking alcohol in moderation
- Staying hydrated
- Maintaining a healthy body mass index (BMI)
› Using aids safely
› Meeting new people and participating in activities.
These strategies should not be seen as a list of steps. Each of these areas should be addressed during all stages of a client’s care.

Having regular medical check-ups
Regular medical check-ups can help identify diseases and conditions early. This enables health care professionals to provide earlier intervention. With some conditions, such as cancer, early treatment can be the difference between life and death. Medical check-ups can help by:
› improving the quality of the client’s life
› reducing or slowing functional loss
› reducing the need for hospitalisation.
Both men and women should have regular check-ups of their skin to check for changes in moles and freckles that may indicate skin cancer.

Women should have regular pap smears (to check for cancerous cells in the cervix) and breast examinations (to check for the presence of lumps or other abnormalities).
Men should have regular prostate checks to check for abnormalities that may indicate cancer.

Therefore, medical check-ups can identify problems or potential problems, and support workers can use this knowledge in their work by:
› checking that the client has regular check-ups with their GP
› assisting the client to go to screening appointments.

Eating well
Older people and people with disabilities are more likely to:
› eat alone
› have a reduced or low income
› have problems with their mouth or teeth
› have reduced taste sensation
› experience pain or discomfort eating and digesting food
› have problems with their digestive system, reducing the body’s ability to make use of the foods consumed
› have difficulty shopping.
These factors mean that clients may not have access to nutritional food, find it difficult to prepare nutritional food, or even have little interest in food.

It is a support worker’s role to help their clients overcome these barriers.
Chapter 2: Applying basic knowledge of factors that support a healthy functioning body

The following table summarises how support workers can assist clients to maintain good eating patterns.

<table>
<thead>
<tr>
<th>Eating well can:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• prevent weight gain or weight loss</td>
<td>• suggesting healthy meal choices</td>
</tr>
<tr>
<td>• help ensure that the body has the required range of nutrients.</td>
<td>• helping with shopping</td>
</tr>
<tr>
<td></td>
<td>• using social welfare services for clients who have insufficient money to eat well</td>
</tr>
<tr>
<td></td>
<td>• assisting with meal preparation</td>
</tr>
<tr>
<td></td>
<td>• assisting with eating</td>
</tr>
</tbody>
</table>

Exercising physically

Exercising physically can promote the strength and resilience of the musculoskeletal system. It can also have psychological benefits. Exercise can reduce the presence of cortisol, a stress hormone, and increase endorphins, a hormone that promotes feelings of pleasure and wellbeing. Endorphins are produced by the pituitary gland, which is one of the organs in the endocrine system.

Exercise can also help improve self-esteem by helping the client feel good about their body and its shape. People with high self-esteem are more likely to participate in social activities that are vital for good mind–body health.

When we think of exercising we typically think of extremes such as marathons and aerobics. Some older people do participate and perform well in these sorts of sporting activities; however, these may not be valid choices for some clients. Other exercises, such as aqua aerobics, swimming, and Pilates are low-impact choices that can be suitable for people with a range of impairments. Exercising can also include everyday activities such as walking.

The following table summarises how support workers can assist clients with an exercise regime.

<table>
<thead>
<tr>
<th>Exercising can:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• prevent weight gain</td>
<td>• working with the client to identify exercise options</td>
</tr>
<tr>
<td>• help with weight loss</td>
<td>• transporting the client to and from venues</td>
</tr>
<tr>
<td>• strengthen muscles</td>
<td>• exercising with the client</td>
</tr>
<tr>
<td>• prevent the loss of bone mass</td>
<td>• encouraging them to complete as many everyday physical activities as they can</td>
</tr>
<tr>
<td>• improve self-esteem</td>
<td></td>
</tr>
<tr>
<td>• improve a client’s mental health.</td>
<td></td>
</tr>
</tbody>
</table>
**Exercising mentally**

The brain also requires exercise. This helps prevent cognitive decline and can improve cognitive performance. Clients who have good cognitive functions are more likely to be able to manage their own lives including medical care. This can improve the client’s sense of control and self-worth.

