



My^eCampus

Learner Guide
CS2 Client Screening



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Get Started Here!

Welcome to the **CS2 Client screening** cluster of units. A cluster of units is a group of units that are clustered together to achieve a set of learning outcomes.

The name given to this cluster of units is CS2. Below is a list of the units contained within this cluster of units:

- SISFFIT001 Provide health screening and fitness orientation
- SISFFIT006 Conduct fitness appraisals
- SISFFIT005 Provide healthy eating information
- SISXCCS001 Provide quality service

Before you begin please read through the following frequently asked questions.

What is the full name of the course award I am working for?

Successful completion of this course can count towards several qualifications. Check your registration details for the qualification you are working towards.

How much work is involved?

Whichever qualification you are working towards will have a number of units of competency you are required to complete.

We recommend that, to successfully meet the requirements of each cluster of units for this course, you plan to complete one cluster of units of study per month. You will receive your personalised study plan two weeks after your enrolment date. This study plan is a structured plan which allocates a manageable study timeframe, with the allocation of additional months at the end of your study period.

This will enable you to read through the materials, undertaking a range of activities which focus on this cluster of Units. Then you will be ready for the final assessments at the end of this Cluster of units.

If I get stuck or need help, what is available?

The Technical Panel is available to support you during business hours, from Monday to Friday (excluding public holidays). You may book a phone coaching session with a Technical Advisor by emailing your questions to fitness.support@aipt.edu.au. One of the Technical Advisors will respond to you within two business days. In the meantime, whilst you are waiting for a response, we recommend that you continue working through your cluster of units learning and activities.

Aim: What is this unit about, and what will be expected of me?

SISFFIT001

This unit applies to fitness instructors who work in a variety of fitness locations such as fitness, leisure and community centres. These individuals typically work independently with some level of autonomy in a controlled environment. Work is performed according to relevant legislation and organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

SISFFIT006

This unit applies to fitness instructors who work in a variety of fitness locations such as fitness, leisure and community centres. These individuals typically work independently with some level of autonomy in a controlled environment. Work is performed according to relevant legislation and organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

SISFFIT005

This unit applies to fitness instructors who work in a variety of fitness locations such as fitness, leisure and community centres. These individuals typically work independently with some level of autonomy in a controlled environment. Work is performed according to relevant legislation and organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

SISXCCS001

This unit applies to individuals working in a range of customer service roles in the sport, fitness or recreation industries. This includes individuals working in gyms, aquatic centres, community centres or indoor activity centres, as well as to those working as instructors, trainers or guides and volunteers in indoor and outdoor settings.

These individuals undertake work according to relevant legislation and organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Learning objectives: What should I be able to do, when I have successfully achieved this cluster of units?

We are working with you to support you in developing your competence in the following areas:

SISFFIT001 – Provide health screening and fitness orientation

- I. Identify client fitness requirements.
- II. Administer pre-exercise health screening questionnaire.
- III. Advise benefits of fitness activities and exercise prescription.

SISFFIT006 – Conduct fitness appraisals

- I. Identify client fitness goals.
- II. Plan and conduct fitness appraisal.
- III. Evaluate fitness appraisal.

SISFFIT005 - Provide healthy eating information

- I. Provide healthy eating information.
- II. Support positive attitudes to eating and body composition.

SISXCCS001 - Provide quality service

- I. Address client needs and expectations.
- II. Provide quality service experience.
- III. Resolve customer complaints.

What kind of work will I have to undertake and complete?

This is an online learning course, which is different from learning in the traditional classroom.

How many modules are in this course?

There are **five** modules to be completed within this course. They are:

1. Provide quality service
2. Provide health screening, and conduct fitness appraisals and fitness orientation
3. Provide healthy eating
4. Food choices outcomes
5. Digestive system

How are the modules presented?

Each module will provide you with an introduction and overview of information.

When do I get assessed?

You will submit your assessments at the end of this cluster of units. You can of course ask for help before or during your studies if you wish. Please feel free to read through the assessments at any time.

How will I be scored/assessed?

The Assessor is looking for a demonstration of your competence in this cluster of units. There are four assessment items for each cluster of units. Each of the four assessment items must be assessed as 'Satisfactory'. If any assessment item is assessed as 'Not Yet Satisfactory', this means that the item does not meet the cluster of units standards/requirements. You will then be required to review and resubmit the assessment item/s. The Assessor will provide comments for you for the purpose of assisting in revising and reviewing your submission to meet cluster of units standards and criteria. Professional AIPPT assistance is also available for you, on request.

The final assessment outcome of the cluster of units will recognise you to be 'Competent' in each of the individual units that make up this cluster of units. This can only be confirmed when all four assessment items are assessed as "Satisfactory". You will not be deemed "Competent", until all four assessment items are separately assessed as "Satisfactory". This is the basis on which all vocational (work-based) training is assessed. Please note that neither scores nor grades are issued to candidates within the competency-based assessment process.

How will I know the difference between learning activities and final assessments?

Within this cluster of units, you will be provided with the following presentations, in this order:

- **General information** – to read through, interpret and understand
- **Final assessment tasks** – are to be found in a separate resource; the Assessment area of My eCampus.

Additional learning aids (subject to availability)

- eLibrary of templates and resources available for you to use
- Video clips to enhance your e-learning (subject to availability)
- Webinars can be organised (subject to availability and numbers)
- Online chat forums are encouraged (subject to availability).

What icons are used throughout the course?

We have included the following icons to identify the different work you are going to undertake:

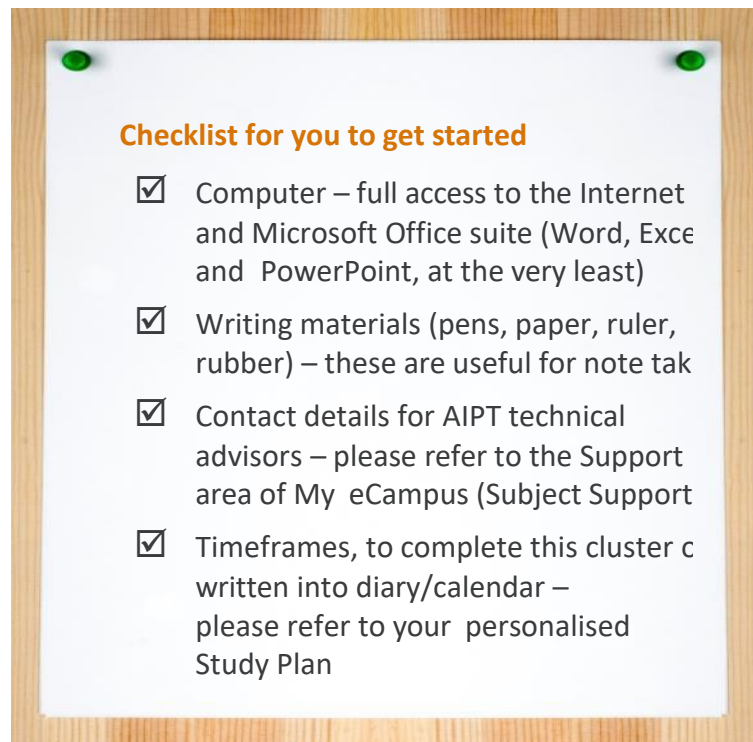
Icons	Icon type	Description
	Prescribed Reading	Courses with prescribed readings require you to have access to a particular text for the duration of the course. This icon represents readings from this text.
	Suggested Reading	These are readings which will add depth and understanding to your course participation.
	Definition	These represent definitions of important terms relevant to this course.
	Reflection	Reflections prompt you to think about certain subject matters. You are being encouraged to draw on your own personal experiences.
	Tip	Hints and tips to assist you in this subject area.
	Video	Videos to support the course content. Watch these short videos to learn more about the topics covered.
	Web	Internet web link to support course content and provide further reading or research opportunities
	Attachment	Attachments are separate documents that are referred to within the Modules. You can download the attachments from the Learning Resources section of this unit in My eCampus.

AIPT is committed to, and continuously reviews, the design and development of their contemporary eLearning tools and resources to support you, in your studies. However, availability of resources will be subject to availability.

Recommendation to make the best use of your time

We recommend that you attempt to complete at least one cluster of units per month. A minimum of 12 hours per month should be set aside in a quiet area where there are minimum interruptions for you. This time is YOUR investment in YOUR learning and, in YOUR success.

Great! I think we are ready to get started. Please work through and complete the following checklist, to ensure you have the tools needed to get started.



To be successful within this cluster of units, we need you to demonstrate your competence. What does that mean for you?

To be competent is to: Demonstrate your skills, knowledge and attributes for completing a task/job to national standards.



Tip

Read through and identify any area/s in which you may wish to undertake personal research prior to commencing your studies.

Remember that AIPT has Technical Advisers who are available to work with you after you have commenced your studies. When contacting them (preferably by email), list the key questions or queries you have. By doing so, you will enable them to assist you in the best possible way. Telephone appointments are also available! Their email address is fitness.support@aipt.edu.au.

So, let's look at the 'competencies' that are to be demonstrated, within this cluster of units.

SISFFIT001

Performance Evidence	• Use a risk stratification process for each client contact session for clients with differing needs, goals and preferences • Conduct calculations and measurements to adequately complete health screening procedures: – Waist circumference – Waist to hip ratio – Body mass index • Explain available programs, services and facilities to match each client's needs, goals and preferences • Prepare referral letters with supporting pre-exercise health screening documentation for at least two clients to a relevant medical or appropriate allied health professional when guidance and feedback is required regarding exercise participation • Prepare referral letter for at least one client to a more highly qualified fitness professional, such as a personal trainer, when either the: – Client requests personal training services – Client's needs, goals and preferences are suited to the scope of practice of a fitness professional more highly qualified than a fitness instructor • Interact with all clients in a professional manner • Use appropriate communication strategies and organisational channels to collect and handle sensitive information.
Kn Knowledge Evidence	• Legislation and regulatory requirements: – Appropriate collection and storage of client information – Application of legal and ethical limitations of own role – Work health and safety/occupational health and safety • Industry endorsed client pre-exercise health screening processes • Industry endorsed risk stratification procedures, exercise implications and referral requirements • Features and benefits of fitness facilities, exercise programs and services • Essential information and protocols for completion of referrals: – Client details – Rationale for referral – Guidance being sought – A copy of the pre-exercise health screening tool • Role of medical or allied health professionals for referral processes • Role of relevant personnel for referral processes: – Personal trainer – Advanced personal trainer • Considerations to be aware of in the following specific population client presentations: – Asthma – Children and their developmental stages – Continence issues – Depression – High cholesterol – Hypertension – Knee injuries – Lower back pain – Menopause – Metabolic disease or conditions, including diabetes mellitus – Neck issues

	– Obesity – Older populations and conditions associated with ageing process – Osteoarthritis – Osteoporosis – Overweight – Pre and postnatal – Rheumatoid arthritis
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SISFFIT006

Performance Evidence	• Plan and conduct health and fitness appraisals incorporating the following assessments for each client: – Cardiorespiratory endurance (submaximal oxygen consumption) – Blood pressure – Range of movement/flexibility – Strength – Weight – Height – Body mass index – Waist to hip ratio – Girth measurements • Use the following fitness appraisal equipment appropriately and safely: – Tape measure – Scales – Sit and reach tools – Bicycle, treadmill or rowing ergometer – Heart rate monitor – Blood pressure equipment – sphygmomanometer – Stop watch
Knowledge Evidence	• Legislation and regulatory requirements relevant to: – Fitness assessments and collection of client information – Negligence and duty of care – Appropriate collection and storage of client information – Application of legal and ethical limitations of own role – Work health and safety/occupational health and safety • Organisational policies and procedures relevant to: • Fitness assessments and collection of personal information • Conduct of fitness appraisals • Industry endorsed client pre-exercise health screening processes • Industry endorsed risk stratification procedures, exercise implications and referral requirements • Features and benefits of fitness facilities, exercise programs and services • Role of medical or allied health professionals for referral processes • Health-related components of fitness: – Body composition – Muscle endurance – Muscle strength – Cardiovascular endurance – Flexibility

Knowledge Evidence	• Benefits of fitness appraisal procedures and testing • Signs and symptoms of exercise intolerance • Interpretation of results from the following health and fitness assessments: – Cardiorespiratory endurance (maximal and sub-maximal oxygen consumption) – Blood pressure – Range of movement/flexibility – Strength – Weight – Height – Body mass index – Waist to hip ratio – Girth measurements – Skin fold measurements • Methods for measuring exercise intensity: – Heart rate response – Respiration rate response – Rate of perceived exertion – Work output • Products and services available in the fitness industry that could be used to meet client goals • Exercise adherence and behavioural change strategies: – Habits – Intrinsic and extrinsic motivation • Goal setting.
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SISFFIT005

Performance Evidence	• Access and provide each client with: – Current healthy eating information from identified current healthy eating information resources – Information on healthy eating related to the maintenance of health and prevention of chronic disease • Answer client queries and concerns regarding interpretation of healthy eating information • Collaborate with clients to implement healthy eating habits • Identify and prepare referrals for at least five clients to an Accredited Practising Dietitian, Accredited Sports Dietitian and/or General Practitioner as required: – Clients who have specific dietary requirements or dietary concerns – Clients who need support regarding positive attitudes to eating.
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Knowledge Evidence	- Information to promote positive attitudes to eating and body composition: - Relationship between fitness, health and appearance - Relationship between healthy eating, physical and mental health - Realistic expectations of nutrition and goal attainment - Link between healthy eating and common client health conditions - Current healthy information resources: - National Health and Medical Research Council (NHMRC) – Australian Dietary Guidelines - Relevant current healthy eating information as outlined in the Australian Dietary Guidelines: - Food groups and nutrients - Balanced diet - Own role and limitations in providing healthy eating information
Knowledge Evidence	- Role of Accredited Practising Dietitian, Accredited Sports Dietitian and General Practitioner for referring clients - Effects of cultural and social influences on food choices - Referral requirements for: - Dietary trends - Fad or popular diets - Nutritional supplementation - Sports foods - Ergogenic aids - Concept of metabolism and the factors affecting metabolism.

SISXCCS001

Performance Evidence	- Provide programs and services to clients with varying needs and expectations over at least three service periods ensuring that: - Services match client needs and expectations - Personal presentation standards meet organisational standards - Client appointment times are organised and confirmed - Service is provided in a timely manner - Client confidentiality and privacy is maintained - Complaints are resolved or referred as required - Interact with clients in a polite and courteous manner using appropriate communication strategies and organisational channels to provide relevant information.
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Knowledge Evidence	• Relevant legislation related to customer service: – Consumer law – Equal opportunity – Work health and safety/occupational health and safety – Promotions • Organisational policies and procedures to enable ethical and non-discriminatory treatment of client requests and resolution of complaints: – Communication protocols – Complaint procedures – Customer service procedures – Reporting procedures – Personal presentation – Privacy – Record keeping procedures • Communication mediums required to provide service to clients and colleagues • Conflict resolution strategies • Awareness of customs and practices of various social and cultural groups within Australia, to assist with meeting client needs and expectations in regards to: – Modes of greeting, farewelling and conversation – Body language, e.g. body gestures, – Formality of language – Clothing • Services and products within the organisation that may be suited to particular clients • Principles and benefits of enhanced customer service experiences and positive communication
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Standards established to assess you

As you will learn over the course of this cluster of units, to assess any performance requires that a minimal standard or standards (or benchmark) be achieved. This is written into a Performance Criterion.

A Performance Criterion will clearly state WHAT is to be demonstrated for assessment to be successful. The performance criteria for this cluster of units are set by the Australian Qualifications Framework (AQF).

Performance criteria

SISFFIT001

1. Identify client fitness requirements.	1.1 Question clients to confirm fitness goals, expectations and preferences. 1.2 Confirm current and past physical activity participation. 1.3 Describe available programs, services and facilities relevant to client needs and expectations.
2. Administer pre-exercise health screening questionnaire.	2.1 Explain purpose of pre-exercise health screening questionnaire and risk stratification to client. 2.2 Provide and administer an industry standard pre-exercise health screening questionnaire to client. 2.3 Discuss client preferences and outcomes of pre-exercise health screening. 2.4 Refer client to medical practitioner or other appropriate professionals for

	further appraisal as required.
3. Advise benefits of fitness activities and exercise prescription.	3.1 Explain benefits of fitness activities and fitness programs. 3.2 Advise client regarding processes and suitability of relevant activities and programs, as required. 3.3 Document and update records of fitness orientation, pre-exercise screening and advice provided to client.

SISFFIT006

1. Identify client fitness goals.	1.1 Clarify significance of fitness appraisal in relation to program development and seek client consent. 1.2 Review pre-exercise health screening, and health assessment procedures as required. 1.3 Discuss client health-related goals and acquire additional client information as required. 1.4 Refer client to a medical or allied health professional as required.
2. Plan and conduct fitness appraisal.	2.1 Determine tools and methods to conduct health and fitness assessments. 2.2 Conduct required health and fitness assessments in a safe and timely manner. 2.3 Implement strategies to overcome client cultural and social differences and behavioural patterns as required. 2.4 Select and use communication techniques that encourage and support the client. 2.5 Monitor client for signs and symptoms of intolerance and discontinue fitness assessments as required. 2.6 Explain results of fitness assessments and recommend an appropriate exercise program. 2.7 Match fitness goals to products and services available in the fitness industry. 2.8 Develop a client profile and record outcomes of appraisal and exercise program recommendations. 2.9 Review individualised exercise goals and implement adjustments to goals due to fitness appraisal results, as required.
3. Evaluate fitness appraisal.	3.1 Request and respond to feedback from client. 3.2 Identify and document aspects needing further attention.

SISFFIT005

1. Provide healthy eating information.	1.1 Access and provide information regarding healthy eating, health and fitness to clients. 1.2 Explain adverse effects of poor nutrition to clients. 1.3 Show sensitivity to cultural and social differences influencing food choices. 1.4 Identify and refer clients with specific dietary requirements or dietary concerns to an Accredited Practising Dietitian, Accredited Sports Dietitian or General Practitioner, as required. 1.5 Maintain records of client consultations.
2. Support positive attitudes to eating and body composition.	2.1 Discuss with clients the relationship between body composition and physical and mental health. 2.2 Incorporate an understanding of the relationship between attitudes to eating and physical and mental health in client interactions. 2.3 Model healthy eating behaviours and attitudes in personal practice. 2.4 Refer client to an Accredited Practising Dietitian, Accredited Sports Dietitian

or General Practitioner, as required.

