The Wiltshire School of Beauty and Holistic Therapy

VTCT Level 3 Diploma in Reflexology

Practitioner's Training Manual

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1. AIMS & OBJECTIVES

AIMS

The aim of this manual is to teach the student the basics of health and safety, and anatomy and physiology in relation to this course. This manual also covers the background, benefits, treatments, consultation, contra-indications, contra-actions, aftercare, equipment and products needed. The student will also learn the movements and techniques required to perform a professional treatment during the practical sessions.

OBJECTIVES

The objectives of this course are that by the end it the student will be able to perform a professional treatment in a safe and hygienic manner in a commercially acceptable time, along with experience of carrying out a consultation with the knowledge of the background, benefits, consultation, contra-indications, contra-actions, aftercare, equipment and products needed.

WSHBT advise you to read this training manual thoroughly along with other research before you take part in your practical session.

2. COURSE DETAILS

During this intensive course you will learn how to perform a professional Reflexology treatment within a commercially acceptable time.

You will learn how to:

Prepare the treatment area
Prepare the client for treatment
Carry out a client consultation
Carry out a reflexology treatment
Provide aftercare advice.

You will also study:

Health, safety and hygiene for complementary therapies
Principles and practice for complementary therapies
Knowledge of anatomy, physiology and pathology benefits of reflexology
Reflect on your practice as a complementary therapist
Business practice for complementary therapies

Good luck and enjoy!

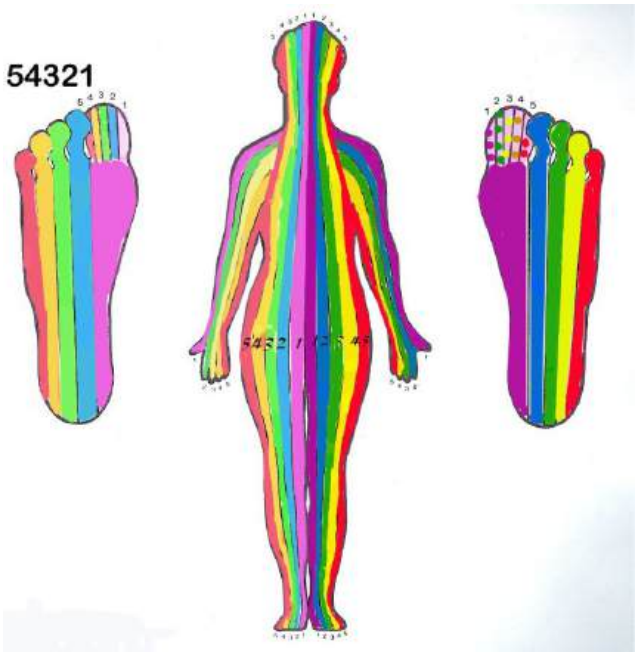
3. REFLEXOLOGY INTRODUCTION

The History of Reflexology

Reflexology is a gentle treatment that involves the feet and specific areas that are related to the body. It is classed as both a science, due to the mapping of reflexes, and an art due to applying pressure using the fingers and thumbs. It is thought to date back 5000 years when pressure therapies were practiced in ancient Egypt.

Early paintings depicting the practice of hand and foot reflexology found in the tomb of the pharaoh Ankhmahor in Egypt dating from 2330 B.C. demonstrate the ancient origins of reflexology.

Dr William Fitzgerald, an American specialist, carried out research in an area that he named "zone analgesia". Here he found that by applying pressure to a certain area of the body, an anaesthetic effect was created. This then led him to design a chart of the ten longitudinal lines, or zones, of the body i.e. five on each side, with reflexes that operate along these zones.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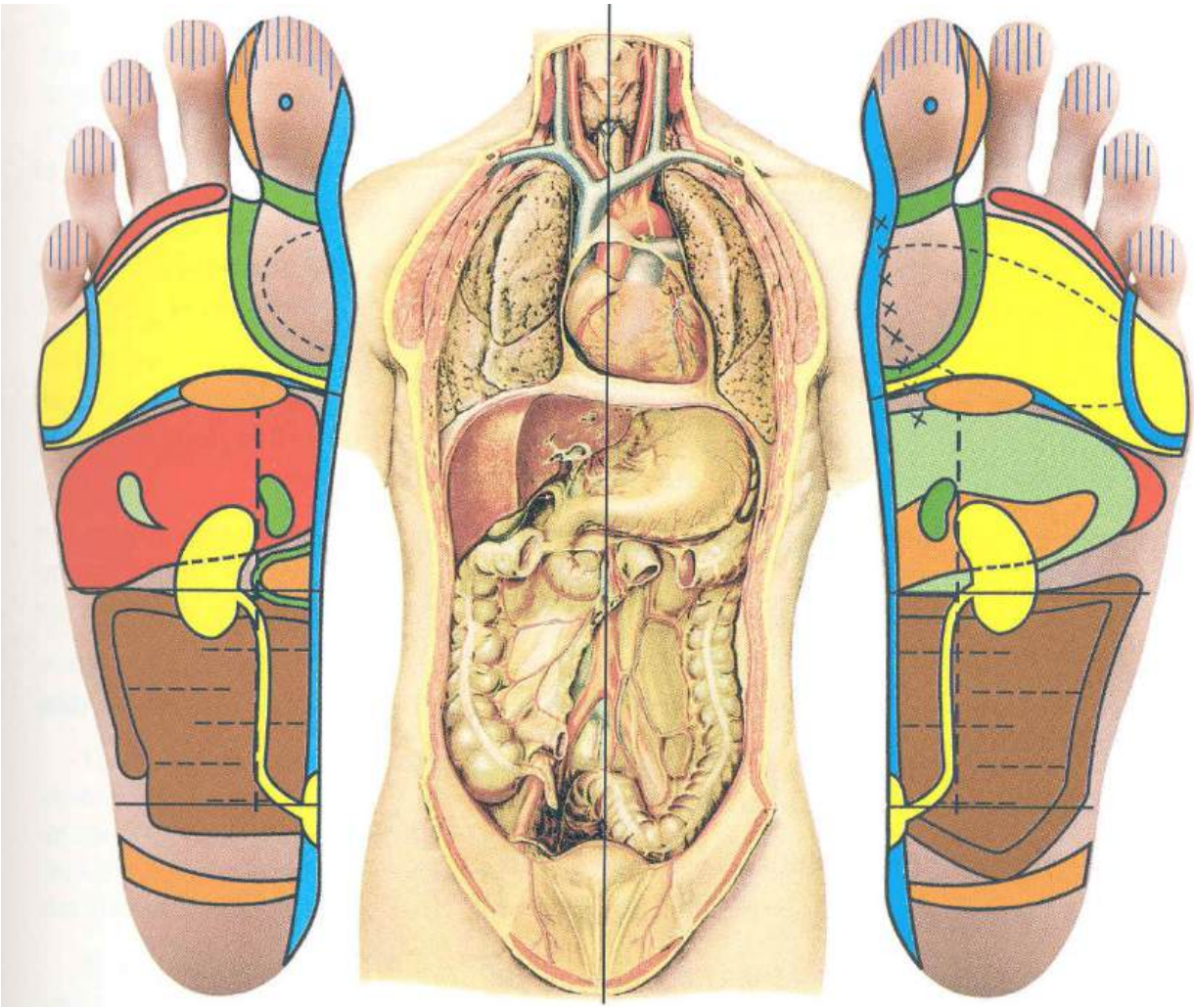
He held a belief that applying pressure to certain reflexes could help relieve pain of an organ or a gland. His work was further developed in the 1930s by a physiotherapist, Eunice Ingham, who discovered that applying pressure to tender areas on the feet could create a therapeutic effect on the rest of the body. She used this theory in her work and went on to formulate a chart of the feet where all of the organs and other parts of the body were mapped out.



Reflexology was later introduced to Great Britain in the 1960s, by Doreen Bayly, a student of Ingham's.

What is Reflexology?

Reflexology is a holistic therapy, treating the mind, body, and spirit, and is a wonderful treatment to experience.

It is based on the principle that vital energy, or bio-energy, circulates between the organs of the body, and penetrates every living cell. When this energy is blocked, the zone of blockage as well as its corresponding organs will be blocked. Pain in certain organs is associated with blockages or the build up of crystals in corresponding or reflex zones. With massage, these crystals or blockages can be broken down. This relieves pain in the corresponding area and promotes the healing process.

During the treatment patients can experience feelings of relaxation and comfort, nausea and discomfort due to emotional reactions, mood swings, drowsiness, changes in body temperature, tingling and prickling sensations in the feet over the congested areas. Because symptoms of detoxification can accompany healing, after treatment patients may exhibit symptoms of cold or flu, cough, frequent bowel movements and urination, headaches, increased sweating, yawning and fatigue.

Long-term effects include relaxation, stress reduction, relief of chronic pain, invigoration, increased energy, improved disposition, increased creativity and productivity.

Benefits of a Reflexology Treatment

Reflexologists do not diagnose, prescribe or treat specific conditions. A reflexology treatment treats the whole body, and by restoring the whole body's natural balance, brings about improved health.

Conditions that may benefit from Reflexology include:

- Migraine
- Stress
- Anxiety
- Depression
- Back pain
- Arthritis
- Hormonal imbalances e.g. PMS, menopausal symptoms
- Digestive disorders e.g. IBS
- Stress-related conditions
- Sleep problems
- Respiratory problems
- Infertility
- Sports injuries.

What other benefits can be expected?

- Improved relaxation
- A sense of wellbeing
- Improved circulation
- Support of the immune system
- Elimination of toxins from the body.

How Often Should We Have a Reflexology Treatment?

This will depend on the client and the reason for treating. Some conditions respond well after one or two treatments. It is advisable to have Reflexology once a month as a preventative measure.

4. HEALTH, SAFETY & HYGIENE

Maintaining a high standard of hygiene is essential. Not only from a health and safety perspective, but clients will not return if the salon, treatment area, or equipment are not clean.

It is a legal requirement for employers to display an approved health and safety poster or to supply employees with an equivalent leaflet or information.

It is recommended that you get copies of the following from your local council:

- Health and Safety in the Workplace
- Trade Descriptions Act
- Data Protection Act
- Sales of Goods Act
- COSSH Regulations and Risk Assessment (Control of Substances Hazardous to Health)
- Local Government (Miscellaneous Provisions) Act 1982
- The Management of Health and Safety at Work Regulations 1992
- The Workplace Regulations 1992
- The Manual Handling Regulations 1992
- The Personal Protective Equipment at Work Regulations 1992
- The Health and Safety (Display Screen Equipment) Regulations 1992
- The Electricity at Work Regulations 1992
- Health and Safety (First Aid) Regulations 1981
- RIDDOR – The Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 1995
- Fire Precautions (Workplace) Regulations 1997
- Consumer Protection Act 1987.

All businesses are required by law to comply with the following health and safety acts, which are monitored and managed by The Health & Safety Executive (HSE) www.hse.gov.uk

Health and Safety at Work Act 1974

This protects your rights either as an employer or employee. The law states that the employer must provide a safe working environment provide health and safety training for staff, produce a written policy of the company's health and safety policy, and ensure that anyone on their premises is not exposed to any health or safety risks.

Trade Descriptions Act 1972
This act is particularly relevant to therapists as it relates to how the goods or services are described in any kind of advertising or promotional material. The act makes it illegal to mislead the public in any way or make any false claims about what you are able to do.

Data Protection Act 1984
This is only relevant if you are storing information about your clients on a computer. If so, you must register your business on the Data Protection register.

Sale of Goods Act 1994
This act protects your clients' rights by insisting that any goods or services sold must be of a satisfactory standard, be suitable for the purpose described, accurately described, and provided in a reasonable time and for a reasonable price.

Control of Substances Hazardous to Health Act (COSHH) 1989
This act provides guidance on dealing with chemical substances that could enter the body and cause skin irritations, allergies, burns etc.

Local Government (Miscellaneous Provisions) Act 1982
The local authority is responsible for registering and licensing any businesses where invasive treatments, i.e. body piercing, epilation, acupuncture take place on the premises. This is to ensure that all equipment is sterilised, only fully qualified therapists are carrying out the treatments, waste products (especially needles) are disposed of correctly.

The Management of Health & Safety at Work Regulations 1992
This act outlines the responsibilities of the owner/manager of the business to protect the well-being of all who visit the premises, to keep a record of all checks they have made and also of any first aid treatments carried out on their premises.

The Workplace Regulations 1992
These regulations govern the appearance of all parts of the workplace, not just the treatment rooms. This would include suitable toilet facilities which are kept clean and tidy with adequate soap, towels, hot & cold running water etc. Proper ventilation, the areas are well lit, the area is at a comfortable temperature, is clear of all waste material (keep the walk ways clear of clutter), has up to date fire fighting equipment, has drinking water available.

The Manual Handling Regulations 1992
This relates to the appropriate posture when lifting to reduce the risk of injury and to safely carry out manual tasks required in the workplace.

The Personal Protective Equipment at Work Regulations 1992
This act requires you to provide the correct safety/protective equipment to carry out a particular task.

The Health & Safety (Display Screen Equipment) Regulations 1992
These regulations are relevant to anyone using a computer and require you to get regular eye tests, take regular breaks, and use the correct height adjusted chair.

The Electricity at Work Regulations 1992
This governs the use of electrical equipment in the workplace and ensures that any equipment is checked at least once a year by a qualified electrician. Any faulty equipment is removed from service, and written records are kept should an inspector wish to see them.

Health and Safety (First Aid) Regulations 1981
No matter how small your business is there must be first aid treatment available should an injury take place.

RIDDOR – The Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 1995
This outlines the correct procedure to adopt if a workplace accident occurs. An accident book is a must.

Fire Precautions (Workplace) Regulations 1997
This ensures that the safety of all those present is considered and planned for, should a fire take place.

Consumer Protection Act 1987
This is designed to look after your clients' interests and protect them from any product deemed unsafe.

Salon/Treatment Area Hygiene

Clean the salon thoroughly, daily.

Clean the treatment area before and after every client.

Use clean fresh smelling towels for each client, (dirty linen must be laundered at a minimum of 60◦C).

Creams, lotion and sprays should be dispensed from purpose-specific pump or spray bottles where possible, otherwise use a clean disposable spatula to remove products from bottles/jars.

Replace all lids after removing products from the bottles/jars.

Sterilise all tools.

Empty bins and dispose of contents accordingly.

Check all the plugs and wires on electrical equipment and make sure they conform to British Standards, and are professionally checked annually.

Make sure all fire exits are clear and accessible.

Make sure your client's personal belongings are safe.

Protect client's clothing by using towels. The towels may also be used to preserve the client's modesty during the treatment.

Read all labels and follow all manufacturers' instructions.

Know the hazardous warning signs.

Store products safely and in accordance with safety data sheets.

Report any faulty equipment/goods to your supervisor or supplier.

Have a first aid kit that complies with the Health and Safety (First Aid) Regulations 1981.

Carrying out a Risk Assessment

There is a legal requirement to provide a safe environment for staff and clients who may be using your premises. Carrying out a risk assessment will identify any hazards that could potentially cause harm. It is important that risks are minimised and that all staff are trained in the event of an accident. There are some potential salon hazards that will require a regular risk assessment, such as the space, any chemicals being used, any equipment and the security of people and money.

Sterilising Equipment

Micro-organisms that may cause disease must be controlled through cleaning, disinfection or sterilisation.

Sanitation

This greatly reduces the number of pathogenic bacteria, this is the lowest form of decontamination and is safe to use on the skin. This process will remove soil, dust, dirt and organic matter along with a large proportion of micro-organism from an object. Sanitation/cleaning is essential before disinfection or sterilisation of instruments and equipment.

This process can be carried out by using sanitising sprays, soaps and gels, applying directly onto the skin and equipment.

Disinfection

This greatly reduces the pathogenic bacteria on work surfaces. This method is not suitable for the skin, hair or nails.

Disinfection is used on floors, any work surfaces/station, walls and bowls etc. This process does not remove bacteria spores.

Sterilization

This process kills all living organisms; sterile in this context means free living disease-causing micro-organisms and their spores. This is a difficult process to maintain but should be carried out on all tools especially if they have been in contact with blood.

Several ways to sterilise the equipment:

UV light

An enclosed steel cabinet which omits UV light when closed to kill off any bacteria

Autoclave

This works similar to a pressure cooker, by heating the water under pressure to a temperature of 100°C which kills all germs and is one of the most efficient methods

Barbicide

This is a liquid used to soak instruments; ammonia can be used as the liquid within the barbicide

5. PROFESSIONAL ETHICS & STANDARDS OF PRACTICE

A Reflexologist should:

Maintain the highest standard of professional conduct.

Ensure their personal presentation is satisfactory at all times

Not wear any over powering scents

Not wear any jewellery other than a wedding band

Provide services in an ethical and professional manner in relation to clientele, business associates, health care professionals and the public.

Practice within the professional boundaries of the practitioners training.

Ensure client comfort and safety.

Protect client privacy.

Respect client confidentiality.

Maintain anonymity of the client when discussing the client's case with other professionals, unless written consent is obtained.

Have adequate professional insurance.

Never claim to cure a condition and always manage client expectations.

Never treat a client with a condition that is contra-indicated to the treatment.

Keep all records of treatments complete and up to date.

Explain the treatment and answer any questions and queries prior to carrying out the treatment on the client.

Never treat a minor or without prior consent from a parent or carer.

Treat all clients in a professional manner at all times regardless of their colour, gender or religion.

Refer clients to other professionals/GP where required.

Standards of Practice

The practice of good ethics is essential to the reputation of the field of reflexology and the welfare of the clients and practitioners of reflexology. The following is a statement of standards and ethics for reflexologists, including standards of ethical and proper behaviour.

A Reflexologist should:

conduct themselves in a professional, honest, and ethical manner.

promote professionalism.

establish goals with each client and evaluate the outcome at the end of each session.

promote reflexology within the community.

promote reflexology with healthcare professionals and other practitioners.

truthfully and accurately represent their credentials, qualifications, education, experience, training and competence relevant to the practice.

maintain confidentiality of the client.

undertake continual professional development to enhance their skills.

A Reflexologist will:

take a full medical history on the client's first visit.

discuss and record any health problems, contra-indications, symptoms or diagnosis from a conventional medical practitioner.

use this information to decide whether treatment is suitable for the client.

explain the treatment to the client.

give a full and professional treatment.

give full and correct aftercare advice.

write up full details of the treatment on the client's record card.

on the client's next visit, discuss and record any changes that they may have noticed in their symptoms.

refer the client to their GP if necessary.

Skills and Personal Qualities

A Reflexologist should:

be comfortable touching people.

be a good communicator, able to explain treatments to clients and ask appropriate questions.

have good listening skills.

be able to make clients feel relaxed and comfortable.

have empathy with clients.

be able to respect professional boundaries.

know when to advise clients to seek conventional medical advice.

keep accurate written records.

respect confidentiality.

have business skills if they are self-employed.

It is important to:

be interested in human biology and health.

have a genuine desire to help people.

6. PRINCIPLES & PRACTICE OF COMPLEMENTARY THERAPIES

Complementary therapies have been around for thousands of years. Many people think of them as modern and "new age", but in fact the conventional medicine that we routinely use and get prescribed from our doctors are often based on complementary therapies, mainly herbal medicine.

Complementary therapies are treatments that sit outside the traditional or conventional medicine of a person's primary health system. However, it is important to recognise that a treatment that is complementary for one culture may be traditional in another. For example acupuncture is classed as complementary in the UK, but is classed as traditional in China.

The central concept for the majority of complementary and alternative therapies is that the **whole** person is looked at rather than just treating a specific symptom. During the first consultation, an in-depth history will be taken, where the therapist will ask questions on the clients well being. Complementary therapists see symptoms as valuable messengers which can indicate an underlying problem. These symptoms can indicate that the balance has been altered and that some adjustments may need to be made for health to be regained. If symptoms are ignored, then more significant problems may occur later on.

This holistic view and the importance of maintaining good health tempts many people to try complementary therapies as they have a desire to improve their lives, as well as having more choice. Holistic comes from the word "whole" and means that the whole person is treated and not just the symptom, as very often one condition can cause the symptoms of another.

Complementary therapies can help restore the body's natural equilibrium and balance. They can boost the immune system, improve circulation, increase energy levels, help rid the body of toxins and induce a deep state of relaxation. Although most therapies work on this basis, specific therapies lend themselves to treating specific physical, mental or emotional problems, as well as working as a preventative measure.

The History and Origins of Complementary Therapies

The Origins of Body Massage

From the earliest of times, massage has been used by stroking or rubbing parts of our body that are experiencing pain. It is a universal instinct to rub ourselves when we are hurt and we are taught it from a very young age.

Early cave drawings have been discovered depicting people giving and receiving massages, and there is evidence dating back 3000 years, when the ancient Romans, Greeks, Chinese and Egyptians have been known to use massage. Those who could afford to do so were rubbed with olive oil after they bathed to help keep their joints and skin supple. This soon developed into a full body massage; in fact Julius Caesar received massages to help relieve his epilepsy.

The knowledge of massage spread to Japan, where Japanese monks developed a technique incorporating massage with pressure therapy, which was developed into Shiatsu. Moving onto India, the Hindu book AyurVeda was written, which described how massage could be incorporated with exercise.

In Africa and Asia, massage has always been valued and used as a healer and is today used widely in the UK as a way to treat ill health, for relaxation and as a preventative measure. Here in the UK, Swedish massage, as we know it has taken its origins from Henrik Ling, who developed the techniques that we are familiar with, and named then effleurage, Petrissage and tapotement.

The Origins of Aromatherapy

Aromatherapy is the use of essential oils, extracted from plants and used in treatments that can facilitate well being and be useful in improving or preventing ill health. They can be used in a variety of ways from inhalation to absorption and many everyday products that we can now buy include aromatherapy oils.

The use of essential oils can be dated back to Ancient Egypt when incense made from aromatic woods was burnt in honour of their gods. The use of these oils was clearly recorded in hieroglyphics. Hippocrates – the father of medicine studied the effects of hundreds of scented plants and herbs. It became his belief that these plants could offer a great deal to promote health. Religious ceremonies were performed in Egyptian temples, using exotic oils, with the Egyptians believing that essential oils had a preserving property, with embalming being the one principal use of aromatherapy.

The earliest written account in Europe of the use of essential oils was in the twelfth century, where records show that aromatics were used as a protection against the plague.

The term “aromatherapy” came about by the French chemist, Rene-Maurice Gattefossé (1881-1950), who discovered the benefits of lavender after burning his

arm. He found that the oil was healing on his skin and left no scarring. During the First World War, he used essential oils on the wounds of soldiers. His studies were later taken further by Dr Jean Valnet during the Second World War, when he found that that essences worked wonders for healing wounds of the soldiers.

Aromatherapy was reintroduced into the health care of Great Britain during the 1950's by Marguerite Maury, in her book "The secret of life and Youth". As a student of Gattefossé, Maury introduced the use of essential oils into massage so they could be used on a more practical level.

The Origins of Herbalism

This is the oldest form of medicine known to mankind and is the mainstay of many early civilisations. The earliest written account of herbalism dates back 5000 years. Today it is the most widely practised form of medicine used and also forms the basis of today's conventional medicine. It is an important part of the Traditional Chinese Medicine (TCM)

The Romans brought many of the popular herbs that are used in Britain today, and through time – before conventional medicine had even developed, herbs were used by most women, sometimes called folk healers, in looking after and caring for their families. For many people, these herbs were thought to be magic and spiritual. These skills were passed down through generations and involved using plants such as garlic, aloe Vera and Echinacea. In fact aspirin, commonly used today as an excellent anti clotting medicine is derived from the willow bark.

Nicholas Culpepper, in the 17th Century helped to spread knowledge of herbalism after he translated the pharmacopoeia and then had the publication of his book "English Physician and Complete Herbal" which is still in print today.

Using plants and plant extracts, herbalism can be used for a wide variety of ailments. The plants can be infused by pouring boiling water over the leaves, steeped in alcohol and water or by boiling the barks or roots in water. The end product can be administered as ointments, tablets, capsules and can be either brought over the counter from health food stores and chemists or can be prescribed by a medical herbalist.

Herbalism is still one of the most widely used treatments in the world today and is used extensively for a variety of conditions. Research has shown that herbalism works when chemical compounds are altered in a synergistic manner. Scientists have spent a great deal of time looking closely at medicinal plants to discover the most active substances within them by isolating the active constituents in the plants. These substances are then selected and isolated from the others before being reproduced in a laboratory. The chemical substances are then developed, although they may be concentrated many times or even changed completely to increase the action. The human body is designed to be able to digest and absorb plant based foods, so may have a more powerful effect than chemical medicines.

In May 2011, many changes took place for herbalism with the introduction of a new regulation, stating that every herb sold in the UK must be stamped with a THR (Traditional Herbal Remedy) logo, if it has undergone a process to show that it has met certain standards. One of those standards is that the herb has been used for the past 30 years and has been sold in the EU for at least 15 years. This logo ensures that each remedy is giving a standard dose and is safe. It does not; however demonstrate that the remedy has been tested for effectiveness.

The Origins of Acupuncture

This is a form of healing that has been used in China for the past 2000 years, although it goes back further when the Chinese were found to rub stones against certain parts of their bodies to try and relieve pain. The word "acupuncture" comes from the Dutch Physician, Willem Ten Rhyne, during the 17th Century. The meaning is literally "to puncture with a needle" Today in the UK, there are about 7,500 acupuncturists practising, and one in three GP surgeries are making acupuncture available to patients on the NHS.

The belief that underpins acupuncture is that energy, called Chi (pronounced Chee) flows through our body, and that our health is dependent on the flow of this energy as it passes through 20 main acupuncture meridians and 12 linking meridians. Chi consists of Yin and Yang, which are two opposites, but need to be in balance with each other, or disease will occur.

The aim of the treatment is to restore the balance of Chi in the body, as the acupuncturist believes that the flow of Chi can be disturbed by many factors, such as emotional pressure.

By inserting very fine needles into specific areas, the area can be stimulated and the Chi can be allowed and encouraged to flow again. The needles can be left in from a few minutes to 30 minutes and as many as 15 may be used at a time. Whilst inserted, the needles can be flicked or twisted to encourage healing, which for some causes a heavy, tingling sensation.
Research has shown that acupuncture stimulates nerve receptors and changes the blood composition.

The use of acupuncture grew rapidly, with many countries sending doctors to China to train in the practise. Acupuncture was first known in Europe from the early 16th Century and was introduced into England in 1821 when it was used by a midwife Edward Joukes.

The Development and Use of Massage and Therapies

There are so many different types of "touch therapies" that it is impossible to describe the development of all of them, so below is a brief description of a popular range.

The Development and Use of Indian Head Massage (IHM)

This treatment was originally developed in India as a grooming technique used to strengthen and improve the fullness of the hair. This was achieved by stimulating the pressure points on the scalp. It was particularly popular with women of fashion who wanted to enhance their fine appearance. The technique, in many senses, became part of everyday life in India and is practiced on young and old alike. It became a tradition that was handed down through the generations.

In the West, IHM has evolved as part of a stress management programme and incorporates pleasant smelling oils such as jasmine which are massaged into the neck and shoulders, as well as the back, arms, scalp and face.

Apart from the pampering aspect of the treatment, massage has many physiological and emotional benefits. IHM is known to:

- improve blood flow to the head and neck
- improve lymphatic drainage
- relieve muscular tensions
- relieve physical and emotional stress
- improve joint mobility
- promote deep relaxation
- help improve muscle tone
- help relieve eyestrain
- help relieve deep congestion in the head
- relieve stress and anxiety
- create a feeling of balance and well-being.
- uplifting
- improve hair and scalp conditions

The majority of people only worry about their hair's health when it starts to look dry or thinning. When the body is subjected to ill health or stress, the hair is often affected and can become dry. Healthy hair should be promoted from childhood with the help of regular massage, and Indian women use oils such as coconut or almond to help nourish the hair and to keep its shiny appearance.

The Development and Use of Stone Therapy

Stone therapy has been used for over 2,000 years. Native American women used to place a warmed stone on their belly during menses (menstruation). Roman baths involved hot water and tables of hot and cold stones to lie on. Pilgrims would put a hot stone at the end of their bed to warm their feet. Fasting Japanese priests would wear a sash in which 3 warm stones were placed to help to slow down their digestive process. Ancient Chinese, Egyptians and American Indians used stones for healing.
The stones represent a gift from Mother Earth and are symbolic for their giving of energies and grounding effects on the mind, body and spirit.

A stone massage is a complete, body, mind and soul massage that uses smooth, flat, and heated rocks placed at key points on the body.

Generally the rocks used in a stone massage are basalt, which has high heat retention qualities. Stones are placed in water and heated to within a certain temperature range before placement on the body. The stones are usually placed on specific points on the back, but can be placed on other places such as between the toes, or in the palms of the hands.

The heat of the rocks causes muscles to relax, thus allowing the therapist to apply deeper, more precise pressure if desired or necessary. The heat contained in the rocks also relaxes nerves, and may improve chakra flow if placed on chakra centres on the body.

The Development and Use of Chiropractic

A chiropractor deals particularly with the spine, and the joints, ligaments, tendons and nerves associated with it. The word “chiropractic” comes from the Greek words “cheir praktos” which means hand done or done by hand and was discovered by the Canadian, Daniel Palmer.

Palmer was a keen student of anatomy and physiology and whilst working one day, saw a man who had gone deaf after putting his back out. Palmer had a theory that the spine was the highway for all of our nerves and that if the spine was misaligned, it would need to be repaired to allow nerves to travel. He examined the man and found that he had put out one of his vertebrae. Palmer adjusted his spine, which caused the man's hearing to return. Chiropractic was discovered. His first school was formed in 1897.

Chiropractic is a statutory regulated therapy which gives assurances to its clients that chiropractors have studied a specific training course. Through the work of

Daniel Palmer, chiropractic is a widely used therapy that has grown over the last one hundred years, treating many conditions. There is a great deal of evidence to demonstrate that chiropractic is more effective at dealing with lower back problems than conventional treatments, and many G.P's will now recommend that their patients see a chiropractor.

Because chiropractors mainly treat the spinal region, many people incorrectly assume that chiropractors treat only back and neck ailments, and although these can be successfully treated, the aim of chiropractic is to restore and optimize human health. Conditions such as headaches, infant colic, ear infections and asthma can all benefit from this treatment, along with many others.

The spinal column encases the nerves and chiropractors believe that any problems in this area can irritate parts of the nervous system and put pressure or inflammation on the nerves. By correcting any abnormalities of the spinal cord, optimum health can follow as well as improvements with immunity.

Chiropractors can help people of all ages and is especially beneficial on children, as a problem detected in the early years can prevent problems occurring in the later years. Bumps and falls that occur during childhood can sometimes result in minor damage to the spine which, at the time may not seem significant, but chiropractors believe that if left, this can result in headaches or neck problems later on in life.