The following table shows how support workers can assist clients to maintain mental sharpness.

<table>
<thead>
<tr>
<th>Mental exercise can:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>improve cognitive performance</td>
<td>discouraging the clients from spending long periods of time in front of the television</td>
</tr>
<tr>
<td>prevent cognitive decline</td>
<td>engaging in conversation with the client</td>
</tr>
<tr>
<td>help with self-esteem</td>
<td>providing the client with age-appropriate puzzles</td>
</tr>
<tr>
<td>help people make sound decisions.</td>
<td>providing the client with books that reflect their interests</td>
</tr>
<tr>
<td></td>
<td>encouraging the client to interact with others.</td>
</tr>
</tbody>
</table>

**Not smoking**

As mentioned in Chapter 1, tobacco smoking is the leading cause of preventable diseases. Sometimes people who have disabilities or illnesses that cause pain consume marijuana in an attempt to reduce their pain levels; however, as marijuana is often mixed with tobacco, the adverse effects are similar. A connection has also been made between marijuana use and a range of psychiatric conditions.

The following table describes how support workers can assist clients to quit smoking or manage tobacco consumption.

<table>
<thead>
<tr>
<th>Quitting smoking will:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>improve the appearance of the skin</td>
<td>providing referrals to a GP who may prescribe medication to help the client cease smoking, or to other health professionals</td>
</tr>
<tr>
<td>improve respiratory and heart function</td>
<td>linking the client with an organisation such as QUIT or similar</td>
</tr>
<tr>
<td>improve fitness</td>
<td>supporting the client to quit</td>
</tr>
<tr>
<td>reduce stress in the long term</td>
<td>distracting the client when they crave a cigarette</td>
</tr>
<tr>
<td>decrease the likelihood of developing cancer</td>
<td>providing the client with educational materials from government services such as QUIT.</td>
</tr>
</tbody>
</table>

Consider the following example; you will see the effects of smoking on more than one of the body’s systems.
Example

Sandeep is a smoker. He complains to his support worker, ‘I can’t understand it. I spend so much time in bed, but am still tired’.

The support worker is aware that smoking can interfere with normal lung and blood cell functions, which can prevent the heart and muscles from receiving blood that is sufficiently oxygenated. She is also aware that smoking can decrease the blood flow through the blood vessels, and thus cause fatigue.

His support worker explains this to Sandeep and encourages him to quit smoking.

Drinking alcohol in moderation

Alcohol is a toxin that can do damage to the body’s systems. Drinking too much alcohol may:

- damage the liver, thus impairing the digestive system
- damage the blood vessels, which impairs the cardiovascular system
- increase the likelihood of certain cancers
- affect a person’s ability to maintain relationships
- lead to an acquired brain injury that impairs the nervous system.

The standard for excessive alcohol consumption varies between men and women. Safe levels of alcohol are:

- men – fewer than 28 drinks per week
- women – fewer than 14 drinks per week.

According to the National Health and Medical Research Council, males who drink five to six drinks a day, and females who drink three to four drinks a day place themselves at risk of alcoholism.

Moderate alcohol consumption can be part of a person’s normal social activities. Support workers must take care not to judge clients. Signs that a person is consuming excessive amounts of alcohol may include:

- memory loss
- poor grooming and hygiene
- no money for food and other necessities
- broken capillaries (small blood vessels)
- drinking alone.
The following table identifies how support workers may assist clients to manage alcohol consumption.