SISXCCS001

1. Address client needs and expectations.	1.1 Recognise and confirm client preferences, needs and expectations. 1.2 Source and provide relevant information about programs, services and facilities to match client requirements. 1.3 Meet all reasonable client needs and requests in a timely and professional manner. 1.4 Encourage clients to ask questions and address these as required.
2. Provide quality service experience.	2.1 Organise, confirm and record appointments for clients to their satisfaction. 2.2 Provide professional and personalised service to ensure a quality experience for clients. 2.3 Anticipate client preferences, needs and expectations throughout the provision of services. 2.4 Confirm client satisfaction in a timely manner and implement appropriate adjustments to service as required. 2.5 Promote repeat business to clients by offering continued service or offers of alternatives. 2.6 Maintain records of client service provided.
3. Resolve customer complaints.	3.1 Recognise client dissatisfaction, conflicts or complaints promptly and take action to resolve the issue. 3.2 Respond to client complaints professionally and refer to appropriate personnel as required. 3.3 Discuss unresolved concerns with client and prepare plan of action if appropriate.

Module one: Provide quality service

Good customer service is essential to the success of any business, and as such it is a highly valued skill among employers. Strong organisations will not only strive to simply meet the expectations of their customers, they will actively attempt to exceed them too. High-quality customer service will enhance the reputation of a business, increase sales through word of mouth, and create long-term customer retention.

It is especially important in the fitness industry to provide outstanding customer service as businesses in this industry are traditionally driven by strong customer retention. This module will address customer service expectations in the fitness industry by informing on how to use appropriate communication techniques, maintain high personal presentation standards, establish rapport with clients, and determine and address client needs and expectations as well as deal with complaints.

SECTION 1 – CLIENTS IN THE FITNESS INDUSTRY

In the fitness industry, you will be faced with a wide variety of clients from various social and economic backgrounds. It is important to know how to adjust your communication style based on the type of client you are dealing with. Some of the types of clients you will work with in the fitness industry may include:



SECTION 2 – COMMUNICATION STRATEGIES

Good communication and rapport building strategies are an important part of any industry, but they are particularly important in the fitness industry as most business will be undertaken on a face-to-face basis. Communication should always be:



Rapport is about building relationships with other people. This is especially important when working with clients as it ensures that they feel comfortable whilst also allowing them to trust their personal trainer. Creating good rapport is hugely important in ensuring the longevity of the relationship between trainer and client.

In order to ensure the safety of your clients and to make them aware of all the services that you can offer them, it is crucial to employ both verbal and non-verbal communication strategies.

Communication with clients may be:

- Verbal
- By written format, such as handwritten, electronic (e.g. email) or hard copy (e.g. letter)
- By telephone
- Face to face
- Formal
- Informal
- Varied according to the needs of the client, including:
 - Use of appropriate voice tonality and volume
 - Use of languages other than English
 - Use of a family interpreter
 - Use of basic gestures
 - Use of visual aids such as photographs, sketches, or product information sheets

Using non-verbal communication such as gestures and body language is also an important part of communicating with clients, particularly in the fitness industry where you may often be showing clients how to perform exercises.

It is equally important that you be able to read a client's non-verbal cues as these may indicate discomfort or embarrassment. For example, a client may stand with their arms folded if they are uncomfortable performing the exercise that you are demonstrating to them.

Examples of how to practise reading non-verbal communication include:



Examples include shopping centres, buses, trains, cafés, or around the workplace. Examining how others use body language can teach you how to better receive and use non-verbal signals when conversing with others.

People from different countries and cultures tend to use different non-verbal communication gestures. You should take the time to learn about them.

It is hugely important to show sensitivity to any cultural and/or social differences. This may include the way in which you greet and farewell clients as well as the way you communicate and the conversations you have, i.e. the topics you choose to discuss and the formality of your language. You should also take into consideration your non-verbal communication such as your body language and use of gestures.

You may also need to consider the way you dress so as to display cultural sensitivity. For example it may be polite when working with people from some Muslim cultures to cover up your arms and legs with appropriate clothing or being sensitive to people's dietary choices such as veganism and not eating pork etc.



Questioning Techniques

It is important to develop skills in questioning so as to communicate with people effectively. Questions can be either open-ended or closed-ended. It is vital to select the correct questioning technique based on the situation as well as the information that you hope to gain through the questioning.

Open-ended questions

- Are questions without a fixed end. They encourage continued conversation that will enable you to gain more information. To use the open-ended questioning technique you should begin each question with interrogatives i.e. who, what, where, why, when or how.

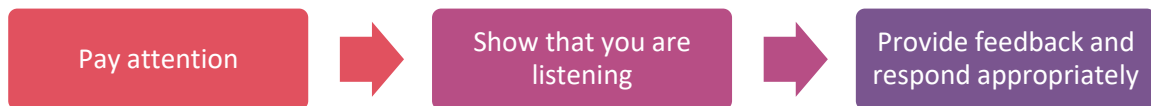
Closed-ended questions

- Are questions with a fixed end point. The answer to the question asked should be either 'yes or no'. Closed-ended questions are used to confirm facts and generally focus on one point or topic. To use the closed-ended questioning technique you should begin each question with verbs e.g. do, can, would, is or are.

Listening is a vital interpersonal and communicational skill. Developing effective listening skills is just as important as developing speaking skills. Learning to be a better listener can increase productivity and improve relationships at the workplace.

It is important that when communicating with clients, you listen carefully to their wants, needs, questions, and concerns. In order to be a successful communicator it is crucial that you listen actively, not passively. Active listening means that you are engaged and involved in the listening process.

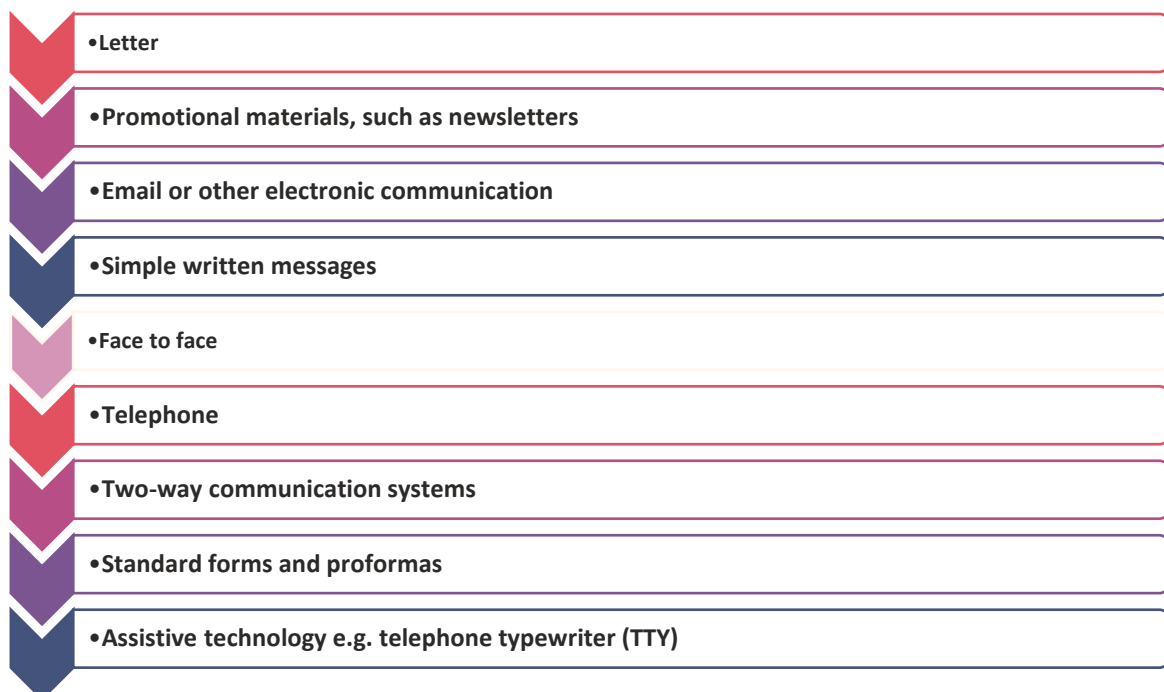
To be an active listener you should:



SECTION 3 – METHODS OF COMMUNICATION

Communication methods relate to what you will use to communicate. It is important that you select an appropriate medium of communication for the particular audience, purpose, and situation, taking into consideration the characteristics of each medium and the relevant factors involved. These may include the technical skills required to use the medium, and its particular features.

Mediums of communication in the fitness industry may include:



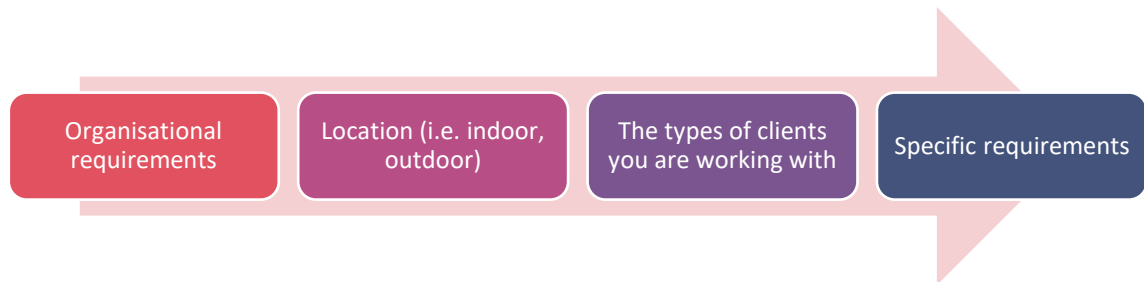
When selecting a communication medium, you will also need to do so according to standard protocols and organisation procedures.



- Modes of greeting and farewelling
- Addressing the person by name
- Required timeframe for addressing and servicing clients
- Required timeframe for response to an enquiry
- Use of standard letters and proformas

SECTION 4 – PERSONAL PRESENTATION

You must ensure that you practise high standards of personal presentation and hygiene when working in the fitness industry. You must do so in accordance with:



In the fitness industry, personal presentation will tell potential clients a lot about whether they feel you may or may not be a good fit for them as a trainer. First impressions definitely count when trying to build rapport with people who may be entrusting their health and wellbeing to you. Imagine that you were selecting a personal trainer: you would be far more likely to consider someone who was smart and looked like they took care of themselves as opposed to someone who appeared disorganised and messy.

Many workplaces have policies regarding personal presentation, which all employees are required to comply with or risk losing their job.

Personal presentation may include:

- Attire, shoes, and accessories
- Wearing of uniform items within the organisation's policy requirements
- Complying with organisation's policy for personal presentation
- Hair and grooming
- Hands and nails
- Jewellery
- Personal hygiene



SECTION 5 – HOW TO PROVIDE A QUALITY SERVICE TO YOUR CLIENTS

In the fitness industry, you must ensure that your client's needs and expectations are correctly identified. You must identify clients with special needs and provide appropriate products, services, and information that are suitable.

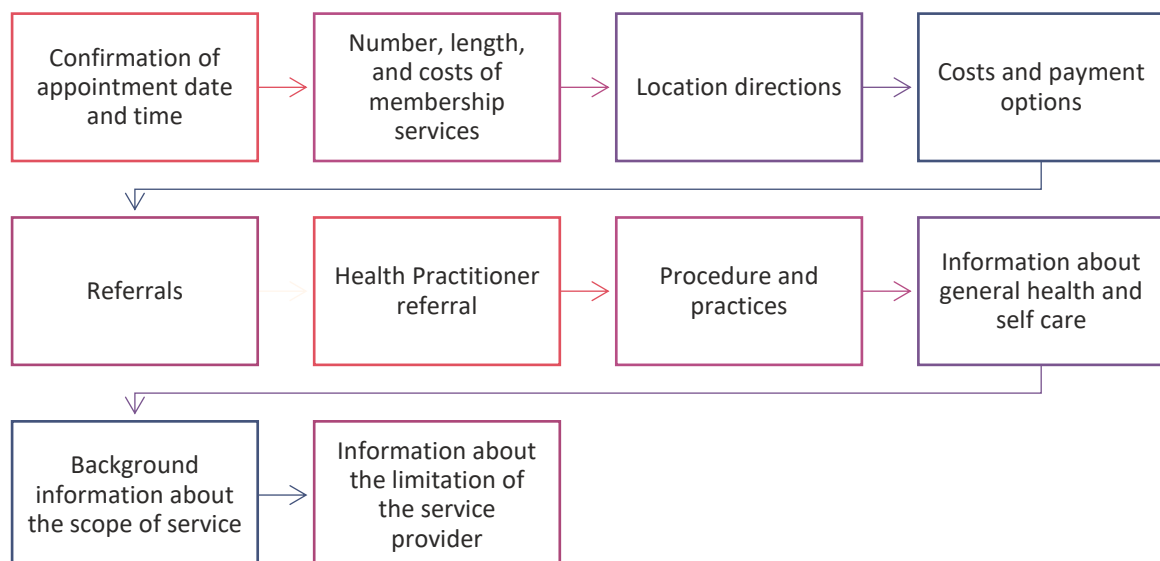
Clients with special needs that you may come across may include:



Adaptations to customer service and variations to sessions/programs should be included to factor in examples such as these. However, at no time should clients with special needs be made to feel that they are different or disadvantaged in any way. A good employee should find a way to harness the abilities of clients with special needs without highlighting their inabilities.

Collecting relevant information

Once you have identified your client's needs and expectations correctly, you should provide them with appropriate products, services, or information. In the fitness industry, the information that you may need to provide to clients may include:



In order to provide effective customer service, you should ensure that you are comfortable with all of this relevant information so that you can address and handle client and customer enquiries on the spot. This enables you to look both professional and knowledgeable.

Developing relationships with clients

In a fitness environment, it is important to keep up-to-date client records. This must be done to meet organisational policies and procedures. Client records are important for the client's health and wellbeing as they contain all medical and health related information. This in turn makes it easier to measure a client's progress. Some organisations also encourage employees to file information about their clients, such as their occupation, marital status, number of children, and/or important upcoming events like weddings. This can be an excellent rapport-building exercise.



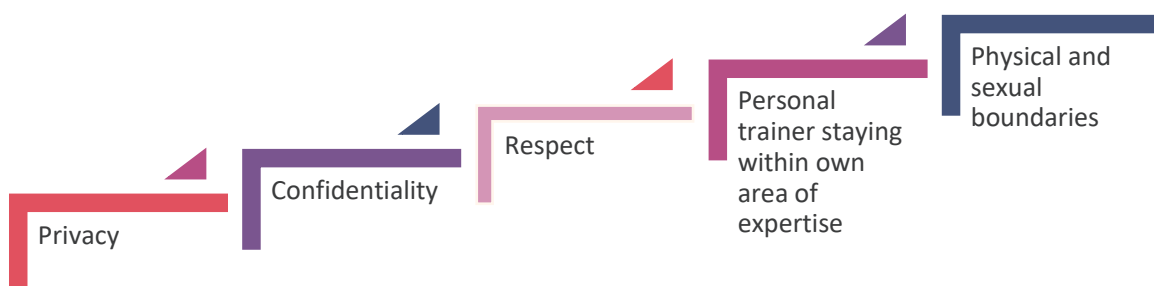
It is equally important to provide empathy and special assistance to clients who are faced with special needs or circumstances. Clients should be encouraged to voice their queries and/or fears so that these can be addressed, in turn leaving the client feeling more comfortable, safe, and confident. When communicating and interacting with clients, you must ensure that you take into consideration cultural and personal factors.

Boundaries with clients

The relationship between client and trainer should always be one of confidentiality, trust, and honesty. What should never occur are issues of ethical misconduct whereby an instructor uses their position of power to violate the trust of their client.

Clients need to understand that there are boundaries to the instructor/client relationship, and these should be clearly outlined and explained to them.

Boundaries include:



Section 6 – Promoting your services



Promotional services are how an organisation makes the public aware of the services they provide. If done properly, promotional services increase public awareness of a product or service, thereby increasing sales results and in turn company revenue.

In the fitness industry, promotional services may include:

- Client loyalty programs
- Newsletters
- Email notification of sales and promotional packages
- Sale of gift vouchers
- Marketing events and activities
- Discount vouchers

SECTION 7 – DEALING WITH CONFLICT AND COMPLAINTS

In order to prevent customer dissatisfaction, you should identify potential and existing conflicts and seek solutions in conjunction with all parties involved, making sure that action is taken as soon as possible to resolve any situation that does arise. You should only work within your own level of responsibility and the organisation's procedures. Most organisations have a complaints procedure, and this should include a process to be followed in an attempt to resolve the conflict and ensure that the client is satisfied with the outcome.



Basic counselling skills

Occasionally, clients may require additional assistance that you may not be qualified to provide. This additional assistance may be some form of counselling. You may have to determine a client's need for basic counselling and refer them to an appropriate person or service.

Basic counselling may be required:

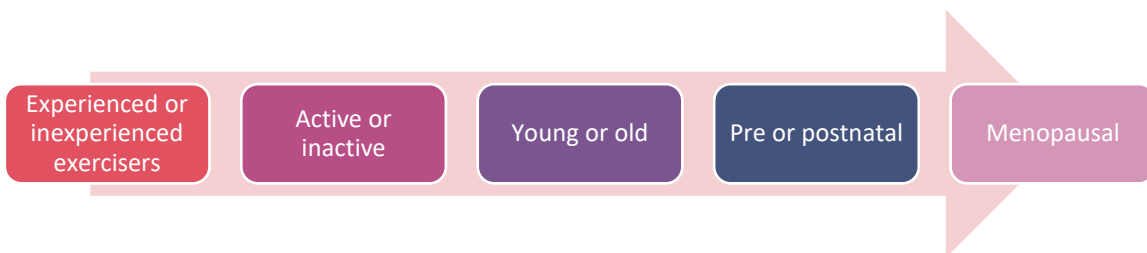


Module two: Provide health screening, and conduct fitness appraisals and fitness orientation

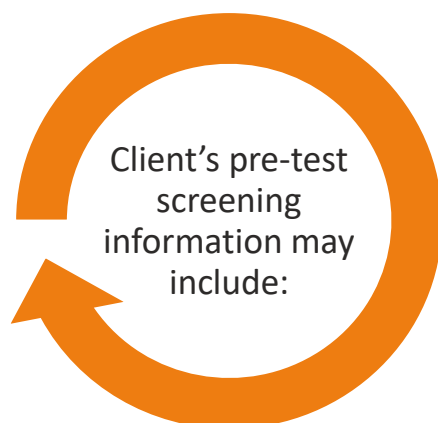
SECTION 1 – REVIEWING PRE-TEST SCREENING INFORMATION

The clients that you work with will vary in terms of their social and economic background and their previous experience of structured exercise, and so will their abilities, goals, and expectations. Being aware of the different types of clients you may encounter will allow you to better prepare for what you may find during their fitness appraisal and how to design their program moving forwards.