The Development and Use of Osteopathy

Born in 1828, Andrew Taylor Still, in USA, trained as a Doctor. As time went on he began to follow a different path from many of his peers, and he sought new methods of treating sickness. The outcome was the application of a physical treatment, which he called **"osteopathy".**

In 1892, Taylor Still organised a school in Missouri for the teaching of osteopathy and it was from these small beginnings that osteopathy was brought to the UK, with the first school in London being set up in 1917.

Andrew Taylor Still believed that every disease or illness began with structural problems in the spine and that when problems occurred in the spine, the nerves send abnormal signals to the organs. Therefore the osteopath is trained to palpate (feel) the body for its structural makeup. It is possible for an osteopath to detect physical problems that fail to appear on an X-ray. The Osteopath will detect a problem then "set" the body, by applying a gentle and precise force to promote movement. This manipulation, massage and touch can balance tensions and can eliminate dysfunction in the movement of the tissues. By releasing compressed bones and joints, the body can heal itself. It has been found that tension in the spine can play an effect on the whole of the nervous system, so by altering and aligning the joints and bones, the nerves and brain will not be put under pressure.

Osteopathy is an established recognised system of diagnosis and treatment. It emphasises the structure and functional integrity of the body, and recognises that much of the pain we suffer from stems from abnormalities in the function of the body structure as well as damage caused to it by the disease.

Osteopathy can be used for a range of problems, including back pain, babies with colic, pregnancy posture, sleeplessness and repetitive strain injury.

This therapy, along with chiropractic, is one of the regulated therapies that is endorsed by the British Medical Association as 'a discrete clinical discipline' which can run alongside and compliment mainstream medicine. It is a state registered therapy, which means that the public have the security of knowing that the practitioner has undergone state registered training.

The Development and Use of Homeopathy

Homeopathy was first introduced in the early 1800's when German doctor, Samuel Hahnemann was carrying out some translations for William Cullen's "*A treatise of the materia medica"* into German. He came across a passage which he did not agree with. It stated that cinchona bark was used to treat malaria as it had stomach-strengthening properties. He decided to take four grams of the bark, twice a day for about a week, to see what happened. To Hahnemann's surprise, he found that he experienced symptoms similar to malaria and therefore concluded; drugs that are used to treat unhealthy people can also cause the symptoms of the disease in healthy people. Hahnemann called this process "proving". This principle of treating like with like, was termed "the law of similar" or "similar suffering" and is today used to describe the term for homeopathy.

From them, Hahnemann and some of his colleagues continued researching different substances to see what sort of symptoms they produced. He was then able to determine what conditions they could be used for.
Homeopathic remedies are derived from animal, plant and mineral sources and are used in a very dilute dosage. The substance used is soaked in alcohol to extract their essential ingredients. This is called the "mother tincture" This substance is then diluted either by factors of ten (and designated X) or by 100 (and designated C). Originally, Hahnemann did all of this by hand, mixing, diluting and then shaking. It is this shaking that is thought to make the properties more powerful, as energy is added at each stage. This process is now carried out by machine. The final product can be either oils, tablets, pillules, solutions or powders, and is used for a wide variety of ailments.

Homeopathy is now widely practiced, with there being several homeopathic hospitals in the UK.

There are numerous benefits of this therapy, and it can address a wide range of conditions from minor to the more serious. Homeopathy is a holistic therapy in that it looks at the whole body rather than just a symptom in isolation. During the consultation, the personality and character of the client is considered as this can determine which remedies are prescribed. The remedy will be an individual one as it's not a case of "one size fits all" as is the case with some conventional medicines.

All homeopathic remedies are recorded and described in a book called the 'materia medica', which originates from the Latin word of 'mater' which means materials and 'medica' which refers to their use in medicine. The first Homeopathic Materia Medica was created by Hahnemann which he called the Materia Medica Pura, which translates as the Book of Pure Medicines.

Homeopathy can be beneficial for short term, acute conditions such as coughs, colds and the flu, as well as for long term, chronic conditions such as allergies, eczema and migraines. First aid ailments also respond well, such as bites and stings.
The therapy has also shown positive benefits when treating emotional problems such as anxiety, depression and low self esteem. The results of good homoeopathic treatment can improve mental outlook on life and help focus thoughts to improve the quality of life.

Because homeopathy works in harmony with the immune system, the remedies do not disturb the digestive system or lower the immune system, which some conventional medicines do. Remember, homeopathy works on a "law of similars", so any condition which shows a symptom is treated with a remedy that would cause that symptom in a healthy person. Therefore, any condition can be treated with the correct remedy.

Differences between Complementary, Alternative

And

Allopathic Medicine

It is important that we understand the difference between the terms "complementary" and "alternative", and also the way in which conventional medicine is defined.

Complementary therapies are treatments, such as reflexology, massage and chiropractic, which are used alongside conventional treatments. The aim is that the therapies compliment the treatment that you could get from your doctor, or self prescription. For example, you may take nurofen to relieve the pain of a back problem but also see a chiropractor to deal with the cause of the problem.

Alternative treatments and medicines are treatments that are used instead of conventional, on their own. An example here could be homeopathy or herbalism, in which they could be used to replace conventional medicine. This can be a

contentious issue as there is a danger that serious health conditions which need conventional medicine will not be treated. There is no evidence to prove that any CAM will cure life threatening diseases.

Conventional medicine, which we generally get from our doctors or over the counter, works on a scientific level and will use a medical search for physical causes of ailments. This allopathic medicine will use drugs or treatments to oppose or suppress the symptoms. Generally this allopathic view will involve a clinical examination for the presence of disease, which could include discovering a high temperature, lumps, abnormal heart rate etc, and then the use of drugs or other treatments will be prescribed to work on a biomedical level. The conventional approach of separating different aspects of our physical and emotional (mental) health can mean treating an illness as a separate entity.

Complementary and Alternative Medicine aims to create homeostasis (balance) and harmony within the body. As already stated CAM attempts to deal with the body holistically and tries to see the illness in the context of the whole body, not just a symptom. Prior to your treatment beginning, an in-depth consultation will take place to try and determine the cause of the problem, if there is one. The consultation goes beyond medical questioning, but also pays attention to the client's lifestyle, emotions and thoughts. It is during the consultation that effective and appropriate communication is used to ensure that the client is able to give the therapist the information that is needed. When the therapist uses verbal communication, the questions should preferably be open to allow the client the opportunity to expand, and the therapists' tone of voice should be welcoming. Barriers such as desks should be removed when completing the consultation, so that the client does not feel powerless. Listening actively to the client is also very important with positive body language being used. All information collected from the client should be kept confidential, adhering to data protection. The therapist should always work within their limits, and refer the client to a different health provider if they feel that is necessary. This could be do a GP, another therapist, counsellor etc.

Many people believe that it is only the placebo affect that allows CAMS to work, in that your health improves because you think that what you are doing is helping. Whether or not this is the case, this proves that the mind is a powerful tool, and most therapists would argue that it doesn't matter whether the therapy works on a placebo level or on a physical level, but it is the improvement that people experience that is the most important aspect.

There are many reasons why people may choose to use CAM:

Cultural: Many people will opt for complementary therapies due to their up-bringing. This may be due to cultural beliefs against conventional medicine or beliefs that only natural remedies should be used.

Lack of trust: If patients have had a bad experience using conventional medicine in the past, with either the drugs or practitioners, they may opt for an alternative way of receiving health care.

Against animal testing: Most conventional drugs are at some point tested on animals. Strict vegans or those who are opposed to this testing may decide they want to try a treatment that has not caused animal suffering.

Natural way of life: Many people are deciding to take more control over their own lives and this may involve using natural alternatives, which do not cause any side effects or hidden dangers. Most complementary therapies use more of a preventative approach to health rather than waiting for a problem to occur.

Relaxation: Many therapies will be used to aid relaxation and promote a "feel good factor". Therapies such as aromatherapy promote a sense of well being.

Last resort: After receiving conventional treatment and being told that there is nothing that can be done for a condition, many people will want to try something else.

Differences and Similarities
Between CAM and Allopathic Treatments

CAM	Allopathic Treatments
Takes on an holistic approach looking at the whole person, including lifestyle.	May only look at the symptoms from a medical perspective.
Natural remedies are used to treat patients.	Doctors will tend to prescribe chemical or synthetic drugs.
There are only a few side effects to the use of CAM.	Can have unknown side effects but they are provided to the patient.
They can be quite costly as the NHS only provides a limited amount.	People see the NHS as free even though they pay for their taxes. There will be a charge for prescriptions.
There is not normally a long waiting list to see a practitioner.	You may have to wait to see your doctor.
Some complementary therapies are not regulated which can make them unsafe and open to abuse.	The British Medical Council regulates all doctors.
Not always easily accessed so people may have to travel to use them.	Usually very accessible as there are services in most towns.
Complementary therapies have an ancient background with a long standing history.	Conventional medicine is mainly modern.
People have doubts about the effectiveness of the therapies due to lack of evidence.	All treatments have scientific basis behind them, having been tested on animals first then following strict licensing.
The consultation can last up to one hour in some cases	The average consultation may last only five minutes.

Unlike conventional medicine, most complementary therapies are not tested on animals first; in fact some CAM's are not tested at all. If there is funding available, a therapy can be tested within controlled trials on human participants. This evidence will rarely be scientific but more based on the participant's perception. Some therapies that have undergone both scientific and controlled trials include herbalism, homeopathy, chiropractic and acupuncture.

Therapeutic Aims and Procedures of Complementary Therapies

Therapies will have different aims, and these should be considered when choosing a therapy for a particular person. A therapy may aim to be:

Remedial – aiming to remove the condition. These include homeopathy and herbalism, which can be used on chronic conditions. Chiropractic can be used to put right a skeletal problem

Preventative – aiming to reduce the risk of an illness developing. These include reflexology, yoga and massage and can be used at regular intervals to maintain health.

Palliative – aiming to make symptoms tolerable. These include acupuncture and aromatherapy and are used to reduce pain. Many people who are having conventional treatment, such as chemotherapy will use a therapy for palliative care.

How often a therapy will take place, will depend on the reason for using it in the first place. For example, someone may injure their back, so have two sessions of chiropractic a week as a remedial treatment, but then go onto a preventative programme and just go once a month.

Regulation, Legislation and Guidelines Concerning CAM

At the moment, there is no statutory regulation for complementary therapies, apart from chiropractic and osteopathy, which have both received statutory regulation. This means that there are very few standards for training and working as a therapist. This differs from the rest of Europe, where the majority of countries restrict CAM treatments to registered medical practitioners.

Once a therapist has qualified in a therapy, they can apply to belong to a regulatory body if they wish. This is called voluntary self regulation. The regulatory body sets out standards that should be followed, and to guide therapists into good practice, as well as offering further training, advice and support. It is not compulsory for a therapist to belong to a regulatory body, however many therapist choose to belong to one as it gives their work greater credibility. Regulation does also offer some protection to clients as it ensures that only qualified therapists are allowed to join.

Some regulatory bodies will hold a list of qualified therapist's. Examples of regulatory bodies are below:

The British Acupuncture Council

Complementary Medical Association
British Reflexology Association
British Herbal Medicine Association
Federation of Holistic Therapist (FHT)
Aromatherapy Council

To belong to a regulatory body, the therapist would need to show evidence that they have carried out their training through an approved organisation, and have taken an accredited qualification. The regulatory body will also ensure that the therapist updates their skills frequently by carrying out continual professional development (CPD)

Depending on where you work as a practitioner will affect which legislation you have to follow. If you are working within an employer's workplace, you will be under obligation to follow the Acts which are set out within the health, safety and hygiene unit. Wherever you work though, you have a responsibility to ensure that the Health and Safety Workplace Act is followed, and that you always have adequate insurance to protect both you and your clients. You have a duty of care when working with others.

The government views regulation as important, but the lack of compulsory regulation is a contentious issue, as some professionals feel it should be made compulsory as it would set standards and ensure consistency of training, where others feel that it is an unnecessary procedure as CAM practitioners do not claim to want the same status as medical professionals.

Within The House of Lords Science and Technology (sixth report), Professor Edzard Ernst at the Department for Complementary Health Studies, University of Exeter, states that "The nature of regulation (e.g. statutory regulation or self regulation) seems of secondary importance. What matters is that regulation achieves its primary aim, which is to protect the public. As long as this can be demonstrated, any form of regulation would seem welcome" (P 230).

Where CAM's are being used within health settings, there will usually be guidance to their use. For example the Royal College of Nursing (RCN) have produced guidance on the use of CAM's within clinical practice. The National Occupational Standards (Skills for Health) have also set out standards of good practice for regulatory and training bodies to follow.

As already discussed, herbalism now has to follow guidance set out by The EU Directive on Traditional Herbal Medicinal Products

Training Routes and Working Within CAM

You may already be a complementary therapist expanding your knowledge or you may be just entering this rewarding field. Wherever you are within your studies, the field of CAM is a continual journey and you will want, and indeed need to expand your knowledge to keep up with the latest developments.

Choosing the correct qualification and training institution is an important step. The education and training CAM practitioners receive is a major factor for clients and employers when choosing a therapist. The qualification that you study needs to be one that is accredited so that you are able to join a regulatory body and apply for insurance.

Most training has evolved with relative freedom due to the unrestricted practice, which can be a positive as it has allowed creativity, but it also means that some training providers will be offering training that cannot be used with the general public due to not be accredited. A piece of paper is of no use if you cannot use it and with developments in the field of regulation, there may come a time when you have to join a regulatory body.

The more established therapies, such as osteopathy, chiropractic, acupuncture and herbalism already hold a firm place within Higher Education (HE), and therefore have to follow the strict controls that other courses being taught within HE hold. The standardisation of other therapy training. The House of Lords Science and Technology (Sixth report on CAM) (2000) states that " High quality, accredited training of practitioners in the principal CAM disciplines is vital in ensuring that the public are protected from incompetent and dangerous practitioners".

As already discussed, joining a regulatory body will require you to continue with your professional development (CPD) and this will ensure that your skills stay up to date and that you are able to further your career progression. There are a number of ways you can achieve this, such as attending lectures at exhibitions or conferences which are held frequently across the country, carrying out additional training or even contributing to research or published articles.

There is a great deal of opportunity for CAM practitioners, whether it is working in a spa, clinic, hospice, health centre, salon, sports events or even on a cruise liner, each day will be varied and rewarding.

7. ANATOMY, PHYSIOLOGY & COMMON PATHOLOGIES

THE SKIN, HAIR AND NAILS

The Skin Structure

Skin makes up around 12% of an adult's body weight. It's very adaptable and able to mould into different shapes, covering bones and muscles to perform various functions of the body's make up.

The functions of skin (Shapes) are:

Sensation - Main sensory organ for temperature, pressure, touch and pain.

Heat Regulation - Regulates the body temperature by sweating to cool the body down when it overheats, and shivering when the body is cold.

Absorption – Some creams, essential oils and some medication can be absorbed through the skin.

Protection – Too much UV light may harm the skin, so the skin protects itself by producing a pigment, seen in a tan, called *melanin*. Bacteria and germs are prevented from entering the skin by a protective barrier called the *Acid Mantle*. This barrier also helps protect against moisture loss.

Excretion – Waste products and toxins are eliminated from the body through the sweat glands.

Secretion – Sebum and sweat are secreted onto the skin's surface. The sebum keeps the skin lubricated and soft and the sweat combines with the sebum to form the acid mantle.

Vitamin D production - Absorption of UV rays from the sun helps formation of vitamin D, which the body needs for the formation of strong bones and good eyesight.

There are 3 major layers of the skin, the Epidermis, Dermis and the Subcutaneous.

The Epidermis Layer

The outermost layer of the skin is called the epidermis layer. There are no blood vessels in the epidermis but it's the deepest layer and is supplied with lymph fluid. It is thickest in the palms and on the bottom of the feet.

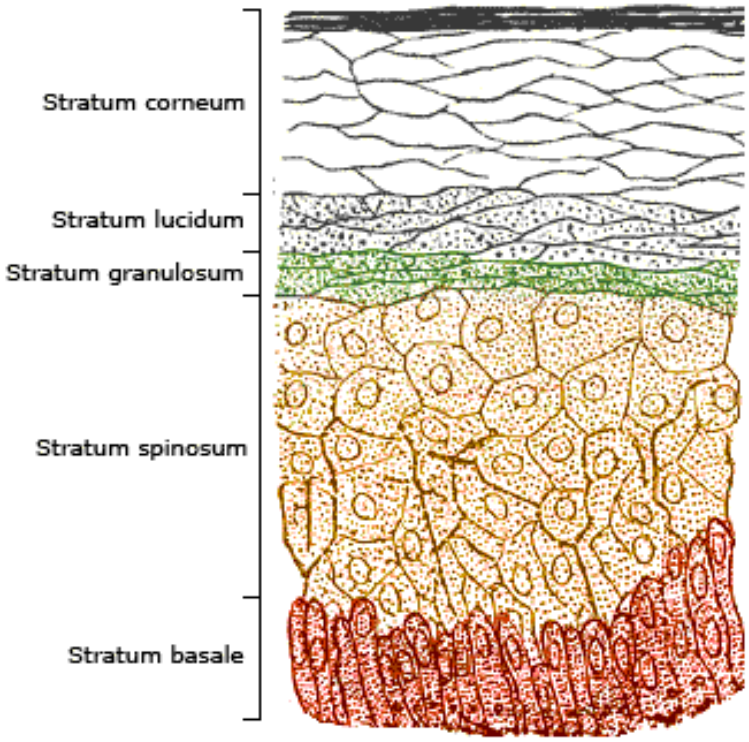
There are various layers of cells within the epidermis, the outermost of which is called the *stratum corneum* (or *horny layer*). The layers can be seen clearly in the diagram of the skin. The surface layer is composed of twenty-five to thirty sub-layers of flattened scale-like cells, which are continually being cast off by friction and replaced by the cells of the deeper epidermal layers.

The surface layer is considered the real protective layer of the skin. The cells are commonly called keratinised cells because the living matter within the cell (termed protoplasm) is changed to a protein (keratin) which helps to give the skin its protective properties.

New skin cells are formed in the deepest layer within the epidermis. This area is called the *stratum basale* (or *basal/germinative layer*). The new cells will gradually move towards the outer layers of the skin as the stratum corneum is shed. The new cells gradually change in form as they move upward to the outer layers, becoming keratinized in the process.

Names of the Layers of the Epidermis

English Name	Latin Name
Horny Layer	Stratum Corneum
Clear Layer	Stratum Lucidum
Granular Layer	Stratum Granulosum
Prickle Cell Layer	Stratum Spinosum
Basal/Germinative Layer	Stratum Basale



The Dermis Layer

The dermis is a tough and elastic layer containing white fibrous tissue interlaced with yellow elastic fibres.

Many structures are embedded in the dermis including:

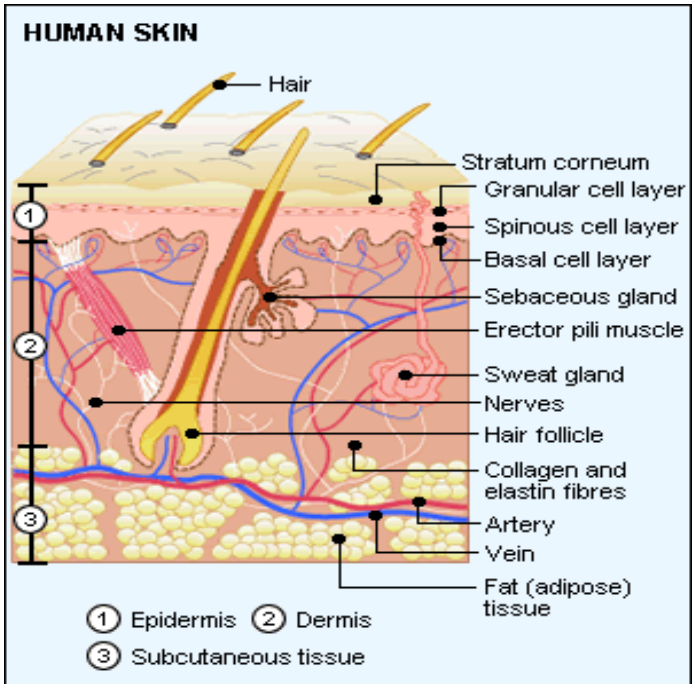
blood vessels
lymphatic capillaries and vessels
sweat glands and their ducts
sebaceous glands
sensory nerve endings
the erector pili - involuntary muscles are sometimes activated in cold weather to give 'goose bumps'
hair follicles, hair bulbs and hair roots.

The Subcutaneous Layer

This is the deepest of the layers of skin and is located on the bottom of the skin diagram. It connects or binds the dermis above it to the underlying organs. The subcutaneous layer is mainly composed of loose fibrous connective tissue and fat (adipose) cells interlaced with blood vessels. The hypodermis (subcutaneous layer) is generally about 8% thicker in females than in males. The main functions

of the hypodermis are insulation, storage of lipids, cushioning of the body and temperature regulation.

Diagram of the Skin



Skin Pathologies

Name	Appearance	Cause	Categories i.e. fungal, bacterial etc
Dermatitis	Inflammation of the skin, swelling & redness	Allergic reaction to contact with allergen	Allergy
Seborrheic Warts	Flat top/warty looking lesion	Ageing	Fungal
Herpes simplex	Red sore/scab usually on side of the mouth also none as a cold sore	Viral infection transmitted by contact with another infected area. Highly contagious	Viral
Warts	Small solid growth	Same as Herpes simplex	Viral
Scabies	Itchy white spots	Mite transmitted by direct skin to skin contact typically from itchy infected area and transporting mite to someone else under fingernails.	Infestation by a mite, fungal

Name	Appearance	Cause	Categories i. e fungal, bacterial etc
Psoriasis	Red itchy scaly patches erupting on skin	The immune system sends out a faulty signal that speeds up the growth cycle of skin cells	Chronic recurring skin disease which can be pustular or non pustular
Acne Rosacea	Redness on nose and cheeks	Dilation of minute capillaries in the skin	Skin disorder
Impetigo	Red spot which blisters then discharges developing a yellow crust	Highly contagious. Spread through direct contact and itching	Bacterial
Milia	Small harmless pinhead cysts also called milk spots	Manifestation of immature sebaceous glands and become blocked with keratin	Benign cyst
Eczema	Same as dermatitis: redness is due to dilated blood vessels and as fluid accumulates itching, and swelling occurs. Weeping skin can then become infected	Allergic reaction Stress	Allergy

The Hair

There are roughly 5 million hairs that cover the body and with the exception of the palms, soles, the lips, the sides of the fingers and toes and some parts of the genitals, the whole body is covered in hair.

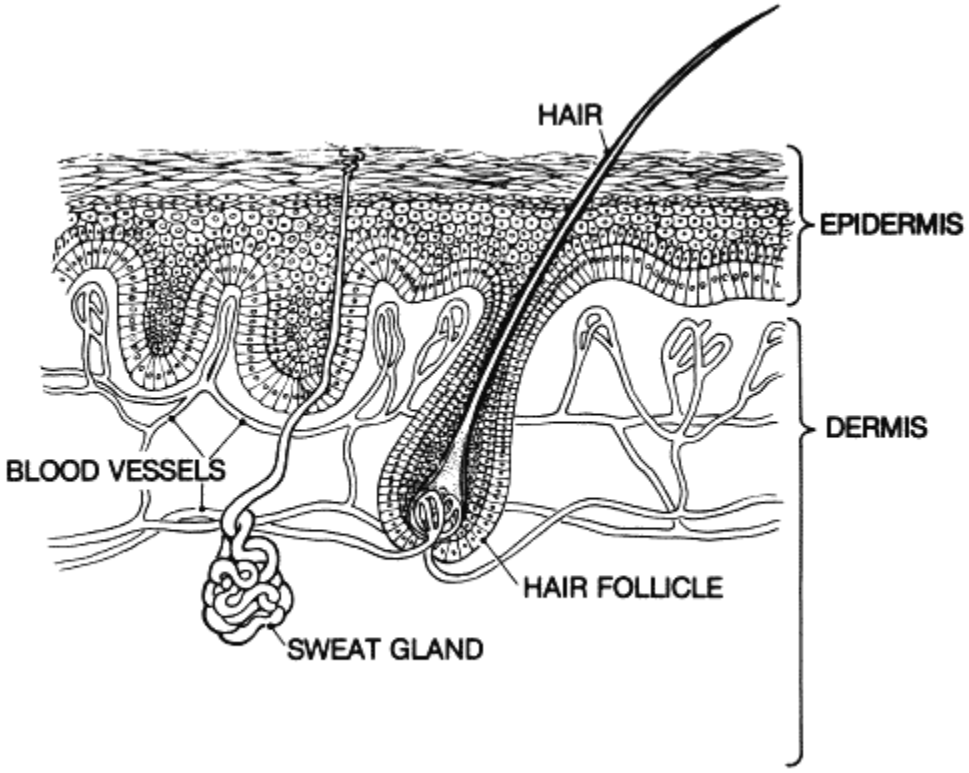
Hair originates from a structure called a hair follicle. This tube like structure extends into the dermis layer and is fed by capillaries and nerves which are attached to it.
Epithelial cells grow and divide inside the base of the follicle, which forms the hair bulb.
Keratin, a protein which is found in the epithelial cells coats the hair which causes it to stiffen as it grows up through the follicles. Whilst the hair is in the follicle, it is called the root, but once exposed from the scalp it is called the hair shaft.

Structure of the Hair Root

Below the surface of the skin is the hair root, which is enclosed within a hair follicle. At the base of the hair follicle is the dermal papilla. The dermal papilla is feed by the bloodstream, which carries nourishment to produce new hair. The dermal papilla is a structure very important to hair growth because it contains receptors for male hormones and androgens. Androgens regulate hair growth and in scalp hair, Androgens may cause the hair follicle to get progressively smaller and the hairs to become finer in individuals who are genetically predisposed to this type of hair loss.

Each strand of hair consists of three layers.

1. An innermost layer or medulla, which is only present in large thick hairs.
2. The middle layer known as the cortex. The cortex provides strength and both the colour and the texture of hair.
3. The outermost layer is known as the cuticle. The cuticle is thin and colourless and serves as a protector of the cortex.



As the newly formed cells grow and push up from the follicle base, the older epithelial cells die.

The colour of the hair is determined by pigmented cells called melanocytes, which contain melanin. The amount of melanin will determine the colour of hair.

Hair Types and Textures

Straight Hair

With this type of hair, there is absolutely no curl pattern, and it is completely straight and sleek. The hair tends to be shiny because of the lack of curl pattern which allows the light to reflect off of the hair, giving it a shiny finish.

If straight hair appears dull is may be because it has become damaged. It is essential to care for the hair carefully to maintain its shine.

Wavy Hair

Wavy Hair can either be fine, or medium textured which looks coarser and thicker. It is possible to style and straighten the hair for a sleek look, but tighter curls can also be added.

Medium Curly Hair

This hair has a tighter curl pattern, and can either be loose curl or a tighter curl pattern. There is a lot of body in this hair which gives it versatility and it can be styled in many different styles, although it may be hard to straighten. The hair easily absorbs water when wet, but then it shrinks.

Kinky, Coily Hair

Tightly coiled hair has a lot more kink and appears thicker than other curly hair but it can be fairly fine. This type of hair is found in Afro styles and should not be brushed when dry as it can cause damage and breakage.

Texture

Hair texture is the measure of the circumference of the hair strand and is classified as either being "coarse", "fine", or "medium".

Coarse hair has the largest circumference and is strong as it has more substance. It can be resistant to colouring and perming.

Medium texture indicates a middle-range size circumference of the hair shaft, it's considered normal and poses no special considerations regarding processing and chemical services.

Fine hair, has the smallest circumference, and is often very easy to process. It is easily damaged from chemicals and heat.

Hair texture varies from individual to individual, and the same head of hair can have different textures in different places.

Hair Density

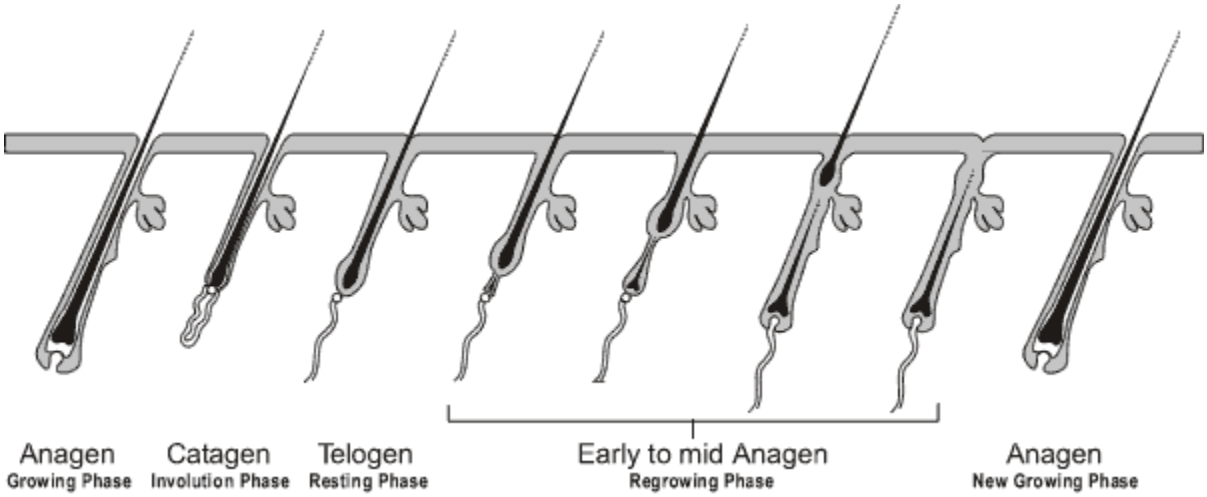
Hair density is the amount of hair strands on the head, and is measured by counting the number of hair strands found in one square inch (2.5cm) of scalp. Generally, the classifications of hair density are thick, medium, and thin, and are unrelated to the texture of the hair. The average head has approximately 2,200 strands of hair per square inch, and a total of approximately 100,000 hairs.

Hair Growth Cycle

Hair follicles grow in repeated cycles. One cycle can be broken down into three phases.

1. Anagen - Growth Phase
2. Catagen - Transitional phase
3. Telogen - Resting Phase

Each hair passes through the phases independent of the neighbouring hairs.



We are constantly losing around 30,000 to 40,000 dead skin cells form the surface of the skin every day, with the epidermis constantly replacing old skin cells and shedding them. The germinativum layer (basale) has cells that are shaped liked columns that divide and push new cells into the layer above. This process continues through each layer with the final layer – the corneum being made up of dead, flat cells that shed around every 2 weeks.