<table>
<thead>
<tr>
<th>The consumption of alcohol in moderation may help avoid:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- some cancers</td>
<td>- recognising and reporting signs of excessive alcohol use</td>
</tr>
<tr>
<td>- cardiovascular disease</td>
<td>- providing referrals to GPs</td>
</tr>
<tr>
<td>- gastrointestinal damage</td>
<td>- supporting the client to engage in other activities that will help them feel good about themselves.</td>
</tr>
<tr>
<td>- damage to the nervous system</td>
<td></td>
</tr>
<tr>
<td>- relationships from breaking down</td>
<td></td>
</tr>
<tr>
<td>- domestic violence.</td>
<td></td>
</tr>
</tbody>
</table>

**Staying hydrated**

Maintaining the fluid levels of the body is important to overall health. The body needs fluids to:

- regulate its temperature
- maintain the functions of its systems
- help deal with and expel toxins.

The following table suggests ways support workers may assist clients to maintain their fluid intake.

<table>
<thead>
<tr>
<th>Drinking plenty of fluids:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- will help the body's systems operate at an optimal level.</td>
<td>- providing fluids – preferably water</td>
</tr>
<tr>
<td></td>
<td>- reducing the amount of alcohol and caffeine clients consume; these fluids act as a diuretic, reducing the amount of fluids in the system</td>
</tr>
<tr>
<td></td>
<td>- monitoring and recording fluid intake</td>
</tr>
<tr>
<td></td>
<td>- seeking medical help if the client sweats excessively, has diarrhoea and/or is vomiting.</td>
</tr>
</tbody>
</table>

**Maintaining a healthy body mass index (BMI)**

Maintaining the body within a healthy weight range is an important part of good general health.

People who are underweight are at risk of:

- starving their systems of nutrients
- osteoporosis
- organ failure
- death.
People who are overweight are at risk of:

- type 2 diabetes
- musculoskeletal problems
- skin problems
- cancer.

People who are overweight may also experience low self-esteem. This can cause them to avoid social activities, which in turn can damage their mental health.

The following table describes how support workers can assist clients to keep their weight within a healthy range.

<table>
<thead>
<tr>
<th>Maintaining an appropriate weight may:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• prevent damage to the body’s system</td>
<td>• supporting the client to eat a nutritional range of foods</td>
</tr>
<tr>
<td>• maintain the client’s self-esteem.</td>
<td>• encouraging overweight clients to make healthier choices</td>
</tr>
<tr>
<td></td>
<td>• seeking the assistance of a dietitian</td>
</tr>
<tr>
<td></td>
<td>• encouraging clients to exercise.</td>
</tr>
</tbody>
</table>

Using aids safely

Older people and clients with disabilities may use any one of a number of aids designed to improve their independence. Examples of aids include:

- mobility aids such as walking frames and wheelchairs
- hearing aids
- glasses
- eating aids such as specialised cutlery and crockery.

The following table provides ideas on how support workers can ensure aids are suitable for the client’s needs.

<table>
<thead>
<tr>
<th>Using aids correctly may:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• assist a client to maintain their independence</td>
<td>• seeking the assistance of an occupational therapist or other appropriate health care professional to help the client understand how to use their aids correctly</td>
</tr>
<tr>
<td>• prevent accidents and injuries.</td>
<td>• making sure the aids are well maintained and in safe working condition.</td>
</tr>
</tbody>
</table>
Meeting new people and participating in activities

As people age their social networks diminish. Some of the reasons relate to:

- lifestyle changes such as retirement
- the death of friends and family members
- changes in income, reducing a person’s ability to participate in a range of events
- the loss of a driver’s licence or the loss of confidence in one’s ability to drive preventing people from attending events
- loss of self-confidence causing a person to withdraw.

People with **acquired disabilities** may also find that their social networks diminish. They may not be able to participate in their old clubs. They may no longer be able to work. They may also find that some of their old friends can’t cope with their disability and stop contacting them.

Friendships and relationships are essential to good psychological health. Therefore, clients must be supported and encouraged to meet new people. Participating in activities is one way to help clients meet new people. The focus is on the activity, rather than the making of friends. This can mean meeting people is less daunting and allow them to make friends without feeling pressured.