Clients may include:



Prior to designing and preparing a client to start an exercise program, it is important that you review client-screening information, discuss their fitness goals, and conduct a basic fitness appraisal. To begin this process, you will need to review your client's pre-test screening information.



- Lifestyle evaluation
- Fitness goals
- Time available to exercise
- Exercise history
- Exercise preferences
- Medical history
- Informed consent
- Medical clearance

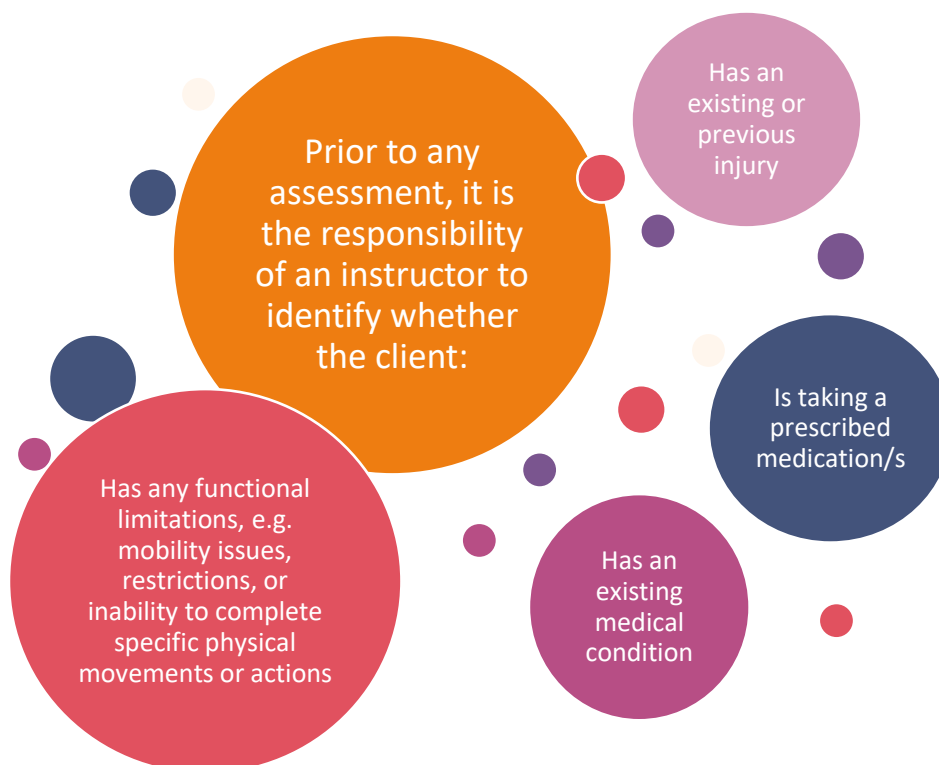
Reviewing this information properly will allow you to prescribe a fitness program that is suitable, effective, and enjoyable for your clients. Gathering all of the pre-test screening information will also allow you to ensure that it is safe for your client to begin an exercise program.

Before you begin the pre-test screening, you must advise the client of the relevance of the

screening and appraisal process in developing an individualised exercise program.

This allows them to understand that a pre-test screening is conducted for their safety but also ensures that the fitness instructor/personal trainer gets to know them, their likes and dislikes, and their current lifestyle.

A lifestyle evaluation allows you to gain an insight into a client's way of life. This will determine whether there is anything that may affect a person's ability to conduct an exercise program safely as well as their ability to attain their desired results. As part of a lifestyle evaluation, you may determine whether a person is a smoker, takes drugs, and how much alcohol they consume on a weekly basis if at all. A lifestyle evaluation may also ask questions regarding the type of work an individual does, their stress levels, amount of time spent sitting or using a computer, and the number of hours on average a person sleeps per day. A lifestyle evaluation is most commonly in the form of a written questionnaire and may or may not be combined with a medical history questionnaire.



If it is identified that an individual has a medical condition, an existing or previous injury, or any functional limitations or is taking a prescribed medication, you must obtain a clearance letter from an allied health professional or medical practitioner to ensure that it is safe for them to participate in an exercise program. This medical clearance ensures the safety of the client and protects you from any litigation should injury occur.

A health screening questionnaire may be created by your workplace or it may be a PAR-Q (Physical Activity Readiness Questionnaire). A PAR-Q is a health screening tool that can be used by anyone who is planning to start an exercise program.

Personal trainers often use a PAR-Q during a fitness appraisal to determine the safety or possible risk of exercising for an individual based upon their answers to specific health history questions.



It is important to complete a PAR-Q because it:

- Assesses current levels of fitness
- Informs of current levels of physical activity
- Highlights possible negative behaviours undertaken by the client
- Explains the specific benefits of the fitness activities relevant to the needs of the client
- Advises of the benefits of a fitness appraisal and exercise program to the client
- Assesses the requirements and expectations of the client
- Provides a document that can be used in case of legality

There are seven standard health screening questions on a PAR-Q, but some organisations add additional questions in order to gain more information from their clients.

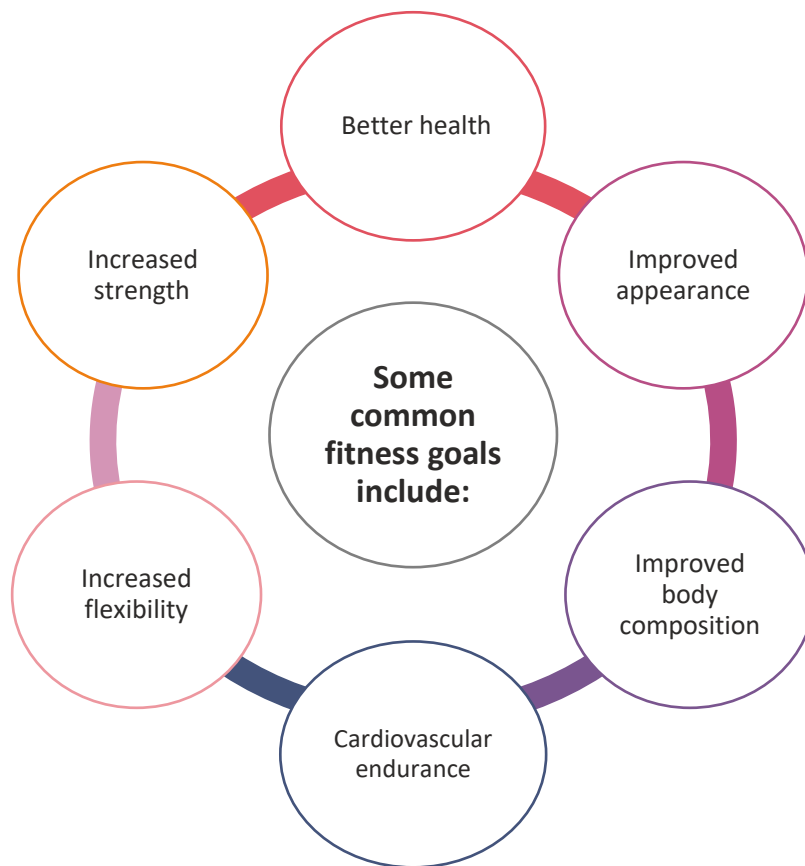
The seven standard questions include:

1. { • Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
2. { • Do you feel pain in your chest when you do physical activity?
3. { • In the past month, have you had chest pain when you were not doing physical activity?
4. { • Do you lose your balance because of dizziness or do you ever lose consciousness?
5. { • Do you have a bone or joint problem that could be made worse by a change in your physical activity?
6. { • Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
7. { • Do you know of any other reasons why you should not do physical activity?

Alongside identifying any medical conditions, injuries, and/or medications they are taking, it is also important that you enquire about their current fitness levels, functional limitations, lifestyle factors, and their exercise history. Asking questions and having a relaxed conversation with new clients will allow you to develop a rapport as well as help to eventually design a fitness program that will be both specific to their needs and enjoyable.

People often blame a lack of time for their inability to exercise. Long working hours and family responsibilities often play a large role in how much time is available for physical activity and recreation. When discussing a client's program, it is important to determine how much time they can commit to exercise each week. You may need to assist clients in finding time by evaluating their weekly schedule with them from the time they wake up until they go to sleep and look for opportunities in the day to add in some form of exercise. This will also allow you to gauge whether they are able to commit enough time so that their goals can be considered realistic.

Client goals will vary from person to person, and assumptions should never be made; for example, every male wants big muscles and every female wants to lose weight. As a personal trainer, it is part of your role to discuss with your client their health and fitness goals, ensure that these goals are achievable, and design a program specific to the goals of your client.



You should also discuss with your clients what exercises and gym equipment they like and enjoy using and alternatively what exercises and gym equipment they dislike.

It is important to assure them that there are alternative options should certain exercises make them feel very uncomfortable. For example, if a client is uncomfortable using a treadmill, they may feel more at ease using a rowing machine or recumbent bike.



As part of obtaining all necessary pre-test screening information, it is also important to gain informed consent. This is a formal document obtaining permission from your client to conduct fitness screening and testing and then prescribe them an individualised program.

This document should be filed away as evidence in case of litigation. In an informed consent document, clients will acknowledge that they understand the risks of exercise and have advised their trainer of any medical conditions and/or injuries of which they are aware.

SECTION 2 – REFERRAL TO MEDICAL OR ALLIED HEALTH PROFESSIONALS

On occasion, after gathering information about a client's medical history during their health screening, you may need to refer them to a medical practitioner. You may also need to recommend that certain clients seek medical or allied health professional assistance before proceeding with their fitness appraisal and exercise programming according to organisational policies and procedures.

The medical condition or injury suffered by your client will determine the allied health professional most suitable. If you have a client that needs to be referred, sending them to a medical practitioner, i.e. general practitioner (GP), would be beneficial as they are an expert who can then refer the client to the most suitable allied health professional.

Besides a GP, there are other allied health professionals to whom a client may be referred:



- Physiotherapists
- Chiropractors
- Accredited exercise physiologist
- Occupational therapists
- Osteopaths
- Remedial massage therapists
- Sports physicians/doctors
- Podiatrists
- Accredited practising dietitians
- Psychologist

SECTION 3 – LEGAL AND REGULATORY REQUIREMENTS

When reviewing a client's pre-test screening information, it is important that you do so in accordance with legislation and regulatory requirements. These may include:

- **Work (Occupational) health and safety** – This relates to compliance with the Work Health and Safety Act, and under this legislation, instructors who are conducting health screenings, fitness appraisals, and exercise sessions are required by law to ensure the safety of themselves and all others around them, including clients, participants, and athletes.
- **Duty of care** – This is about taking reasonable care to ensure the safety of all individuals participating in your class, session, training session, etc.



- **Copyright legislation** – This protects against the use of materials created by someone else without appropriate permission. This legislation is enforced in Australia through the Copyright Act.
- **Privacy legislation** – This protects individuals' personal information. Participant and/or client privacy should always be protected. It is illegal in Australia under the Privacy Act to pass on a person's personal details without their permission or to use it for anything other than what it was obtained for in the first place.
- **Anti-discrimination** – This is about ensuring equality and that all individuals are on a level-playing field in regards to employment opportunities, promotion, participation, and access to services. The Anti-discrimination Act 1977 enforces anti-discrimination in our society.
- **Licensing** – All fitness industry organisations need a number of licences in order to run their organisation or business. Some common licences required when conducting activities as part of the fitness industry may include:
 - Fundraising licence
 - Music licence
 - Broadcast licence agreements
 - Merchandising licence agreements



- **Child protection** – It is a compulsory legislative requirement under the Working with Children Act 2005 for any person working with children to have an up-to-date Working with Children Check (WCC). This mandatory check was implemented to protect children 18 years of age and under from sexual or physical harm.
- **Consumer protection and trade practices** – In Australia, Consumer Protection and Trade Practices law protects all consumers from any false or misrepresentation of information as well as providing warranty protection.



Organisational policies and procedures



All organisations in the fitness industry that conduct health screening and fitness appraisals will have a different process for doing so. As a personal trainer, it is your responsibility to ensure that you do so in accordance with the organisational policies and procedures at all times.

Any documentation generated in the fitness industry should be documented and filed both electronically and physically. Such documentation includes all fitness appraisals, PAR-Qs, medical clearance information, Work Health and Safety (WHS), and maintenance checklists as

well as a copy of any fitness/exercise program prescribed for a client. Filing documentation physically and electronically ensures that the information can be referred to at a later time.

A personal trainer may refer back to a client's initial fitness appraisal when completing a follow-up appraisal after a client has been completing their fitness/exercise program for around three to six months. Initial documentation will allow for the trainer to measure the client's progress since they began their program.

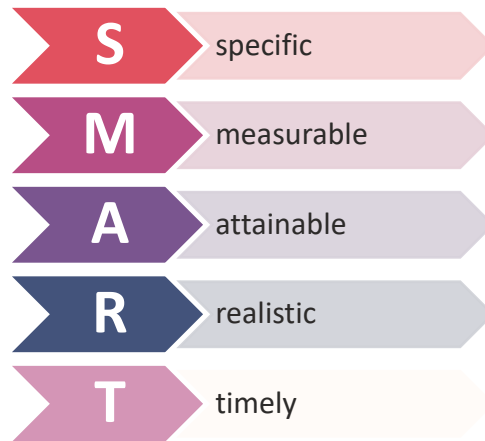
SECTION 4 – GOAL SETTING

Goal setting is one of the most important parts of the initial screening phase with a new client. Part of this is determining the perceived benefits, i.e. what the client hopes to gain from becoming active through a prescribed fitness program. Perceived benefits may be cosmetic, health related, or social/recreational or to become more athletic.

In consultation with the client, a personal trainer should develop and document a variety of long and short-term goals to work towards.



As an instructor, ensure that the goals selected are S.M.A.R.T:



Once you have collected and reviewed all relevant pre-test screening information and ruled out any medical conditions or reasons as to why the client should not begin an exercise program as well as discussed the goals of the client, you will need to conduct a basic fitness appraisal.

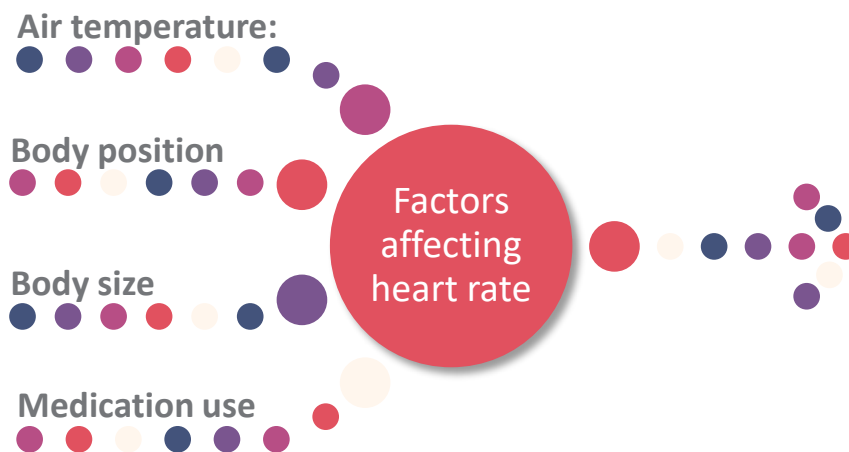
This is an assessment of an individual's fitness level. The information obtained through conducting the fitness appraisal provides data for comparison at a later date as well as providing valuable information for the planning of an individualised exercise program. During the fitness appraisal, a number of physical tests and measurements will be recorded to determine a person's cardiovascular fitness, strength, flexibility, and body composition.

There are several key tests that should be conducted as part of a fitness appraisal. The venue and resources available will influence the type of test that completed. All fitness appraisals should consist of the assessments that are detailed as follows.

SECTION 5 – FITNESS APPRAISALS

Passive Fitness Appraisals

Resting Heart Rate is the heart pumping the lowest amount of blood you need because you're not exercising. If you're sitting or lying and you're calm, relaxed and aren't ill, your heart rate is normally between 60 (beats per minute) and 100 (beats per minute).