Nails

Nails provide some protection to our sensitive fingers and toes as well as allowing us to grasp small objects

The nail is made up from the following:-

Nail Wall: This is the folds of skin that overlap the sides of the nail. It holds the nail in place and protects the nail plate edges.

Matrix: The only living reproducing part of the nail, this is situated directly below the cuticle. New cells form here and continually push towards to produce the nail plate. It also contains blood vessels and nerves. Blood supply provides the cells with nourishment. If the matrix is damaged the nail will grow deformed.

Lunula: (Halfmoon) This is the meeting point for the matrix and nail bed and is pearly coloured and crescent shaped due to the cells being pushed closely together. The blood capillaries cannot be seen through the lunula because of this.

Nail Plate: Visible nail that rests on the nail bed up to the free edge. This is made up from dead cells (that have been pushed up from the matrix) and are held together with a minimum amount of moisture. The nail is semi-transparent – allowing the colour of blood supply of the dermis to show through (pink colour).

Nail Bed: Part of the nail that the nail plate rests on, also a continuation of the matrix. It is abundantly supplied with blood vessels and nerves, having numerous parallel ridges which dovetail exactly with the ridges on the under surface of the nail plate.

Free Edge: Is an extension of the nail plate. It overlaps the hyponichium. This part of the nail can be filed and shaped.

Cuticle: This is the overlapping epidermis surrounding the nail. It protects the matrix from invading bacterial and physical damage.

Eponychium – Base of the nail.

Peronychium – Sides of the nail.

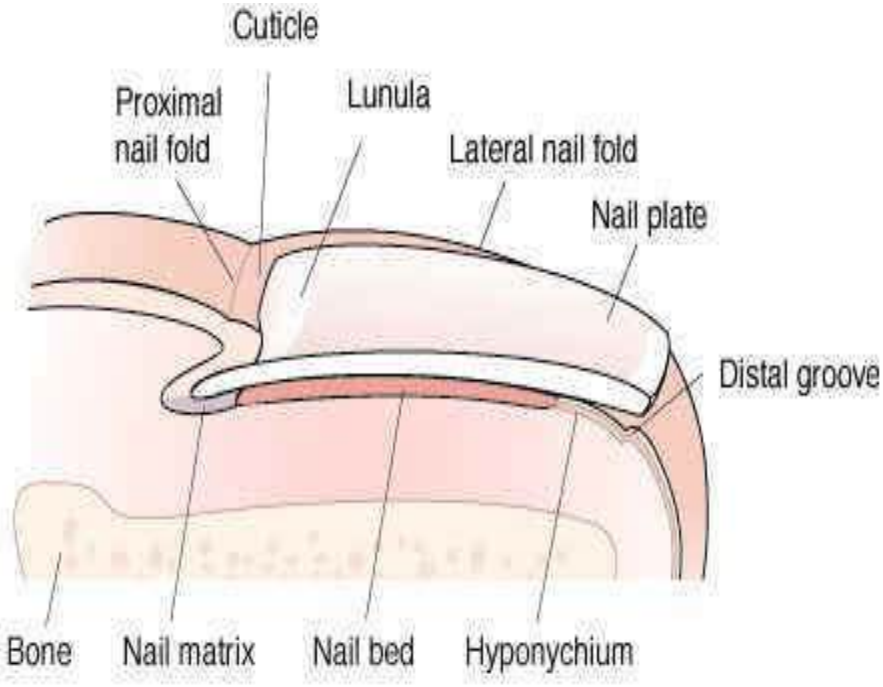
Hyponichium -The portion of the skin at the end of the finger which is underneath the free edge.

Nail Grooves (Or furrows): Side of the nails upon which the nail moves on and acts as a guideline for the nail to follow.

Mantle: Is the skin over the matrix which protects it.

Nail Pathologies

Name	Appearance	Cause
Leukonychia	White flecks within the nail plate.	Trauma to the nail or signs of a disease.
Hang nail	A small piece of torn skin next to the nail	Usually picking or biting the nails
Paronychia	Skin infection around the nails, causing red swelling	From biting or injury
Vertical ridges	Lines running the length of the nail	Unknown but more common as you get older. Nothing to worry about
Onycholysis	Separation of the nail from the bed	Usually trauma but can be a sign of disease



THE SKELETAL SYSTEM

The Skeletal System serves many important functions; it provides the shape and form for our bodies in addition to supporting, protecting, allowing bodily movement, producing blood for the body, and storing minerals.

Functions

Its 206 bones form a rigid framework to which the softer tissues and organs of the body are attached.

Vital organs are protected by the skeletal system. The brain is protected by the surrounding skull, and the heart and lungs are encased by the sternum and rib cage.

Bodily movement is carried out by the interaction of the muscular and skeletal systems. For this reason, they are often grouped together as the muscular-skeletal system. Muscles are connected to bones by tendons. Bones are connected to each other by ligaments. A joint is where bones meet one another. Muscles which cause movement of a joint are connected to two different bones and contract to pull them together. An example would be the contraction of the biceps and a relaxation of the triceps. This produces a bend at the elbow. The contraction of the triceps and relaxation of the biceps produces the effect of straightening the arm.

Blood cells are produced by the marrow located in some bones. An average of 2.6 million red blood cells are produced each second by the bone marrow to replace those worn out and destroyed by the liver.

Bones serve as a storage area for minerals such as calcium and phosphorus. When an excess is present in the blood, buildup will occur within the bones. When the supply of these minerals within the blood is low, it will be withdrawn from the bones to replenish the supply.

Divisions of the Skeleton

The human skeleton is divided into two distinct parts:

The axial skeleton consists of bones that form the axis of the body and support and protect the organs of the head, neck, and trunk:

- Skull
- Sternum
- Ribs
- Vertebral Column.

The appendicular skeleton is composed of bones that anchor the appendages to the axial skeleton:

- Upper Extremities
- Lower Extremities
- Shoulder Girdle
- Pelvic Girdle.

(The sacrum and coccyx are considered part of the vertebral column)

Types of Bone

The bones of the body fall into four general categories: long bones, short bones, flat bones, and irregular bones.

Long bones are longer than they are wide and work as levers. The bones of the upper and lower extremities (e.g. humerus, tibia, femur, ulna, metacarpals, etc.) are of this type.

Short bones are short, cube-shaped, and found in the wrists and ankles.

Flat bones have broad surfaces for protection of organs and attachment of muscles (e.g. ribs, cranial bones, bones of shoulder girdle).

Irregular bones are all others that do not fall into the previous categories. They have varied shapes, sizes, and surface features and include the bones of the vertebrae and a few in the skull.

Bone Composition

Bones are composed of tissue that may take one of two forms. Compact or dense bone, spongy or cancellous bone. Most bones contain both types.

Compact bone is dense, hard, and forms the protective exterior portion of all bones.

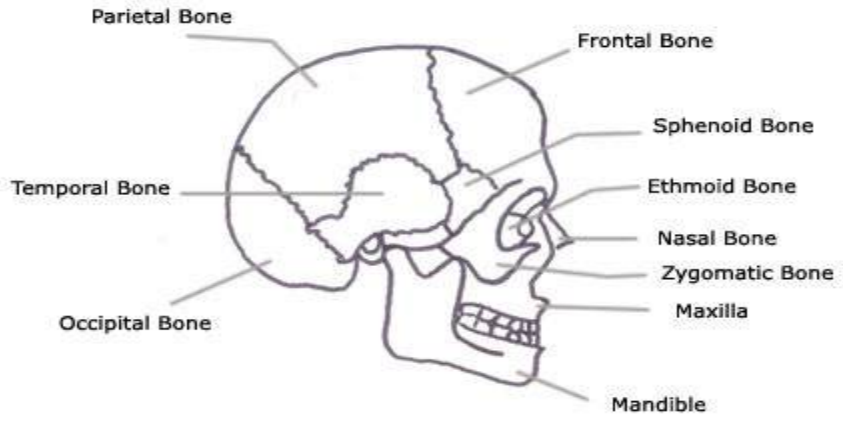
Spongy bone is inside the compact bone and is very porous (full of tiny holes). Spongy bone occurs in most bones.

The charts on the following pages show the main bones that you will need to have good knowledge of.

Bones of the Skull and Face

The adult skull is usually made up of 22 bones. Many of them are small bones that make up larger ones. The most significant to you are:

Name	Position
Frontal	Makes up your forehead and also the roof of your eye sockets; joins with the parietal and temporal bones
Parietal	Forms the roof and sides of the cranium
Occipital	Situated at the back of the cranium
Temporal	Situated on both sides of the cranium
Sphenoid	Located at the front of the temples; contains a sinus cavity and houses the pituitary gland
Ethmoid	Forms the roof of the nasal passage
Nasal	Forms the bridge of the nose
Lacrimal	The most fragile bone of the face and is part of the eye socket
Maxilla	Forms the upper jaw and is the largest facial bone
Mandible	Forms the lower jaw and is the strongest of the skull
Zygomatic	Forms the angle of the cheeks



SKULL DIAGRAM WITH LABELS

Bones of the Neck, Chest, Shoulder and Spine

Name	Position
Cervical version	The neck
Hyoid	U-shaped bone at the front of the neck
Clavicle	Slender long bones at the base of neck
Scapula	Triangular bones in the upper back
Humerus	Upper arm
Sternum	Breast bone

We have 7 bones in the neck, which form the cervical vertebrae.

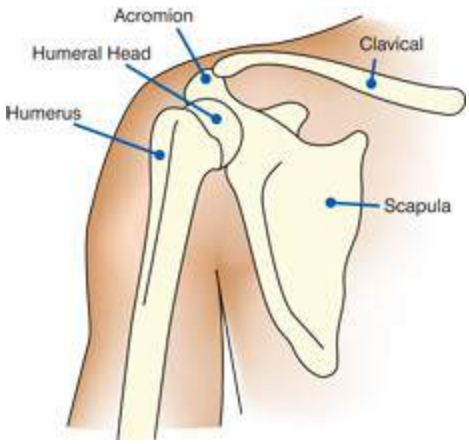
Our shoulders have 4 bones. These are 2 clavicles (collar bones) and 2 scapulae (shoulder bones).

The sternum is a dagger shaped bone located in the centre of the chest. It helps protect the heart, along with the ribs, which are thin, flat curved bones.

There are 24 bones which make up the ribs, and these are arranged in 12 pairs.

The spine, technically called the vertebral column, consists of 33 irregular shaped bones called vertebrae. Arranged within 5 sections, these bones make up the: cervical (neck), thoracic (chest), lumbar (lower back), sacrum (back wall of pelvic girdle), coccyx (tail bone).

In between these vertebrae are vertebral discs which are made up of fibrous cartilage which acts as a shock absorber. Sometimes a disc may collapse. This is called a "slipped disc" and can cause intense pain as the disc presses on a nerve root. Massage may be of a great benefit if this happens.

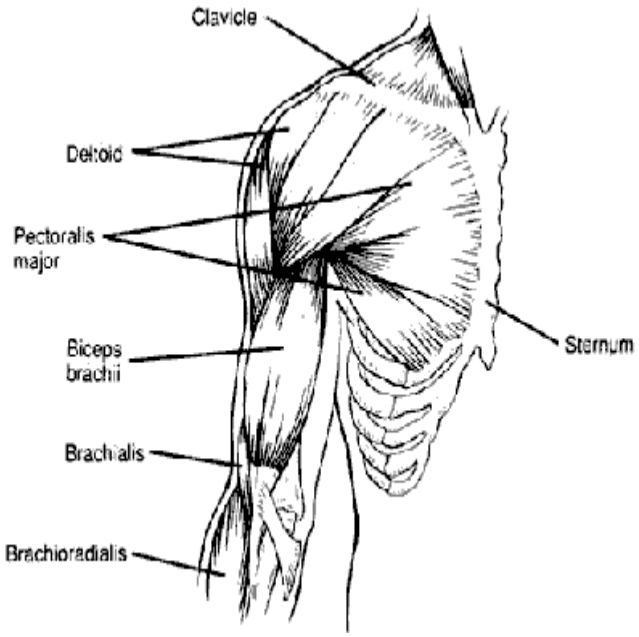


Bones of the Arm and Hand

The forearm is made up of two bones: the radius and ulna. The ulna is the larger of these two bones. The radius and ulna on the forearm form a hinge with the upper arm bone called the humerus and this enables the arm to flex and extend.

The wrist is made up of eight individual bones called the carpals and are named: trapezium, trapezoid, scaphoid, lunate, triquetral, pisiform, capitate and hamate.

The palm of the hand is made up of bones called the metacarpals and the finger bones are called the phalanges. The fingers are made up of three bones except for the thumb, which has two.



BONES & MUSCLES

Bones of the Leg and Foot

The tibia and the fibula are the bones that make up the lower leg. The tibia is normally called the shinbone, the fibula forms part of the ankle joint.

Seven bones, all with individual names, make up the tarsals. They are called: calcaneum, talus, cuboid, outer cuneiform, middle cuneiform, inner cuneiform, navucular and five metatarsals. Together they support the major arches of the foot.

The toes are made of phalanges like the fingers. Big toes have two phalanges and the others have three.

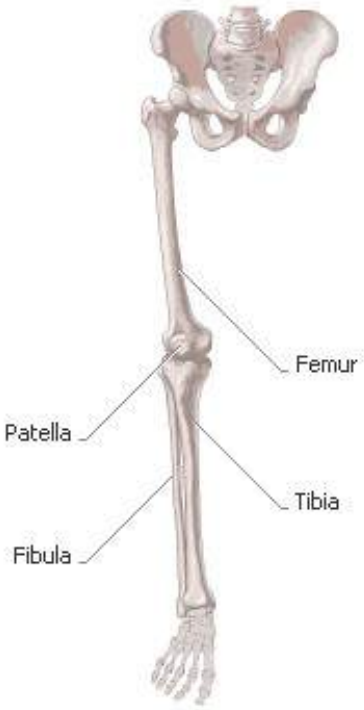
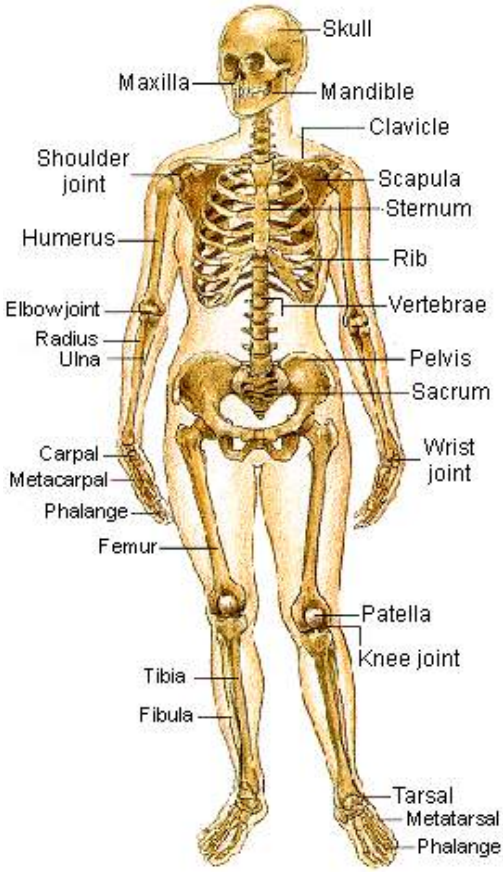


Diagram of the Skeleton



THE JOINTS

Fibrous

Fibrous joints connect bones without allowing any movement. The bones of your skull and pelvis are held together by fibrous joints. The union of the spinous processes and vertebrae are fibrous joints.

Cartilaginous

Cartilaginous joints are joints in which the bones are attached by cartilage. These joints allow for only a little movement, such as in the spine or ribs.

Synovial

Synovial joints allow for much more movement than cartilaginous joints. Cavities between bones in synovial joints are filled with synovial fluid. This fluid helps lubricate and protect the bones.

Growth and Repair of Bones

Bone is continually going through a system of growth and repair called ossification. There are two stages of ossification, with the first stage consisting of the cartilage being covered with a layer of Osteoblasts, which are cells that are constantly forming new bone, using calcium and other minerals. Further cells called osteoclasts then break down the calcium to prevent the bones becoming too dense whilst the bones get larger. There are also old bone cells called osteocytes which are mature cells that store the calcium of the body.

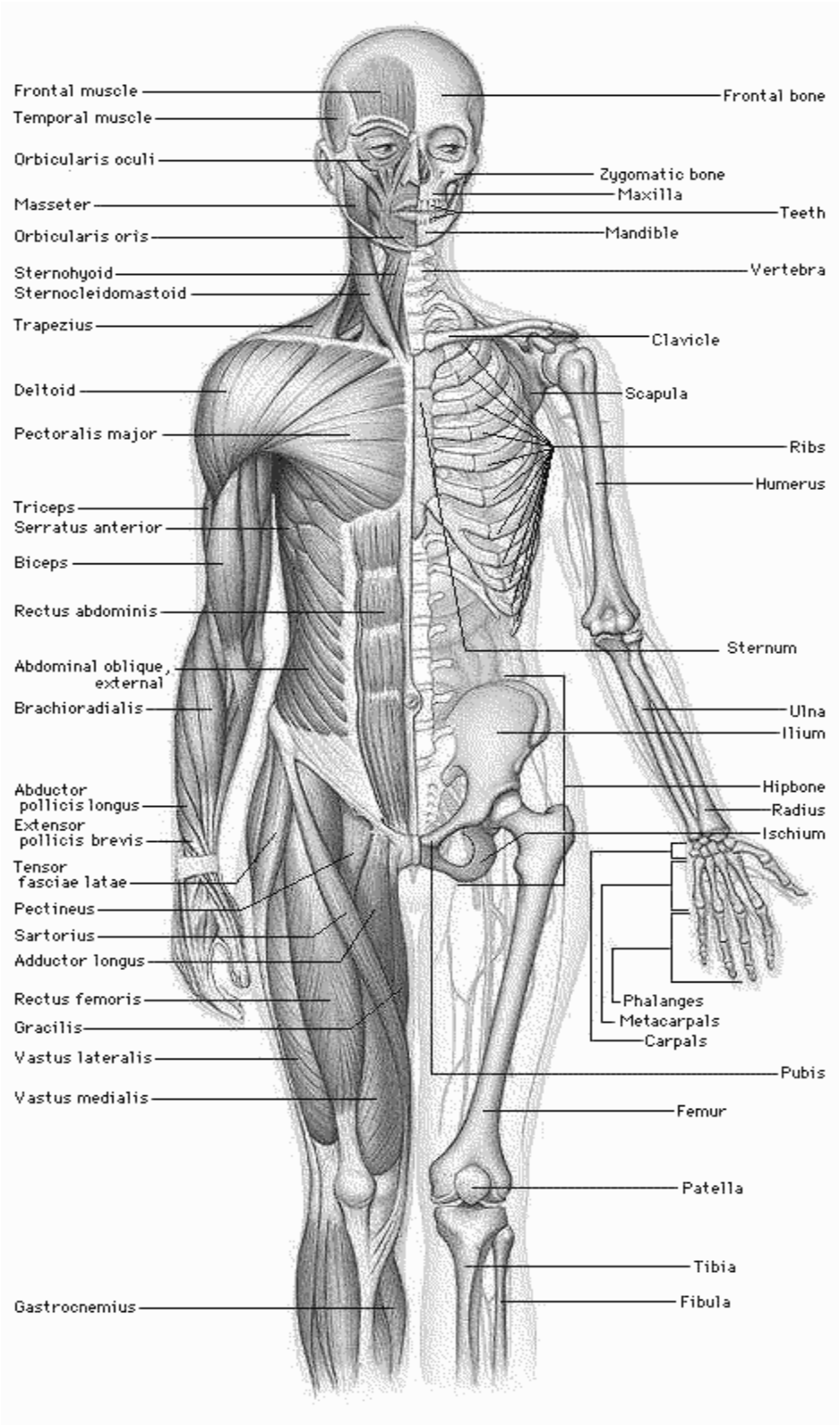
Pathologies of the Skeletal System

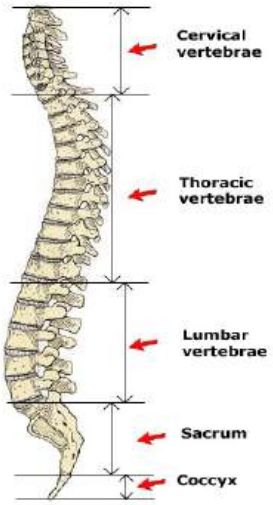
Postural Defects	**Meaning**
Kyphosis	Excessive curvature at the top of the spine.
Scoliosis	Curvature of the spine to one side.
Lordosis	Inward curve of the lower back.
Cervical spondylitis	Arthritis of the spine in the neck.

Fractures	**Meaning**
Simple	Fracture causing little damage to the surrounding tissue. The skin remains intact.
Compound	The bone is sticking through the skin.
Comminuted	The bone breaks into several pieces.
Greenstick	The bone is bent and broken on only one side.
Impacted	One broken fragment is impacted into the end of another.
Complicated	When the broken bone causes damage to other organs.

Skeletal Disease	Meaning
Gout	Type of arthritis in one or more joints, usually the big toe.
Paget's	Normal cycle of bone renewal and repair is disrupted.
Osteoarthritis	Arthritis where bony spurs grow.
Osteoporosis	Weak and fragile bones.
Rheumatoid arthritis	Arthritis that attacks the cells that line the joints.
Rickets	Softening and weakening of bones that can cause bow legs.
Scleroderma	Targets the connective tissue of skin, muscles and organs.
Synovitis	Inflammation of the synovial membrane.
Ankylosing Spondilitis	A form of inflammatory arthritis, affecting the joints of the lower back.
Systemic Lupus Erythematosus	An autoimmune disorder that can affect many parts of the body including the joints, where the body attacks its own tissue.

THE MUSCULAR SYSTEM





The muscular system is the body's network of tissues that controls movement both of the body and within it. Walking, running, jumping: all these actions propelling the body through space are possible only because of the contraction (shortening) and relaxation of muscles.

These major movements, however, are not the only ones directed by muscular activity. Muscles make it possible to stand, sit, speak, and blink. Even more, were it not for muscles, blood would not rush through blood vessels, air would not fill lungs, and food would not move through the digestive system. In short, muscles are the machines of the body, allowing it to work.

The muscles of the body are divided into three main types: skeletal, smooth, and cardiac.

There are just over 650 skeletal muscles in the whole human body. As their name implies, skeletal muscles are attached to the skeleton and move various parts of the body. They are composed of tissue fibres that are striated/striped. The alternating bands of light and dark result from the pattern of the filaments (threadlike proteins) within each muscle cell. Skeletal muscles are called voluntary muscles because a person controls their use, such as in the flexing of an arm or the raising of a foot.

Smooth muscle is found in the stomach and intestinal walls, in artery and vein walls, and in various hollow organs. They are called involuntary muscles because a person generally cannot consciously control them. They are regulated by the autonomic nervous system (a division of the nervous system that affects internal organs such as the heart, lungs, stomach and liver). Unlike skeletal muscles, smooth muscles have no striations/stripes. In a vessel or organ, smooth muscles are arranged in sheets or layers. Often, there are two layers, one running circularly (around) and the other longitudinally (up and down). As the two layers alternately contract and relax, the shape of the vessel or organ changes and fluid or food is propelled along. Smooth muscles contract slowly and can remain contracted for a long period of time without tiring.

Cardiac muscle, called the myocardium, is found in only one place in the body: the heart. It is a unique type of muscle and like smooth muscle it is involuntary, controlled by the autonomic nervous system. The myocardium is composed of thick bundles of muscle that are twisted and whorled into ring-like arrangements. Forming the walls of the chambers of the heart, the myocardium contracts to pump blood throughout the body.

Muscle Tone & Characteristics

Muscle tone refers to the amount of tension or resistance to movement in a muscle.

Muscle tone is what enables us to keep our bodies in a certain position or posture. A change in muscle tone is what enables us to move. For example, to bend your arm to brush your teeth, you must shorten (increase the tone of) the bicep muscles on the front of your arm at the same time you are lengthening (reducing the tone of) the tricep muscles on the back of your arm. To complete a movement smoothly, the tone in all muscle groups involved must be balanced. The brain must send messages to each muscle group to actively change its resistance.

Muscle tissue has four main characteristics which allow it to carry out its function. It is able to respond to stimuli (Excitability). It can contract (Contractibility). It can extend without tearing (Extensibility) and it can return to its normal shape (Elasticity)

Growth and Repair of the Muscles

Muscle hypertrophy is the term used for when a muscle cell grows in size, and the commonest reason for this is due to exercise, where there will be an increase in muscle fibre. When a muscle is damaged (torn) the body has to repair it and will do this by using satellite cells which fuse with the ends of the damaged fibre. If the damage is constant then the process will repeat itself so that more satellite cells are used which will create growth of the muscle.

The charts on the following pages show the main muscles that you will need to have a good knowledge of.

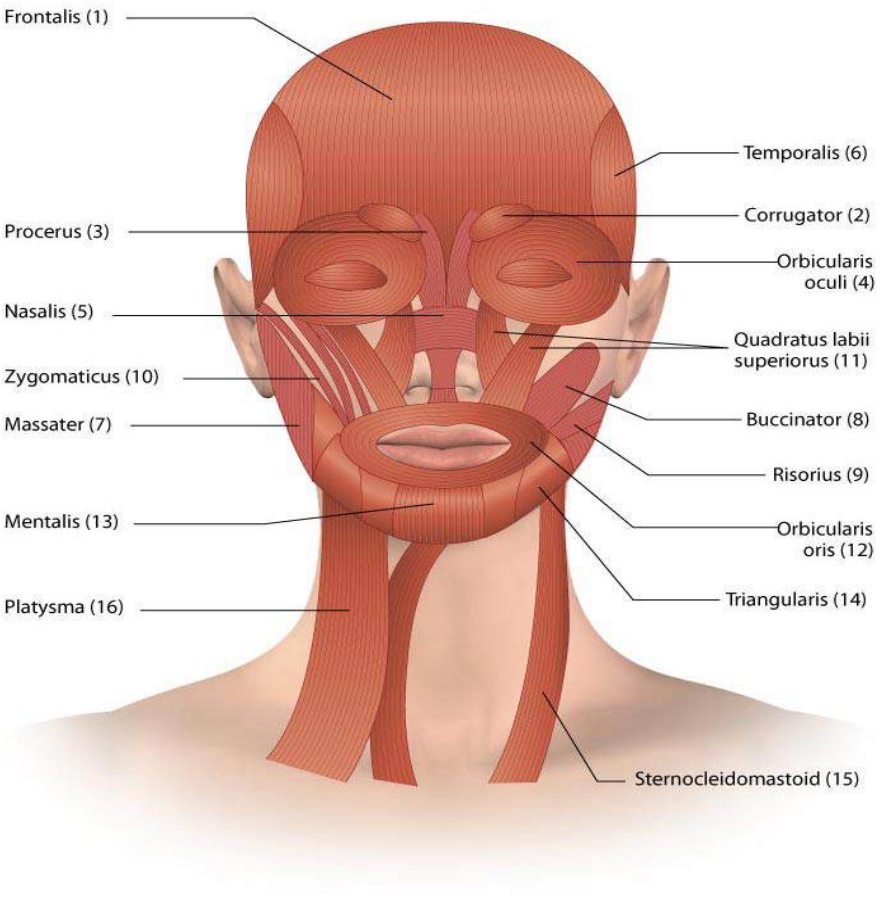
Facial Muscles

The face has several relevant muscles. Below is a chart of their names, position and action.

Name	Position	Action
Frontalis	Upper part of the cranium	Elevates eyebrows; draws the scalp forwards
Corrugator	Inner corner of eyebrows	Draws eyebrows together (frowning)
Procerus	Top of nose between eyebrows	Depresses the eyebrows (forms wrinkles over bridge of nose)

Orbicularis Oculi	Surrounds the eye	Closes the eye (blinking)
Nasalis	Over the front of nose	Compresses nose (causing wrinkles)
Temporalis	Runs downs the side of face towards jaw	Aids chewing; closes mouth
Masseter	Runs down and back to the angle of the jaw	Lifts the jaw; gives strength for biting (clenches the teeth)
Buccinator	Forms most of the cheek and gives it shape	Puffs out cheeks when blowing; keeps food in mouth when chewing
Risorius	Lower cheek	Pulls back angles of the mouth (smiling)
Zygomaticus	Runs down the cheek towards the corner of the mouth	Pulls corner of the month upwards and sideways
Quadratus labii superiorus	Runs upward from the upper lip	Lifts the upper lip; helps open the mouth
Orbicularis Oris	Surrounds the lip and forms the mouth	Closes the mouth; pushes lips forwards
Mentalis	Forms the chin	Lifts the chin; moves the lower lip outwards
Triangularis	Corner of the lower lip, extends over the chin	Pulls the corner of the chin down
Platysma	Front of throat	Pulls down the lower jaw; angles the mouth
Sterno – mastoid	Either side of the neck	Pulls head down to shoulders; rotates head to side; pulls chin onto chest

Diagram of some of the Facial Muscles



Muscles of the Chest and Upper Arm

Name	Position	Action
Pectoralis major	Across upper chest	Used in throwing and climbing; adducts arms
Pectoralis minor	Underneath pectoralis major	Draws shoulders downwards and forwards
Deltoids	Surrounds shoulders	Lifts arms sideways, forwards and backwards
Biceps	Front of upper arm	Flexes elbow; supinates the forearm and hand
Triceps	Back of upper arm	Extends the elbow
Brachialis	Under the biceps	Flexes the elbow

Muscles of the Hand and Forearm

Name	Position	Action
Brachio radialis	On the thumb-side of the forearm	Flexes the elbow
Flexors	Middle of the forearm	Flexes and bends the wrist drawing it towards the forearm
Extensors	Little finger side of the forearm	Extends and straightens the wrist and hand
Thenar muscle	Palm of the hand below the thumb	Flexes the thumb and moves it outwards and inwards
Hypothenar muscle	Palm of hand below little finger	Flexes little finger and moves it outwards and inwards

Muscles of the Abdomen

Name	Position	Action
Rectus abdominis	Front of abdomen from the pelvis to the sternum	Flexes the spine; compresses the abdomen; tilts the pelvis
Oblique's	Internal – *either side of the rectus abdominis* External – *lies on top of the internal oblique's*	Both compress the abdomen and twist the trunk

Muscles of the Back

Name	Position	Action
Trapezius	The back of the neck and collar-bones	Moves scapula up, down and back; raises the clavicle
Latissimus dorsi	Across the back	Used in rowing and climbing; adducts the shoulder downwards and pulls it backwards
Erector spinae	Three groups of muscles which lie either side of the spine from the neck to the pelvis	Extends the spine; keeps body in an upright position
Rhomboids	Between the shoulders	Braces the shoulders; rotates the scapula

Muscles of the Buttocks and Legs

Name	Position	Action
Gluteals	In the buttocks	Abducts and rotates the femur; used in walking and running
Hamstrings	Back of the thigh	Flexes the knee; extends the knee
Gastrocnemius	Calf of the leg	Flexes the knee; plantar-flexes the foot
Soleus	Calf of leg, below the Gastrocnemius	Plantar-flexes the foot
Quadriceps extensor	Front of the thigh: group of four muscles	Extends the knee; used in kicking
Sartorius	Crosses the front of the thigh	Flexes the knee and hip; abducts and rotates the femur
Adductors	Inner thigh	Adducts the hip; flexes and rotates the femur
Tibialis anterior	Front of the lower leg	Inverts the foot; dorsi-flexes the foot; rotates the foot outwards

Muscles of the Leg and Foot

Whilst there are many muscles located in the lower leg, the following are the most relevant:

The muscles that make up the calf - the gastrocnemius and soleus - are the most powerful muscles of the lower leg.