Participating in activities can also help people exercise their mind and their body.

The following table has suggestions for encouraging clients to maintain a healthy level of social interaction.

<table>
<thead>
<tr>
<th>Meeting new people and participating in activities:</th>
<th>Support workers can use this knowledge in their work by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- helps people build up their social networks</td>
<td>- seeking out opportunities for the client to meet new people</td>
</tr>
<tr>
<td>- helps people feel valued</td>
<td>- encouraging the client to meet new people</td>
</tr>
<tr>
<td>- provides people with a chance to gain mental stimulation</td>
<td>- ensuring that the client can get to activities where they can meet new people</td>
</tr>
<tr>
<td>- provides people with a chance to exercise physically (depending on the activity)</td>
<td>- ensuring that the client has sufficient money to pay for the activities</td>
</tr>
<tr>
<td>- provides people with a sense of purpose.</td>
<td>- referring a client to a psychologist or therapist to help them gain the required confidence.</td>
</tr>
</tbody>
</table>
Focusing the care plan

When preparing a care plan it is also worth preparing a checklist, similar to the following, to ensure that a client’s physical, psychological and social needs are met.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the plan include medical check-ups?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is nutrition covered?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the plan provide the client with the opportunity to exercise regularly?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the plan provide opportunities to stimulate their mind?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the plan include a strategy designed to support the client to cease smoking, if applicable?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the plan include a strategy designed to assist the client to achieve a healthy weight if they are underweight or overweight?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the plan include a strategy designed to assist the client to use aids safely?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the plan include strategies designed to support them in meeting new people and participating in activities?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the answer to any of these questions is no, it is worthwhile revising the care plan in conjunction with other stakeholders to ensure that it addresses all of the client’s needs. Consider the following example.
Example

Pete, 19, lost the use of both of his legs in a workplace accident. Home and community care workers visit regularly to help him with personal care tasks and maintain the cleanliness of his house. When he returned home from hospital, his friends visited on a regular basis taking him to social functions whenever they could. Pete appeared relatively happy.

However, in more recent times the support workers have noticed that Pete’s friends have stopped visiting. Furthermore, Pete now spends much of his day in front of the television. He often smells of alcohol and appears to be gaining weight. A support worker asks Pete how much he is drinking. Pete says that he doesn’t know. Support workers note that the recycling bin is now full of empty stubbies.

In this situation the support workers are taking care of some of Pete’s physical needs. However, he appears to be engaging in behaviours, putting the health of his body at risk. These include:

- drinking excessively
- gaining weight
- not meeting new people
- not participating in activities
- not exercising physically
- not exercising mentally.

These behaviours are recorded in Pete’s case notes. The home and community care supervisor, in conjunction with all stakeholders, including Pete’s GP, his support workers and Pete, redesigns Pete’s care plan to incorporate:

- age-appropriate social activities
- group exercise
- a weight management plan
- an alcohol management plan.

The plan continues to include personal care and household tasks.

As you can see, the new plan addresses all of the factors that contribute to Pete maintaining a healthy body.
Chapter 2: Applying basic knowledge of factors that support a healthy functioning body

Practice task 5
Read the case study, then complete the tasks that follow.

Case study
Nicola, 19, has a mild intellectual disability. As part of her care her service provider assists her to:
- learn about screening and health assessments for young people
- learn about binge drinking
- make and keep appointments with GPs
- learn how to budget and go shopping
- prepare a range of nutritional meals
- access appropriate and relevant courses and other learning opportunities
- gain the interpersonal skills needed to meet new people and join in activities
- identify and participate in age-appropriate social activities.