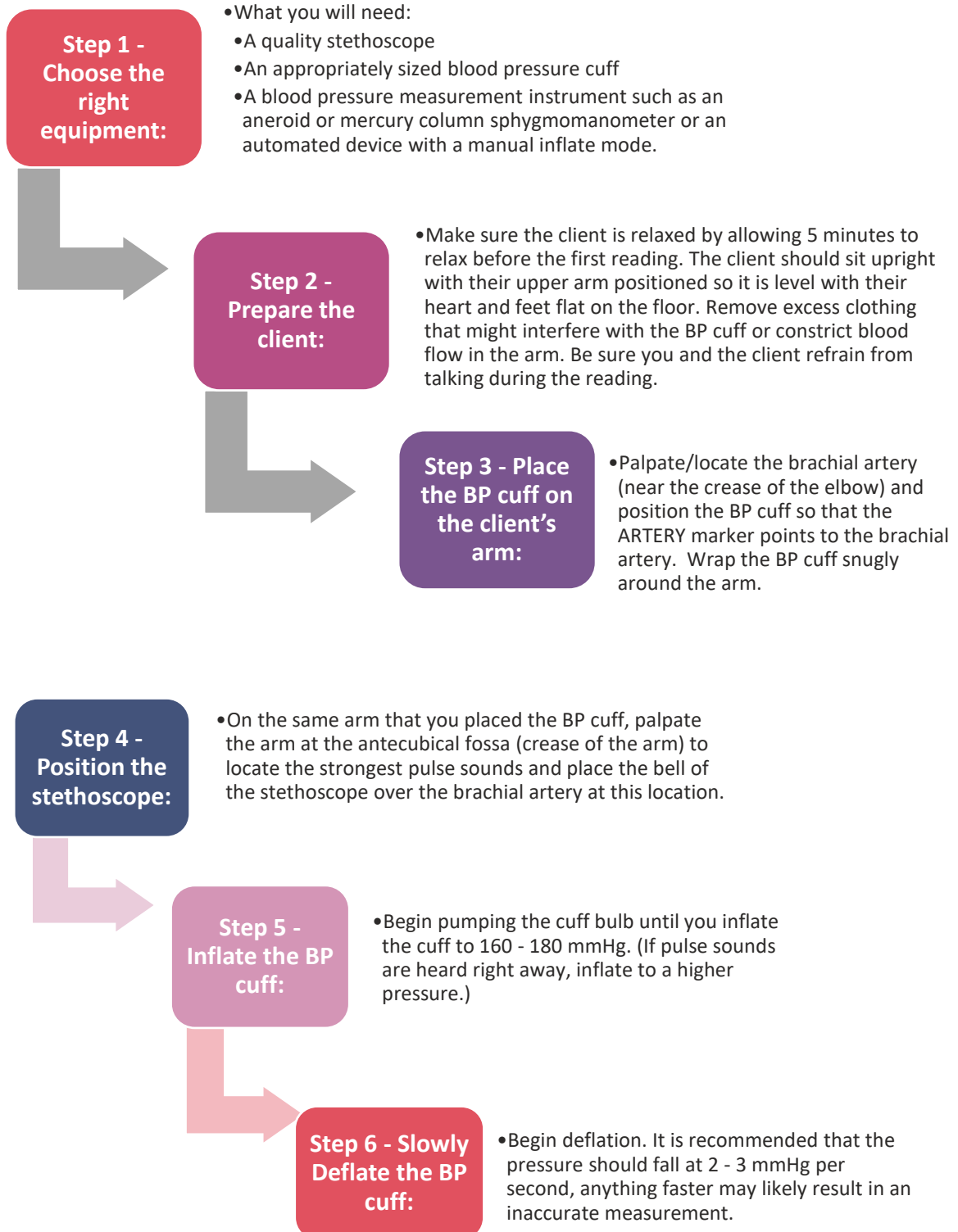


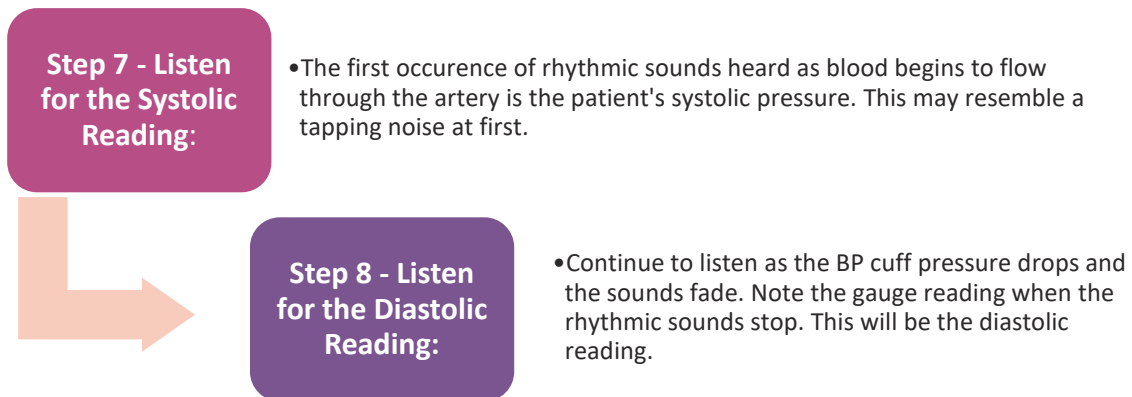
- **Air temperature:** When temperatures (and the humidity) soar, the heart pumps more frequently to assist with cooling. This causes an increase to your pulse rate but usually no more than 5 to 10 beats a minute.
- **Body position:** When you are awake and lying, sitting or standing, your pulse is quite similar. Sometimes as you stand, your pulse and force at which your heart contracts may rise to counteract the effect of gravity pulling blood down your body.
- **Emotions:** If you're stressed, anxious or overly happy or sad, your pulse can rise.
- **Body size:** Body size usually doesn't change pulse if you remain within your recommended weight range for your height or gender. Obesity can affect your resting heart rate however.
- **Medication use:** Medications that block your adrenaline (beta blockers) tend to slow your pulse, while too much thyroid medication or too high of a dosage will raise it.
- **Blood pressure** is compulsory as part of a fitness appraisal. Blood pressure is a measurement of the force blood applies to the artery walls. It is measured as two numbers, systolic pressure and diastolic pressure.



A client's blood pressure should only be taken when they have rested for five minutes as stress, nervousness about being tested, and physical activity can impact the reading. A client's blood pressure should therefore be taken at the beginning of a fitness appraisal. The client should be seated with their arm resting on a table or bench. The arm should be approximately at heart level.

To conduct a blood pressure test you will follow these 8 steps:





Blood pressure readings may be as follows in the table.

	Normal	Acceptable	High
Systolic	90-120	120-140	140-180
Diastolic	60-80	80-90	90-110

Source: www.betterhealth.vic.gov.au



Upon measuring a client's blood pressure, if their reading is high, this indicates one risk factor and this must be recorded as part of your risk stratification process.

High blood pressure, called hypertension, can indicate a blockage of the arteries and can lead to cardiovascular health conditions.

Readings at the higher end of the acceptable range – 120-140mmHg for systolic and 80-85mmHg for diastolic – are known as pre-hypertensive.

Readings of around 140-160mmHg systolic or 85-90mmHg diastolic represent stage 1 hypertension; readings of 160mmHg+ systolic or 90mmHg+ diastolic represent stage 2 hypertension. Some gyms will refer a client to their GP at stage 1, some at stage 2.

Hypertension can be extremely dangerous and is a contraindication to physical exercise.

Body composition measurements

Girth measurements

Anthropometric measurements should also be completed during a fitness appraisal. These give a great indication of body composition and are very useful for measuring a client's progress. Girth measurements are a great way of measuring body size and composition. All that is required to complete girth measurements is a marker to accurately mark the size from which the measurement should be taken and a flexible tape measure.



Girth measurements can be taken from a number of sites around the body during a fitness appraisal, including the waist and/or abdominal; chest; upper arm, first relaxed and then flexed; hip; and thigh.

All sites should be measured over minimal clothing, and the tape should be placed flat on the area being measured, loosely but firmly.

Arm girth relaxed

With the subject's arms in a relaxed position by their sides, mark the mid-point between the acromion process and the lateral, proximal head of the radius. Measure the circumference at this point.

Arm girth flexed

Measure the circumference of the belly of the biceps whilst the arm is flexed to 90 degrees.

Chest girth

Ensure that your client is standing in a relaxed position. Mark a mid-point on the sternum at the attachment of the fourth rib. Due to the invasiveness of this method, you can obtain a point of reference on the site usually along the same line as the armpit. Measure this circumference from behind, ensuring that you stay out of your client's personal space as much as possible. Take the reading upon exhalation.



Mid-thigh girth

With your client standing, measure the mid-point between the greater trochanter and the lateral head of the tibia. Measure the circumference at this point.

Waist girth

The tape is placed around the waist at the observed narrowest point with the client in a relaxed standing position. If this point is not apparent, then a measurement is made half way between the costal boarder – bottom rib – and the iliac crest. The measurement is made at the end of the normal expiration.

Hip girth (Gluteal)

Measure the circumference of the buttocks at the level of their greatest posterior protrusion as observed from the side, with the client in a relaxed standing position with feet together. When measuring this site, ensure that the tape is horizontal and correctly located. Again, take this measure from the side to ensure that you are not invading your client's personal space.

Waist to hip ratio (WHR)

By measuring the hip and waist sites, a trainer can calculate a client's waist-to-hip ratio (WHR). The WHR can identify abdominal obesity. WHR is determined by dividing the waist measurement by the hip measurement. A WHR greater than 0.95 for men and 0.86 for women indicates an increased health risk. See the table below for WHR Norms.

Waist - This measurement should be taken at the narrowest waist level, typically above the navel.

Hip – Measuring tape should be positioned at the level of the greatest protrusion of the gluteal (buttock) muscles. Client should be standing in a relaxed position, with legs shoulder width apart.



$$WHR = \text{Waist Circumference (cm)} / \text{Hip Circumference (cm)}$$

Waist to Hip Ratio (WHR) Norms				
Gender	Excellent	Good	Average	At Risk
Males	<0.85	0.85-0.89	0.90-0.95	≥0.95
Females	<0.75	0.75-0.79	0.80-0.86	≥0.86

BMI

The BMI is used to estimate a person's total amount of weight or mass in relation to height. It is calculated by dividing bodyweight in kilograms by your height in metres squared. As it does not take into consideration muscle mass, an individual with a large amount of muscle and little fat may still have a high BMI.

$$BMI = \text{Weight (kg)} / (\text{Height (m)})^2$$

An example of a BMI calculation for a male weighing 85kg and standing at 1.86 metres is as follows:

$$\text{Height (m)}^2: 1.86 \times 1.86 = 3.46$$

$$BMI = 85\text{kg divided by } 3.46 \text{ m} = 24.6 \text{ (Healthy)}$$

BMI should not be used as a sole method of determining body composition. BMI is classified using the following ranges:

<18.5	Underweight
18.5 – 24.9	Healthy
25.0 – 29.9	Overweight
30.0 – 34.9	Obese I
35.0 – 39.9	Obese II
> 40.0	Obese III

Skin fold testing

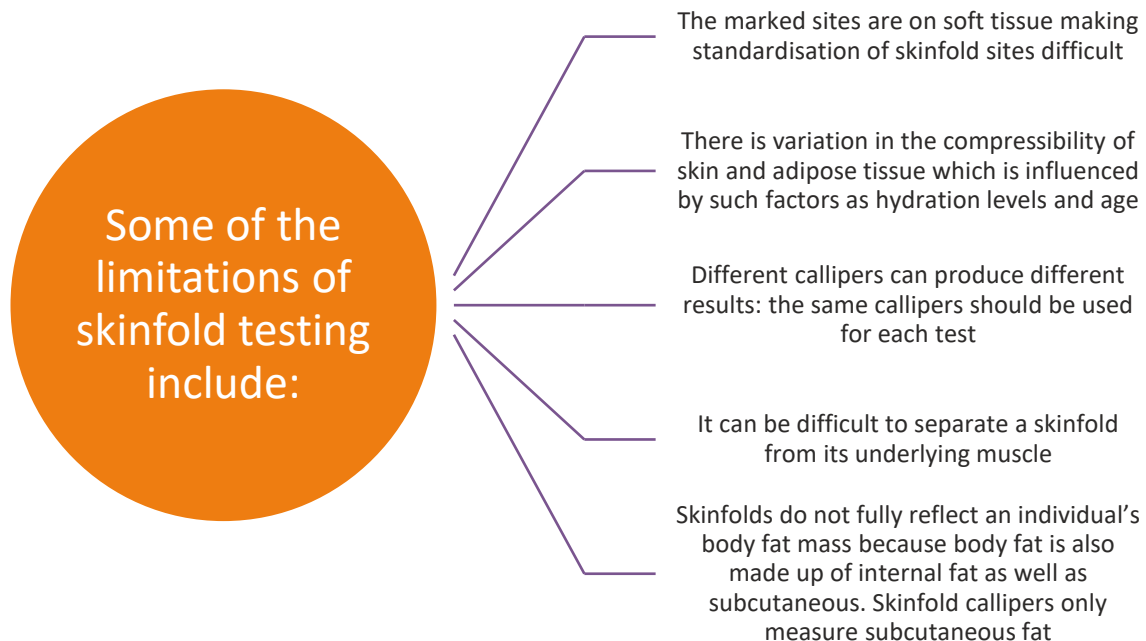


Anthropometric measurements can also be taken through skin fold testing. This measures fat distribution amongst various sites throughout the body. In order to take skin fold measurements, skin fold callipers and a tape measure will be required.

The number one mistake made when people take skin fold measurements is that they measure the muscle as well as the adipose tissue, or fat. It is important that an instructor understand how to

pinch the skin to raise the double layer of skin and the attached adipose tissue.

Skinfold testing is now considered a specialisation due to the poor reliability of testing within testers themselves and callipers used. Specialised courses can be performed to increase a tester's skill and calibrated callipers can be purchased to improve these results. Typically skinfold measurements are used on athletes where body fat levels are quite low whereas in normal populations body fat levels are higher. Fat cells can be compressed easily due to their composition, therefore only the calliper should be compressing the skin to ensure the highest degree of accuracy. Please see below for some limitations of skinfold testing to be aware of.



When assessing a client's body fat, inform the person that only selected sites are being measured, meaning it is not a measure of total body fat but simply fat distribution at specific sites.

Common skin fold sites

If selecting this method of body composition assessment, the recommended method utilises the sum of 4 skin folds to estimate body fat; triceps, biceps, subscapular and suprailiac skin folds. However it is important to be aware of the other skinfold sites which you may be required to assess. The following information will assist you to accurately locate each site.

The process involves raising a double fold of skin with the thumb and forefinger. The thumb and forefinger should approach the measurement site perpendicular to the surface of the skin, with the callipers applied 2cm from the raised site.

This is done at standardized sites across the body, marking a small cross on the site. The skinfold should be raised with the cross in the centre.

There is a variety of protocols and sites that can be used for this. The skinfold measurements can either be totalled together to give a sum of skinfolds measurement, or entered into prediction equations that calculate body density and then percentage body fat. See below video for further information on how to take skinfold measurements.



Video

Please watch the following video about skin fold measurements:

[Skin fold measurements \(08:12min\)](#)

Composition	Male Athletes	Female Athletes
Lean	<7%	<12%
Acceptable	7-14.9%	12-24.9%
Overweight	15% or >	25% or >

DEXA Scan

A measurement increasing in popularity due to its recent increased accessibility to the general population is a dual energy x-ray absorptiometry (DEXA) scan. Two x-ray beams with different energy levels are transmitted through the tissues of the body. The absorption of these x-rays by the different tissues of the body can help to determine the composition of these tissues.

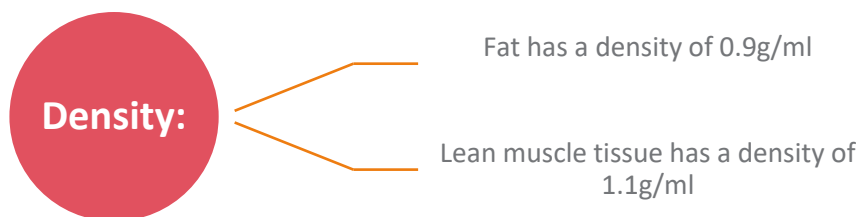
This scan will give an extremely detailed breakdown of body composition for different segments of the body. It is considered one of the best measurements for body composition.



Image source: Nick Smith photography - ALSPAC web site, CC BY-SA 3.0, retrieved from [Wikimedia](#)

Hydrostatic underwater weighing

This is the gold standard and most accurate measure of your weight.



It requires expensive and uncommon equipment usually reserved for professional athletes, universities, hospitals, and scientific studies. Fat has a density of 0.9g/ml whereas lean muscle tissue has a density of 1.1g/ml.

Water has a density of 1g/ml, so fat will float and muscle will sink.

By weighing the person in air and then submerging a body in water and using underwater weighing, the difference between fat and lean mass content can be determined and the percentage of the two of an individual can be calculated.

Bioelectrical impedance analysis



Bioelectrical impedance analysis (BIA) uses a range of devices such as small hand devices or appropriate bathroom scales to measure body fat percentage.

An electrical current is passed through your body from one hand to the other if using the hand device or one foot to the other if using bathroom scales. The resistance to alternating current – or the impedance – is measured.

As lean tissue conducts electricity better than fat, it is possible from this measurement to determine your fat and fat-free mass percentages.

Note that body water affects accuracy, so dehydration, caffeine, menstrual stage, hormones, etc. all play a part in how accurate the results are.

Active fitness appraisals

Active fitness appraisals include a range of fitness tests that test aerobic capacity, strength, muscular endurance and flexibility and mobility.

Read Attachment 1 before continuing with this learner guide. It provides information and tables for each test listed.



Attachment 1

Please open and read **Attachment 1 – Active fitness appraisals** which provides full information on a range of fitness tests that can be used to test aerobic capacity and flexibility and mobility.

Attachment(s) for this unit can be found in the *Learning Resources* section of this unit in My eCampus.

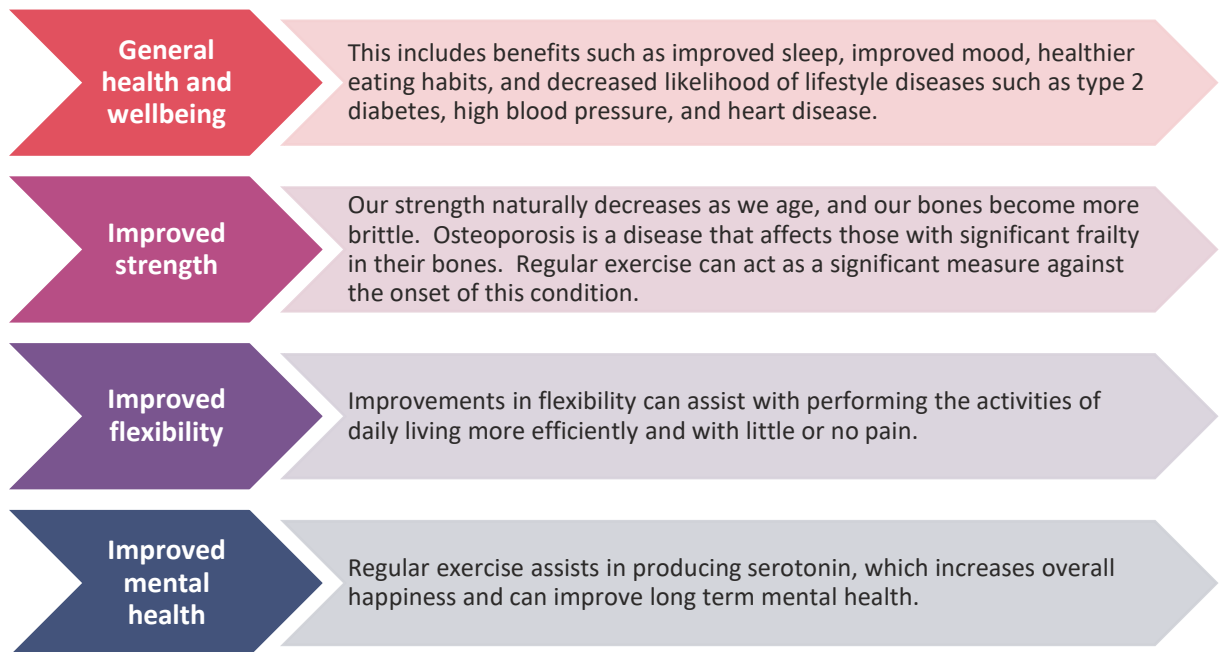
SECTION 6 – BENEFITS OF EXERCISE

It is important to motivate your clients to change their behaviour in order to give them the best opportunity to achieve positive results. A simple way of providing this motivation to your clients is by making them aware of the various benefits of regular exercise.