The anterior tibialis is on the front lower leg (related to shin splints), and dorsi flexes the foot (bends ankle) and inverts the foot (turns sole inwards).

The gastrocnemius plantar flexes the foot (points the toe) and pushes the body forward when in motion.

The soleus plantar flexes the foot and maintains standing position.

The Achilles tendon is located in the lower leg.

Here are some definitions of the terminology.

Plantar flex – the action of the gastrocnemius muscle that helps to point the foot down.

Dorsi flex - the action of the anterior tibialis that makes the heel go down and the toes point up.

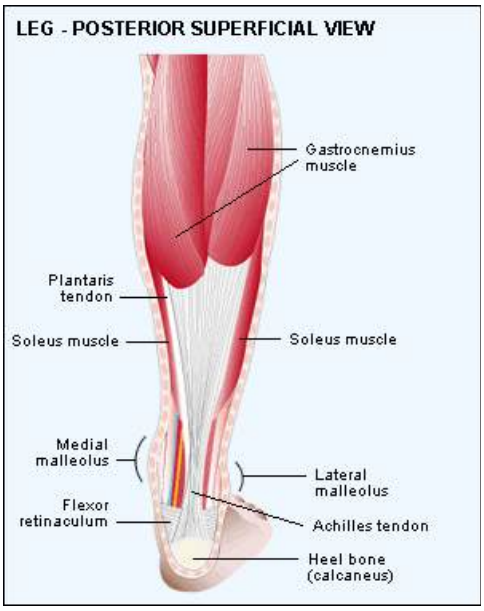
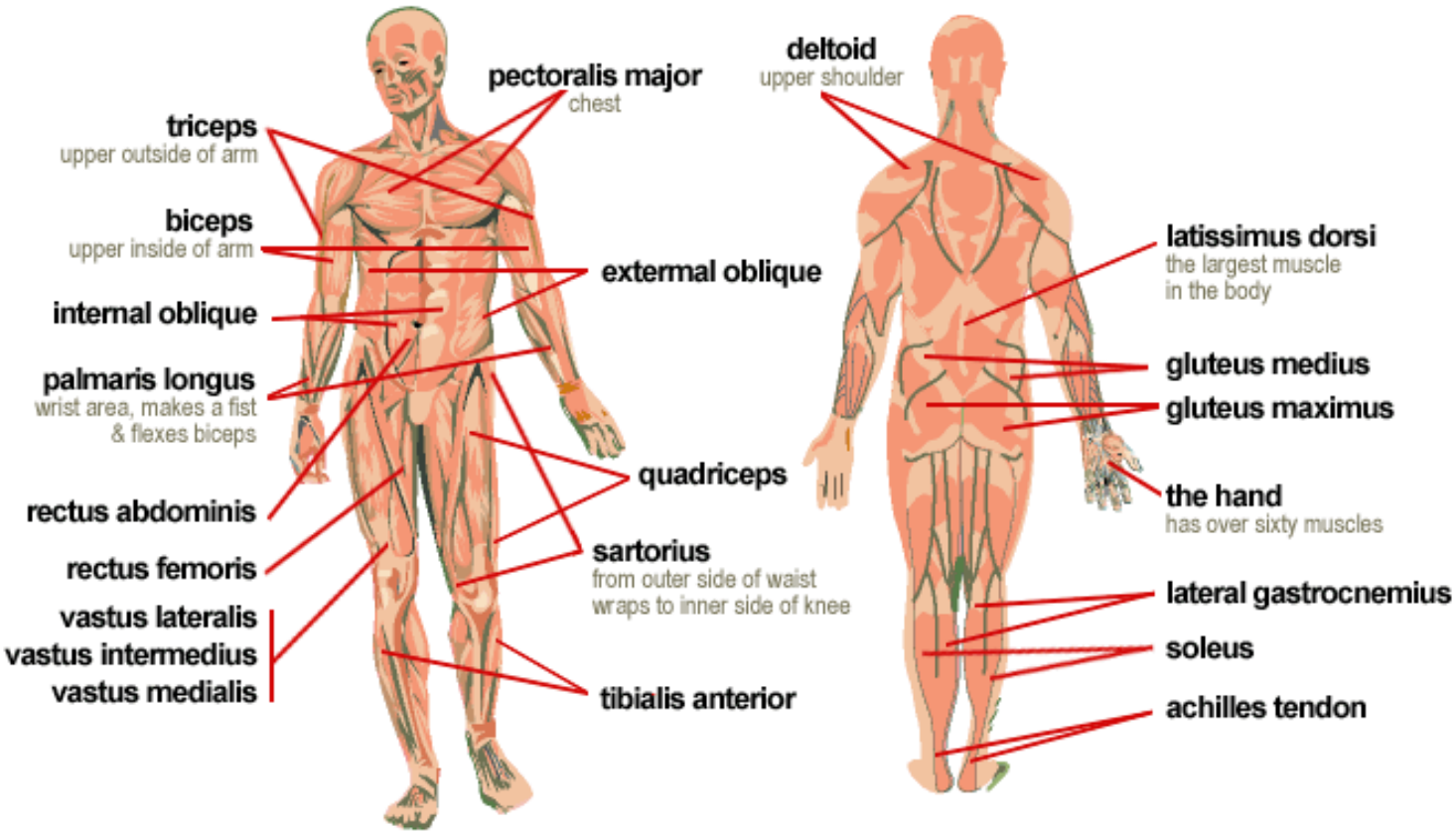


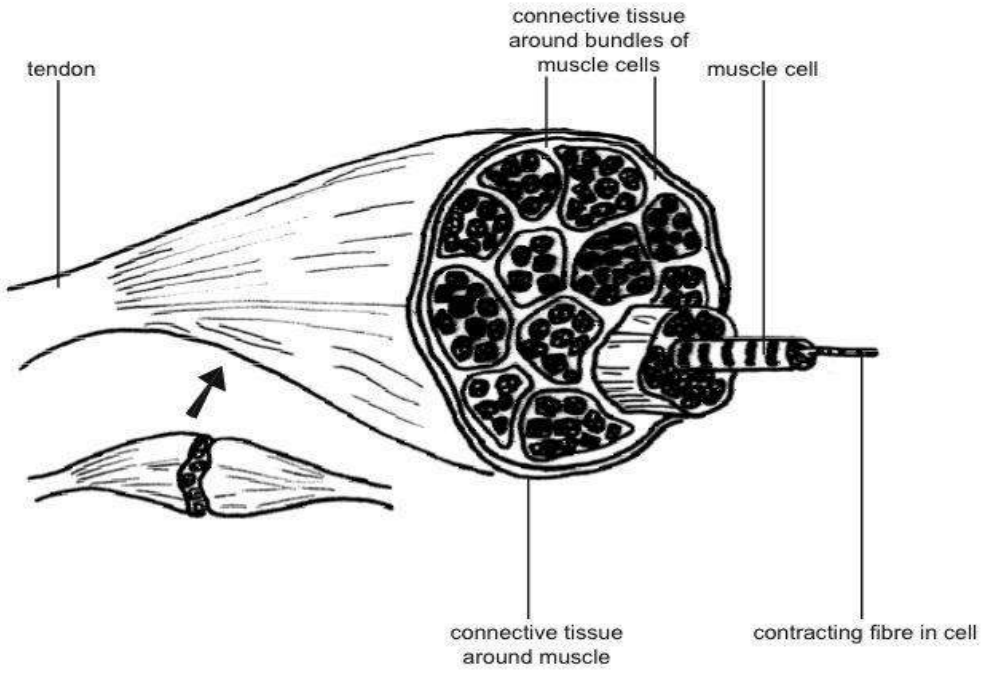
Diagram of some of the Muscles



MUSCLES, TENDONS & LIGAMENTS

Muscles

Muscles are made up of thousands of filaments, comprised of bundles called myofibrils. A complete bundle of myofibril forms just one muscle fibre, with a number of muscle fibres being bound together by connective tissue to form a fascicle. A collection of fascicles make up the whole muscle.



Connective tissue, known as the muscle fascia, also covers the outside of the muscle. Running throughout the connective tissue are blood vessels and nerves.

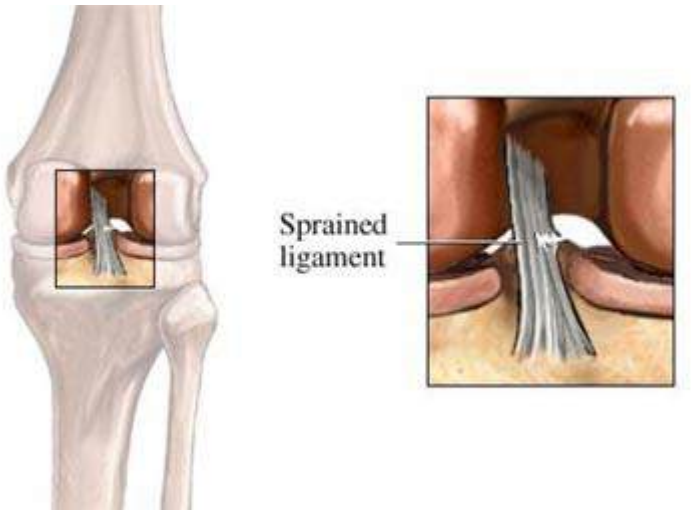
When muscles are damaged, through overuse etc., they are repaired by producing scar tissue, which is made from brittle fibrous material. This can be felt as a knot within the muscle and can be painful for the client. If the scar tissue is recent, it is important to avoid the area as massage can aggravate it. Scar tissue can create a reduction in blood serving that area so circulation is limited to the muscle. The scar tissue can also clamp onto a nerve and create pain in an additional area. Scar tissue can be broken down by using deep massage and finishing with effleurage. Always encourage the client to drink plenty of water to help remove the toxins that will have been released.

Tendons

Tendons are made up of bundles of collagen fibres and create a cord like structure, which is tough but also flexible. It extends from the connective tissues that surround the muscle. Its main function is to attach muscle to bone, and can act as a shock absorber. Tendons can be easily injured and can become torn or inflamed and may need surgery to repair them.

Ligaments

Ligaments are responsible for holding two or more bones together where a joint is formed. They consist of a short band of fibrous tissue, made from strands of collagen fibres, which allows the joint to move freely within a certain range.



If ligaments become loose, from overstretching, the joint itself becomes weak as there is not enough support provided. Ligaments can become damaged if they are over extended.

Pathologies of the Muscular System

Disorder	Signs & Symptoms	Cause
Cramp	Sudden muscle pain, mostly commonly in the calf muscle	The muscle suddenly shortens, which can be due to exercise, nerves or tendons shortening due to age
Sprains	Pain, inflammation, lack of movement	A stretch, tear or twist of a ligament due to force
Strains	Pain, inflammation, lack of movement	A stretch, tear or twist of a muscle fibre due to force
Fibromyalgia	Pain and stiffness in the muscles, ligaments and tendons	No known cause
Muscular Dystrophy	Causes muscles weakness which slowly gets worse and loss of muscle tissue	inherited
Spasticity	An abnormal increase in muscle tone or stiffness in the muscles which will	May occur with spinal cord injury, MS, Cerebral palsy, brain damage

	affect movement	

THE NERVOUS SYSTEM

The nervous system is the means by which the body co-ordinates bodily systems and informs the body about any changes in the environment.
The nerves carry brief electro-chemical messages that trigger appropriate responses in the various parts of the body. The messages (impulses) then react and will do certain tasks such as make the muscles contract, the glands secrete and the blood vessels widen or narrow.

The nervous system is a very complex system in the body but is divided up into two main parts. The Central Nervous System (CNS) and the Peripheral Nervous System (PNS).

The CNS

The Central Nervous System consists of the brain and spinal cord. The main function of this part of the system is to get information from the body and send out instructions. The CNS receives sensory information from all parts of the body. On receipt of this information, the CNS analyses the information, and thoughts, emotions and memories are then generated and stored. The CNS usually responds to nerve impulses by stimulating muscles or glands, which creates an appropriate response to the original stimulus such as a change in temperature.

The Brain

The brain is the most highly developed part of the nervous system and is protected by the skull. A vast network of arteries supply the brain with blood and twelve pairs of cranial nerves originate from the brain. Most of these nerves supply the sense organs and muscles in the head, but some do extend to other parts of the body. The cranial nerves are not part of the CNS but are part of the peripheral nervous system. The surface layer of the brain is called the cerebral cortex, and is often referred to as the gray matter because of the lack of insulation which gives it the white appearance.

The largest part of the brain is called the cerebrum, which in Latin means “brain” and is divided into two sections called hemispheres, which are joined by a band of nerve fibres. These hemispheres are both responsible for different behaviours such as hearing smell and touch.

Brainstem

The brainstem is the lower extension of the brain where it connects to the spinal cord. Neurological functions located in the brainstem include those necessary for survival (breathing, digestion, heart rate, blood pressure) and for arousal (being awake and alert).

Most of the cranial nerves come from the brainstem. The brainstem is the pathway for all fibre tracts passing up and down from peripheral nerves and spinal cord to the highest parts of the brain

Cerebrospinal Fluid (CSF)

This fluid circulates throughout the CNS and is located between the ventricles of the brain and within the spinal cord.

The choroid plexus is the area on the ventricles of the brain where cerebrospinal fluid is produced at the rate of 500 ml/day. It has two important functions. Firstly it is needed to deliver nutrients to structures of the nervous system and to remove any waste. CSF also acts as a shock absorber in the case of trauma to the head through an injury or accident.

The Spinal Cord

The spinal cord is a long nerve tract that runs from the base of the brain, down through the vertebral column. It consists of millions of nerve fibres which will allow messages to be transmitted.

The spinal cord allows the brain to communicate to all areas of the body. It does this using 31 pairs of spinal nerves which branch off from the spinal cord and are part of the PNS.

Neurons

The spinal cord is a thick bundle containing millions of nerve cells called neurons. A neuron is a cell which is very long and is specialised to be able to transmit nerve impulses. Most of this length is made up of the part of the cell called an axon – this is a nerve fibre thinner than a hair.

A neuron is triggered to fire a nerve impulse, which travels along the axon, which then passes from one neuron to another by means of transmitter chemicals. Long axons enable nerve impulses to be transmitted very quickly. Most nerve fibres are encased in a fatty layer called the myelin sheath. This acts like insulation and gives the nerve its white appearance. Unlike an electrical wire, the axon of a neuron can only transmit impulses in one direction. This means that there has to be two types of neurons:

Sensory nerves send messages from the muscles to the spinal cord and the brain. Special sensors in the skin and deep inside the body help people identify if an object, for example if it is hot. Sensory nerve damage often results in tingling, numbness, pain, and extreme sensitivity to touch

Motor nerves enable the brain to stimulate muscle contraction, by sending impulses from the brain and spinal cord to all of the muscles in the body. Damage to the motor nerve can lead to muscle weakness, difficulty walking or moving the arms, cramps and spasms.

The dendrites receive the nerve impulses, which are then carried away by the axon. The terminal button touches a dendrite of another neuron at a junction called a synapse. Dopamine; a chemical neurotransmitter then allows the nerve impulse to be transmitted across the synapse, which allows the message to be conveyed.

The Peripheral Nervous System

This part of the system is made up of all of the nerves and the wiring. This system sends the messages from the brain to the rest of the body. The 31 pairs of spinal nerves are part of the peripheral nervous system.
There are two types of cells in the peripheral nervous system which carries information to the sensory neuron cells and from the motor neuron cell. Cells of the sensory nervous system send information to the CNS from internal organs or from external stimuli.

Much of the peripheral nervous system is concerned with voluntary response, but there are still involuntary responses that are dealt with. This part of the PNS is called the autonomic nervous system as it deals with automatic responses such as smooth and cardiac muscle. The autonomic nervous system comprises of the sympathetic and parasympathetic system. The differences between both of these are the responses that are generated as they work in opposition to each other. For example, the medulla of the adrenal glands is supplied with sympathetic fibres which trigger the release of adrenaline into the blood. The parasympathetic nervous system releases acetylcholine that decreases the heart.

The Olfactory System

The Olfactory System is basically the body's system of smell and it begins at the roof of the mouth and nasal cavity.

Tiny molecules of aroma are inhaled by the nose and are trapped in the nose by hair like nerve endings that pass the aroma on to receptors. These are then carried to the Olfactory Bulb within the limbic region of the brain. As a neural circuit, the olfactory bulb has one source of sensory input (axons from olfactory receptor neurons of the olfactory epithelium), and one output (mitral cell axons).

The olfactory region of each of the two nasal passages in humans is a small area of about 2.5 square centimetres containing in total approximately 50 million primary sensory receptor cells

Pathologies of the Nervous System

Disease	Signs & Symptoms	Cause
Bell's Palsy	Temporary paralysis of the muscles on one side of the face.	Due to an injury of the facial muscle where it becomes inflamed or compressed
Epilepsy	Condition affecting the brain, causing repeated seizures.	Not always known
Meningitis	An infection of the meninges, the membrane that surrounds the spinal cord and brain.	Bacteria or a virus.
Multiple Sclerosis	Scarring of the myelin sheath that protects and coats the nerves, creating problems with vision, sensation etc.	Many theories, such as genetics, environment, autoimmune disease.
Neuritis	An inflammation of a nerve.	Trauma or injury
Cerebral Palsy	Brain damage causing problems with movement and function.	Usually from birth or from trauma.
Depression	A mental or psychological condition which affects mood.	No single cause but can be linked to life events.
Alzheimer's Disease	A form of dementia with memory loss and action slips.	No single factor.
Sciatica	Pain, tingling and numbness in the leg.	When there is damage or pressure on the sciatic nerve.
Vertigo	Sensation that you are moving when you are not	Usually caused by problems to do with the balance mechanism in the ear.

THE ENDOCRINE SYSTEM

The endocrine system is a collection of glands that release hormones which have an influence on almost every cell, organ, and function of the body. Hormones are chemicals that carry messages from one cell to another through the bloodstream. The endocrine system regulates our mood, growth and development, the function of tissues, as well as metabolism and sexual function.

The endocrine system is in charge of body processes such as breathing and cell growth, which are controlled by hormones that transfer information and instructions from one set of cells to another. Many different hormones circulate throughout the bloodstream, and each one has a specific role. The levels of hormones circulating can be influenced by factors such as stress, infection, and changes in the balance of fluid and minerals in blood. In summary, the endocrine system produce's chemicals called hormones, which are secreted directly into the blood stream, where they are then carried to their target organ.

The major glands that make up the human endocrine system include the:

Hypothalamus
Pituitary gland
Thyroid
Parathyroid's
Thymus
Adrenal glands
Pineal body
Reproductive glands
Pancreas

A gland has more than one function. It produces and secretes chemicals but it also selects and removes materials from the blood, processes them, and then secretes the finished chemical product to be used in a specific area in the body.

There are two different types of glands. Exocrine glands have ducts that carry their secretory product to a surface. Such glands include the sweat, the mammary glands and the sebaceous glands. Endocrine glands release hormones directly into the blood stream for transportation around the body. Some other organs in the body, but not part of the endocrine system, also release hormones, such as the brain and heart.

The workings of the endocrine system

Once a hormone is secreted, it travels from the endocrine gland through the bloodstream to target cells designed to receive the message. During the transit to the cells, the hormones have special proteins bound to them. These proteins act

as carriers that control the amount of hormones that are available to interact with and affect the target cells. Once at the target cells, receptors within the cells attach themselves to specific hormones so that only those hormones communicate with the cells. The hormone locks onto the cells receptors and chemical instructions are transmitted to inside the cell. Once the hormone level reaches the required amount, any further secretions are controlled by mechanisms to maintain it.

We are going to look at each one in turn:

The hypothalamus

The hypothalamus is a small cone shaped structure of specialized cells that is located in the lower central part of the brain just above the brain stem. It acts as the primary link between the endocrine and nervous systems through the pituitary gland. The hypothalamus has to respond to many different signals and has the following functions:

Controls the autonomic functions
Controls emotions
Plays a significant role in homeostasis
Controls motor functions
Regulates food and water intake
Regulates the sleep and wake cycle

The hypothalamus controls the pituitary gland, which is sometimes referred to as the master gland, and sends hormones down to the pituitary gland.

The Pituitary Gland

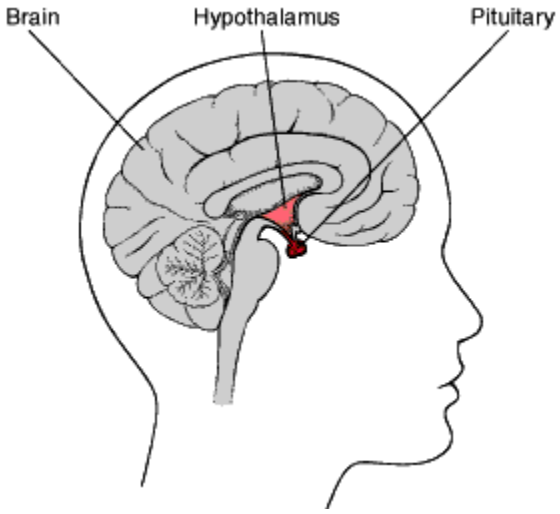
Around the size of a pea and located just below the hypothalamus, this tiny gland has a powerful effect on the body. This master gland makes hormones that control other endocrine glands, such as the thyroid and adrenals, and receives its information from the hypothalamus, for example a change in temperature.

The pituitary is divided into two parts:

The anterior lobe regulates the thyroid, adrenals and reproductive glands.

The posterior stores and releases the hormones from the hypothalamus without making any hormones itself. For example the antidiurectic hormone is released as it prevents excess water being excreted by the kidneys.

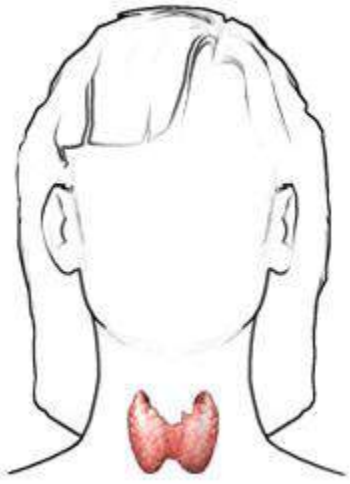
The pituitary gland also secretes endorphins that act on the nervous system to respond to pain as well as secreting the hormone FSH and luteinizing hormone that are vital for reproduction.



Thyroid Gland and Parathyroid

This gland is located in the front part of the lower neck and is shaped like a butterfly. It produces the hormone Thyroxine and triiodothyronine, which controls the rate at which cells burn fuels from food to produce energy. This phrase is called metabolism and deals with body temperature and weight. Iodine is found in the thyroid hormones which the thyroid needs to make the hormones.

If there is a lack of iodine in the diet, the thyroid cannot make the hormones. Hormones produced by the thyroid also aid in the development of the brain and nervous system in children. The release of these hormones is controlled by



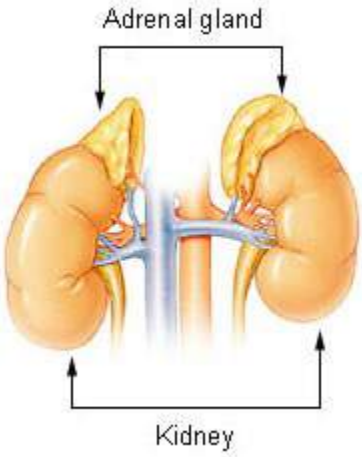
thyrotopin, secreted by the pituitary gland. Attached to the pituitary are four small glands, called the parathyroid's which release the parathyroid hormone that regulates the levels of calcium in the blood.

Thymus

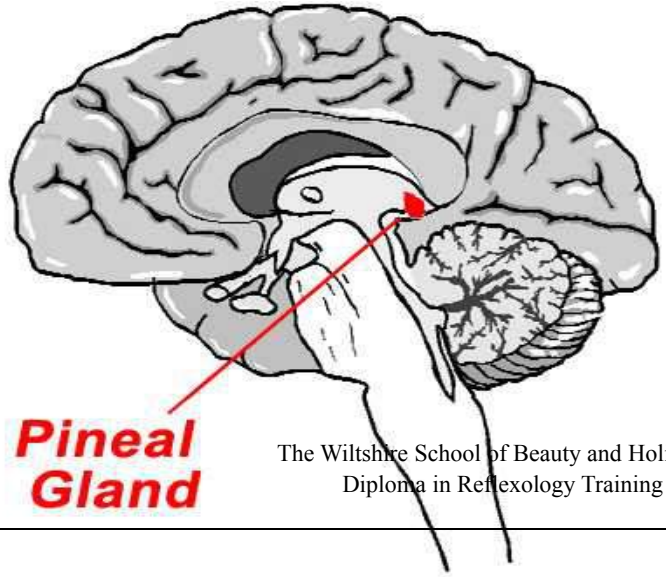
The thymus is a small gland that is situated behind the top of the breastbone in front of the trachea and plays an important role in immunity. The thymus increases in size and activity until puberty then begins to shrink. The thymus secretes several hormones which help develop the immune system, one in particular called thymosin are produced that stimulate the development of antibodies as well as producing T-lymphocytes which are white blood cells that fight infection and destroy any abnormal cells.

The Adrenal Glands

The body has two triangular adrenal glands, one on top of each kidney. The adrenals work with the hypothalamus and the pituitary gland by stimulating the adrenals to produce corticosteroid hormones. The adrenal glands consist of two parts, each one producing a set of hormones which has a different function. The adrenal cortex, which is the outer part, produces hormones called corticosteroids directly into the blood stream which help regulate the salt and water balance in the body. The cortex also controls the body's use of fats, proteins, and carbohydrates. The adrenal medulla, which is the inner part of the gland, is not essential for life but secretes epinephrine which increases blood pressure and the heart rate when under stress – also called adrenaline.



The Pineal Gland



This gland is situated in the middle of the brain, around a quarter or an inch long and secretes a hormone called melatonin when it's dark that regulates the sleep – wake cycle. This is why some people feel depressed in the dark winter months

when they may be producing too little melatonin. The pineal gland is shaped like a pine cone and helps to promote sleep as it is sensitive to light. But can also affect reproduction by depressing the activity of the gonads.

Reproductive glands

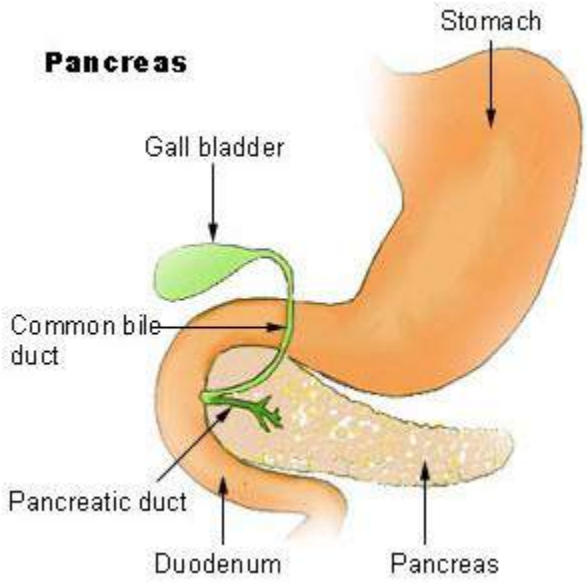
The gonads are the main source of sex hormones in males, located in the testes and in females the ovaries. The secretion of sex hormones by the gonads are controlled by the pituitary gland hormones such as FSH and LH

The testes secrete hormones called androgens, with the principle one being testosterone. Production of testosterone begins during foetal development, and nearly ceases during childhood. All of these hormones play an important role in puberty and sexual development as well as producing sperm by the testes.

The ovaries secrete two female hormones; oestrogen and progesterone, with the former being involved in the development of features such as breast growth and the accumulation of body fat around the hips and thighs. Progesterone causes the uterine lining to thicken in preparation for pregnancy.

The Pancreas

This organ is situated in the abdominal cavity behind the stomach, with the right side being the widest part and being attached to the duodenum. This organ is classed as a compound gland as it works as both an exocrine and endocrine gland, with the exocrine part secreting digestive hormones and the endocrine part producing two important hormones; insulin and glucagon.



A part of the pancreas, called the Islets of Langerhans secretes glucagon which tells the liver to take carbohydrate out of storage to raise a low blood sugar level if there is one. If the blood sugar level is too high the islet cells secrete insulin to tell the liver to take excess glucose out of circulation to lower it. Both hormones insulin and glucagon therefore work together to maintain a steady level of glucose, or sugar, in the blood and to keep the body supplied with fuel to produce and maintain stores of energy. If there is not enough insulin made by the body, the blood sugar will rise and become diabetes mellitus.

The exocrine part makes pancreatic juices, and as they are made they flow into the main pancreatic duct which joins the common bile duct. This connects the pancreas to the liver and also the gallbladder.

To summarise the glands and organs:

Gland/Organ	Hormone	Process
Pituitary Gland	Trophic hormones, Growth hormones, luteinising hormone (LH), Follicle stimulating hormone (FSH)	Stimulates production of hormones from other glands Milk production
Hypothalamus	Hormone releasing factors, anti-diuretic hormones, Oxytocin	Stimulates pituitary gland to produce hormones, control of water Helps uterine contraction in childbirth and stimulates the let down reflex for breastfeeding
Thyroid	Thyroxine	Controls rate of body processes and heat production and energy production from food
Parathyroid glands	Parathormone or parathyroid hormone	Controls the amount of calcium in blood and hormones
Pancreas	Insulin	Controls blood sugar
Adrenal glands	Adrenaline Cortisol Aldosterone Androgens	Controls emergency action, response to stress Stress control, conversion of fats, proteins and carbohydrates to glucose. Acts on the kidneys to control salt and water balance
Testes	Testosterone	Control of sperm, growth and development of male features at puberty, beard growth
Ovaries	Progesterone Oestrogen Placental hormone (pregnancy only)	Helps control normal progress of pregnancy. Interacts with FSH and LH and oestrogen to control the menstrual cycle

Stomach wall	Gastrin	Starts acid production by stomach
Small intestine	Secretin	Triggers release of digestive enzymes from pancreas

Homeostasis

Homeostasis involves maintaining a constant internal environment in order for the body to function, regardless of the external conditions. The skin plays an important role in this as it contains heat and cold receptors in the skin which regulates the body temperature, keeping it at around 37°C.