1. Use the following list to identify the actions taken to assist Nicola in maintaining her body’s systems in a state of health.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the plan include medical check-ups?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is nutrition covered?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does the plan provide the client with the opportunity to exercise regularly?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does the plan provide opportunities to stimulate their mind?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does the plan include a strategy designed to support the client to cease smoking if applicable?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does the plan include a strategy designed to assist the client to achieve a healthy weight if they are underweight or overweight?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does the plan include a strategy designed to assist the client to use aids safely?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Does the plan include strategies designed to support them in meeting new people and participating in activities?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
2. Match the actions in the care plan to general strategies designed to maintain the body in a state of health, by drawing a line from one to the other. Some of the actions in the care plan may meet more than one general strategy. Some of the strategies may appear more than once.

<table>
<thead>
<tr>
<th>Action</th>
<th>General strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain the interpersonal skills needed to meet new people and join in activities</td>
<td>Have regular medical check-ups</td>
</tr>
<tr>
<td>Access appropriate and relevant courses and other learning opportunities</td>
<td>Eat well</td>
</tr>
<tr>
<td>Prepare a range of nutritional meals</td>
<td>Exercise the body</td>
</tr>
<tr>
<td>Make and keep appointments with GPs</td>
<td>Exercise the mind</td>
</tr>
<tr>
<td>Learn how to budget and go shopping</td>
<td>Join a club or social group</td>
</tr>
<tr>
<td>Identify and participate in age-appropriate social activities</td>
<td>Drink alcohol in moderation</td>
</tr>
<tr>
<td>Learn about screening and health assessments for young people</td>
<td>Maintain an appropriate weight</td>
</tr>
<tr>
<td>Learning about binge drinking</td>
<td></td>
</tr>
</tbody>
</table>
2.2 Applying knowledge of the relationship between body systems and healthy functioning

Support workers need to know how the various systems of the body interact so that they can identify when one system is affecting another and causing ill health. Support workers need to understand about the various processes, conditions and resources needed by the body to support healthy functioning.

The body systems perform the following functions:

- Body regulation
- Protection from infection
- Physical activity

Body regulation

Body regulation includes maintaining body temperature, maintaining body fluids and the elimination of wastes.

Signs that the body is not regulating itself effectively include:

- changes in behaviour such as disorientation
- feelings of dizziness
- changes in temperature
- sweating
- increased heart rate
- dry and hot skin
- headache
- unconsciousness.

Poor regulation, in extreme cases, can lead to organ failure and death.

If you suspect the body is not regulating itself effectively, you should seek immediate help. If you are working in an aged care facility you could contact a health professional, perhaps a registered nurse, within the facility. If you are working in a client’s home, you should contact your supervisor immediately. If you are unable to reach your supervisor, consider contacting the emergency department of your local hospital, which can give you further instructions. If the client is unconscious or displaying a number of the signs that the body is not regulating itself, call emergency services by dialling 000.

Regardless of where you are working, you should always:

- follow workplace policies and procedures
- document all actions
- report all actions.
Maintaining body temperature

The correct temperature of the human body is 36.9 °C. If a person is unable to maintain their correct body temperature, they may suffer serious consequences. These consequences can include organ failure and/or damage to any one of, or a combination of, the nervous system, the digestive system, the urinary system or the cardiovascular system.

The following systems and organs are involved in maintaining body temperature.

<table>
<thead>
<tr>
<th>Organ</th>
<th>System</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Integumentary system</td>
<td>Senses cold or hot</td>
</tr>
<tr>
<td>Hypothalamus</td>
<td>Nervous system</td>
<td>Acts as a thermostat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initiates heating or cooling activities</td>
</tr>
<tr>
<td>Muscles</td>
<td>Musculoskeletal system</td>
<td>Shiver to increase body temperature if the body is too cold</td>
</tr>
<tr>
<td>Sweat glands</td>
<td>Integumentary system</td>
<td>Produce sweat if the body is too hot</td>
</tr>
</tbody>
</table>

Steps support workers can take to help a client avoid high body temperature include ensuring they:

> drink water
> wear appropriate clothing
> take a cool shower or bath
> stay inside
> perform only light exercise.