After completing a fitness appraisal with a client, it is important to debrief and discuss the results of the testing and measurements obtained. You should identify areas for improvement and recommend an appropriate exercise program designed to meet the needs and goals of the client.



Benefits of conducting a fitness program may include:



Module three: Provide healthy eating information

SECTION 1 – THE IMPORTANCE OF GOOD NUTRITION

Obesity in Australia

Poor diet and lifestyle has led to obesity in Australia being described as an epidemic. The number of obese people has doubled in the last two decades, with around seven million Australians aged 25 years and over (60 per cent of the national population) overweight or obese (The Better Health Channel, 2012). The reasons for this rise in overweight people stem from factors such as living a sedentary lifestyle, consuming more kilojoules (kJ) than required, and socioeconomic status.

The Australian Institute of Health and Welfare (2012) reported that people who are overweight, particularly those who are obese, have higher rates of death and illness than people of healthy weight, both overall and from a range of specific conditions. These include cardiovascular disease, high blood pressure, type II diabetes, sleep apnoea, osteoarthritis, psychological problems and, for women, reproductive problems.



Healthy diet

It is internationally recognised that a daily healthy eating plan is fundamental to a healthy lifestyle and society. A healthy diet is one that helps maintain or improve the general health of the population. It is important for lowering many chronic health risks, such as obesity, heart disease, diabetes, hypertension, and cancer. A healthy diet involves consuming appropriate amounts of all essential nutrients and an adequate amount of water.



The World Health Organisation (WHO, 2012; 2015) makes the following recommendations with respect to both populations and individuals on how to maintain good health:

1. Try to burn as much energy as you eat, and try to eat as much energy as you burn, as a healthy weight is a balance between those two if a healthy weight has already been achieved.
2. A healthy diet is important to help protect against many health conditions such as diabetes, heart disease, stroke, and cancer. Poor diet, in combination with lack of physical activity, poses the highest risk to global health.

3. Increase consumption of food-producing plants, particularly fruits, vegetables, legumes, whole grains, and nuts.
4. In order to avoid unhealthy weight gain, total fat intake should not exceed 30% of total energy intake. Reduce intake of saturated fats, which are those that become solid at room temperature, such as lard or butter, in favour of unsaturated fats, which remain liquid at room temperature, and are found in all plant-based oils as well as oily fish.
5. Eliminate trans-fatty acids e.g. margarine.
6. Limit the intake of processed sugars.
7. Limit salt/sodium consumption to less than 5g per day as this assists in the prevention of hypertension (high blood pressure) and reduces heart disease and stroke risk.



Tip

Please note the recommendations made by the World Health Organisation aim to support nutrient requirements for worldwide application; they are a starting point for health and obviously are unable to address all individual health conditions.

There are many definitions of healthy eating, such as the following.



Definition: Healthy eating

- **Definition 1:**

The consumption of a wide variety of fresh fruit, vegetables, legumes, and wholegrain cereals as well as dairy and animal foods

Source: The Australian Guide to Healthy Eating and Dietary Guidelines for all Australians, n.d.

- **Definition 2:**

Being able to use some moderate constraint in your food selection to get the right food, but not being so restrictive that you miss out on pleasurable foods. In short, normal eating is flexible. It varies in response to your emotions, your schedule, your hunger, and your proximity to food.

Source: Ellyn Satter, R.D.

- **Definition 3 :**

The intake of a mixed and balanced diet that contains enough nutrients and calories to meet the body's needs and a positive attitude about food (no labelling of foods as "good" or "bad," "healthy" or "fattening," as doing so can lead to feelings of guilt and anxiety).

Normal eating is related not only to health maintenance but also to acceptable social behaviour and is both flexible and pleasurable. It is important for people to understand that although normal eating fluctuates it should not fluctuate to the point of leading to a nutrient deficiency or excess weight loss or gain.

Thoughts about desired foods and meal planning should be part of a person's daily life, but they should not dominate it.

Source: Pereira, R.F. & Alvarenga, M., 2007, 141-148

Good nutrition

Good nutrition is extremely valuable not only to complement your training program and maximise benefits gained from exercise but also for your general health and wellbeing. The benefits of good nutrition are multiple.

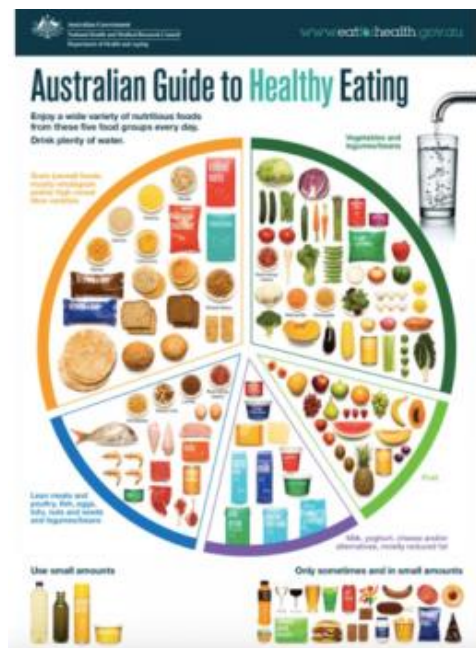
Good nutrition is essential for the body and all its systems to function optimally for a lifetime. In fact, the benefits of good nutrition can be found in physical and mental health because a healthy diet provides energy, promotes good sleep, and gives the body what it needs to stay healthy.



There are various nutritional guidelines and recommendations for the Australian public. These guidelines are developed and supported by the Australian Government National Health and Medical Research Council and by the Department of Health and Ageing. It must be remembered that the guidelines are just that, a guide. They are designed for the majority of people, but they will not be suitable for all people.

The Australian Dietary Guidelines (2015) provide five principal recommendations as a foundation for good nutrition:

1. To achieve and maintain a healthy weight, you should be physically active and choose amounts of nutritious food and drinks to meet your energy needs.
2. Drink plenty of water, and enjoy a wide variety of foods from these five groups every day.
 - Plenty of vegetables, including different types and colours, and legumes/beans
 - Fruit
 - Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa, and barley
 - Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
 - Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced-fat milk is not suitable for children under two years of age)



3. Limit intake of foods containing saturated fat, added salt, added sugars, and alcohol.

- Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries,
- pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps, and other savoury snacks.
- Limit intake of foods and drinks containing added salt.
- Limit intake of foods and drinks containing added sugars, such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, and energy and sports drinks.
- If you choose to drink alcohol, limit the intake.
- For women who are pregnant, planning a pregnancy or breastfeeding, not drinking alcohol is the safest option.



4. Encourage, support, and promote breastfeeding.

5. Care for your food; prepare and store it safely.



Web

For more information on the amounts and types of food for optimal health and wellbeing refer to the Eat for Health Educator Guide:

- [Eat for Health – Educator Guide](#)

Source: National Health and Medical Research Council

Benefits of good nutrition are:

- Achievement of recommended daily intake of nutrients
- Normal growth and development
- Normal reproduction
- Maintenance of body systems
- Resistance to infection and disease
- Wound healing and injury repair
- Mental concentration
- Prevention of nutrition-related chronic diseases e.g. CVD, hypertension, Type II diabetes, etc.
- Increased energy levels
- A healthy BMI/body composition/weight
- Elevated immune system

Exercise and meal timing

The period of time that it takes for food to be broken down in the stomach and moved through to the small intestine is approximately one hour for liquids, two hours for carbohydrates, three hours for proteins, and five hours for fats. To prevent nausea, cramping, or fullness during exercise, a familiar meal low in fat, high in carbohydrates, and with some protein should be consumed three to four hours prior to commencement of activities.

Fluid replacement during exercise is important at a rate of 250 mls every 15 minutes. You should also keep hydrated before and after exercise.

Poor nutrition

All cells need nutrients to grow and work. Lack of vitamins, minerals, and protein can make the immune system weaker. People who are malnourished either do not take in enough calories and nutrients or the body cannot use the food they do take in. Either way, malnourishment can weaken the immune system. This means that people who are malnourished are more likely to develop infections.



Many clients you will encounter throughout your career in the fitness industry will have poor nutritional habits. This can have detrimental effects on their health, most of which can be relieved by diet correction.

Poor nutrition can have a negative effect on a person's growth and development, and it can also increase the risk of developing serious diseases later on in life. A diet high in saturated fat, trans-fat, sugar, processed foods, and salt but that is also low in fibre, fruit, and vegetables greatly increases the risk of conditions associated with malnutrition.

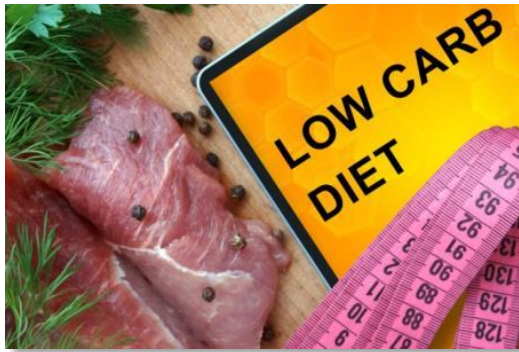
These conditions can be either localised or systemic and can be separated into three main categories as follows.

Over-Nutrition	Deficiencies	Complex Disorders
Metabolic - Obesity - Cardiovascular disease - Stroke - Diabetes - Gallstones Micronutrients - Fat-soluble vitamins - Hemochromatosis - Hypertension	Macronutrients - Protein – kwashiorkor, marasmus, mental retardation Micronutrients - Calcium – osteoporosis, rickets - Iodine – goitre - Iron – anaemia - Zinc – growth retardation - Vitamin B – fatigue - Vitamin C – gingivitis, scurvy (Australian National Health and Medical Research Council and New Zealand Ministry of Health, 2014) - Vitamin D – osteoporosis, rickets	Overconsumption of one thing causes a deficit in another.

Poor nutrition also affects a person's thinking processes and the way their body functions. It can result in increased body fat, slower mental problem solving, lower core strength, slower muscle response time, and decreased alertness.

Low carb diets

Low-carbohydrate diets focus on restricting carbohydrate intake. This usually results in the restriction of essential nutrients, such as calcium and fibre.



These diets offer a quick fix and do not promote long-term weight loss as they are hard to maintain.

A well-balanced diet, which includes a controlled amount of carbohydrates, fats, and protein, is proven to have positive long-term effects on weight loss and good nutritional habits.

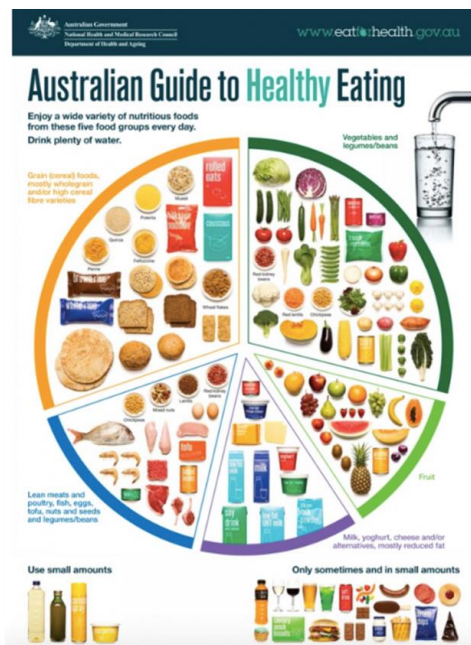
A well-balanced diet recommendation as recommended in the Australian Dietary Guidelines:



Attachment 2

Please open and read **Attachment 2 – Australian Guide to Healthy Eating** this poster provides a breakdown of recommended food groups.

Attachment(s) for this unit can be found in the **Learning Resources** section of this unit in My eCampus.



SECTION 2 – MACRONUTRIENTS AND ENERGY USE

What are macronutrients?

Macronutrients are substances needed for growth, metabolism, and for other body functions. These include carbohydrates, protein, and fats, all of which contribute to dietary energy intake.

The main function of macronutrients is to provide energy, which is measured in kilojoules.

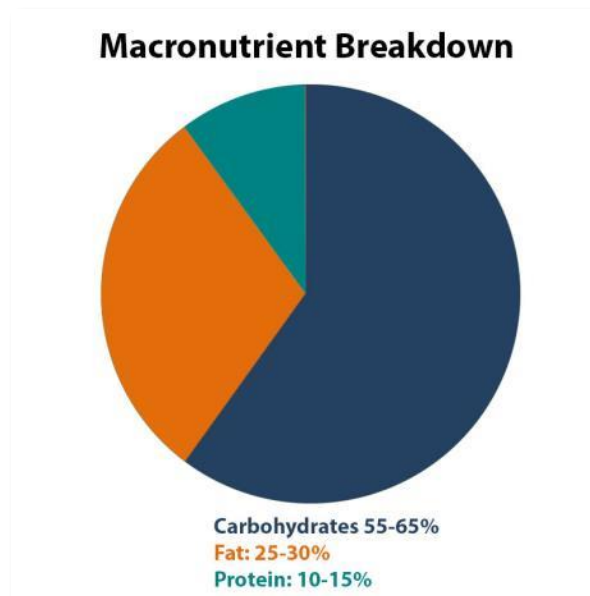
While each macronutrient provides kilojoules, the amount provided by each varies:

Carbohydrates provide 16.7kJ/gram (4 Calories/gram)

Protein provides 17kJ/gram (4 Calories/gram)

Fats provide 37.7kJ/gram (9 Calories/gram)

Macronutrients also have specific roles in maintaining the body and contribute to the taste, texture, and appearance of foods.



Carbohydrates

There are two basic types of carbohydrates:

1.



Simple carbohydrates are made up of one or two sugar molecules; due to their simple nature they are digested rapidly and so are considered a quick source of energy. E.g. glucose and fructose which can combine to form sucrose (which is table sugar).

2.



Complex carbohydrates are essentially chains of simple carbohydrate molecules such as starch, amylose, cellulose, glycogen and fibre. Complex carbohydrates take longer to digest and so provide more sustained energy.

Carbohydrates are circulated in the blood stream as blood glucose and are readily available for

use to fuel exercise. Carbohydrates are easily accessible and broken down quickly for energy, so this fuel source is used during high-intensity, short-duration anaerobic activity.

An example of such activity are a 200m sprint whereby the body needs energy quickly and the intensity level is high.



Attachment 3

Please open and read **Attachment 3 – Macronutrients** for a summary of the macronutrients covered in this section.

Attachment(s) for this unit can be found in the *Learning Resources* section of this unit in My eCampus.

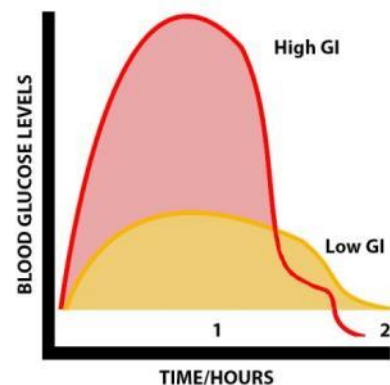
The glycaemic index

The glycaemic index (GI) is the classification of carbohydrates based on their blood glucose level (BGL) response. The GI reflects the quality of carbohydrate and their glycaemic response.

- Low GI foods are slowly absorbed and are reflected by a small rise in BGL. E.g Beans, high fibre breads and whole grain pasta, unprocessed oats.
- High GI foods are quickly absorbed and are reflected by a quick large rise in BGL. E.g. potatoes, white bread, short grain rice, sugar (Diabetes Australia, 2010)

Low-GI foods are recommended due to the minimal rise in BGL seen.

Attachment 3 – Macronutrients provides a table of foods in the GI classification for your reference.



The amount of carbohydrate in the reference and test food must be the same

Glycaemic Load

The glycaemic load (GL) reflects both the quantity and the quality of the carbohydrate. A GL less than 80 per day is recommended.

$$GL = \frac{GI * CHO (g)}{100}$$

Fats

Fat is an important part of a healthy diet. However, some fats are better than others. Saturated fats increase blood cholesterol whereas mono-unsaturated fats help lower blood cholesterol. Trans-fatty acids are potentially harmful and are used to make baked products, pies, cakes, biscuits, and buns. Both omega-3 and omega-6 fats are polyunsaturated fats that are beneficial to health. Omega-6 can be found in nuts and seeds whereas the richest source of omega-3 is oily, deep-sea fish.



Omega-3 has been heavily researched for its health-promoting qualities. However, there has also been much discussion over the best source of omega-3 due to issues with fish contamination and heavy metals.

Fats are stored as adipose (fat) tissue. This can be under the skin, surround organs, or can be stored between muscle cells as free fatty acids. Fat is an energy-dense macronutrient, meaning that it is an effective fuel source. However, fats take longer to break down into a usable form than carbohydrates do, so exercise needs to be of lower intensity, longer duration for fat to be used as fuel. An example would be a slow jog for one hour.

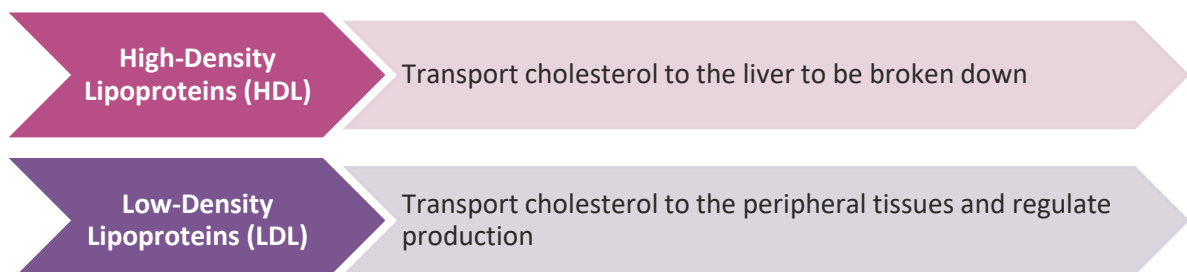
Attachment 3 – Macronutrients provides a summary of fats for your reference.

Cholesterol

Cholesterol is a form of fat found in eggs, full fat dairy, meats and is also produced by your liver. It is not used in energy production but as a component of cell membrane structure hence it is required to maintain health. Due to the fact that cholesterol is produced within your liver, it is generally not required to be consumed from the diet.

Cholesterol is transported around the body by attaching to lipoproteins.

There are two types of lipoproteins:



It is important that there be more HDLs present than LDLs present in one's diet.

Protein

Protein is important for cell building and renewal. It is recommended that 10-20% of total energy consumed be from protein. Protein choices should be low in fat and come mostly from sources such as lean red meat, chicken and vegetable sources such as beans, nuts, lentils pulses.