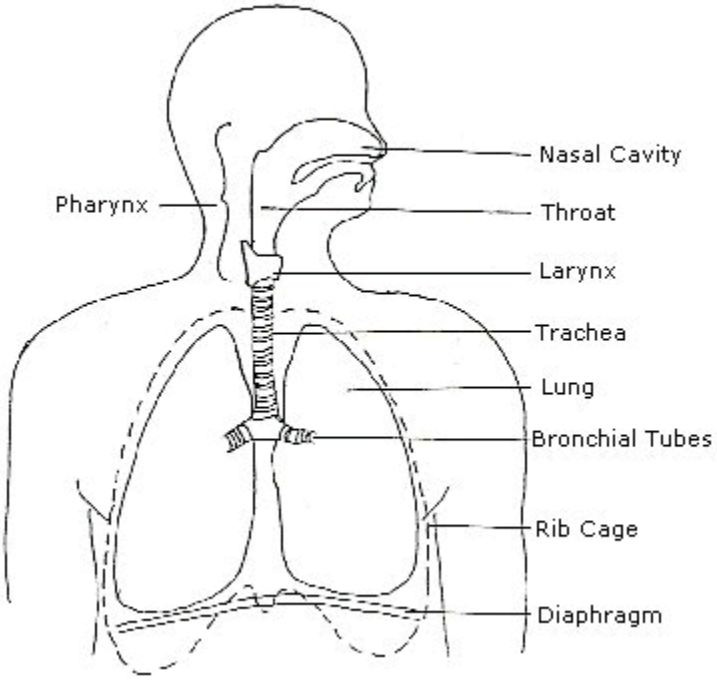
The glands that we have discussed also reduce the growth of fungi by producing acidic secretions, as well as responding to signals from the hypothalamus in the brain. These nerve signals send messages to the glands which stimulates the production of sweat to cool the body down.

The blood vessels within the skin also respond to the hypothalamus and dilate to allow blood to flow closer to the skin and allow heat to be lost, as well as constrict to retain heat within the body when the temperature drops.
The pigmented cells, melanocytes also play a part in homeostasis as they act as a barrier from the damaging effects of ultraviolet light.

Pathologies of the Endocrine System

Disease	Meaning
Acromegaly	Too much growth hormone, causing body tissues to gradually enlarge.
Thyrotoxicosis	When there is too much thyroid hormone in the body
Addison's Syndrome	Disorder of the adrenal glands affecting the production of adrenaline and cortisol.
Cushing's syndrome	A range of symptoms if there is too much cortisol in the blood.
Goitre	An abnormal swelling of the thyroid gland.
Diabetes	The amount of glucose in the blood is too high because the body cannot use it properly.
Polycystic Ovary Syndrome	Condition which affects the workings of the ovaries, causing cysts to form around the edge of the ovaries.

THE RESPIRATORY SYSTEM



The main function of the respiratory system is to allow oxygen to enter the body and for carbon dioxide to leave. This is called "gas exchange" and takes place on an internal level into tissues and an external level into the lungs. It is vital that it takes place for life to continue.

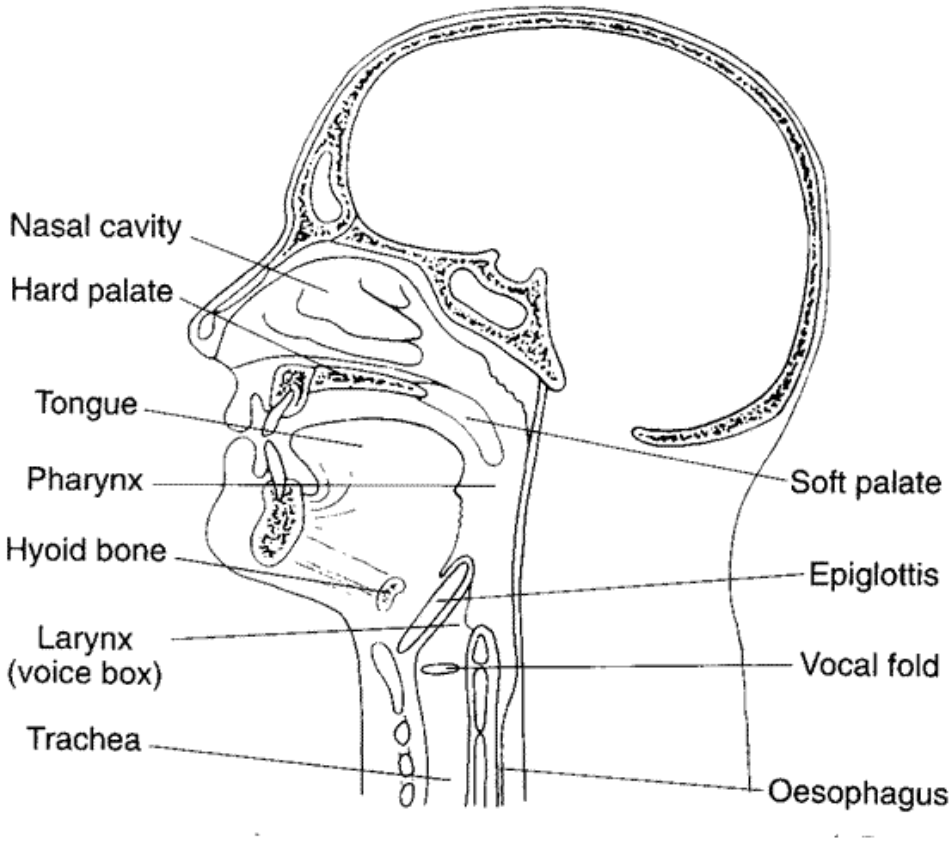
The circulatory system is constructed to allow this gas exchange to take place. Below are the organs within the system.

The Mouth allows an intake of air if there is a high demand or if the nasal passage is blocked in any way. It is an oval shaped cavity which is lined with a mucous membrane. The mouth contains the soft and hard palate, forming the roof of the mouth, as well as the gums in which the teeth sit. It is not ideal to continually breathe through the mouth as the air is not as well filtered and it can cause other medical problems.

The nasal cavity traps particles that enter the passages by containing shelf-like structures called turbinate's. Any material that is deposited in the nose is transported by ciliary action to the back of the throat in around 10-15 minutes. The vascular mucus membranes of the nose will also warm and moisten the air as it is inhaled. The mucus which is produced will also be moved to the back of the pharynx for either swallowing or expectoration. The nose is formed by the two nasal bones and by cartilage and is divided by a septum. The nose also acts as a

sounding chamber for the voice as some of the bones surrounding the nasal cavity are hollow. These hollows are called paranasal sinuses and allow the voice to become resonant, lighter and to secrete mucus to help with air filtration.

The pharynx (throat) is a muscular cavity that begins from behind the nose to the beginning of the voice box and the oesophagus. The pharynx is divided into three sections. The nasopharynx lies behind the nose and can be seen when the mouth is wide open, the oropharynx which lies behind the mouth, and the laryngopharynx which lies behind the larynx. The upper part of the pharynx lets air pass through, whilst the lower parts permit air, foods and fluids to pass. When it is necessary to swallow, breathing will stop as the oropharynx becomes blocked off from the nasopharynx as the soft palate is raised, as it is impossible to be able to breathe whilst swallowing.

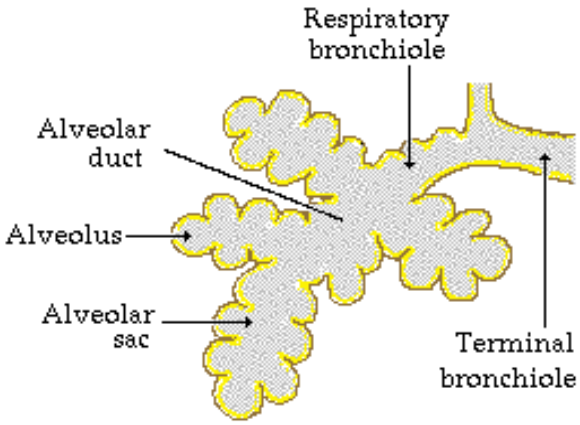


The larynx, also known as the voice box, is a 2" tube shaped structure which is located at the entrance of the trachea. The larynx contains two vocal cords, which will vibrate together when air passes between them. This gives us the sound of the voice. The larynx is made up of several irregular cartilages and the lobes of the thyroid gland are on either side. The oesophagus, which is the tube that carries food from the mouth to the stomach, is just behind the trachea and the larynx. Both openings of the oesophagus and the larynx are close together in the throat, so when the act of swallowing occurs, a flap called the epiglottis keeps the food out of the windpipe by moving down over the larynx.

The trachea, also known as the windpipe, is a tube like structure consisting of between 16 – 20 rings of cartilage that joins the nose and mouth to the lungs. It measures approximately 10-12" in length and runs from the lower part of the larynx to the lungs by dividing into the bronchi. The trachea contains an epithelial lining that secretes mucus, which traps any dust. It is then swept upwards by the cilia towards the larynx away from the lungs.

The bronchi are supported by cartilage and are formed when the trachea forks into two branches, making up the left and right bronchi. These branches then divide again, with the right Bronchus being wider and shorter than the left. The right bronchi then divide into two branches for the middle and lower lobes. The left bronchi is nearly double in length, being 5cm long and divides again, one for each broncho-pulmonary segment. Within the lungs, the bronchi divide again into smaller bronchi, called bronchioles. There are numerous glands in the wall of the bronchi which secrete slimy mucus, which helps to trap dust and any other particles, which are then propelled upwards to the mouth by cilia.

The bronchioles are the first divisions of the bronchi that no longer contain cartilage, but are made up of a single layer of epithelial cells. The bronchioles are smaller than one millimetre in diameter and control the air distribution into the lungs. The bronchiole end in the alveoli.

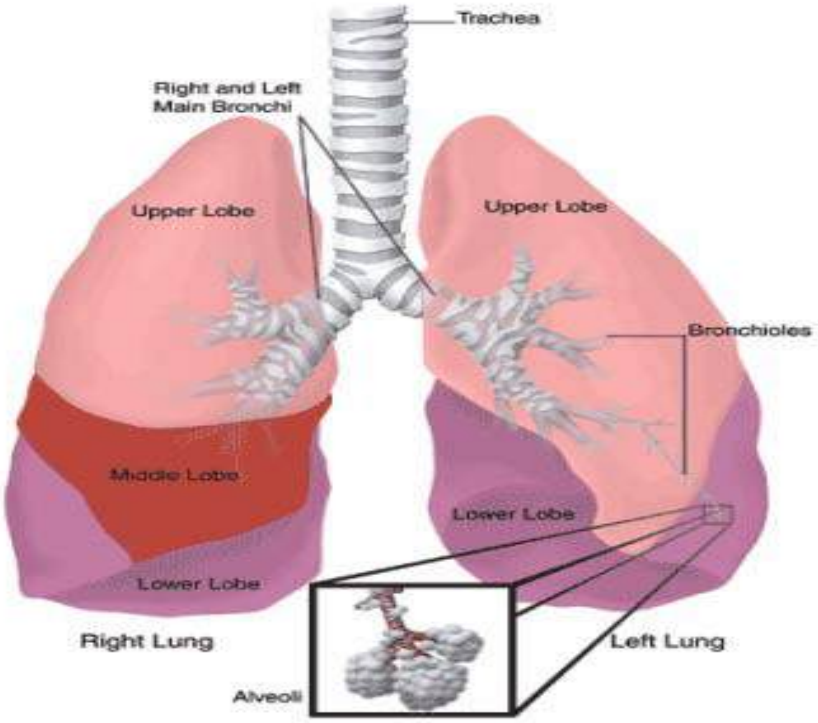


The alveolar sac contains around 300 million alveoli, which are arranged in grape like clusters to increase the surface area, which can become reduced due to irritants such as dust. It is here that gas exchange takes place. To allow this to happen, the alveoli are constantly moist and are surrounded by a network of capillaries. Oxygen is in a higher concentration in the alveoli than in the blood and so therefore it is able to diffuse into the blood through a thin layer of cells. The reverse happens with carbon dioxide, which is a higher concentration in the blood than the alveoli and so it diffuses into the alveoli through the thin layer of cells.

The lungs are located in the thorax and are cone shaped. They make up one of the largest organs of the body with a huge surface area. The main role of the lungs is

to exchange gas; oxygen for carbon dioxide and on average a person breathes 25,000 times a day, moving 10,000 litres of air a day.
Mucus is produced in the lungs that traps any inhaled particles, which can be removed by coughing.
The lungs are situated in a space, known as the pleural cavity. Each lung is covered in two thin layers of a single celled membrane called pleura which slide back and forth over each other every time a breath is taken to allow the lungs to expand and contract. There is a small amount of fluid here to prevent friction. The pleura, which are connected to the chest wall, are called the parietal pleura, and the pleura that are attached to the lung are called visceral pleura.

The front and back of the lungs are protected by the ribs, and the intercostals muscles help allow the chest wall to move. The front of the ribs contains costal cartilage which connects the sternum and the ends of the ribs. The back of the lungs contains the transverse processes of the thoracic vertebrae. The lungs differ on either side with the right lung having 3 lobes; the superior, middle and inferior lobe and the left lung only having the superior and inferior lobe.



The Diaphragm is a dome shaped muscular sheet that extends along the bottom of the rib cage and inserts into the lower ribs. The diaphragm relaxes during inhalation to allow more room in the thoracic cavity, which in turn creates a suction to allow air to be drawn into the lungs. When you exhale, the diaphragm expands which reduces the amount of space in the cavity for the lungs, which forces the air out.

The Intercostal Muscles occupy the space in-between the ribs and are made up of two types. The internal muscles are on the inside of the rib cage and extend from

the front of the ribs and go around the back, and the external muscles are on the outside of the ribs and cover the back of the rib, around to the bony part at the front. They receive messages from the brain to control breathing, and are responsible for working alongside the diaphragm.

Breathing Mechanism

To be able to take in oxygen and allow carbon dioxide to be expelled, a complex procedure needs to take place.

Inhalation:

The diaphragm contracts and moves downwards
This forces the rib cage muscles to contract
The ribs then move up and out
There is decreased pressure in the chest
The air is sucked down into the lungs through:
Nose, pharynx, larynx, trachea, bronchus, bronchiole and to the alveoli
Once the oxygen is in the alveoli, gas exchange takes place so that the carbon dioxide is ready to be exhaled. The reverse then happens.

Exhalation:

The muscles of the diagram and intercostals relax
The size of the thorax reduces
Air is forced out of the lungs

Gas Exchange

Once the air that we have inhaled reaches the lungs, the 21% of dissolved oxygen then diffuses through the alveolar lining cells of the alveolar and the walls of the capillaries and enters the plasma of the blood.
From the plasma, the oxygen then diffuses into the red blood cells (erythrocytes) and combines with the haemoglobin to form oxyhaemoglobin.
The newly oxygenated blood then leaves the capillary network and enters the pulmonary veins to be transported back to the heart to be pumped around the body for its use.
Once the oxygen has travelled the body, the deoxygenated blood leaves via the capillary network from the pulmonary artery back into the alveoli.
The exhaled breath still contains 16% oxygen and 4 ½ % carbon dioxide.

Breathing Patterns

Shallow Breathing

When we take short intakes of breath, the Intercostal muscles around the ribs tend to work harder than the diaphragm, which in turn can cause the diaphragm to become weak. Stress and tension can be the cause of shallow breathing and it can lead to a lack of oxygen entering the body, as well as constricting the chest and lung tissue.

Deep Breathing

By using the diaphragm muscle, we are able to fully fill our lungs with air and therefore take in the largest amount possible. The abdominal muscles also play an important role in deep breathing.

Pathologies of the Circulatory System

Disease	Signs & Symptoms	Cause
Emphysema	Shortness of breath due to obstruction.	Permanent damage of the lungs due to smoking or working in an environment with chemicals.
Bronchitis	Burning sensation during breathing, cough, sore throat.	An infection of the airways caused by virus or bacteria.
Pneumonia	Cold feeling, difficulty breathing, cough, fever.	Inflammation of the tissue within the lungs.
Tuberculosis	Persistent cough, weight loss, night fevers.	Bacterial infection, usually affecting the lungs but can affect other body systems.
Rhinitis	Itching and sneezing and irritation of the nose.	Inflammation inside the nose, usually due to an allergy.
Laryngitis	Sore throat, pain in the voice box, mild fever.	Inflammation of the larynx (voice box) due to infection or damage.
Pharyngitis	Sore throat.	Bacterial or viral infection.

THE CARDIOVASCULAR SYSTEM

The main functions of this system are to supply oxygenated blood throughout the body, and to remove waste products, such as carbon dioxide. It is able to carry out this task by using three organs; the blood, vessels and the heart.

Blood

If we think of the circulatory system as a transportation service then the blood would be the bus. Carrying and distributing oxygen, nutrients, antibodies, heat and hormones, it travels through the body, whilst also collecting waste products, such as carbon dioxide, which need to be removed. The blood is made up of 4 components and an adult has 10.6 pints.

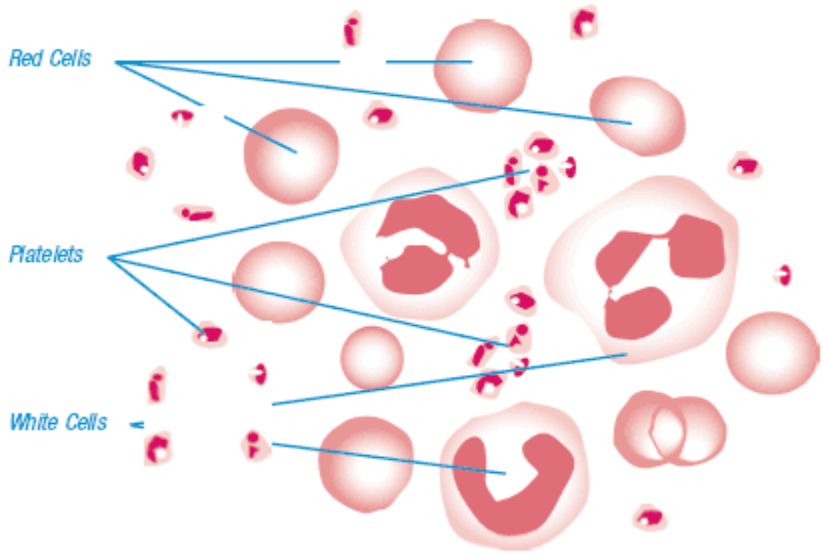
Plasma is a straw coloured fluid and accounts for about half of the total volume of blood. It is necessary for the suspension of blood cells and is made up of 90% water. The major protein in plasma is albumin which prevents fluid from leaking out of the blood vessels into tissues. Plasma also supplies water when additional liquids are needed in the tissues of the body, as well as play a crucial role in regulating the body temperature by carrying heat around the body. The Plasma contains dissolved substances, most of these are useful and are carried to places where they are to be stored or used. The products of digestion including glucose, amino acids, mineral salts and vitamins are carried from the small intestines (ileum) to other organs. Without plasma, the life-giving blood cells would be left without transportation.

Red blood cells (erythrocytes) carry oxygen, which is needed by the cells to produce energy, and are formed in the bone marrow of long bones. They are the most common type of blood cell and live for around 120 days and make up around 40% of the bloods volume. These blood cells contain protein chemical called haemoglobin which is bright red in colour. Haemoglobin allows the oxygen to be collected in the lungs by binding its molecules with the oxygen and then distributes it around the body. Carbon dioxide is then collected to allow it to be removed. If you have a lack of haemoglobin, you may develop a condition called anaemia.

White blood cells (leucocytes) are involved in the protection of the body and are on the continual look out for any sign of bacteria. There are five main types of white blood cells which all have a differing role. The white blood cells that are most numerous are Neutrophils which kill and ingest foreign material. Lymphocytes help protect against viral infections and produce antibodies. Monocytes ingest dead and damaged cells, Eosinophils protect by killing parasites and destroying some cancer cells as well as being involved in the allergic response, as well as the basophils.

White blood cells have a shorter life expectancy than red, only surviving for about 3 weeks. A drop of blood can contain anywhere from 7,000 to 25,000 white blood cells at a time. If an invading infection fights back and persists, that number will significantly increase.

Platelets, also called thrombocytes are necessary for the blood clotting process to take place. They are irregularly-shaped and colourless and have a sticky surface that lets them form clots to stop bleeding. When you cut yourself, platelets in the blood react to the air and calcium, vitamin K, and a protein called fibrinogen are released. This forms a blood clot, which seals or plug's the hole and later on becomes a scab. A scab is an external blood clot that we can easily see, but there are also internal blood clots. A bruise, or black-and-blue mark, is the result of a blood clot. Clotting is necessary, but sometimes it can be very dangerous as if a blood clot forms inside of a blood vessel, it can block the flow of blood, cutting off the supply of oxygen.



Blood Vessels

If the blood acts as a bus, then the blood vessels are road networks that it travels along. There are three main vessels, and the blood follows two pathways known as pulmonary and systemic.

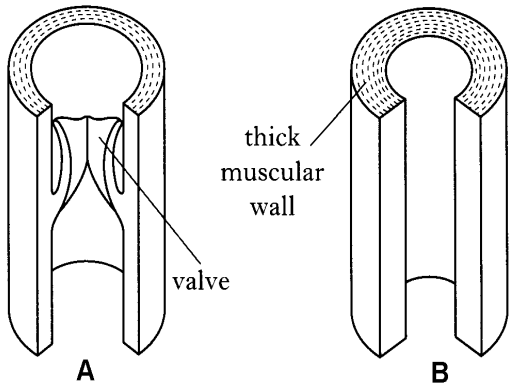
Arteries always carry blood away from the heart, with the exception of the pulmonary artery (we will look at that later). They are the biggest of the vessels and carry oxygenated blood. The walls of the artery are muscular and elastic which helps allow the blood to travel the body. The aorta is the largest artery of the body, which originates from the heart, and branches out into smaller arteries, called arterioles which branch into capillaries. An artery has three layers. An outer layers of tissue a muscular middle and an inner layer of epithelial cells. There are two types of arteries. Pulmonary arteries carry blood from the heart to

the lungs and systemic arteries carry blood to the rest of the body. The smallest arteries are called arterioles and deal with delivering blood from the arteries to the capillaries

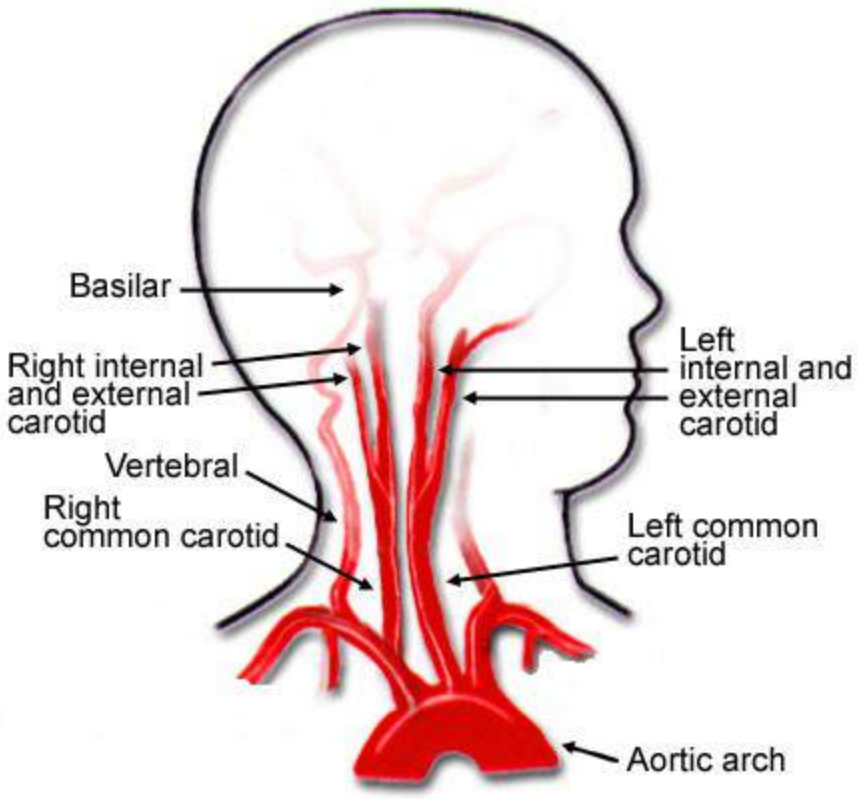
Veins carry deoxygenated blood to the heart, under low pressure, in order for it to get sent to the lungs. Veins contain valves, which act like doors - preventing the blood from flowing in the wrong direction. The largest vein is the vena cava which leads to the right atrium of the heart. Veins also have three layers: an outer layer of tissue, muscle in the middle, and a smooth inner layer of epithelial cells, but the layers are thinner and contain less tissue. Because it lacks oxygen, the blood that flows through the veins has a deep red colour. The walls of the veins are rather thin which makes the blood visible through the skin on some parts of the body, such as the hands, wrists and ankles. As the skin refracts light, the deep red colour actually appears a little blue from outside the skin. Veins can be classified into four different types. Pulmonary veins carry blood from the lungs to the left atrium of the heart. Systemic veins carry deoxygenated blood from the remainder of the body to the right atrium of the heart. Superficial veins are to be found close to the surface of the skin and deep veins are located deep within muscle tissues

Capillaries are very small vessels that transport blood from the arteries to the veins. They have thin walls, made up of endothelium (single layer of overlapping flat cells) that allows substances such as nutrients to exchange. The capillaries are so small that red blood cells have to travel through them in single file. The flow of blood through the capillaries is controlled by structures called precapillary sphincters, which are located between arterioles and capillaries. They contain muscle fibres that allow them to contract. Blood flows freely to the capillary beds of body tissue when the sphincters are open, but when the sphincters are closed blood is not allowed to flow. Plasma moves out of the capillaries and becomes tissue fluid. This fluid bathes the cells in nutrients and oxygen, some waste and excess fluids move into the lymphatic vessels, with the carbon dioxide and waste returning to the capillaries.

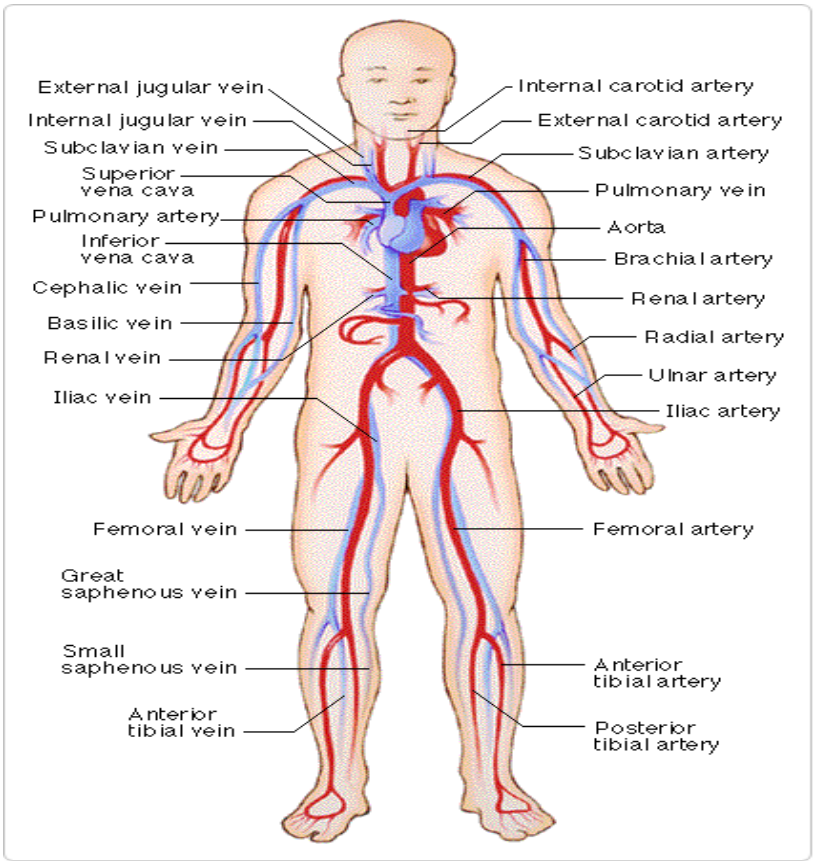
Diagram of a vein and an artery



Arteries of the neck



Arteries of the Body



The Heart

The heart is a muscular organ that is primarily a shell containing 4 chambers, which are the right and left atrium and the right and left ventricle. Its main function is to act as a pump and maintain a constant circulation of blood around the body.

The Right Atrium

This chamber receives de-oxygenated blood from the body through the superior vena cava (head and upper body) and inferior vena cava (legs and lower torso). An impulse is sent via the sinoatrial node, which causes the cardiac muscle tissue of the atrium to contract, allowing the tricuspid valve, which separates the right atrium from the right ventricle to open. This allows the de-oxygenated blood which has collected in the right atrium to flow into the right ventricle.

The Right Ventricle

This chamber receives de-oxygenated blood from the atrium as it contracts. The pulmonary valve leading into the pulmonary artery is closed which allows the ventricle to fill with blood, then to contract. As this contraction occurs, the tricuspid valve closes and the pulmonary valve opens. The closure of the tricuspid valve prevents blood from backing into the right atrium and the opening of the pulmonary valve allows the blood to flow into the pulmonary artery toward the lungs.

The Left Atrium

This chamber receives the newly oxygenated blood from the lungs through the pulmonary vein. A contraction triggered by the sinoatrial node progresses through the atrium and the blood passes through the mitral valve into the left ventricle.

The Left Ventricle

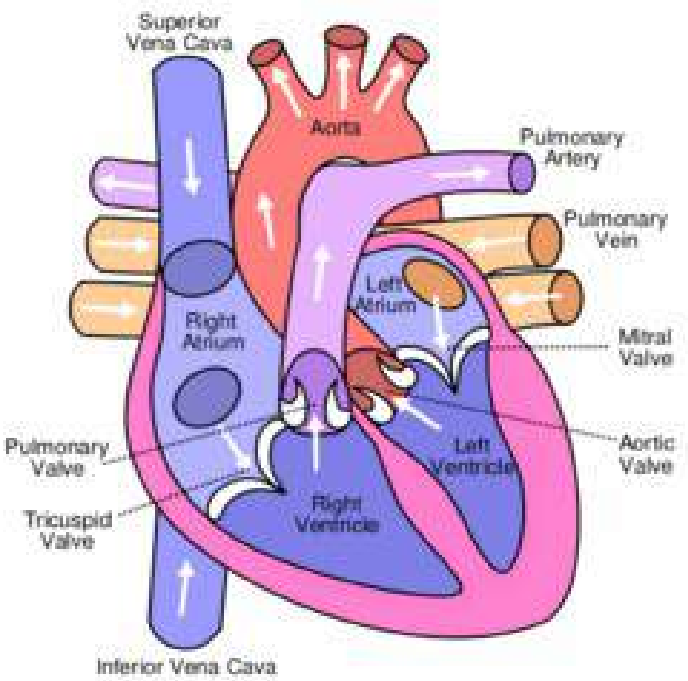
This chamber receives the oxygenated blood as the left atrium contracts, and the blood passes through the mitral valve into the left ventricle. The ventricle is able to fill with blood as the aortic valve leading into the aorta is closed. Once the ventricle is full it contracts, the mitral valve closes and the aortic valve opens. The closure of the mitral valve prevents blood from backing into the left atrium and the opening of the aortic valve allows the blood to flow into the aorta and flow throughout the body.