Maintaining body fluids

There are three systems that play a major role in maintaining body fluids. These are the cardiovascular, digestive and integumentary systems; the urinary system also plays a part. The following table summarises these roles.

<table>
<thead>
<tr>
<th>System</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>Distributes fluids throughout the system.</td>
</tr>
<tr>
<td>Digestive</td>
<td>Absorbs fluids from beverages and foods with a high fluid content such as fruits.</td>
</tr>
<tr>
<td>Integumentary</td>
<td>The skin plays a dual role in keeping fluid in the body, and expelling it. The skin helps prevent fluid loss. Damage to the skin can prevent the skin from working effectively. For example, people with skin burns will lose a greater volume of fluids, which can result in dehydration. Likewise dry skin, such as skin affected by eczema, is less effective at preventing fluid loss. Fluid is also lost through the skin. Sweating helps maintain body temperature and expel wastes from the body.</td>
</tr>
<tr>
<td>Urinary system</td>
<td>The kidneys help regulate the amount of fluids in the body.</td>
</tr>
</tbody>
</table>
Chapter 2: Applying basic knowledge of factors that support a healthy functioning body

One of the most important things a support worker can do to assist clients to maintain body fluids is to ensure that the client’s fluid intake is adequate. Other steps can include applying a topical cream to help improve the moisture of the skin.

Eliminating wastes from the body

The body eliminates wastes through urine, faeces and sweat. The systems that are involved mainly include the digestive, urinary and integumentary systems.

The action of these systems in eliminating body wastes is outlined in the following table.

<table>
<thead>
<tr>
<th>System</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestive</td>
<td>The mouth and teeth break up food. It is carried down the oesophagus to the stomach. In the stomach the food is broken down by acids. The food then moves through the small intestines where nutrients are taken and distributed throughout the body by blood cells. The remaining product is transported to the liver where toxins are filtered. Finally the remaining food is taken via the intestine to the anus where it is expelled in the form of faeces.</td>
</tr>
<tr>
<td>Urinary</td>
<td>Waste fluids, such as urea, are carried from the digestive system by blood to the kidneys. The kidneys remove toxins. The fluid then moves through the ureter to the bladder before being expelled via the urethra.</td>
</tr>
<tr>
<td>Integumentary</td>
<td>Other waste products are expelled in the form of sweat.</td>
</tr>
</tbody>
</table>

Support workers can contribute to the proper functioning of these systems by:

› ensuring the client has sufficient fluids
› ensuring the client is enjoying good urinary and bowel continence
› preventing the client from using deodorants excessively as these can block the sweat glands.

Maintaining blood pressure

Blood pressure helps move blood throughout the body, but if it exceeds the normal range, blood pressure can present a client with serious health problems. Often clients experiencing blood pressure problems will have prescribed medication to take.

The main system involved in maintaining blood flow is the cardiovascular system. The nervous and urinary systems also play a role in regulating blood pressure.

People with low blood pressure may experience dizziness and confusion and are at an increased risk of falls.

Support workers can help clients with low blood pressure by:

› increasing fluids
› increasing salts
› encouraging the wearing of pressure stockings
› elevating the client’s feet.
People with high blood pressure are at increased risk of:

› stroke
› heart attack
› kidney disease.

Support workers can help clients with high blood pressure by encouraging exercise and eating a healthy diet to assist in maintaining a healthy BMI.

Consult with your supervisor, or a health care professional, prior to undertaking any of these activities.

Consider the following example, which illustrates the relationship between body systems and the effects of poor body regulation.

**Example**

Bill, 67, lives at home. He has trouble with his teeth. He has lost interest in food and refuses to eat regular meals. Bill is tired, constipated, losing weight, has trouble moving and is experiencing delirium. He also has extremely low blood pressure. Bill’s support worker contacts the supervisor who, in consultation with Bill’s wife and his doctor, arranges for Bill to be hospitalised. Bill is fed through a drip in hospital and will return home when his condition has stabilised. He will also be given meal supplements and dental care to help increase his BMI.