Protein is not generally stored if consumed in excess; however, as with any excess consumption of a macronutrient, if an excess of protein is consumed, it can be converted and stored as fat in the body.

Protein is spared for muscle growth and maintenance and other essential functions and is not usually broken down and used for energy.

When carbohydrate and fat are depleted, protein can however be used as an energy source. This is not desirable as it causes muscle atrophy.

Attachment 3 – Macronutrients provides a summary of proteins for your reference.

Twenty one different amino acids are required for protein synthesis. Proteins are made up from amino acids, each with a different role or effect on the body and can be defined under two groups; essential and non-essential amino acids. An essential amino acid cannot be synthesised by the body and therefore must be supplied by the diet. A non-essential amino acid is made within the body so consumption is not required.

Complete and incomplete proteins

Proteins derived from animal sources, such as meat, dairy and eggs can contain all essential amino acids and so are considered 'complete proteins'. Plant sources of protein such as legumes, seeds and grains are generally missing one or more amino acids and so require correct protein combinations from a variety of sources to ensure that all amino acids are provided. Correct protein combining for vegans requires a combination of two or more plant protein sources, for example peanut butter on wholegrain toast or chick pea salad with sunflower seeds; these are examples of how to ensure that all amino acids are made available.



Web

Plant proteins

For more information on plant protein read the following handout:

[a State University: Vegetarian Diets](#)

Amino acids

The table below lists the essential and non-essential amino acids.
Click on each amino acid name for more information.

Note that each link opens in a new browser.

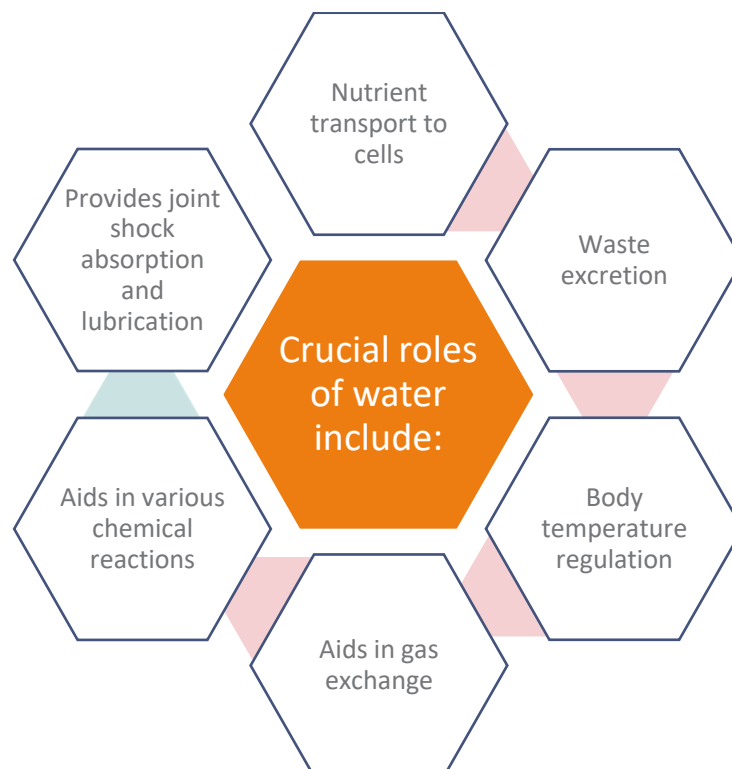
Essential	Non-essential
• Histidine • Isoleucine • Leucine • Lysine • Methionine • Phenylalanine • Threonine • Tryptophan • Valine	• Alanine • Arginine • Aspartate • Cysteine • Glutamate • Glutamine • Glycine • Proline • Serine • Tyrosine • Asparagine • Selenocysteine

Fluids

Water

Water occupies every space within the body, be it blood plasma, intestine water, cerebrospinal fluid, fluid in joints, and cells.

Water makes up 40-60% of body weight and is the most important nutrient in the body. Survival without it is limited to a few days.



The Australian Government National Health and Medical Research Council states that under normal conditions, approximately 2.1-2.6 litres of water is required by the body daily. During either exercise or very hot or humid conditions, more water is required. Indeed, the body may lose 1 litre of water hourly when exercising in hot weather.

The following table, as taken from the Australian Government National Health and Medical Research Council's [Nutrient Reference Values](#) for Australia and New Zealand, details one's daily water requirements as dependent on age and gender.

Gender	Age (years)	Total Water (Food and Drinks)	Fluids (Water, milk, other drinks)
All	1-3	1.4 L/day	1 L/day (4 cups)
	4-8	1.6 L/day	1.2 L/day (5 cups)
Male	9-13	2.2 L/day	1.6 L/day (6 cups)
	14-18	2.7 L/day	1.9 L/day (7.5 cups)
	> 18	3.4 L/day	2.6 L/day (10 cups)
Female	9-13	1.9 L/day	1.4 L/day (5.5 cups)
	14-18	2.2 L/day	1.6 L/day (6 cups)
	>18	2.8 L/day	2.1 L/day (8 cups)

The body is limited to 1 litre of fluid absorption per hour in the stomach. This means that fluid intake must be regular and plentiful to prevent dehydration. The body's thirst response lags behind the need for fluid, so thirst cannot be relied upon as a cue for telling you that you need to drink.

Dehydration



Dehydration affects the function of the body, and the changes caused by dehydration can prevent weight loss or lead to weight gain. Dehydration can occur due to poor water intake from both food and fluids and can be exacerbated by caffeine and alcohol. Signs and symptoms of dehydration include headaches, poor concentration, tiredness, and constipation.

The best fluid replacement is plain water. For prolonged higher-intensity exercise in heat, a sodium-containing drink is best for replacing the electrolytes lost from the body via sweating.

Caffeinated beverages

Caffeinated beverages include coffee, tea, soft drinks and energy drinks. Caffeine is a socially accepted stimulating chemical that increases the central nervous system's ability to decrease fatigue and increase alertness, but this is not without some negative side effects. The picture on the right (health effects of caffeine) shows the positive and negative effects of caffeine.

Negative effects of caffeine

- Sleep disruption
- Pregnancy complications
- Diuretic (tolerance built)
- Mental dependence
- Coordination interference
- Nervousness
- Irritability
- Restlessness
- Headaches
- Heart palpitations
- Anxiety
- Insulin resistance

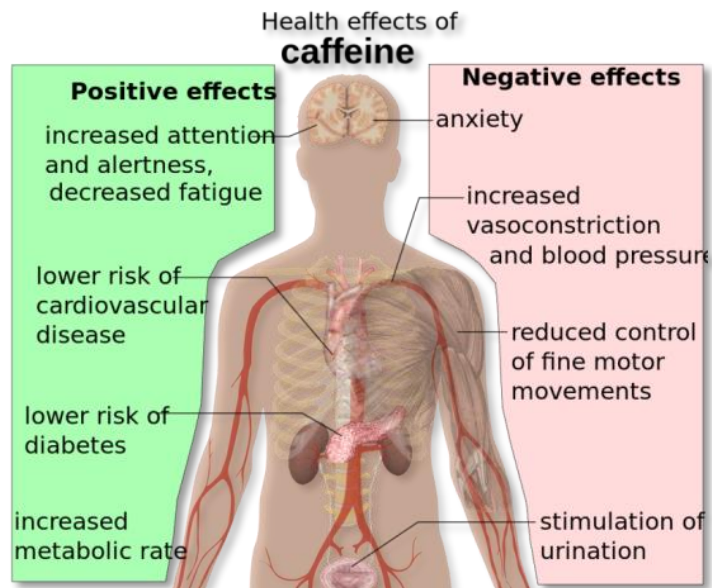
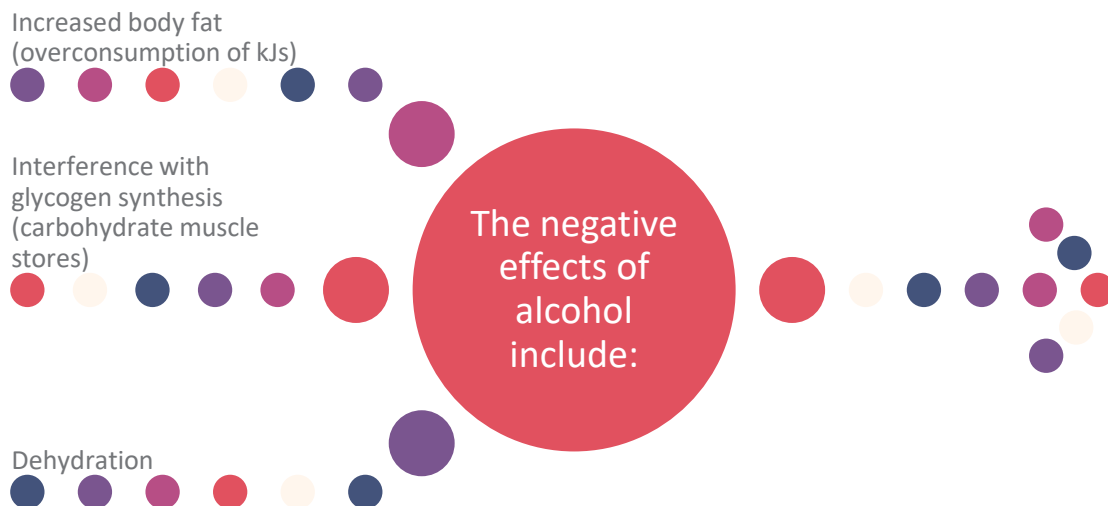


Image source: www.commonswikimedia.org

Alcohol

Alcohol cannot be stored in the body like carbohydrates, fats, and proteins. Therefore, it must be metabolised and utilised for energy. Alcohol contains a large amount of kJs (7 calories per gram) without any micronutrient value to assist in its metabolism in the body.



The recommended weekly guide is two or less standard drinks per day with alcohol-free days during the week.

A standard drink is:

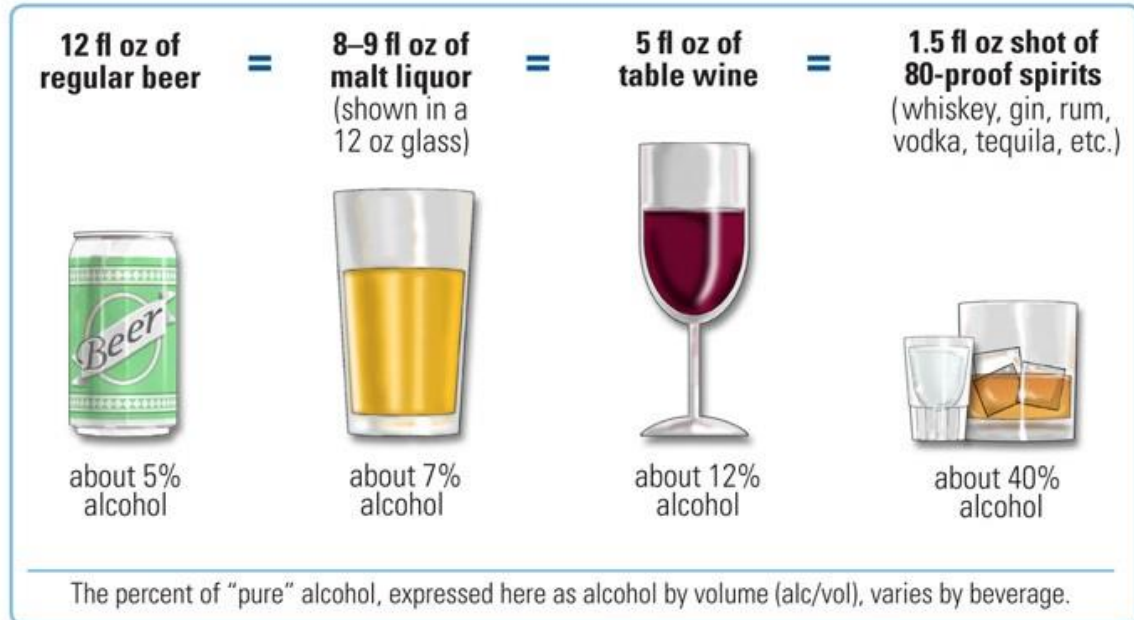


Image source: [National Institutes of Health](#) / [Wikimedia commons](#)



Web

Visit this website for more information on standard drinks and how to reduce alcohol-related harm:

- [Eat for Health](#)

SECTION 3 – METHODS OF FOOD CHOICES

BMR and PAL



Definition

Basal Energy expenditure

The University of Utah (1998) states that basal energy is the energy needed to carry out fundamental metabolic functions, such as breathing, ion transport, normal turnover of enzymes, and other body components.

It is measured with the subject in the fasted state, lying quietly in a room of comfortable temperature.

Source: University of Utah, 1998

Basal energy is measured in calories, a unit of heat, and is represented by the symbol kcal.

Metabolism

The Nemours Foundation (2015) states that metabolism is defined as a collection of chemical reactions that takes place in the body's cells. Metabolism converts the fuel in the food we eat into the energy needed to power everything we do, from moving to thinking to growing. Specific proteins in the body control

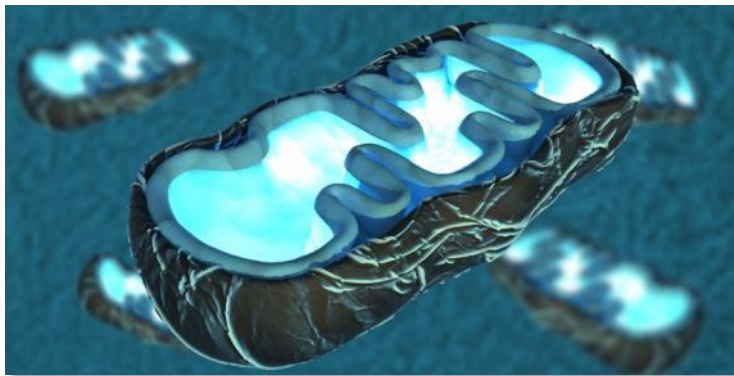
the chemical reactions of metabolism, and each chemical reaction is coordinated with other body functions. In fact, thousands of metabolic reactions happen at the same time — all regulated by the body — to keep our cells healthy and working.

Source: The Nemours Foundation, 2015

Basal metabolic rate (BMR)

This is the amount of energy expended to maintain life at rest.

The Harris Benedict Equation, which calculates BMR, is discussed in depth later.



Metabolism is life sustaining. It is the process of digesting food and converting it to energy or storage.

It is affected by the thermic effect of both activity and eating.

There are many factors affecting a person's metabolism and BMR. These are described in the following table.

Factor	Explanation
Genetics	Some people are genetically predisposed to: - Selecting fat rather than carbohydrate food sources - Being less effective fat oxidisers than others
Gender	Women have a lower metabolic rate than men generally and are also more energy efficient. This is partially attributable to men having a higher percentage of lean muscle tissue which burns more kilojoules at rest. During rest or sleep, a man will generate more body heat indicating an increased metabolic rate in comparison to women. It is also usually easier for men to lose body fat than women.
Age	Studies indicate that strength, fitness levels, and metabolism decrease with age, but some interesting studies on older subjects who are exercising, especially using weight training, indicate that this loss may be related to lack of use rather than just the ageing process.
Race	Studies are now indicating tendencies towards racial differences in metabolic rate such that it has generally been shown that African American men and women have a lower resting metabolic rate than caucasian men and women as an example. (Sharp et al., 2002)
Climate	Cold climates create a higher metabolism as the body works to maintain a constant temperature.
Hormones	Certain hormones can impact metabolic rate, e.g. thyroid hormones. An overactive thyroid (hyperthyroid) will generally increase metabolic rate while an underactive thyroid (hypothyroid) will decrease it. Reproductive hormones such as testosterone, oestrogen, and progesterone can also have an impact on metabolic rate.

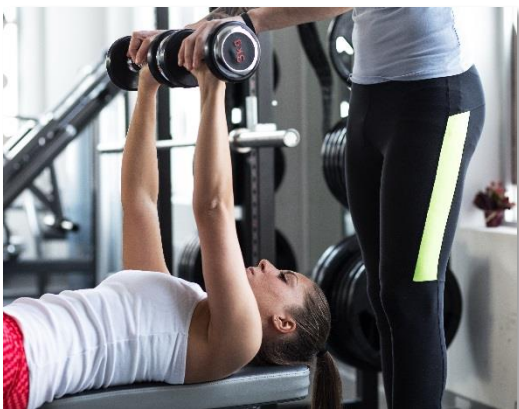
Activity Level	The thermal effect of exercise can vary hugely and can impact metabolic rate, both short term and long term. Short-term effects occur especially with aerobic exercise performed regularly. Long-term effects occur from increased muscle mass and physiological changes at a cellular level.
Muscle Mass	This is a crucial component in determining metabolism. Muscle is vital, consuming kilojoules even at rest. Fat is inert, and therefore an imbalance of fat in comparison to muscle results in a decreased metabolism in comparison to individuals with a higher proportion of muscle mass to fat.
Diet	High complex carbohydrate and high-fibre diets require greater energy expenditure to process food to useable nutrients within the body. Any excess consumption of all types of macronutrients will result in fat storage. In the case of excess amounts of carbohydrates ingested, this conversion to fat can take up to four days, which gives leeway to utilise the carbohydrate before it is converted to adipose tissue (fat). Fat ingested beyond energy needs is converted to body fat quickly by comparison, i.e. within one day.

The following factors are modifiable to improve the metabolic rate:



Exercise includes informal daily activity such as housework and formal or arranged exercise such as aerobic or resistance training. In most cases exercise increases lean body mass. Moderate exercise has shown to be able to temporarily decrease appetite.

Aerobic exercise burns calories and at moderate to low intensities uses mainly fat as fuel, depending on the length of session. However, prolonged periods of excessive cardiovascular training, resulting in energy expenditure exceeding energy intake, will likely cause loss in muscle mass which can then decrease the metabolism. Greater increases in metabolism are achieved by conducting moderate to high intensity aerobic activities, e.g. 30 mins will provide a short term increase in metabolism post workout.