The right side of the heart is completely separate from the left side by the septum to prevent blood flowing into the opposite side.

The function of the heart is to pump blood around the body and is approximately the size of a fist. The heart walls are made up of a special type of muscle called cardiac muscle which allows it to contract and relax. The heart is centrally located but is tilted so that most of the heart muscle is to the left. The left ventricle contracts most forcefully, so you can feel your heart beating stronger on the left side of your chest.

Deoxygenated blood enters the right side of the heart via the inferior and superior vena cava into the right atrium.
From here it travels through the tricuspid valve, which shuts off once the blood fills the right ventricle.
The blood then passes through the pulmonary valve into the pulmonary artery to the lungs to allow the carbon dioxide to be removed and to collect oxygen.
Oxygenated blood then enters the left side of the heart via the pulmonary vein and enters the left atrium.
It passes through the mitral valve that closes once the left ventricle is full.
The ventricle now contracts and forces the blood through the aortic valve into the aorta so that blood is pumped to the head and rest of the body.

The function of the valves is to prevent the blood from flowing back the wrong way. The bodies' blood is circulated through the heart more than 1,000 times per day, and beats an average of 70 to 80 times per minute. Many factors can affect the pulse, such as exercise, age, gender, emotion and drugs.



Coronary Arteries

The heart tissue must have a constant supply of oxygen to allow the heart to contract and relax, so there is a network of vessels that deliver oxygenated blood to the tissues.

The aorta is supplied with the left and right coronary arteries, which gradually branch off into smaller vessels. The larger vessels are situated on the surface of the heart, with the smaller vessels penetrating the heart muscle. Over time, and in a diet that is rich in cholesterol, plaques can build up and eventually block the flow of blood through the coronary artery. When this happens, the heart tissue becomes starved of oxygen and stops functioning as it should. This results in a heart attack.

Blood Pressure

Blood pressure is the force applied against the walls of the arteries as the heart pumps blood through the body. The pressure is determined by the force and amount of blood pumped and the size and flexibility of the arteries.
Each time the heart beats (about 60–70 times a minute at rest); it pumps out blood into the arteries.

> Your blood pressure is at its highest when the heart beats, pumping the blood. This is called systolic pressure.
> When the heart is at rest, between beats, your blood pressure falls. This is the diastolic pressure

Heart failure can occur if the blood pressure is too high, and the heart becomes enlarged. Aneurysms, which are small bulges, may form in blood vessels, with the commonest locations being in the aorta, arteries in the brain, legs, and intestines; and the artery which leads to the spleen.

Kidney failure may occur if blood vessels in the kidney narrow, and arteries throughout the body will harden, especially those in the heart, brain, kidneys, and legs. All of this can cause a sudden heart attack, kidney failure or a stroke. Blood vessels in the eyes can burst or bleed which may cause vision changes and can result in blindness

In the majority of high blood pressure cases, the cause is unknown. In fact, you can have high blood pressure for years without knowing it. When the cause is unknown, you have what's called essential or primary hypertension. Factors that may lead to high blood pressure are known as secondary hypertension, include: Kidney abnormality, a structural abnormality of the aorta (large blood vessel leaving the heart) existing since birth, narrowing of certain arteries.

Pathologies of the Cardiovascular System

Disease	Meaning
Anaemia	Reduced number of red blood cells carrying oxygen.
Aneurysm	A bulge in a blood vessel, which can split open.
Gangrene	Body's tissues begin to decay due to an interruption of blood flow.
Arteriosclerosis	Where the arteries lose their elasticity and is a form of atherosclerosis'
Atherosclerosis	Hardening of the arteries, usually caused by cholesterol.
Palpitations	Noticeable heartbeat, often felt in the throat or neck.
Deep Vein Thrombosis	Blood clot within a blood vessel.
Stroke	A blockage of the blood supply to the brain due to a bleed of a blood clot.
Phlebitis	Inflammation of a vein usually caused by local trauma.
Varicose Veins	Swollen or enlarged veins, caused when valves within the veins become weakened.

THE LYMPHATIC SYSTEM

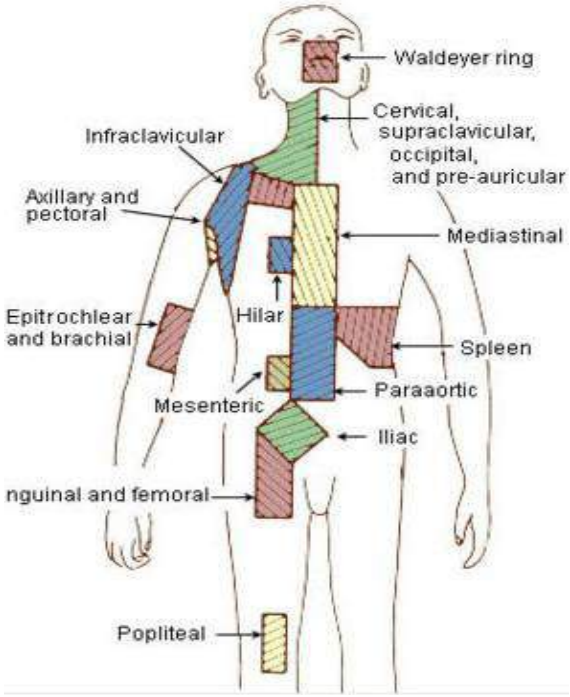
The lymph system is a collection of thin tubes that carries colourless liquid called lymph. As discovered in the circulatory system, blood travels around the body and delivers oxygen and other nutrients. On its journey, fluid leaks into the body's tissues and it is this fluid which makes the lymph, along with substances such as fibrinogen, water and lymphocytes. It travels around the tissues of the body and carries white blood cells. After travelling around the body, lymph enters one of the major lymphatic vessels, the thoracic duct, which begins near the lower part of the spine and collects lymph from the pelvis, abdomen, and lower chest. This duct runs up through the chest and empties into the blood through a large vein near the left side of the neck. The right lymphatic duct is the other major lymphatic vessel and collects lymph from the right side of the neck, chest, and arm, and empties into a large vein near the right side of the neck. This means that lymph is continuously emptied into the blood where it mixes with the plasma. The system has no heart or arteries, but capillaries that extend into most tissues, which run parallel to the blood capillaries. In conclusion, the main function of the lymphatic system is to fight infection, distribute fluid and transport fats around the body.

The main functions are:

to collect and return interstitial fluid, including plasma protein to the blood, and thus help maintain fluid balance;

to defend the body against disease by producing lymphocytes;

to absorb lipids from the intestine and transport them to the blood.



Nodes

Throughout the miles of lymph vessels, there are small round nodes or glands, packed fill with lymphocytes which are used to filter the lymph. These structures are made of lymphatic tissue and here the white blood cells fight infection. That is why sometimes these glands can be felt, for example in the armpits, in the groin and neck, as the lymph nodes trap bacteria or viruses that they cannot destroy immediately. The lymph node may swell and become painful and sore. Some nodes cannot be felt, for example those in the abdomen, chest and pelvis. Occasionally the lymph nodes can trap cancer cells that it cannot destroy. The nodes then become swollen but not necessarily painful. This is why it is so important to check any swollen lymph node as cancers can develop in the lymph system.

Lymph

As lymph flows through the node, lymphocytes (white blood cells) are added, this leaves the lymph cleaner due to breaking down bacteria. Lymph drains through around 8 – 10 nodes before returning to the blood. Most lymph nodes are solitary but some can be found in clusters. For example, a cluster is found in the ileum of the small intestine. These large masses of lymph nodules are known as Peyer's patches.

Lymph Vessels – carry lymph

These are microscopic, thin walled tubes which branch, interconnect and extend into almost all tissues of the body. They look like blood capillaries but they contain a larger inner space and also have a closed end. Lymph capillary walls are made up of overlapping cells that swing slightly inward when fluid outside the capillary pushes against them. This allows the milky fluid to enter the capillary, and is now referred to as lymph. Small amounts of diffuse lymphatic tissue are found in virtually every organ of the body.

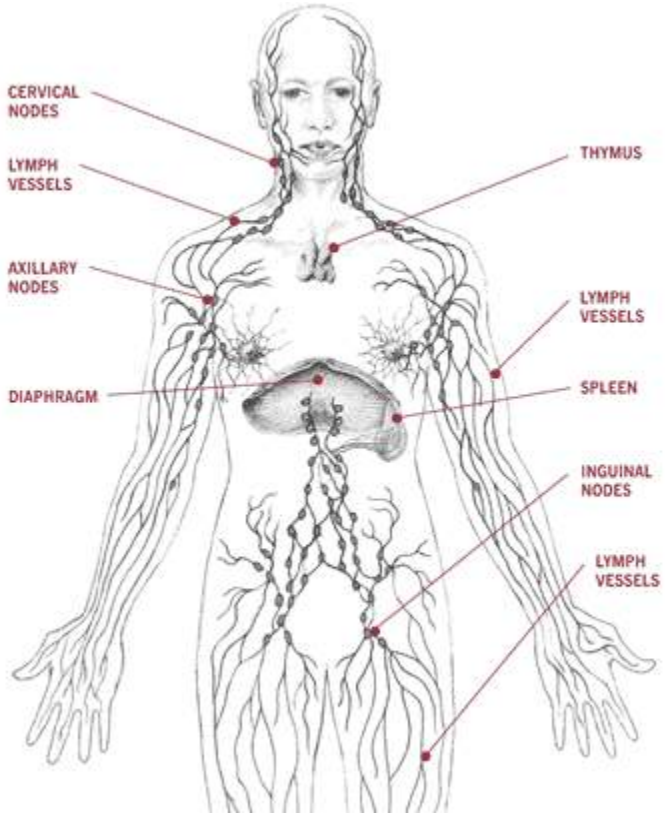
Lymph capillaries join to form larger vessels called lymphatic's or sometimes called lymph veins. Lymphatics are found in the subcutaneous tissue of the skin, following the same path as veins. Lymph vessels contain valves to prevent the back flow of lymph and they allow lymph to travel through lymphatic nodes.

Lymphatic Ducts – collects lymph

Thoracic duct is the principal vessel of the lymphatic system and carries lymph as well as a substance called chyle, which is a milk fluid that contains lymph and emulsified fats. It begins in the abdomen and runs to the neck where it empties into the venous blood stream at the left subclavian vein. This duct receives the lymph from smaller vessels of the lower limbs and the upper left side of the head and neck.

Right lymphatic duct is a vessel that collects lymph from the right upper side of the body and drains it into the right subclavian vein

Cisterna Chyli vessels drains lymph from the intestines which is laden with digested fats



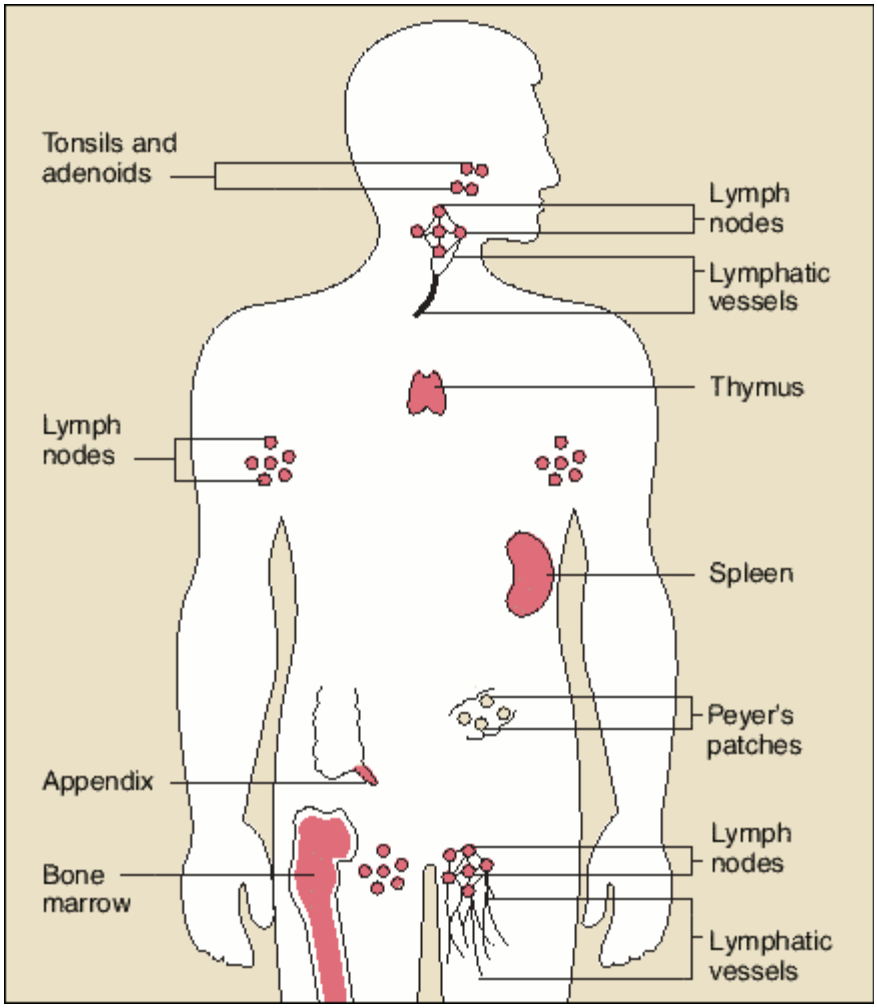
Bone Marrow

Bone marrow is found in the hollow of bones and is a spongy material that makes red and white blood cells and plasma. Once mature enough, two types of white blood cells, lymphocytes and myeloid cells made by the bone marrow enter the bloodstream and circulate around the body. The lymphocytes also circulate in the lymph system. These cells only live for a few days so it is essential that the bone marrow constantly renews the old ones

There are four main organs that are involved with the lymphatic system. They are the spleen, thymus, tonsils and adenoids.

The Spleen

This organ is found in the upper left abdominal cavity and is the largest lymphatic organ in the body. The spleen consists of two types of tissue called the white and red pulp. The white pulp consists mainly of lymphocytes and the red pulp consists of venous sinuses which are filled with blood and cords of lymphatic cells.



The function of the spleen is to filter blood, similar to the way lymph nodes filter lymph, but it also breaks down and destroys old red blood cells, which have a life span of around 120 days. The spleen holds extra blood that can be released into the circulatory system if needed.

The Thymus

As already discovered, the thymus is an endocrine gland but it also helps to produce white blood cells, so that puts it in the lymphatic system as well.

The Tonsils

The tonsils are two glands in the back of your throat, and they help to protect the entrance of the digestive system by preventing bacteria from entering. When the tonsils become infected, a condition called tonsillitis occurs. The lymphoid tissues in the back of the mouth at the top of the throat that normally help to filter out bacteria.

The Adenoids

The adenoids are lumps of tissue found at the back of the nose above the tonsils but are only present in children as they begin to shrink by the age of 7. The appendix also needs to be mentioned as, although its function is unclear, it has a rich supply of lymph tissue.

Pathologies of the Lymphatic System

Disease	Meaning
Oedema	Soft tissue swelling – fluid retention.
Hodgkin's Disease	Cancer of the lymphatic system.
Non Hodgkin's lymphoma	Cancer of the lymphoid tissue.
Glandular fever	Viral infection causing sore throat and temperature.
Lymphadenitis	An infection of the lymph nodes.
Lupus	An autoimmune disease where the body starts to attack healthy cells, tissues and organs.
Cellulitis	A skin infection of the deeper layers of the skin that can spread to other parts of the body

THE DIGESTIVE SYSTEM

The digestive system allows for the breaking down of chemicals in the body that can be absorbed and contains a number of hollow organs which runs from the mouth to the anus. There are a number of stages to digestion as it follows its route through the digestive tract, which takes from 20 – 30 hours, and we are going to look at them in turn as we follow that journey. The digestive systems main aim is to allow for mastication, digestion, absorption and then elimination of food.

The Mouth

When we think of food or before it even enters the mouth, saliva is released from the salivary glands which are passed around the mouth by the tongue. The saliva, which is secreted at around 1 – ½ litres a day, contains an enzyme called amylase that assists with chemically breaking down some carbohydrates. The saliva also moistens the food, making it easier to swallow. Our teeth break down food into smaller manageable pieces by tearing and shredding.

Movements by the tongue and the jaw push the food to the back of the pharynx (throat), where a tiny flap of skin called the epiglottis closes over the entrance of the trachea to prevent choking. This swallowed food, now called a bolus, is pushed down into the oesophagus, where wave like contractions, called peristalsis push the food further down to the stomach. The food passes through a muscular ring, called the cardiac sphincter into the stomach, which then quickly shuts to prevent food travelling back up the oesophagus.

The Stomach

Once in the muscular J shaped sac, the food and liquids are stored and mixed with strong digestive juices that are secreted by the lining of the stomach. The bolus is churned and squeezed by the powerful muscular contractions of the stomach wall. Hydrochloric acid breaks down the bolus into chyme, which is a liquid. The acid does not damage the stomach walls due to a thick layer of protective mucus, but if this mucus becomes limited, then an ulcer may form. With the exception of water, alcohol and certain drugs, very little of the chyme is absorbed into the blood from the stomach.

The stomach walls contain three layers of smooth muscle arranged in longitudinal, circular, and diagonal rows, which allows the stomach to squeeze and churn the food during mechanical digestion. Whilst this digestive process in the stomach is occurring, which can take several hours, a stomach enzyme called pepsin is breaking down proteins. The chyme is then transported a little at a time through the pylorus into the small intestine, via the pyloric sphincter.

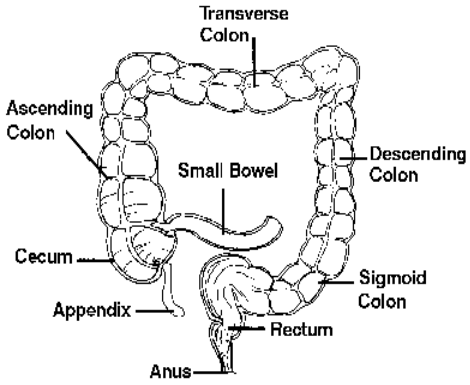
The Small Intestine

Sometimes called the small bowel, the small intestine is the longest portion of the digestive tract and is approximately 20 feet long is made up of the duodenum, the jejunum and the ileum and is a narrow tubed structure that fills most of the lower abdomen. Once the chyme is in the duodenum, bile from the gallbladder and enzymes from the pancreas all combine to complete the final stages of digestion. The acid from the stomach is neutralised in the duodenums alkaline environment.
Gland cells in the small intestine secrete digestive enzymes that chemically break down complex food molecules into simpler ones.
The chyme leaves the duodenum and it enters the jejunum and ileum. Here the nutrients are absorbed through the lining of the small intestine and transferred to the bloodstream and liver by tiny villi which cover the walls of the small intestine.

These finger like projections allow for a greater surface area, allowing the chyme to be absorbed. Such products as fibre and water, that have not been digested in the small intestine travel to the large intestine. The ileum is the final portion of the small intestine, which leads into the large intestine.

The large Intestine

Sometimes called the large bowel, the large intestine collects and stores all waste products before processing them into faeces to be removed from the body. This part of the intestines is around 5 feet long and is made up of the caecum, appendix, colon and rectum.



The caecum is shaped like a pouch and is found in the right lower abdomen and stores all the material; fibre, water salts and some vitamins from the small intestines before moving it along to the colon. The material enters the expanded caecum through a valve that separates the small intestines from the large intestine. A small projection, the appendix, emerges from the caecum, and although it has no known function it can become troublesome if it becomes infected

Starting at the caecum, the ascending colon travels up the abdomen towards the liver. The colon then becomes transverse as it travels across the abdomen, and then descends down the left side of the abdomen to the sigmoid colon. This S shaped organ is the largest part of the intestine and joins onto the rectum. All the time that the processed mixture is in the colon, mucus and bacteria from within the large intestine mix and starts to form faeces. This water and some vitamins and minerals from the faeces are then absorbed into the colon.

The faeces are pushed along to the sigmoid colon and finally the rectum by muscular action, where they are stored until being passed as a bowel motion.

The Pancreas

This 12-15cm organ is located just below the stomach, and slightly behind it. Around 99% of the pancreas is made up of small clusters of glandular epithelial cells called acini, which is responsible for producing the clear pancreatic juice which has many functions. These enzymes enter the duodenum via two pancreatic ducts, which classifies it as an exocrine gland. Pancreatic amylase is secreted for digesting carbohydrates, trypsin to digest proteins and lipase to digest fats. The remaining 1% of the pancreas contains cells which are arranged into clusters called Islets of Langerhans. These cells directly secrete the hormones Insulin and glucagon, needed to control the blood sugar level into the bloody which also means the pancreas is an endocrine gland.

The Liver

Found in the upper abdominal cavity towards the right and above the diaphragm, the liver is the heaviest gland in the body. The livers cells or hepatocytes process chemical changes and its main function is to regulate the composition of blood, so is therefore highly vascular, receiving oxygenated blood via the hepatic artery and deoxygenated blood from the stomach and intestines via the hepatic portal vein. Here, excess glucose from the blood is removed and stored in the form of glycogen, until all the glucose in the body has been used up and blood sugar levels fall. The liver then re-converts the glycogen back into glucose. Filtering the blood of any harmful substances is crucial and this is done by the liver extracting it from the blood. Blood is transported back to the heart via the inferior vena cava.

As well as the mentioned functions, the liver also secretes bile, which consists of cholesterol, pigments, salts and traces of other substances. Bile is removed from the liver to the gall bladder for storage via the canaliculi.

The Gall Bladder

Acting as a storage vessel for bile produced in the liver, this small 4 inch sac is located behind the liver and has an important function of adding mucus to the bile which increases its concentration. As the body requires bile to emulsifier fats, the gall bladder contracts and releases bile into the bile duct. Along with the pancreatic duct, bile enters the duodenum.

Enzymes

Enzymes are biological catalysts, made up of proteins, which speed up chemical reactions in all living things. They are needed to digest food and only work for one specific reaction. Human saliva contains an enzyme called amylase which breaks down starch into a sugar called maltose. The pancreas is the main digestive gland in the body
In the stomach the gastric enzymes pepsin, gelatinase, gastric amylase and gastric lipase are secreted. All of these enzymes have a different role, from breaking down proteins to degrading starch.

Digestive Hormones

As well as releasing enzymes, at least four digestive hormones are released which help aid and regulate the digestive system. These consist of gastrin found in the stomach, secretin, cholecystokinin and gastric inhibitory peptide also found in the duodenum.

Absorption and Transportation of Nutrients

The human body is made up of two-thirds water and it is an essential nutrient that is involved in every function of the body. Water helps transport nutrients and waste products in and out of cells and is necessary for all digestive, absorption, circulatory, and excretory functions. Maintenance of the proper body temperature is determined by water and it is recommended that you drink at least eight 8-ounce glasses of water each day.

Carbohydrates, such as starch and sugars need to be broken down into simpler molecules by enzymes in the saliva and pancreatic enzymes. Starches are digested by the enzyme in saliva and pancreatic juices and sugars are digested by an enzyme found in the lining of the small intestine.

Fibre is indigestible and does not get broken down at all by enzymes. Soluble fibre can be dissolved in water, whereas insoluble fibre passes through the intestines unchanged.

Fats need to be broken down by being dissolved in the intestine and then by the bile acids produced by the liver, so they form tiny droplets. These droplets are then carried into the cells of the mucosa before changing back into large molecules. They then pass into the lymphatic's to be carried to the veins of the

chest, and by blood vessels to the fat deposits in the body where they are laid down as storage.

Proteins must start to be digested by an enzyme in the stomach before they can be used to help build and repair the body's cells and tissues. Once in the small intestine, pancreatic enzymes complete the breakdown of larger protein molecules into smaller ones called amino acids. Once absorbed, they can be carried to all parts of the body for growth and repair

Vitamins are classified by being either water-soluble vitamins (the B vitamins and vitamin C) or fat-soluble vitamins (vitamins A, D, E, and K). It is difficult to store water-soluble vitamins, and any excess are flushed out in the urine. Fat-soluble vitamins can be stored in the liver and the fatty tissue of the body.

Minerals are needed in small amounts. Minerals are classified into essential minerals and trace minerals, with the body only needing very small amounts of trace minerals. Those classified as essential are magnesium, sulphur, sodium, potassium, phosphorus, iron and calcium. The main function of minerals is to control body fluids, build strong bones and teeth and to assist with converting food into energy that can be used.

Water is an essential nutrient which makes up around 50-75% of our body weight. It removes toxins in the body, regulates temperature and is essential for growth of the body.

Pathologies of the Digestive System

Disease	Meaning
Crohn's	Inflammation in the gut, a long term disease, affecting any part of the digestive system.
Coeliac's Disease	An intolerance to gluten which causes indigestion, bloating, weight loss
Gall stones	Pebble like deposits, usually made of cholesterol, that form inside the gall bladder.
Irritable bowel syndrome	Bouts of stomach cramps, bloating and a change in bowel motion.
Hepatitis	Inflammation of the liver, usually caused by a virus.
Hernia	The lining of the abdominal cavity weakens and protrudes through a weak area of the abdominal wall.
Ulcer	A small erosion in the walls of the stomach or small intestine.

THE URINARY SYSTEM

The urinary system is made up of the kidneys, ureters, bladder and urethra and is responsible for controlling the amount of water and salts that are absorbed and filtered into the blood, and will regulate the chemical composition of body fluids by removing metabolic waste.

The Kidneys

These are two bean shaped kidneys in the body, one on either side, located near the middle of the back behind the 13th rib. These 5 – 6 inch long organs are responsible for processing waste products and filtering the blood to ensure that the body is in a state of balance. The waste comes from the normal breakdown from the food that is eaten.

It is essential that this waste is removed as it could damage the body. Each kidney is joined to the aorta, which is the largest artery in the body by a short renal artery, as they receive a huge blood supply.

Each kidney contains around a million nephrons, a tube which is closed at one end, and open at the other. Inside the nephron is a tiny blood vessel called a glomerulus. This vessel intertwines with a tiny tubule where waste materials and water leave the blood and enters the urinary system where it is turned into urine, to continue the journey to the urethra. The main filtered substances consist of water, nitrogen containing compounds, acids, salts and alkalis.

The cortex is the outer part of the kidney and is where the blood is filtered. This process is called ultra-filtration or high pressure filtration because it only works if the blood entering the kidney in the renal artery is at high pressure.

The medulla is the inside part of the kidney and is where the amount of salt and water in your urine is controlled. It is dark red in colour and contains billions of loops of Henle' which pumps sodium ions. ADH stimulates the loops to work harder to pump more sodium ions, which results in very concentrated urine, is produced.

Ureter

Leading from each of the kidneys to the bladder is a 25cm long tube called the ureters. The walls of the ureters are hollow and contain smooth muscles which contracts and allows the movement of urine out of the kidneys. Each Ureter is lined with a membrane coated with mucus. This lining is impermeable to the normal soluble substances of the urine.

The Bladder

The bladder is a hollow, elastic muscular organ in which urine is stored until it is passed out of the body via the urethra. The bladder is found in the pelvis behind the pelvic bone and can expand and hold around 400 – 600ml of urine at a time, for up to five hours.

The more fluid that is drunk, the more urine is produced. When the body becomes hot, and sweat is produced, less urine will be made.

Of the urine produced, around 96% of it is water, but it also contains waste salts and a substance called urea, which is made during the breakdown of proteins in the liver. It is a transparent solution but is amber in colour. The sweat that the body produces may also contain urea and it is essential that this does not build up in the body as it can be an indicator that the kidneys are not working satisfactorily.

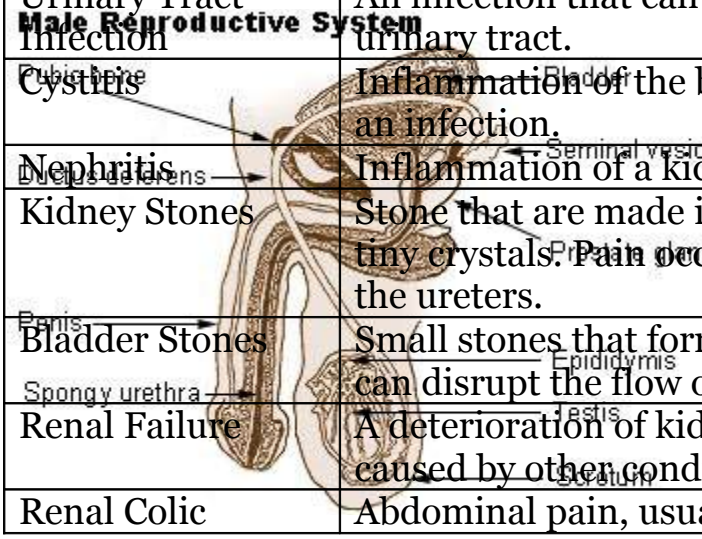
The Urethra

This tube runs from the bottom of the bladder to the outside of the body. In males the urethra is approximately 8 inches long and leaves the bladder, passing downward through the prostate gland, through the length of the penis until it ends at the urethral orifice or opening at the tip of the glans penis. In females, the tube is around 4 – 5 cm in length and exits the body just in front of the vagina.

A ring like band of muscle, called the internal urethral sphincter helps control the process of urination. This sphincter is an involuntary muscle and therefore requires no participant control. The external sphincter, lying below the internal sphincter is made up of smooth and striated muscle and is under the control of the pudendal nerve.

Pathologies of the Urinary System

Disease	Meaning
Urinary Tract Infection	An infection that can happen anywhere along the urinary tract.
Cystitis	Inflammation of the bladder, usually caused by an infection.
Nephritis	Inflammation of a kidney.
Kidney Stones	Stone that are made in the kidneys, usually out of tiny crystals. Pain occurs if the stones move into the ureters.
Bladder Stones	Small stones that form inside the bladder, which can disrupt the flow of urine.
Renal Failure	A deterioration of kidney function which can be caused by other conditions such as diabetes.
Renal Colic	Abdominal pain, usually caused by kidney stones.