In this situation Bill’s digestive system has affected his cardiovascular, musculoskeletal and nervous systems.

**Protection from infection**

An infection is a pathogen that can damage the body’s tissues and their organs. The body has a number of mechanisms designed to prevent and deal with infections. These include the lymphatic system and the integumentary system. The roles of these systems are given in the following table.

<table>
<thead>
<tr>
<th>System</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphatic</td>
<td>White blood cells fight infection.</td>
</tr>
<tr>
<td>Integumentary</td>
<td>The skin acts a barrier against infections.</td>
</tr>
</tbody>
</table>

If you are working with a client with a low level of immunity, you should make sure that they are not exposed to allergens or people with communicable diseases.

You should also make sure that the client’s skin is not damaged in any way and recognise, record and report any skin damage.

The following example shows how a support worker contributes to their client avoiding the possibility of infection. It also shows how body systems are interdependent.
Chapter 2: Applying basic knowledge of factors that support a healthy functioning body

Example

John has diabetes, a condition of the endocrine system. This affects the nerves in his feet. As a result he does not notice that he has damaged the skin on his feet. Lila, his support worker, takes particular care when attending to John's feet. She cleans each foot and checks its condition. She also makes a note in the case notes and communication book. Other support workers monitor the wounds. As a result, John's feet do not become infected. This means that the lymphatic system does not need to fight infection.

Physical activity

There are two types of activity:

› passive activity such as sitting and sleeping
› those that are active, such as walking and moving.

When participating in passive activity, the body's systems are still working. The body still needs to maintain its temperature, the heart still needs to circulate blood and the digestive system still needs to remove nutrients and excrete waste.

When we are moving the systems work harder.

Consider the following examples that once again show how the regulation of the body depends on the interaction of its systems.

Example

1. Jessica wants to go outside. Her brain communicates to her limbs. Both her limbs and muscles work together to enable Jessica to stand up, walk and open the door. Her nervous system works in conjunction with her musculoskeletal system. There are other systems involved. Movement requires her cardiovascular and respiratory systems to work harder as her body's need for oxygen has increased.

2. Sara is undergoing rehabilitation. She has not exercised since her knee reconstruction. This has weakened her cardiovascular function and her muscles. She wants to resume normal activities. Her support worker realises that Sara's cardiovascular and respiratory functions, as well as her musculoskeletal system, are not performing at an optimum level. As a result her support worker helps her slowly resume normal activities by including low-impact options designed to improve her fitness while she strengthens her muscles.

Practice task 6

You are working with Julia, a young person with a disability. You notice the Julia plays with her food and goes to the bathroom immediately after eating. She has lost weight, has experienced hair loss and smells of vomit.

1. Identify the systems involved.
2. What systems could be affected in the long term if action is not taken?
3. What should her support worker do? Discuss some of the options you would consider.
Discussion topics

Below are a number of discussion topics relating to the learning in this chapter. You may like to discuss these topics in the online forum, through online messaging or in a face-to-face environment. Perhaps you are in a workplace and you can brainstorm these ideas with your colleagues. Remember, discussions allow you to create and consolidate new, meaningful knowledge with your fellow students and/or those working in your industry.

› Only people with advanced medical training can recognise when the body’s systems are not working effectively. Do you agree or disagree?
› Discuss other ways older people and people with disabilities can maintain the health of their bodies.

Chapter summary

› Disability and disease are not a feature of the normal ageing process.
› The body’s systems do change as people age.
› Good primary health care can help ensure that a person maintains a healthy body and systems.
› The mind and the body are connected.
› The body’s systems work together to:
  › maintain body temperature
  › maintain body fluids
  › eliminate waste.

Checklist for Chapter 2

Tick the box when you can do the following.

☑ Apply knowledge of how to maintain a healthy body
☑ Apply knowledge of the relationship between body systems and healthy functioning