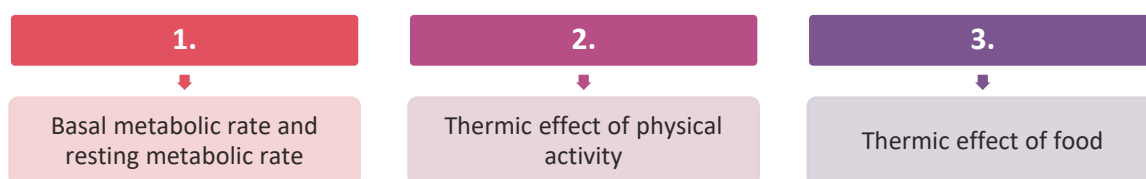
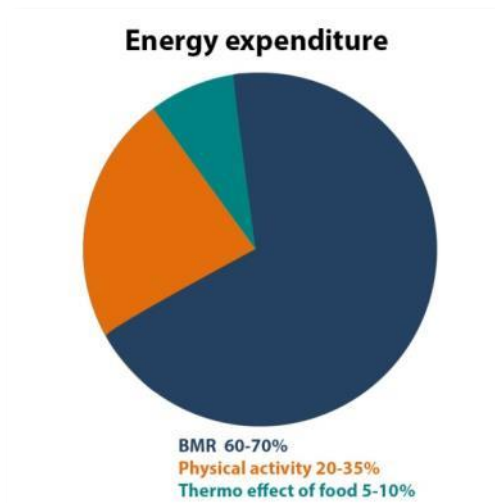
Resistance training results in increased muscle mass, which is the key to maintaining a higher BMR. This is the most effective long-term strategy. Lean muscle mass can be lost with age and also due to inactivity. Weight training can halt and even reverse this process. Therefore a combination of cardio, for its post-workout benefits to RMR, and resistance, for both its post-workout and long term benefits to RMR.

Energy expenditure

Resting metabolism accounts for approximately 60-75% of energy expenditure whereas the thermic effect of food accounts for approximately 10% and physical activity for 15-30%.

Grazing on food and drinking cold water actually increases the thermic effect of food therefore increases energy expenditure. This is because water needs to be brought up to body temperature and food needs to be broken down into useable nutrients.

Total energy expenditure comprises three components:



Basal metabolic rate and rest metabolic rate

Often used interchangeably, metabolic rate represents the minimum amount of energy a person's body needs to maintain life at rest. This includes the number of kJs needed to fuel ventilation, blood circulation and the heart beating, temperature regulation, and digestion. This accounts for 50-80 per cent of total energy use.

The difference between BMR and RMR is that BMR analysis is conducted under more restrictive criteria and requires fasting to limit digestive energy expenditure. BMR requires 8 hours sleep and 21 hours fasting before the analysis is conducted.

Thermic effect of physical activity



This is the energy cost of daily activity. It includes exercise and also daily tasks such as walking, housekeeping, driving and dressing.

The Better Health Channel (2012) reports that energy expenditure of the muscles comprises 20 per cent of the total energy expenditure at rest. However, during strenuous exercise this rate of energy expenditure dramatically increases.

During high-intensity physical activity the muscles may burn through as many as 3,000 kJs per hour. Energy used during exercise can be controlled through participating in moderate-to-high-intensity activity on a regular basis.

Thermic effect of food

This is the amount of energy required above the RMR that results from the consumption, digestion, absorption, transport, metabolism, and storage of food within the body.

It is usually about 10% of total energy expenditure.

The Harris Benedict energy equation

The Harris Benedict Equation is a formula that uses your BMR and then applies an activity factor to determine your total daily energy expenditure (calories). The only factor omitted by the Harris Benedict Equation is lean body mass. Remember, the more muscle your body has, the greater its requirements for energy to maintain.

The Harris Benedict Energy Equation (HBEE) is a two-step equation.

The first step is to determine the BMR using the equation in step 1.

The second step is to multiply this by a physical activity level (PAL) factor.

The PAL is the energy required to sustain the physical activity level of the client. Depending on the ranking, it is multiplied by the BMR to indicate the number of kJs needed daily to manage weight. Although it is an estimation, this method is on average quite reliable for a normal individual who is neither obese nor extremely lean or muscular.

Step 1

The BMR formula uses the variables of height, weight, age, and gender to calculate the BMR.

Women: $BMR = 655 + (9.6 \times \text{weight in kg}) + (1.8 \times \text{height in cm}) - (4.7 \times \text{age in years})$

Men: $BMR = 66 + (13.7 \times \text{weight in kg}) + (5 \times \text{height in cm}) - (6.8 \times \text{age in years})$

Step 2

Harris Benedict Energy Equation
Energy expenditure = BMR x estimated activity factor

- If you are sedentary (little or no exercise) x 1.2
- If you are lightly active (light exercise/sports 1-3 days/week) x 1.375
- If you are moderately active (moderate exercise/sports 3-5 days/week) x 1.55
- If you are very active (hard exercise/sports 6-7 days a week) x 1.725
- If you are extra active (very hard exercise/sports and physical job or 2 x training) x 1.9

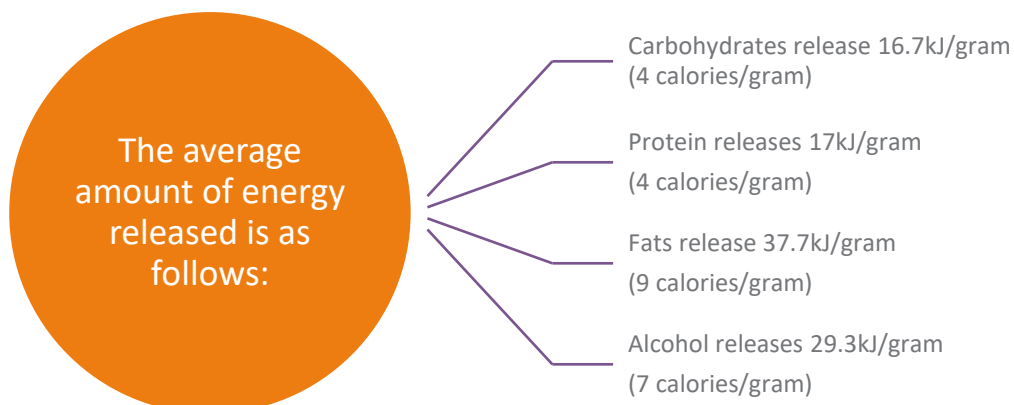
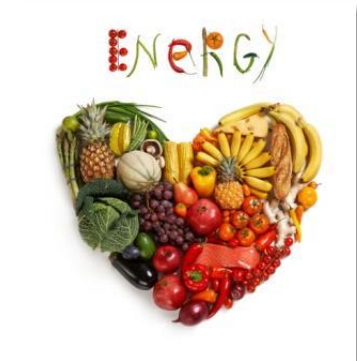
Energy intake

The National Health and Medical Research Council (2012) describes energy not as not a nutrient but rather as a requirement for metabolic processes, physiological functions, muscular activity, heat production, growth, and synthesis of new tissues.

Energy intake refers to the total energy consumed by an individual. This is the total amount of calories or kJs gained from food and drink that comprise one's diet.

The main sources of energy, which is released from food by oxidation, are carbohydrates, proteins, and fats. The metric unit of energy is the kilojoule (kJ). 4.18 kJs are equal to 1 calorie, however in Australia the kilojoule is the recognised unit of measurement. Calories are the imperial unit of energy measure.

Each macronutrient that makes up what we eat and drink has an energy value. Fat provides a far greater amount of energy per gram, and unless weight gain is desired, fat should be kept to a minimum.



To calculate total energy intake, the calorie/kJ value for all foods consumed is tallied to provide a total intake.

Energy balance

Energy balance refers to the balance between the energy you consume and the energy you expend.



Energy consumption > energy expenditure =
weight gain

Energy consumption = energy expenditure =
maintain weight

Energy consumption < energy expenditure =
weight loss



Video

Energy balance and expenditure

For more information on energy balance and expenditure watch this video:

- [How Does Exercise Impact Weight Loss? \(04:33min\)](#)

SECTION 4 – NUTRITIONAL GUIDELINES

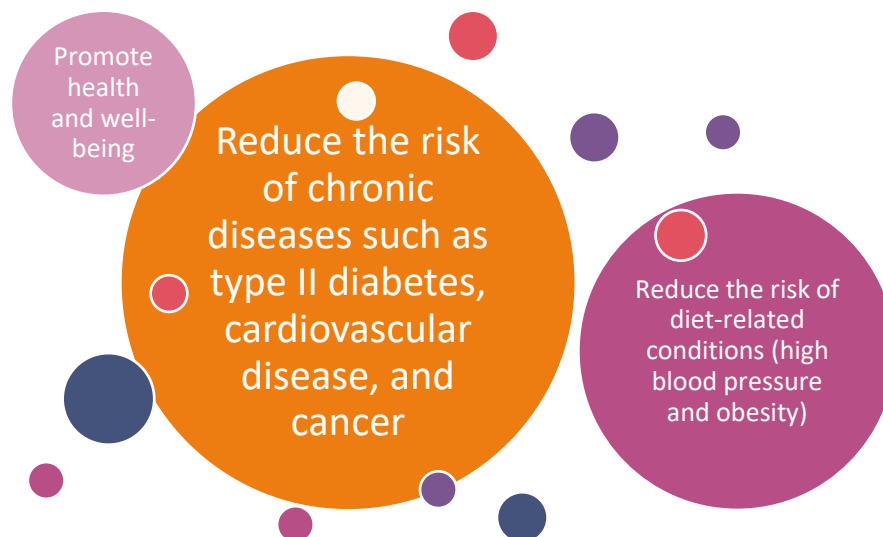
Australian dietary guidelines

The Australian Dietary Guidelines – Summary (published by The Australian Government – National Health and Medical Research Council: Department of Health) contains the fundamental principles of healthy eating.

It offers guidelines without suggesting exact portion amounts or specific intake values. There is no indication on the extent of how much consumption, either high or low, will affect the health of clients.

However, the guidelines do indicate which foods should be consumed and which foods should not be consumed, and as such they should be used as a standard for healthy eating.

The guidelines are based on the best available scientific evidence and provide information about the types and amounts, food groups, and dietary patterns that aim to do the following:



These guidelines include:

- | | |
|--------------------|---|
| Guideline 1 | <ul style="list-style-type: none">• To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs ⁷• Children and adolescents should eat sufficient nutritious foods to grow and develop normally. They should be physically active every day and their growth should be checked regularly.• Older people should eat nutritious foods and keep physically active to help maintain muscle strength and a healthy weight. |
| Guideline 2 | <ul style="list-style-type: none">• Drink plenty of water, and enjoy a wide variety of foods from these five groups every day.• Plenty of vegetables, including different types and colours, and legumes/beans• Fruit• Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa, and barley• Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans• Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced-fat milk is not suitable for children under two years of age) |
| Guideline 3 | <ul style="list-style-type: none">• Limit your intake of foods containing saturated fat, added salt, added sugars, and alcohol. |
| Guideline 4 | <ul style="list-style-type: none">• Encourage, support, and promote breastfeeding. |
| Guideline 5 | <ul style="list-style-type: none">• Care for your food; prepare and store it safely. |



Web

Australian dietary guidelines

For more information on the guideline visit this website

- [Australian dietary guidelines](#) (PDF from website)

Australian guide to healthy eating

The Australian Guide to Healthy Eating describes core food groups and servings per day based on gender and age. The information that the guide contains is more specific and in depth than the Australian Dietary Guides and is therefore more individually accurate. If clients select on a daily basis a variety of foods from the five food groups in the recommended amounts, it is more likely that the daily food consumed will contain the required micro and macronutrients.

The core food groups, which are listed in the [Australian Guide to Healthy Eating](#), include:

Grains	•e.g. cereals, wholegrain, breads, pastas (p. 18, 19)
Vegetables and legumes/beans	•e.g. vegetables, salads, legumes, beans (p. 15, 16)
Fruit	•e.g. tropical, berries, stoned (p. 16, 17)
Protein	•e.g. meat, poultry, fish, eggs, tofu, nuts, seeds, legumes, beans (p. 20-22)
Dairy	•e.g. milk, yoghurt, cheeses (p. 23-25)
Other	•This relates to discretionary choices or additional serves from all food groups for taller or active people, e.g. oils, fats, processed foods, take-away foods (p. 27-34)

Food group serves

[Australian dietary guidelines](#) (PDF from website) – Summary outlines varying recommended serves and offers ranges of additional serves depending on an individual's gender, age, and activity level. The guidelines contain tables outlining each food group and their recommended serves for individuals.



Attachment 4

Please open and read **Attachment 4 – Australian Dietary Guidelines** which provides information on the daily serves and serving sizes recommended.

Attachment(s) for this unit can be found in the Learning Resources section of this unit in My eCampus.

The following table briefly outlines the macro and micronutrients each food group supplies.

Food Group	Macronutrient/s	Micronutrient/s
Cereals, breads, etc.	Carbohydrate, protein, fibre	Folate, thiamine, riboflavin, niacin, iron
Vegetables, legumes	Carbohydrate, fibre	Vitamin C, vitamin A, folate
Fruit	Carbohydrate, fibre	Vitamin C, folate
Dairy	Protein, fat	Calcium, riboflavin, vitamin B12
Meat, fish, poultry, alternatives	Protein	Iron, niacin, vitamin B12, zinc

SECTION 5 – CULTURAL AND SOCIAL FACTORS THAT MAY INFLUENCE FOOD CHOICES

Many of the aspects discussed so far may impact an individual's food choices. Other aspects include:

Cultural aspect

- Family eating habits, i.e. people often eat in a similar way to their parents or they may enjoy foods that they commonly ate as a child
- Religious observances as many religions involve specific days or periods of time where fasting occurs or perhaps animal products are avoided
- Cultural reasons as some cultures eat predominantly a vegetarian diet

Social aspect

- The level of knowledge an individual has about health and nutrition
- Social and work engagements as depending on the type of social events attended, specific foods may be eaten more frequently, e.g. food made available at a weekly footy match or catered work lunches, nurses working shift work often have different eating habits
- Personal preferences as what one person considers tasty may vary to another
- The importance that an individual places on their health and whether they choose to apply knowledge about nutrition

As a personal trainer, it is important that you model and promote healthy eating habits.

However, there are also times when people have less control over food choices due to availability, finances, or work schedules or when they are required to abstain from food or eat differently due to cultural or religious reasons. It can be helpful to discuss dietary habits with your client, but remember to always be respectful of their choices and work with them to assist them to achieve better health rather than telling them what they should do. This constructive approach tends to result in clients returning to you and respecting your advice.



Being sensitive to cultural, social, and religious differences, particularly in a multi-cultural country like Australia, is imperative to building rapport and strong relationships.



Video

Watch this video on different diets from around the world, and consider how this may apply to potential individuals with whom you might end up working.

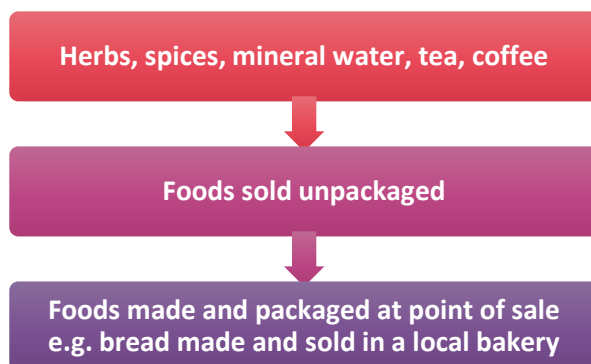
[What different cultures eat \(02:01min\)](#)

Section 6 – Food labelling

Legislative requirements

Foods must have a label on them showing serving size and quantities per serving and/or per 100g of energy, protein, fat, carbohydrate, sugars, and sodium.

Fibre and other nutrients only need to be shown if claims are made about them on the packaging or the advertising. Foods that do not require a nutritional informational panel unless a nutritional claim is made include:



NUTRITIONAL INFORMATION	
SERVING SIZE PER PACKAGE = 1	
SERVING SIZE = 100g	
	PER 100g
Energy	
Protein	
Fat, total	Less than 30g
Fat, saturated	Less than 10g
Carbohydrate, total	
Carbohydrate, sugars	Less than 15g
Dietary Fibre	More than 5g
Sodium	Less than 120mg

Date marks give a guide as to how long food can be kept before it deteriorates or is unsafe to consume.

Ingredient list and order

The ingredient list details all the ingredients contained in the product in descending order of ingoing weight. In other words, the first ingredient listed contributes the largest amount and the last ingredient the least amount.

Interpretation of label

Reading food labels can be a useful way of making the healthiest choice when faced with a few processed options. Nutritional labels can be quite daunting to read, but they contain information regarding nutrients such as fats, sugars, and sodium. When comparing foods, use the per 100g column as this shows the nutrients as a percentage. For the goal of weight management, pay particular attention to the nutritional information for Total Fats, Saturated Fats, and Sugars.

Use the following sites to assist in your learning and understanding of food labels:

- [illegible]

The Food Standards website has further information:

-

Follow this link to the Food Standards list of food additives:

-

Follow these links to view more ideas for recipe modification:

- 54

Meat, chicken, fish, and eggs



- Use lean meat and trim fat off before cooking.
- Remove the skin from chicken.
- Eat more fish.
- Grill or roast meats on a rack without adding fat or barbecue meat on a grill so that the fat drips away.
- Add legumes to increase protein.

Dairy



- Preferably use low-fat dairy products, particularly when they are the major ingredient.
- Avoid fats and oils
- Limit portion sizes

Fats and Oils



- Use low-fat cooking methods where possible e.g. steaming, blanching (in water), stir frying, pan frying with minimal oil/spray oil, grilling, or roasting/baking on a rack are all healthy cooking methods.
- Use non-stick or baking paper.
- Use a polyunsaturated or monounsaturated oil, e.g. canola or olive oil, and spray lightly to stop food sticking when cooking.

Others

1. Switch white to grain for carbohydrates e.g. bread, rice and pasta.
2. Add extra vegetables to dishes.
3. Replace salt with herbs or spices for flavour.

Methods of cooking

There are many different methods of cooking. These include:

Heat methods	Water methods
☐	☐
☐ Grilling	☐ Steaming
☐ Barbequing	☐ Poaching
☐ Searing	☐ Braising
☐ Smoking	☐ Boiling
☐ Frying	☐
☐ Microwaving	
☐ Baking	
☐ Roasting	

With all cooking methods, micronutrients may be affected by temperature or evaporated or dissolved in the water. This will change the micronutrient content of the meal. Different methods also have other ingredients, such as oil, which are needed to allow the cooking method to take place. This changes the macronutrient content.

Effect of nutrient value of food

As already mentioned, cooking methods have an effect on the nutrient value or content of food. The cooking of some foods, in particular those containing water-soluble vitamins like fruit and vegetables, cause the nutrient value to break down into the water, where it can be lost. In some cases, vegetables contain the majority of micronutrients in the skin – potatoes are one example of this – thus the removal of the skin diminishes the micronutrient content.