The Reproductive System

The primary function of the reproductive system is to ensure that the human species survives. All living things reproduce and it is one of the functions that sets living things apart from nonliving things. The continuation of the species will happen by producing an egg and sperm cell and allowing for the transportation of these cells. Another role is to nurture and develop the offspring and to produce hormones.

The Male Reproductive System

This system consists of organs which allows for the production of a new individual. The organs involved are the testes, excretory ducts made up of the epididymis and the vas deferens, glands such as seminal vesicles and the prostate gland and the penis.

Testes

The testes are the principal structure of the male reproductive system. They consist of two egg shaped organs, approximately 2 inches in length. They are suspended from the body by the scrotal sac, which is a pouch of skin that allows the testes to remain at an optimum temperature for the development of sperm. The scrotum changes size to be able to maintain the right temperature. The testicles produce and store million of sperm cells, and with around 850 feet of tubules being packed into each testis, this is where sperm are produced by meiosis. The testes also produce the primary hormone testosterone, which is involved in puberty. During ejaculation, the muscular movements of the vas deferens and the ejaculatory duct aid the ejection of the sperm.

Excretory Ducts

The epididymis and the vas deferens make up the duct system of the male reproductive system. The epididymis is a c shaped set of coiled tubes that is connected to the vas deferens. They are found at the back of the testes and are where sperm are matured and stored. The vas deferens is a muscular tube that passes up along the side of the testicles and transports the semen.

Glands

The function of the glands in the male reproductive system is to secrete fluids during ejaculation.

The seminal vessels have a short duct that joins with the ductus deferens to form an ejaculatory duct that empties into the urethra.
The fluid produced assists with the mobility and viability of the sperm, as well as neutralising the acidity in the female reproductive tract.
The prostate is a firm, walnut size gland that encircles the urethra as it leaves the urinary bladder. It secretes a thin, milky coloured liquid that enhances the mobility of the sperm. It is of an alkaline substance that counteracts the acidity of the urethra.
The paired bulbourethral glands, or sometimes called the Cowper's glands are about the size of a pea and are found near the base of the penis. During sexual stimulation, theses glands secrete mucus like fluid which neutralises the acidity of the urine residue in the urethra. It also provides some lubrication for the tip of the penis during intercourse.

The Penis

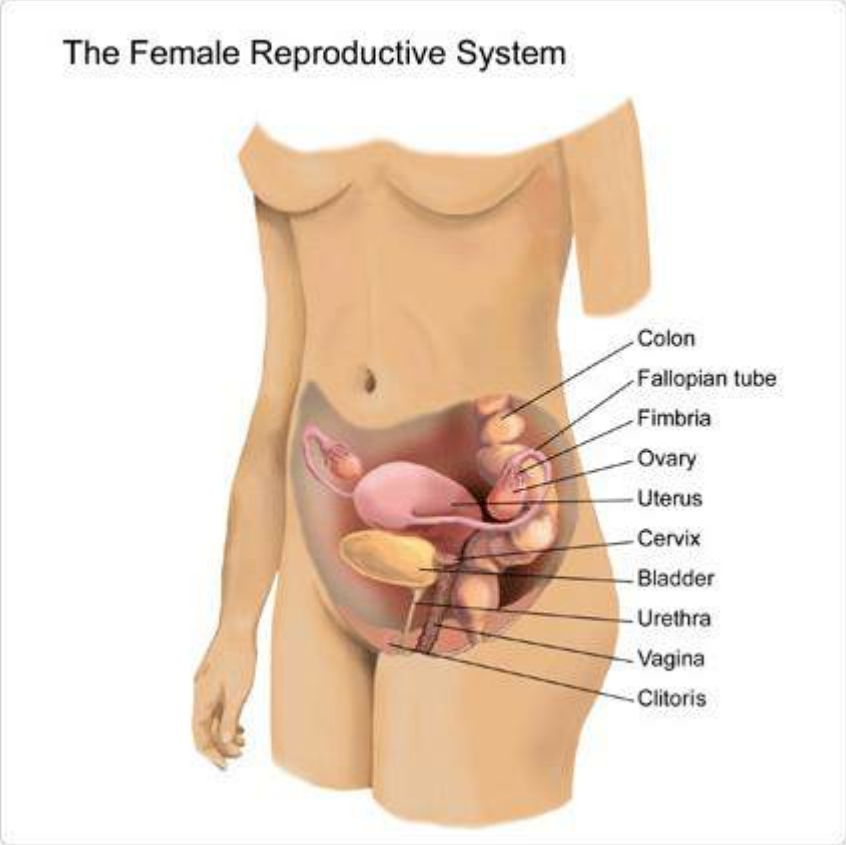
The penis is the sex organ that allows for the passage of both urine and sperm. Apart from the muscles on the tip of the penis, it does not contain bone or muscles.
The penis is made up of three columns of erectile tissue that are wrapped in connective tissue and covered with skin. It has a root, shaft and glans penis, with the root attached to the pubic arch. The shaft is the visible part.
The glans penis is formed at the end and the urethra extends throughout the length of the penis and opens through the external urethral orifice at the tip of the glans penis. The foreskin, a loose folding of skin covers the glans penis.

Seminal Fluid

Seminal fluid contains a mixture of sperm cells and secretions from the accessory glands. In fact around 60% of semen is made up of the secretions from the seminal vesicles, with the prostate gland providing the remainder. Only a small amount comes from the bulbourethral gland and sperm.

In one single ejaculation, the volume of semen can vary from 1.5 to 6.0ml with usually anything between 50 to 150 million sperm per millilitre of semen.

The Female Reproductive System



Again, this system consists of organs which allows for the production of a new individual. The organs involved are the ovaries, fallopian tube, uterus, cervix and vagina.

The Ovaries

The ovaries are the primary female reproductive organs, with each one being a solid oval structure around the size and shape of an almond.

They are approximately 3.5 cm in length and 2 cm wide and are located one on each side of the uterus, in the lateral walls of the pelvic cavity.

They are suspended by the ligaments in the upper pelvic cavity, one being on either side of the uterus. At the birth of a female, each ovary contains over 200,000 immature ova, with each ova being encased in a sac called a follicle. In response to various sex hormones, each follicle develops until they become primary follicles, which is when ovulation occurs.

The ovum breaks free of the follicle and enters the fallopian tube. The ovaries are also responsible for producing oestrogen and progesterone, which are vital for proper reproductive function

There are two fallopian tubes, each about 4 inches in length and a narrow as a piece of string, attached to a side of the uterus. Each tube resembles a funnel, which is wider at the ovary and becomes narrower at the uterus.

The fallopian tube has 20 to 25 fingers like projections (fimbriae) that encourage the mature ovum to enter the fallopian tube. Once in the tube, tiny hairs in the lining help push the ovum down the narrow passageway towards the uterus.

If fertilization takes place, it will usually occur in the wider part of the fallopian tube. Once the ovum has become fertilized it is called a zygote and travels to the uterus over the next 7 days.

The Uterus

The uterus is suspended by broad ligaments and is situated between the bladder and the rectum. It is shaped like an upside-down pear, with a thick lining, muscular walls and a rich blood supply. It is made up of three layers, being the peritoneum (outer layer), myometrium (middle layer) and endometrium (inner lining). The uterus serves as a pathway for sperm to reach the fallopian tubes as well as to be able to expand and contract to accommodate a growing foetus and push the baby out during labour. If fertilisation occurs, the uterus will provide a source of attachment and nourishment for the growing zygote, which embeds into the endometrium. When a woman isn't pregnant, the uterus is only about 3 inches long and 2 inches wide and the lining of the uterus (endometrium) breaks down during menstruation.

The Cervix

The uterus ends at the cervix which is the lower portion or neck of the uterus, which is lined with mucus and joins the top end of the vagina. It is a thick tube of smooth muscle that acts as a channel for sperm to reach the waiting ovum. During late pregnancy the walls of the narrowed channel thin out to allow for the baby's head to descent. The opening of the cervix is very small and during childbirth, the cervix can expand to allow a baby to pass.

The Vagina

The vagina is the female's sex organ and extends about 3 – 5 inches inside, up to the cervix. It is a muscular, ridged sheath connecting the external genitals to the uterus. The vagina acts as a pathway for the penis to enter during intercourse to allow sperm to be deposited. It also acts as a passageway for the birth of a baby. During sexual arousal, droplets of fluid appear along the vaginal walls and eventually cover the sides of the vagina completely. The tissues are rich in blood vessels which when engorged with blood as a result of sexual arousal, press against the tissue, forcing natural tissue fluids through the walls of the vagina.

Menstruation, Conception and Pregnancy

Menstruation is controlled by hormones and the cycle is usually a 28 day process, although this can vary greatly.

During day 1 – 5 the hormones oestrogen and progesterone reduce which causes a breakdown of the endometrium. This results in the discharge of blood, tissue fluid and mucus, but also in the preparation of a mature follicle.
During days 6 – 13, two more hormones, Follicle Stimulating Hormone (FSH) and luteinizing hormone stimulate the ovaries to produce more oestrogen. This in turn allows for the endometrium to re-build.
By now a mature follicle is ready to be released on day 14.
Between days 15 – 28, progesterone is stimulated by luteinizing hormone to prepare the uterus to receive the fertilised ovum, if there is one.
If fertilisation does not occur then the hormone changes will start the cycle over again and initiate the breakdown of the lining.

The process of conception is nothing short of a miracle. Once the ovum has been released, it travels along the fallopian tubes, producing an enzyme that attracts any sperm. One sperm will break through the tough coating of the ovum to fertilise it, which will then continue to the uterus. Once the zygote has arrived in the uterus it will implant itself into the endometrial lining and become an embryo.

Pregnancy

The first four weeks after fertilisation will show a rapid amount of development as all of the major organs and body systems start to develop. The placenta and umbilical cord, which sustains pregnancy, are also being formed.

During weeks 5 – 8, the embryo starts to become recognisably human in form as the limbs begin to grow and the torso straightens out.

By weeks 9 – 12, the first trimester is closing and the foetus is almost double in length with all organs formed. The eyelids are fused with the eyes remaining closed.

Weeks 13 – 16 see the foetus rapidly increasing in size, with movements alerting the pregnant women of its presence. The foetal circulation is now established with the blood being pumped around its body.

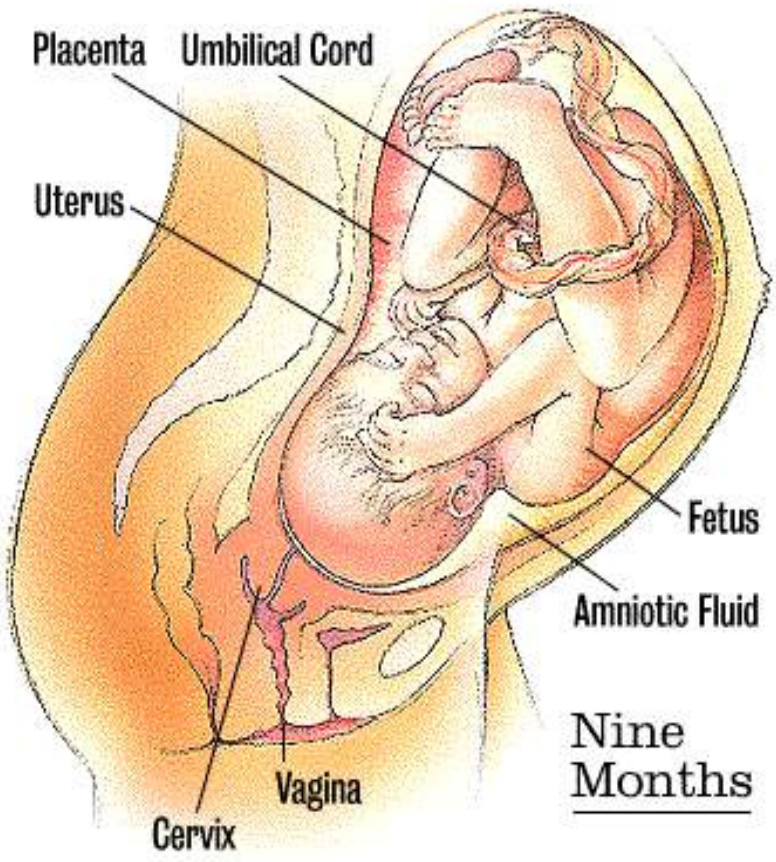
By the fifth month, the skin of the foetus has become more mature and a network of blood capillaries and nerve endings has become established.

The sixth month marks the end of the second trimester and the facial features are beginning to resemble those of a full term baby. The growth rate is slow but weight is being gained rapidly.

The last trimester up until 40 weeks is a period where the foetus continues to develop, but in a much smaller space.

By week 33, the foetus is still putting on weight at just over 5lb, but still lacks adequate fat stores under the skin.

The last few weeks of pregnancy can be a time of great discomfort for many women. For the foetus the fingernails have reached the ends of the digits and its body is covered in a coating called vernix. The average pregnancy lasts from 38 weeks from fertilisation or 40 weeks when calculated from the last day of the menstrual cycle.



Pathologies of the Reproductive System

Disease	Meaning
Mastitis	Inflammation of the breast tissue, which can be caused by infection, engorgement or blocked ducts.
Amenorrhoea	The absence of menstruation in a women who is still of a reproductive age.
Dysmenorrhoea	Pain during menstruation
Endometriosis	Small pieces of uterus lining are found outside of the uterus which causes pain.
Pelvic Inflammatory Disease	Inflammation of the uterus, fallopian tubes and ovaries.

8. CLIENT CONSULTATION

A consultation is a one-to-one talk with your client. Here you will find out very important and confidential information that will help you to advise and give clients the best treatment.

Always introduce yourself to your client. The consultation is often carried out in the room in which you are working and should be carried out before the client gets undressed in case there is any reason that they cannot be treated. Aim to carry out the consultation sat side by side as opposed to being across the desk from each other.

There are three skills required as part of the consultation:

1. Observation/Visual - what can you observe about the client? Are they nervous, extrovert, holding their body in such a way that might give indications for treatments, poor posture etc?
2. Verbal Questioning – gain the information required.
3. Physical Examination/Manual – what can you physically see and feel on the client? This third part is only carried out once you have assessed that, so far, the client is suitable for treatment.

Holistic therapies treat the individual as a whole, taking into consideration general well-being, i.e. health, emotional, physical and mental states. You need to explain carefully to the client why you are carrying out a consultation.

Use open questions to tactfully encourage the client to give you information that you need rather than interrogating them and asking lots of direct and often personal questions. Use the record card as a prompt rather than a list to tick off.

During your consultation, it is important to establish what the client's requirements and expectations are from the treatment. Work together to set an objective for the treatment.

Record Keeping

Records must be maintained for a number of reasons:

They provide contact details in case you have to alter or cancel an appointment.
So that you can monitor the client's progression.
To track any aftercare advice that you have given the client.
As a backup in case the client has an adverse reaction to a treatment.
Another therapist should be aware of what treatments and products the client has had.

Important Information

The following information should be recorded for all clients:

Personal details:

Full name, address, contact number, GP's name and address.

A detailed medical background including:

Specific contra-indications

These should be noted accordingly. You will probably find as you go through that the client will lead you rather than you having to read off a list, as this can be quite unnerving for the client.

Medication

What medication are they taking and for what condition? If a client is taking medication it will give you clues to their health.

Are they consulting a GP on a regular basis or under a consultant and if so for what condition?

If so you may need to check further their suitability for treatment.

Have they had recent surgery?

You will need to consider scar tissue, and there may be post-operative precautions you need to take. Many people find it takes a while to get anaesthetic out of their system and may feel low.

Life changing illnesses

Includes: arthritis, cancer, any disablement, AIDS, epilepsy, diabetes, stroke and depression.

Accidents

What implications do these have? Have they had to have surgery? Do they need referral to other professionals? Will your treatment plan need adjusting?

Other Information:

Physical fitness

How fit is the client? A client may think they are fit and many will say they are fitter than they really are. A resting pulse will give you a guide.

The client's occupation and lifestyle

These factors will give you a rough indication of free time and budget to consider before negotiating a treatment plan. This information will give you clues as to where the client may have stress and muscular tension.

Life changing conditions

Includes: puberty, pregnancy, menopause, retirement, bereavement, divorce and any illness.

Hobbies

It may be useful to find out the client's interests, this will also give you an idea of levels of activity and spare time.

Personality, temperament and emotional state

Not the sort of question you can ask but you can make a mental note of it. These factors will help to indicate which oils or zones to work on further.

Disclaimer and date

Always add a disclaimer and the client's signature to verify that the information the client has given you is, to the best of their knowledge, true and correct.

Client records can be stored electronically or filed manually and should be updated at every visit. If record cards are not updated and do not contain a history of services and dates, you may find your insurance invalidated.

Records cards must be kept for five years, as medical claims can be made up for up to that period. If a client is under 21 years of age, it is recommended that their record card be kept until they are 21 years of age.

Client confidentiality must be protected at all times. If a salon holds computerised records, they must register with the Data Protection Register. If a salon only holds written records, this does not apply, but they must uphold the principles of the Data Protection Act and comply with the following:

All info information must be accurate and necessary to the service or treatment to be performed.

Individual client records must be available for the clients to view if requested.

All information must be stored securely by password protected computer file.

Any contra-indications and possible contra-actions must be identified and discussed prior to the service. In the case of medical referral, the practitioner should keep a copy of the GP's letter with the client's record card.

Always allow the client the opportunity to question and clarify any points before signing the record card.

On the following pages are examples of consultation forms which you can adapt to suit you.

Reflexology Consultation Form

CLIENT DETAILS

Name _____

Address _____

Telephone Number _____ Mobile _____

Date of Birth _____ Occupation _____

Referred by _____ Reason for Visit _____

Skin Type _____

Medication (to include birth pill, and hormone therapy) _____

Any Illnesses _____

Any Operations _____

Accidents, injuries or falls with approx dates _____

_____

GENERAL STATE OF HEALTH

Do you suffer with any problems related to the following?

Diabetes/Epilepsy/Blood Pressure/Heart/Chest/Migraine/Kidneys/Bladder/Allergies/ Hepatitis

Details _____

_____

Are you or could you be pregnant? YES/NO Do you suffer with Premenstrual Tension? YES/NO

Do you have regular periods? YES/NO Date of last period _____

Reason for last visit to doctor _____

Have you been to hospital for X-Ray or tests during the last 3 years? YES/NO

Details _____

CAUTION It is important that you let the Therapist know of any medical conditions that you have had

I confirm that the information given above is correct and complete and that I have read and accepted the caution above. I will inform my therapist before receiving treatment if any of the information above changed at any time during my treatment.

Signed: _____ Date: _____

Print Name: _____

Private & Confidential Client Treatment Record

Client Ref: ....

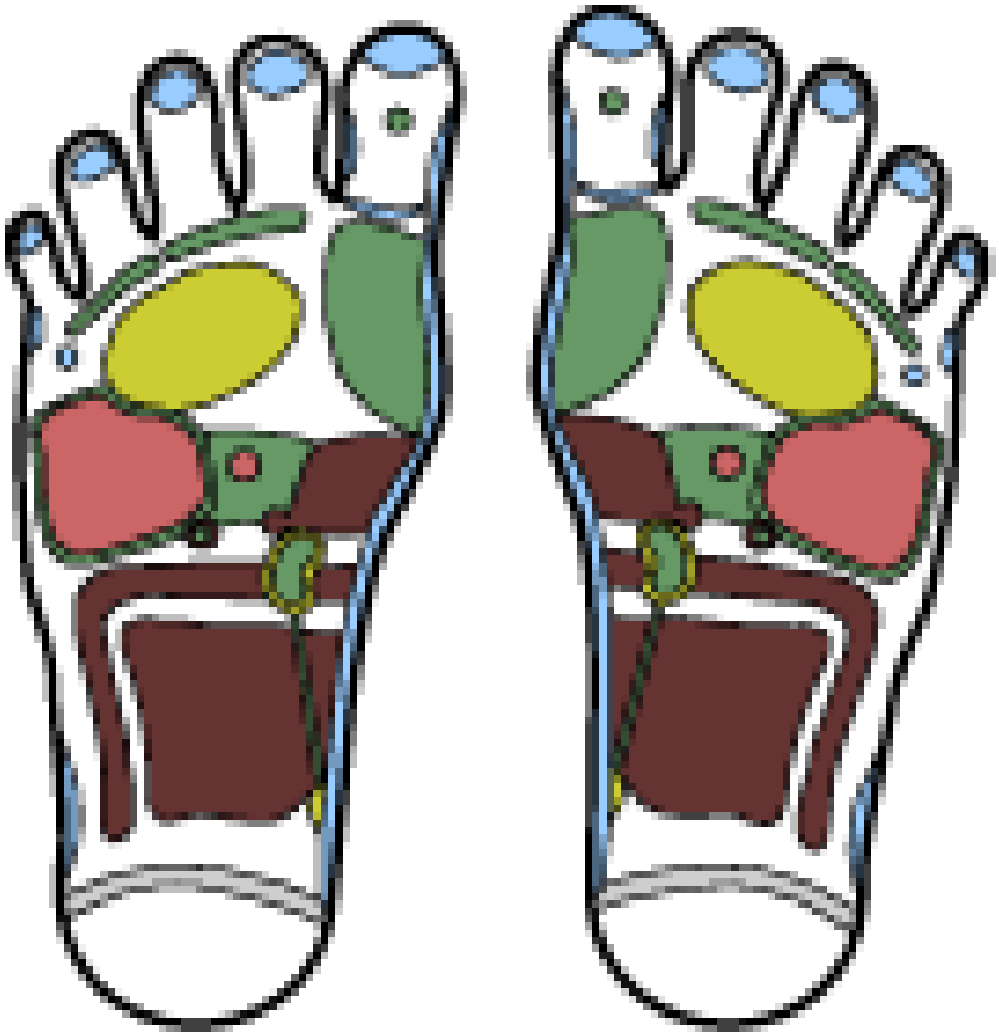
Date:	**Treatment:**
Comments: Have there been any changes to your circumstances, medication and general health since your last treatment?	
Client declaration: *I declare that the information I have given is correct and to the best of my knowledge I can undertake treatments without any adverse effect. I have been fully informed about contra-indications and I am therefore willing to proceed with treatment.*	
Signed (Client):	**Date:**

Date:	**Treatment:**
Comments: Have there been any changes to your circumstances, medication and general health since your last treatment?	
Client declaration: *I declare that the information I have given is correct and to the best of my knowledge I can undertake treatments without any adverse effect. I have been fully informed about contra-indications and I am therefore willing to proceed with treatment.*	
Signed (Client):	**Date:**

Date:	**Treatment:**
Comments: Have there been any changes to your circumstances, medication and general health since your last treatment?	
Client declaration: *I declare that the information I have given is correct and to the best of my knowledge I can undertake treatments without any adverse effect. I have been fully informed about contra-indications and I am therefore willing to proceed with treatment.*	
Signed (Client):	**Date:**

Reflexology Indication Points

Client's Name _____



Assessing the Feet

Shape of the foot - usually corresponds with the size and shape of the person. A tall and slim person will usually have long and thin feet. A small and round person will usually have small and round feet. Also, if a person has broad shoulders then that area of the foot is usually broad too. A person with a long neck will usually have long toes. The curve in the person's arch of their foot also co-relates to the curve in their spine.

Corns/Calluses - may indicate an internal problem that has caused the reflex point to become more sensitive and susceptible to the formation of corns.

Warts/Verrucas - may be located on a weak reflex point.

Bunions/Lumps - could indicate other physical problems.

Flat Feet - may add more pressure on a reflex point, causing an imbalance in energy flow.

Scars - may affect energy flow.

Nail Disorders - may indicate disease or vitamin/mineral deficiency.

Odour - may indicate and imbalance in one or more of the body's systems.

Pigmentation - may indicate that the client has had surgery correlating to that area of the body. A yellow colouring may indicate a liver imbalance, or excessive toxins or bile in the system. Very pale foot colouring indicates poor circulation.

Puffiness/Swelling - may be possible areas of fluid imbalance or internal disorders.

Cracks - may indicate a hormonal imbalance (especially around the heel area), other internal disorder, or a lack of fat in the diet.

Dry Flaky Skin - may show dehydration, a skin disorder or poor circulation.

Colour Variations - may indicate a build up of toxins, fluid retention or mucus in that area of the body. It can also indicate a circulation problem.

Temperature of the foot - may indicate a circulation problem if cold, or an illness or metabolism imbalance if hot.

Texture of the foot - may feel harder or softer in some areas than others. Smooth or rough, dry or moist. You may also feel resistance in the tissue on the area you are working on.

Popping sensations - like you are pressing on bubble wrap, can be caused by an energy imbalance. Can be common in the large intestine area and can also indicate trapped wind in that area.

Stiffness - indicates that there may be a lack of mobility or stiffness in the foot when massaging the feet.

Crystals/Grittiness - is a build up of uric acid crystals and calcium deposits on the end of the nerve and capillaries, which causes congestion. Working this area can help to disperse the crystals, encourage a better flow of energy and improve circulation.

Hollow/Empty Areas - can be due to poor energy flow, or where an organ has been removed in that area. Equally, if there is a build up of scar tissue within that area, you may feel hardness in the corresponding reflex point.

Hardness - may indicate a poor energy flow in that reflex point. It can also indicate muscular tension and tightness within the area.

Dampness - indicates that the client may be retaining toxins and not eliminating waste efficiently. Excessively sweaty feet can indicate a hormone imbalance. It may also indicate a thyroid imbalance.

What the client may feel during treatment:

Sensitivity to touch, even with the lightest of pressure.

Sharp sensation, like they have been pricked with a pin.

Pain.

Discomfort.

Dull ache.

9. CONTRA-INDICATIONS

A contra-indication is the presence of a condition which may make the client unsuitable for a treatment. The treatment may not be able to take place or the treatment may need to be adapted.

When treating a client, if they show signs of any contra-indication, tactfully refer them to their GP for treatment/advice. Never tell your client what contra-indication they may have even if you are sure you know what it is. You may be wrong!

If you are ever unsure about a contra-indication then do not treat the client, refer them to their GP. This way you are always protecting yourself and the client.

Be very careful when dealing with contra-indications. It is a controversial subject and you never want to leave yourself open for further implications.

We also have to consider other clients, always make sure that your place of work, implements, and you, are very clean to avoid cross infection.

There are certain conditions that will prevent treatment occurring, or require a letter of approval from the client's GP. These are as follows:

High/Low blood pressure – clients should have medical referral prior to treatment, even if they are on medication. There is a risk of a thrombosis (blood clot) which could travel to the brain.

Epilepsy – due to the complexity of the condition, medical advice should always be sought before treating a client. There is a theoretical risk that over stimulation or deep relaxation could provoke a convulsion (this has never been proven in practice).

Diabetes – this condition requires medical referral, as a client with diabetes is prone to arteriosclerosis (hardening of the walls of the arteries).

Severe circulatory disorders and heart conditions – medical clearance should always be sought before treating a client. Increased circulation may overburden the heart and can increase the risk of a thrombus.

Recent haemorrhage – this is excess bleeding, either internally or externally. Any massage should be avoided due to the risk of blood spillage from blood vessels.

Fever – there is a risk of spreading infection as a result of increased circulation. During a fever, the body temperature rises to fight the infection.

Cancer – medical treatment should always be sought before treating a client. There is a risk of spreading certain types of cancer through the lymphatic system. Once medical clearance has been given, treatments can help relax and support the immune system. If the client is receiving chemotherapy or radiotherapy for any conditions, medical clearance should also be sought.

Undiagnosed lumps, bumps, swellings – the client should be referred to their GP for a diagnosis. Treatments such as massage may increase the susceptibility to damage in the area by the pressure and motion.

Varicose veins – clients may be more prone to thrombosis, so clearance from the GP will be necessary.

Medication – caution is advised in clients who take heavy dosages of drugs. This could affect their response to treatment, making it stronger due to the increased elimination of the drugs from the bloodstream.

Recent operation – depending on the site of the surgery it may be necessary to seek medical advice.

Acute infectious disease – due to being highly contagious.

Intoxication – the increase in blood flow to the head can cause dizziness.

Thrombosis or embolism – there is a theoretical risk that a blood clot may become detached from its site of formation and be carried to another part of the body.

Recent scar tissue – massage should only be applied once the tissue is fully healed and can withstand pressure.

Severe bruising – should be dealt with as a localised contra indication.

Allergies – ensure that any oils or products used do not contain substances to which the client is allergic.

Pregnancy - it is advisable to avoid treatment during the first three months. Some pregnant women may experience dizziness, so caution should be taken after the treatment.

Elderly - pressure should be altered when treating elderly clients as they are more susceptible to bruising.

Children - a lighter pressure should be given for children. Always have a parent present when treating.

10. CONTRA–ACTIONS

Contra-actions are adverse healing reactions a client may experience during or after a treatment.

You must explain to your client what/if any reactions to expect during/after a treatment.

With all contra-actions tell your client that if they do not improve within 24 hours to get in touch with their GP for advice.

Below is a list of what contra-actions that could occur during a reflexology treatment:

Sense of wellbeing
Comfort
Desire to sleep
Laughing/sighing/yawning/crying
Deep breathing
Thirst
Tenderness
Nausea

Or After a reflexology treatment

Increased energy
Light headedness
Headache
Extreme tiredness
Heightened emotions i.e. crying
Feelings of alertness
Cough

It is important to explain that these symptoms are part of the healing process, sometimes called a “healing crisis”. The symptoms will pass and are an evident sign that the treatment has been beneficial.

11. AFTERCARE

It is very important to give your client clear instructions about what to expect and what to do at home in order to get the best from their treatments. This will help prolong the effects of the treatment.

Explain to the client the following points:

drink plenty of water to aid flushing out toxins

avoid eating a large meal for several hours as the body needs energy for healing

avoid smoking

avoid alcohol, tea and coffee

rest.

It is essential to emphasise the importance of aftercare.

Clients must be provided with clear written aftercare instructions to prevent adverse reactions and know how to deal with them.

The client should sign to confirm that they will follow the aftercare regime and, if they are unwilling to do so, the treatment should not be carried out.

It is always good practice to give your clients a leaflet explaining the advice, this way you make sure they know and understand what to expect.

Finally, ask the clients for feedback on the treatment; fill in their record card on your findings and ask when they would like to rebook.

12. EQUIPMENT & PRODUCTS

The beauty of carrying out a reflexology treatment is that very little equipment is required.

Some therapists decide to purchase a massage couch, which will vary in price. If couches are used, they should always be covered with bed-roll or clean sheets/towels. Another alternative to using a couch is to use a stool or a lounger style chair.

The use of oils is not always recommended as it can be difficult to apply a firm and consistent pressure if the area is too slippery. Instead, a natural, unperfumed talcum powder can be used to lubricate the feet, especially if they are dry.

Foot wipes are used to cleanse the feet.