Many cancer-fighting properties of vegetables are removed when the vegetable is boiled. The cooking of dairy products reduces their protective properties, in particular against colon cancer.

Cooking may not just reduce the cancer-fighting properties of foods, but it has also been found to increase the activity of the small amounts of carcinogens present.

This is true when cooking meat at high temperatures and baking or grilling starchy foods. The

heating of sugars with protein or fats can produce a product linked to ageing and lifestyle conditions such as diabetes.

Safe food handling and hygiene practices

Food needs to be handled correctly in order to eliminate food borne illnesses. Food not only allows disease to be transmitted between people, but it also serves as an environment for growth of bacteria that can cause food poisoning as well. According to the World Health Organisation ([WHO Website](#)), there are five key principles for food hygiene.

1. •Prevent contaminating food with pathogens spread from people, pets, and pests.
2. •Separate raw and cooked foods so as to prevent cross-contamination.
3. •Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
4. •Store food at the proper temperature.
5. •Use safe water and cooked materials.

Module four: Food choices outcomes

SECTION 1 – DIETARY TRENDS

There are always dietary trends portrayed in the media. These generally offer quick fixes due to malnourishment where there are no long-term benefits once the so-called diet has been completed. Weight loss will occur due to a kilojoule deficiency, but the weight loss is generally due to water and muscle loss rather than fat loss.

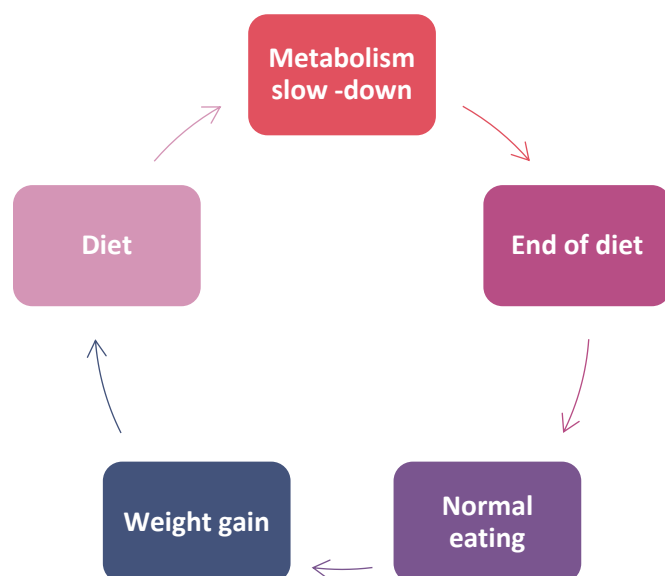
These are summarised in the following table.

Dietary trend	Advantages	Disadvantages
Fad or popular diets, e.g. low-carbohydrate diets	May appear to assist weight loss initially Decrease in high-fat and sugar foods	Research is required in each particular diet to ascertain whether it is effective or just well-advertised. Generic diets do not take into account the individual and their particular health requirements. May involve calorie restrictions which can decrease micronutrient intake, e.g. calcium, magnesium, etc.
Nutritional supplementation, e.g. micro vitamins	Replaces what is not able to be consumed from food	May not actually be lacking in those nutrients and so supplementation may not be required.
Ergogenic aids, e.g. sports drinks	Assist with electrolytic balance during extreme environmental training conditions	Increased calorie intake. Are they really needed?

Fad diets

Fad diets are usually nothing more than a 'quick fix' promising that adherents will lose a large quantity of weight in a short period of time.

This initial weight loss is mostly made up of fluid and some muscle loss; generally, it is not or is a low percentage of fat loss at all, especially in the short term. These diets typically are dangerously low in calories and contain minimal nutrients, often completely removing whole food groups or macronutrients.

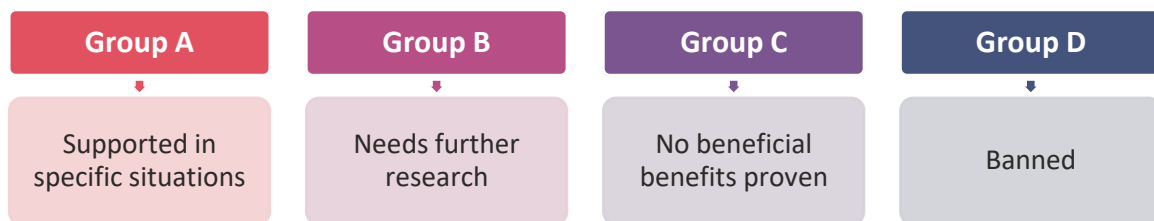


It is important to recognise that these diets are not necessarily safe or healthy and that weight loss and indeed fat loss is best achieved by good nutrition, safe kilojoule restriction and an active lifestyle.

AIS (Australian Institute of Sport) supplement classification

The AIS has produced information on supplement classification.

They have four categories.



Attachment 5

Please open and read **Attachment 5 – AIS Supplement classifications** which provides more information.

Attachment(s) for this unit can be found in the *Learning Resources* section of this unit in My eCampus.

Myths and fallacies

You will gain knowledge over the course of your studies to understand why some common myths and fallacies are indeed inaccurate. These include:

- Targeting a specific area with exercise will spot reduce fat from there
- Training resistance with weights will bulk you up
- Muscle turns to fat when training ceases
- You need to exercise long and hard to get results
- Sweating causes fat to be lost
- By eating less you lose more fat

Body composition changes

Weight loss can be caused by a reduction in muscle mass, fat, bone density, or water volume. The overall objective of exercise professionals is for their clients to achieve fat loss whilst preserving muscle or even possibly increasing muscle. Essentially, to a certain point, these are the same objective.

For long-term fat reduction, an increase in muscle mass also increases metabolism, which helps to decrease fat. For muscle gain, an increase in muscle mass achieves this, which also decreases body fat. Your exercise programming chapter will go into further detail as to how to achieve this through an exercise program.



In regards to nutrition's impact on body composition changes, following the fundamental principles, such as ensuring fat is reduced, having a diet high in low-GI and lean protein foods, and adequate hydration are the most effective strategies for positive change. The key is consistency and variation.

Body's energy systems

The body's energy systems were discussed in the anatomy chapter. Energy is produced from the breakdown of the food consumed. Food is converted into adenosine triphosphate (ATP) so that energy can then be produced from its breakdown into ADP (phosphate and energy).

ATP is stored within the muscle cell and normally is the dominant source of energy under maximum exertion for 1-5 seconds. The following table shows other sources that can be used to create more ATP. Whenever movement commences or demands increase, the body supplies ATP from the top of the table and progresses through the sources.

Each source of energy system is used at different intensities for different durations. Each system also produces by-products and experiences different limitations.

These are all shown in the table.

Energy System	Duration	Intensity	Substrate
ATP	<5secs	High intensity, without oxygen	ATP
Creatine phosphate	<10secs	High intensity, without oxygen	Creatine phosphate
Anaerobic glycolysis (Lactic acid system)	10secs-3mins	High intensity, without oxygen	Carbohydrate
Aerobic glycolysis	>45secs	Uses oxygen at sub-maximal intensity	Carbohydrates, fats

Allied health referrals

As an instructor within the fitness industry, you are bound by regulations as to what you can legally do in regards to nutrition. The Fitness Australia Code of Ethics states:

"Exercise professionals must acknowledge the boundaries of their competence. They shall provide services and use interventions for which they are qualified by training and experience."

Fitness Australia defines a gym exercise instructor as someone who is qualified to assess, train, and supervise a variety of people in predictable circumstances. This in short means that you are not a dietitian; therefore, you are to refer to other health professionals if the client needs advice outside your scope of practice.

The scope of practice of a fitness instructor does not include:

- The provision of specific or individualised dietary analysis or advice, or information regarding:
 - Specific diets
 - Fad diets
 - Nutritional supplementation
 - Sports foods
 - Ergogenic aids
 - Nutrition for exercise or sports performance
- Topics outside your scope as a trainer
- The provision of information or advice to people with medical conditions requiring specialised dietary advice, or to frail elderly people who are at risk of malnutrition
- The provision of dietary information or advice for infants and toddlers. The fitness instructor must refer clients to an Accredited Practising Dietitian, Accredited Sports Dietitian, or General Practitioner as appropriate



Referral or recommendation is required to assist clients who present with dietary concerns.

Dietary concerns may include:	Or gastrointestinal disorders such as:	Or medical concerns such as:
•Anorexia •Bulimia •Overweight or obesity •Nutritional deficiencies such as iron or calcium •Dehydration •Diabetes •Food allergies or intolerances •Weight gain	•Gastrointestinal reflux •Ulcers •Inflammatory bowel disease •Coeliac disease •Lactose intolerance •Chron's disease	•Diabetes •Gallstones •Cancer •Gout •Pregnancy

The referral or recommendation may be made to the following medical and allied health specialists:

- General practitioner
- Accredited practising dietitian
- Psychologist
- Sports physician
- Sports doctor
- Aboriginal health worker
- Diabetes educator



Eating disorders

What is an eating disorder?

Eating Disorders Victoria (2012) outlines an eating disorder as a mental illness, not a lifestyle choice. An eating disorder is characterised when eating, exercise, and body weight become an unhealthy preoccupation in a person's life.

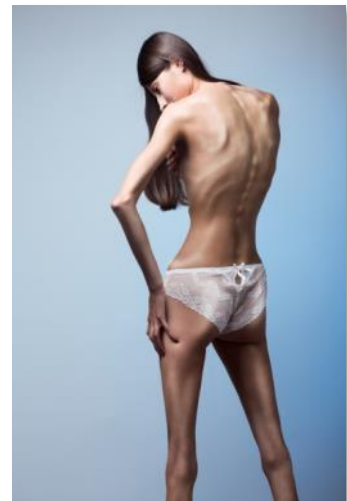
There are a variety of eating disorders that can affect a person, each having different characteristics and causes. The two major eating disorders affecting thousands of people in Australia are anorexia nervosa and bulimia nervosa.

Anorexia

Anorexia nervosa has devastating physical consequences on the human body. Anorexia is characterised by low body weight and body image distortion. Individuals who suffer from anorexia have an obsessive fear of weight gain, which manifests itself through depriving the body of food and often coincides with overtraining.

Anorexia is usually developed during adolescence and is the most fatal of all psychiatric illnesses. Extreme food restriction can lead to starvation, malnutrition, and a dangerously low body weight. These symptoms can lead to a host of health problems and in some cases death.

There are two types of anorexia nervosa. The restricting type is the most commonly known, where a person severely restricts their food intake and follows restricted rules relating to food. The second type revolves around binge eating and purging, where a person may binge on food in between restricting their food intake.



Video

This is a 60 minutes (Australia) YouTube video detailing Amy's story about her battle with anorexia nervosa.

- [Anorexia Story – Part 1](#) (09:10min)
- [Anorexia Story – Part 2](#) (07:41min)

Bulimia Nervosa



Bulimia nervosa is a similar condition to anorexia nervosa except that involves alternations between binge eating and purging and food restriction.

Binge eating refers to grossly overeating large amounts of food followed by a sense of guilt and lack of control that leads to purging methods, such as self-induced vomiting, laxative abuse, other medications, or periods of severe food restriction.

Individuals with bulimia are often overweight or of normal weight and have failed with conventional weight loss methods in the past and feel a sense of helplessness.

Signs of eating disorders

Eating Disorders Victoria (2012) outlines the behavioural, physical, and psychological signs or changes that often accompany an eating disorder. A full list is provided on the eating disorders website. Some are listed as follows:

- Repeated expressed concern about being or feeling fat even when weight is average or below average
- Preoccupation with food, calories, and weight
- Increasing criticism of one's body
- Secretly eating or stealing food
- Eating large meals then disappearing or making trips to the bathroom
- Consumption of large amounts of food not consistent with the client's weight
- Bloodshot eyes especially after trips to the bathroom
- Swollen parotid glands at the angle of the jaw
- Vomiting or odour of vomiting in the bathroom
- Wide fluctuations in weight over short periods
- Periods of severe calorie restriction
- Excessive laxative use
- Compulsive, excessive exercise that is not part of the client's exercise program
- Unwillingness to eat in front of others
- Social withdrawal or isolation from friends, including avoidance of previously enjoyed activities
- Expression of self-deprecating thoughts following eating
- Wearing layered or baggy clothing
- Mood swings
- Appearing pre-occupied with the eating behaviour of others
- Continuous drinking of diet soft drinks or water





Web

A full list is provided on the Eating Disorders website – Support and information service.

- [Eating Disorders Victoria \(EDV\)](#)

Fitness professionals are not qualified to diagnose or treat a client with an eating disorder, and it is crucial that you not attempt to do this. If you suspect that a client may have an eating disorder, you should refer them to their general practitioner, accredited practising dietitian, or psychologist who is qualified to help in this area.



Suggested Reading

Fitness Australia has produced a document outlining how to manage members with eating disorders.

Fitness Australia Guidelines

- [Eating Disorders Guidelines](#) (PDF, 1.08MB)



Module five: Digestive system

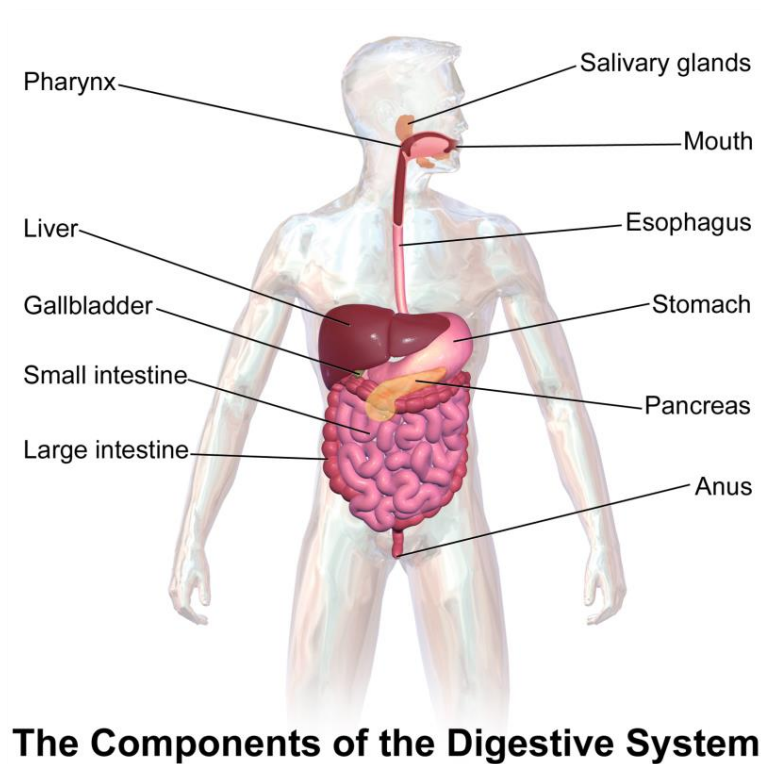
SECTION 1 – THE DIGESTIVE SYSTEM

What does the digestive system do?

The digestive system breaks down food and delivers nutrients to every cell in the body via the bloodstream. The digestive system converts the foods we eat into their simplest form, such as glucose, amino acids, or fatty acids. The broken down food is then absorbed into the bloodstream predominantly via the small intestine but also from the stomach and large intestine, and nutrients are carried to each cell in the body.

Function of organs

The digestive tract begins at the mouth and ends at the anus. It is like a long muscular tube of up to 10 metres in length with digestive organs attached.



Source: By BruceBlaus. When using this image in external sources it can be cited as: Blausen.com staff. "Blausen gallery 2014". Wikiversity Journal of Medicine. DOI:10.15347/wjm/2014.010. ISSN 20018762. - Own work, CC BY 3.0, Retrieved from [Wikimedia](https://commons.wikimedia.org/wiki/File:Human_Digestive_System.png)



Mouth

Mouth

Digestion begins at the mouth. In terms of digestion, the function of the mouth and its associated structures is to form a receptacle for food to begin mechanical digestion through chewing – or mastication – and then to swallow food. Saliva also has a special chemical, called an enzyme, which starts breaking down starches into sugars.

Oesophagus

The oesophagus is a muscular tube that carries food and liquids from the throat to the stomach for digestion after it has been chewed and chemically softened in the mouth.

Stomach

The stomach has several functions:

- A storage bin, holding a meal in the upper portion and releasing it a little at a time into the lower portion for processing.
- A food mixer: the strong muscles contract involuntarily and mash the food into a sticky, slushy mass.
- A sterilising system whereby the cells in the stomach produce an acid that kills germs in "bad" food.
- As a digestive tub. It produces digestive fluid that splits and cracks the chemicals in food to be distributed as fuel for the body.

Small intestine

The small intestine consists of three parts:

1. The duodenum, a receiving area for chemicals and partially digested food from the stomach.
2. The jejunum, where most of the nutrients are absorbed into the blood.
3. The ileum, where the remaining nutrients are absorbed before moving into the large intestine.



Small intestine



Pancreas

Pancreas

The pancreas is one of the largest glands in the human body. As well as digestive juices, it secretes a hormone called insulin. Insulin helps regulate the amount of sugar in the blood. Diabetes is a condition caused by problems with insulin production.

Liver

The liver detoxifies blood cells by mixing them with bile and by chemical alteration to less toxic substances, such as the alteration of ammonia to urea. Many chemical compounds are inactivated by the liver through modification of chemical structures.

The liver converts glucose to a storage form of energy called glycogen. It can produce glucose from sugars, starches, and proteins. The liver synthesises triglycerides and cholesterol, breaks down fatty acids, and produces plasma proteins necessary for the clotting of blood. The liver also produces bile salts which help in absorption of certain macronutrients and excretes bilirubin which is a byproduct of the breakdown of old red blood cells and is also the yellow pigment in urine.



Colon

Substances that have not been absorbed by the small intestine enter the large intestine in the form of liquid and fibre. The first half of the colon absorbs fluids and recycles them into the blood stream. The second half compacts the wastes into faeces and secretes mucus that binds the substances, which it then lubricates to protect the colon and ease their passage.

Rectum

Faeces collects here until pressure on the rectal walls cause nerve impulses to pass to the brain, which then sends messages to the voluntary muscles in the anus to relax, thereby permitting expulsion.

Food transit time

It takes on average of 2.5 to 3 hours for 50% of stomach contents to empty into the intestines, and total emptying of the stomach takes 4 to 5 hours. 50% emptying of the small intestine takes 2.5 to 3 hours. Transit through the colon takes 30 to 40 hours.

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