13. STORAGE & INSURANCE

STORAGE

Make sure you receive a copy of Material Safety Data Sheets (MSDS) from your suppliers. All staff must be trained on the use of products and equipment. Training manuals and information leaflets should be accessible to all staff.

Store your products correctly by following the guidance on the MSDS.

Carry out a risk assessment on each product or COSHH report if required.

Keep products in original containers where possible and ensure any decanted products are fully labelled in smaller, purpose built containers.

Keep all flammable products out of direct sunlight and at room temperature or below.

Mobile therapists must make suitable travel arrangements to avoid spillage and ensure safe working practice, and be professional in appearance.

INSURANCE

There are several types of insurance that are potentially relevant to you as a therapist. The most important are the 'Professional Indemnity Insurance' and 'Public Liability Insurance'. Both of these are necessary in the unlikely event that a client decided to sue you.

Public Liability Insurance - This covers you if a member of the public, i.e. a client or passerby is injured on your premises or if their personal property is damaged in any way.

Professional Indemnity Insurance - This protects you should a client decide to sue you claiming personal injury or damage as a result of treatments carried out by you.

Employer's Liability Insurance - This is only necessary if you hire others to work for you. This type of insurance would cover you should a member of your staff have an injury on your premises.

Product Liability Insurance - This insurance is important if you plan to use, manufacture or sell products as part of your business. This will protect you in the event that a client is dissatisfied with the product or experiences a reaction to using the product.

Car Insurance - If a car is used for business purposes, ensure that this is covered by the policy and that theft of equipment is included.

14. MAPPING OF THE REFLEX POINTS

The diagrams illustrate the relevant site of reflex points that correspond with the whole body. You may see other charts that differ slightly, but a reflexologist will soon learn to use their own intuition when working with a client.

The whole foot, including the soles, tops and sides of the feet are used in reflexology, and will represent the whole body.

As a rough guide:

The toes represent the head and neck.

The inner (medial) side of the foot represents the spine.

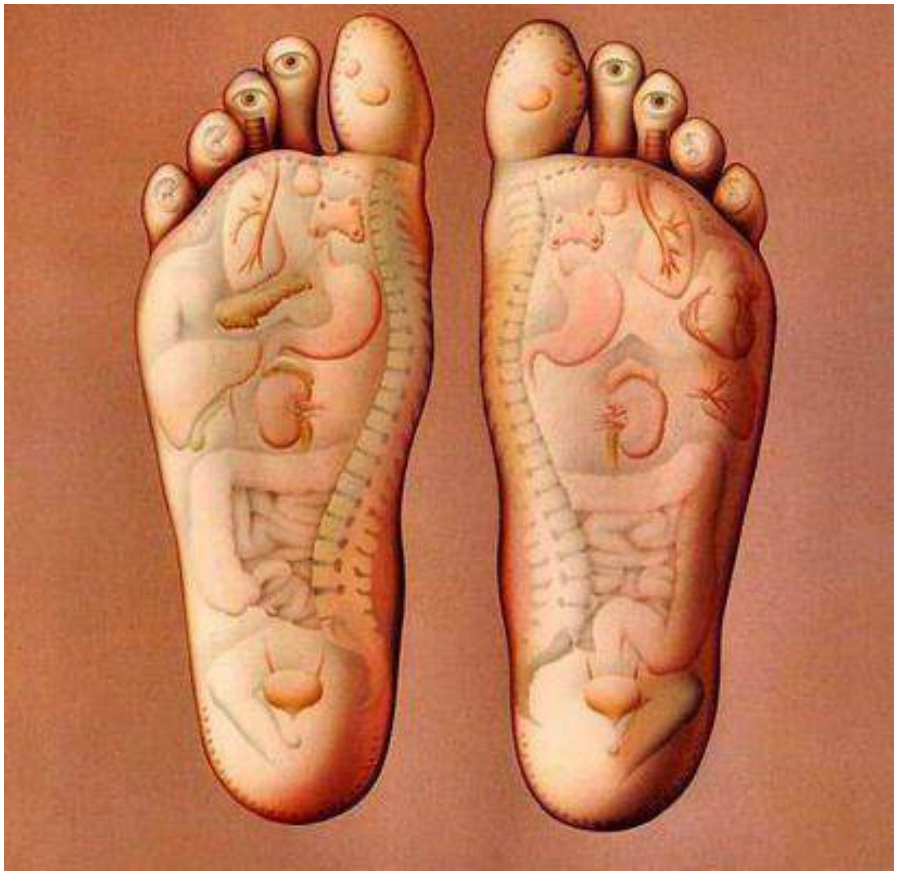
The outer (lateral) side of the foot represents the hip, knee, elbow, upper arm and shoulder.

The ball of the foot represents the thoracic area.

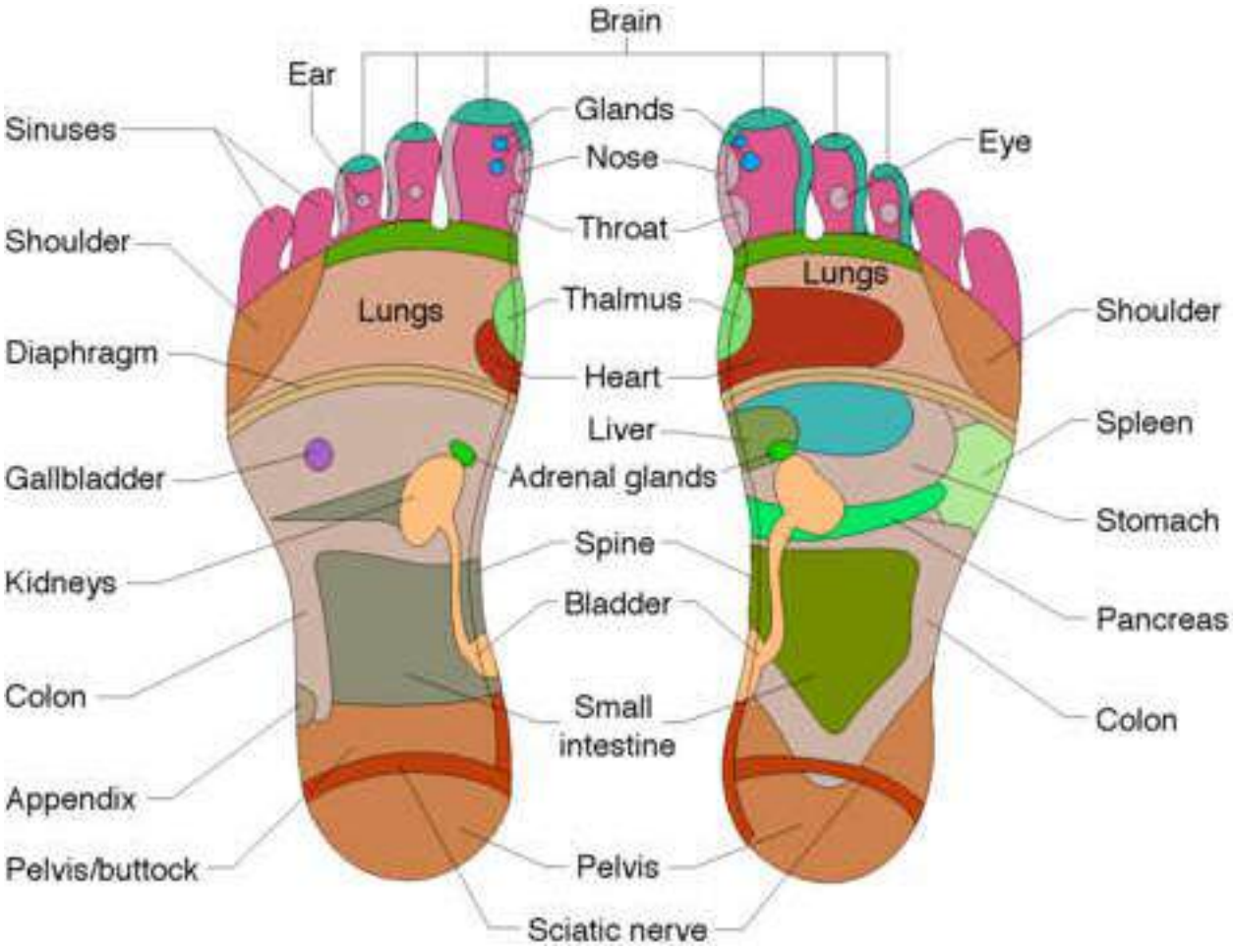
The arch of the foot represents the abdominal area.

The heel of the foot represents the reproductive area and the pelvis.

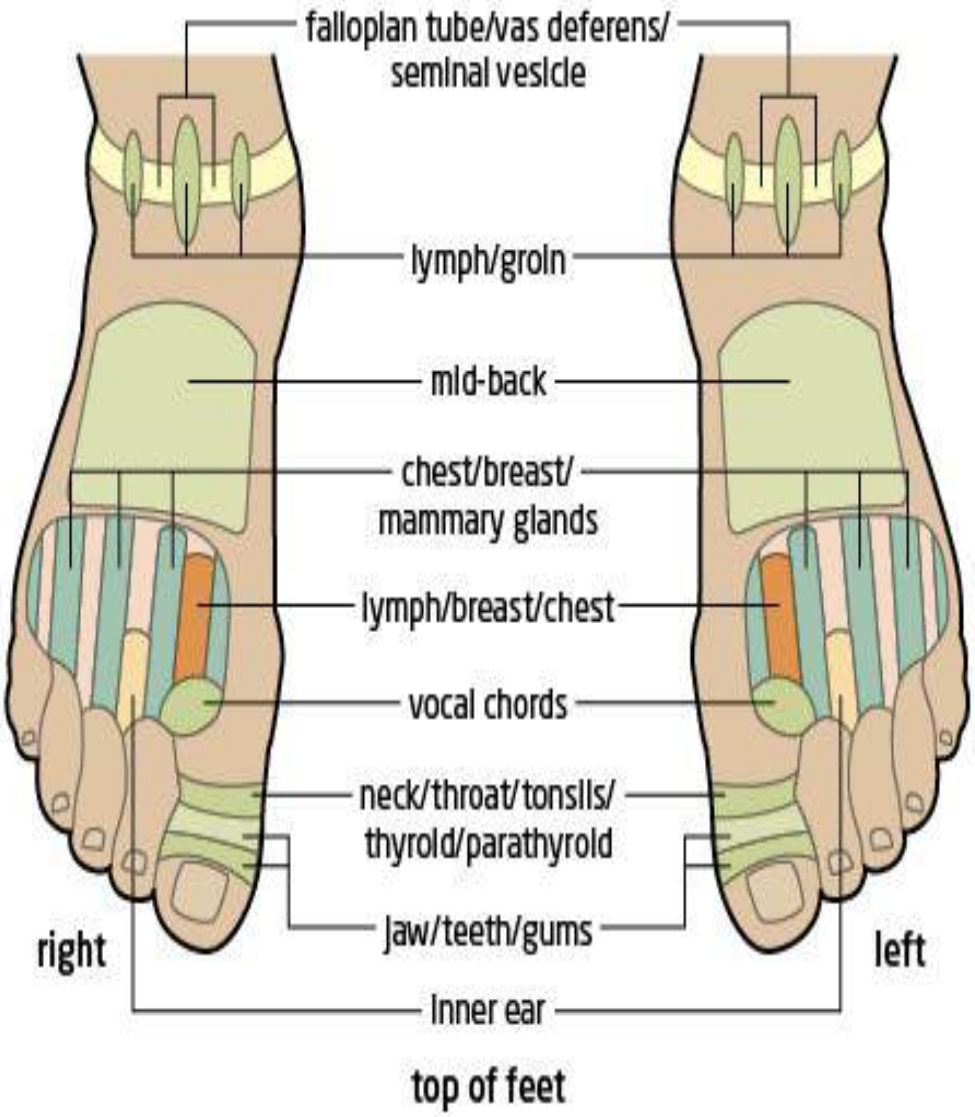
The top of the foot represents the lymphatic circulation.



Plantar View



Dorsal View


falloplan tube/vas deferens/
seminal vesicle
lymph/groin
mid-back
chest/breast/
mammary glands
lymph/breast/chest
vocal chords
neck/throat/tonsils/
thyroid/parathyroid
jaw/teeth/gums
inner ear
right
left
top of feet

15. REFLEXOLOGY ROUTINE

Preparing for the Treatment

Tips on how to prepare yourself and your work room for treatment.

The treatment room should be warm, well ventilated, and draught-free. (The client's body temperature will drop during treatment).

The room should be quiet, peaceful and free from distractions.

Soft relaxing music can be played. Some clients prefer no music.

Lighting should be soft. Make sure no lights are shining in the client's face.

Candles and scented oils can be used for added relaxation.

The area must be spotlessly clean and tidy.

Clean towels and fresh couch-roll should be used for each client.

Blankets and pillows will help the client to be warm and comfortable. Only the foot being worked on should be uncovered during treatment.

Have all your products and equipment set up neatly prior to the client arriving.

A covered bin should be to hand for disposal of waste products, such as tissues and wipes etc.

A hand basin or hand sanitiser should be close by as hands must be washed before and after each client.

You should be calm, relaxed and reassuring to relax the client.

There is no right or wrong way of carrying out a reflexology routine, but it is always advisable to start and end the treatment with a foot massage to help the client relax, and to release any tension in their feet.

Your teacher will demonstrate the relaxation routine to be used. It will last around 5 minutes and, once learnt, you, as the reflexologist, can use some of the techniques during a treatment if a particularly painful area is found.

It will be down to your personal preference, but most practitioners work on one foot before proceeding on the next. The most important thing to do is to cover all of the reflex points shown in the diagrams to ensure that all areas of the body are worked on. Remember that each client is individual, so you are going to find some areas are more painful for one client than for another, and the treatment may need to be adapted. Practise the amount of pressure you apply, and whilst you are training, do not be afraid to ask for feedback. Your teacher will demonstrate the whole treatment to you.

The actual treatment itself involves using your thumb and fingers, compressing and then relaxing. The thumbs tend to be used on the area of the foot that has more padding, such as the plantar (underneath) area, and fingers are used on the dorsal (top) part of the foot. The technique of using your fingers and thumbs will take some practise as you will need to bend and unbend the digits at the first joint. Tiny steps are used to "walk" along the feet, covering all reflex points and applying pressure as you do so. This "walking" motion needs to be tiny and minute as the reflex areas are very close together, and no areas should be missed.

As you "walk" over the areas, you will be able to assess what sort of problems your client may be experiencing. Be very aware of making a diagnosis. You should never tell the client that they have something, but instead suggest that there may be an imbalance in the area. If you are very concerned about something, especially if you have treated the client before, advise them to visit their GP to get checked.

A good reflexologist is one who treats many different clients. It is through practise and experience that you will begin to notice that some areas of the feet "pop" as you "walk" over them. This is a sign that there is, or has been, an imbalance in the area. If the area feels like grains of sand it can indicate that there is congestion in the area of tissue. It may feel like a sharp pain to the client and this is called crystalline deposits. The area may also feel lumpy or spongy, which can indicate a chronic condition (long term).

If you feel some areas that are clearly causing pain to your client, do not avoid working on them. Instead, apply sufficient stimulus to be able to help, but not too much to cause severe pain. Use the relaxation techniques you have been taught to ease any pain and to ensure your client remains relaxed. Explain to the client that some areas may hurt, but in the long term, this treatment will benefit them.

The whole treatment will take around 45 minutes to an hour, which will include an evaluation of the previous treatment and a 5 minute massage at the beginning and end of the treatment. Always allow 5 minutes' rest before the client leaves in which you can discuss the treatment and your findings.

Reflexology Techniques

Thumb/finger walking

Using the pad of your thumb, walk the thumb forwards and apply pressure as you do so, like little bites. This is also known as *the caterpillar* movement.

Rotation on a point

Place the thumb or finger onto a reflex point and rotate on it.

Pivot on a point

Use your free hand to support the foot, and place the thumb of the other hand onto the reflex point. Use the supporting hand to push the foot onto the thumb and lightly rotate the foot. This can be used along the diaphragm line, the solar plexus and the adrenal gland reflexes.

Flexing on a point

This is the same technique as the "pivot on a point" except the hand supporting the foot moves the foot back and forward onto the thumb instead of pivoting.

Hook and back up

Use the 'medial corner' of the thumb and push into the skin. Hook into the skin and then pull the thumb back slightly. This technique can be used to work the pituitary and pineal reflexes.

16. BUSINESS PRACTICE FOR COMPLEMENTARY THERAPIES

Having the necessary qualifications is obviously the starting point, but by no means are they the most important, as acquiring business skills will enable you to work for many years.

First of all you need to ask yourself why you want to have your own business, rather than work for an employer such as a spa, clinic or salon. For many people, the answers to that question are similar.

Work within your own time, at a time convenient to you
Have control over your own work load
Reap the financial rewards for your own hard work
Have no-one to answer to
Self satisfaction of your own achievement
Choose your own holiday dates
Doing the job you enjoy doing

All of the above are able to offer considerable advantages to being self employed, but it is important to remember there are some downfalls.

You have to constantly source your own work load
No job security
No holiday, sick pay or pension plan
Being organised is essential

There are millions of people in the UK who are registered as self employed, and many of them run successful, profitable business who would never work for an employer again. It is important that you are aware of the different types of business's available, such as a partnership, a limited company, sole trader, franchise etc.

The key to a successful business is taking the first step and writing a business plan. The plans aim is to set out an overview of your business, how you expect it to grow, how it will operate and your financial forecast. The plan will help you to remain focused, both in the short and long term, as there may be times when you feel you are losing direction and need some guidance.

A business plan could be compared to a recipe, in that it states what it is you are doing and how you are going to get there, almost like a map. Without a plan, it is easy to lose sight of what it is you are doing, and as the business takes off it is difficult to remember what your initial plans were.

The Business Plan

The majority of high street banks now have pre-printed business plans which can be ordered or downloaded, so it will not be necessary for you to produce your own layout. In fact if you wish to borrow money from a lender to start up your business, they will need to see your business plan to gauge your goals and targets for success on return of their money. The average business plan can be around 20 pages long.

Even if you do not wish to borrow money or have an investor in your business, it is essential that you still write a business plan. It may need to be seen by others at a later date, including future business partners or anyone considering buying your business, but above all that, it will be an internal plan for you to refer to.

Many people put off writing it because it can be a time consuming process.

Writing a business plan..... there is no right or wrong way of writing a business plan, but it is the consideration which goes into it which is of importance. Generally, the following topics will be considered.

At the front of your business plan, will be your summary of the key points of your business and it will be the most important part of the plan. Its job is to tempt the person reading it, possibly a lender or investor into reading further. It should capture the imagination of the reader and cover the whole of your plan, not just consist of a few bullet points. There are some very good free examples of business plans online, for example www.bplans.com/sample.

What is the vision of your business?

- ✓ What exactly is it you wish to achieve?
- ✓ Do you hope to employer others, now or in the future?
- ✓ Do you see yourself as head of your empire with lots of people working for you?
- ✓ Do you just want to work as a mobile therapist?
- ✓ How do you visualise your business now and in the future?
- ✓ What do you want out of it?
- ✓ What service/s do you plan to offer?
- ✓ What are your objectives and short/medium/long term goals? These should be SMART (specific, measurable, actionable, realistic, and timed.)
- ✓ What are going to be your key to success so that you stand out from others?
- ✓ What is your mission?

How will you brand your business?

This is so important and a lot of people rush into this part. What will you call your business? It is important that you choose this carefully as you do not want to change it at a later date.

- ✓ Choose a name that is not confusing or too long to remember. You want people to hear it, remember it and know exactly what it offers. Have you researched your local area and competition for businesses with similar names?
- ✓ Will you have a logo/colour scheme? If so, then ensure you keep it the same on all forms of advertising, business cards etc. You may feel that this is rather unnecessary for a small business, where it is only you working, but creating the right image is essential for building up a picture of what you do.

How will you get your customers?

You need to consider who your customers are and who you will target your business at. Some people worry about doing this as they think they will exclude people, but if you feel your target audience is middle aged women, then you need to find a way of reaching them. This could be through journals or magazines that they read, clubs they belong to or the radio station they are most likely to listen to.

Consider what the current market situation is in your line of business.
Is it a growing market or one that is already drenched in your area?
What is the size of the market and the scope for growth? Who are your main competitors and how will you stand out from them?
Look through the yellow pages and local advertising brochures to see how many businesses are offering the same service as you. If they are twenty people offering the same service in your area, you may need to approach things from a different angle and offer something that they do not.
Consider the costs of marketing and advertising as this is a very expensive procedure.

What are your business operational details?

Right from the start, you need to consider where you will run your business from. Will you be mobile and use other peoples homes to run your business, or will you run your own clinic/salon in another setting, such as a health spa or hairdressing salon. Some people set up a room in their own home, and this works for many if your living arrangements allow it.

What hours/days do you plan to operate? This may change as your business develops, but it is important to consider what your competitors are offering.

If they provide a service in the evenings and weekends to suit people's needs, you may need to as well. It may mean you have to work hours that you did not wish to, in order to compete. If you are providing stock, who will you use as a supplier if necessary? Ensure you shop around to get the best discounts and set up an account with a supplier which will allow you to pay for your goods monthly on an invoice. Find out if you need to belong to a regulatory body to provide your service as some of them will have their own restrictions and guidance on practising. Research the likely cost of any insurance you will need.

What is your financial forecast?

This part takes real honesty and realism to consider the cost of setting up your business.

How much money do you believe it will cost to set up the business?
Will you need to borrow money from an external lender such as a bank or family members?
How do you plan to pay it back? Even if you borrow money from someone you know, always make sure you are all aware of the plans to reimburse, and get this in writing. This is to protect you as well as them as many verbal agreements are set up but not fully understood.
Will you need to purchase specialist equipment such as couches, trolleys and sterilisers? List all of your expenses and consider any hidden costs.
What is your budget and how realistic is that?
Write down all of your initial set up costs, then your daily running costs and consider how much you are going to need to charge, and how much work you are going to have to generate.
What profit do you expect to make and by when? This forecast should be over the next three to five years but should include your monthly cash flow patterns for the first year to show how you will sustain the business, detailing all of your overheads showing your profit and loss. It is better to forecast a slower but more realistic profit. You will also need to show that you have considered the risks associated with your proposal and the contingencies that you have arranged in case things do not go to plan.
Essentially, your business plan is a working document, so that it is an ongoing process which needs to be updated and flexible. Revise your plan periodically and look at what is working and what could be amended.

The Legalities of Running a Business

Choosing premises, insurance, registering your business, health and safety legislation.
You will also need to get public liability insurance to cover you for any accident that a client may have within your property, such as tripping

over a trailing wire in your house, or any damage that may be caused to the client's personal property. Existing home insurances are rarely adequate for this so it is essential to take further cover out as well as notify your existing buildings and contents insurers of your plans.

If you own a great deal of equipment, you may consider taking out a business equipment policy. This could cover you if your expensive hydraulic couch breaks or is stolen.

If you wish to play music to enhance the environment, you will need to gain a licence from the Performing Rights Society, as any music that is purchased only gives you the rights to listen to it privately. Any music that is deemed to generate profit needs to have a licence. Visit www.prsformusic.com for more information to see if you need to apply for a license.

If you decide to rent a room or clinic then you will probably be under the organisations rules, but it is still essential that you have appropriate insurance cover and that the environment is safe and conducive to receiving treatments. If you work in someone else's premises it needs to be decided what sort of commitment you make and how the organisation is going to be run. For example, you may need to sign a lease and pay ground rent or for the use of a shared receptionist. These are all factors that need to be considered. Many clients enjoy going to a "set up" clinic as they feel it is more professional, as it can be, if designed right.

Insurance

Many therapists see insurance as an extra, unwarranted cost, but unfortunately accidents do occur, so it is essential that you have adequate insurance cover, to protect both yourself and your clients. The main types of insurance are:

Medical Malpractice Insurance – this is to cover for each therapy/treatment that is on offer in case negligence arises. This is a very important policy as it protects you, for example against treating a client and them suing you afterwards for a reaction to the treatment. Most clients like to see that their therapist has this insurance as it proves to the client that you have the appropriate qualifications in what you are offering. Some regulatory bodies actually insist that you have insurance for the therapies that you offer.

Public and Product Liability Insurance – this is to cover your clients and their property from accidents and also any product that you may use on them, sell or give to them. This is especially important when using products which may cause allergic reactions. It is recommended you have this cover if you are using any product, such as aromatherapy oils.

Business Equipment Insurance – a policy to cover the equipment that you need to carry out your work, in case it is lost or damaged. It is important to remember that if you have any equipment lost or stolen, you are going to find it difficult to continue with your work without it, as well as having to replace those items.

Registering and Running your business

If you do not employ anyone, then you only need to register yourself as self employed with the HM Revenue and Customs to work as a sole trader. There are many benefits to running your business in this way as there are no registration fees and the paperwork you need to keep is relatively straightforward. However as a sole trader, you are personally responsible for all debts accrued. You can apply online or telephone the Newly Self-employed Helpline on 0845 915 4515. You have three months to register yourself as self employed from starting work. Once you have registered, you will receive an annual self assessment tax return, which needs to be completed using the records you have kept. This can be done by yourself or your accountant if you use one. You will be notified of the dates that this needs to be submitted and any tax owed will be calculated for you.

If you opt for going into partnership with someone else, then the entire decision making needs to be shared, as well as any financial costs. Of course, the partner is also responsible for sharing any debts that may occur. To register a partnership, each partner needs to declare themselves self employed and then it is wise to have a legal document drawn up to set out the circumstances.
If you decide to run your business as a company you will need to appoint at least one director and issue shares as the company's finances are separate from the finances of the owners. The company needs to be registered at Companies House. The Companies Act 2006 has made some important changes which will affect directors and share holders so it is essential that you are aware of these. Setting up a Private or Public Limited Company can be a confusing process, so it is advisable to seek legal assistance with this matter.

If you are employing people, then the process becomes more complex as you need to register with the HM Revenue and Customs as an employer and deal with payroll systems. You will also need to follow

different guidelines and laws governing parental rights, health and safety, contractual changes and time off. You will also need to register with either your Health and Safety Executive or your local authority. Most employers feel the need to use an accountant at this stage. Any member of staff who has been employed for more than one month is legally entitled to a written statement of their employment (contract).

Legislation

Even if you work for yourself, there are still rules and regulations that you need to adhere to. Legislations are rules set out to protect ourselves and others.

Health and Safety Legislation

Health and safety is about preventing people from being harmed, in this case, whilst they are at work or becoming ill through work. We all have a legal obligation to ensure that we do not put ourselves or others in danger and this applies to businesses of all sizes.

The Health and Safety at Work Act 1974, sets out what is expected of us and makes it the duty of every employer to ensure the safety and welfare of the employees in which people should be protected against risks to their health or safety. If you employee more than 5 employees, you need to have a Health and Safety Policy in writing, detailing how you plan to manage health and safety issues.

Even if you do not employ anyone, you are still responsible for the safety of others, including your clients. If you are working from home or your own clinic it is important that you carry out regular risk assessments to reduce the possibility of an accident happening to either yourself or your clients. It is important to look for such hazards as slips, trips and falls, faulty electrical equipment, and any dangerous substances or materials. You are not expected to remove all risks, but are expected to protect people, where “reasonably practicable”

As well as physical hazards, it is important to look for psychological ones as well. For example does your working environment cause stress due to lack of space, or lighting. When carrying out your risk assessment, it is important that the hazards are identified, that they are recorded, then decide who is at risk. Remove the hazard or reduce the risk of an accident occurring, then check the risks regularly. It is important to also include an action plan on how you will deal with risks.

If any equipment is being used, by yourself or your client, it is important to check it often. Any couches must be secure when up, seats and chairs should have adjustable heights and socket points should not be overloaded. All electrical equipment must be yearly PAT tested.

If an employee suffers a work related injury and is off work for 3 consecutive days, the employer must inform the H & S executive about the incident within 10 days.

Control of Substances Hazardous to Health

If any dangerous substances are being used, such as essential oils, it is important to comply with The Control of Substances Hazardous to Health Act (COSHH) and ensure that all substances are locked away or have child proof locks on them. If a client comes to your house for a treatment but brings a young child who finds a bleach bottle, you are held responsible.

First Aid at Work Act

If you are working from home or from within a clinic, it is important that you have a fully stocked first aid box, as well as an accident report book, to comply with the First Aid at Work Act. It may not be necessary to have a qualified first aider if you are a small business, but the Health and Safety Executive (HSE) can advise you on appropriate training courses if you are interested in training. The qualification, First Aid at Work, is valid for three years.

Marketing and Public Relations

You may now have decided on what services your business is going to offer and where you are going to offer them from. The next step, and one of the most important, is getting the general public to know about you. Many business's come unstuck at this stage as marketing is time and money consuming, and it is all too easy to fall into the trap of "waiting for people to come to you". You have to get your business name out there, and frequently. But marketing is not just about advertising your business. It is knowing how to deal with your customers and then promoting your sales so that you business continues.

It is essential that you carefully choose the marketing mediums that suit your business and what services you are offering. If whilst you were carrying out your business plan you decided that you want to have thirty clients a week, your advertising is going to have to go to a large audience to be able to maintain that each and every week. It has also

got to be the most cost effective way of getting your name out to the right audience.

First of all you need to decide how much money you initially have to start your advertising campaign off with. Once you have this budget, you can start looking at the different mediums that are on offer.

Secondly, you need to consider who your target audience are and get to know them. This is essential for pitching your marketing campaign. If you are offering beauty treatments, you may decide that women aged between twenty and forty five are going to be your most likely customers or young girls during prom season.

If you are offering holistic treatments, you may find that men are equally keen on having a treatment as much as women. There is a danger of restricting your target audience by the stereotypes that we hold, so be very aware of looking outside of the box when choosing your target audience.

Once you have decided who you are aiming your services at, you can decide on the form of marketing that will reach them. For example, if you are hoping for women who have a higher disposable income then it may pay you to research where those women are likely to work. It could be possible to directly approach a large employer and offer your services within their workplace. If your client group is young mothers who are in need of stress relief, then it may be wise to directly approach toddler groups, playschools or nurseries. Below are some ideas of the different forms of marketing mediums.

Branding

Branding can be referred to as the name, sign or symbol used for your business, or a combination of all of them. It is not just about being better than your competitors, but is there to allow your potential customers to know clearly what it is you do and that you are the only business to use.

Whichever branding style you choose, it needs to deliver a very clear message to your customer in a way that motivates them to use your service as it is the only one that will do the job correctly.

When you are choosing the name for your business, ensure it does not sound similar to any other company as people will mistake you for them. Do not rush into choosing a name as you do not want to change it once set up!

Any printing that carries your business name should be consistent and carry the same design. Do not confuse your customers by swapping, especially if you change printing companies. Remember first

impressions count and you want your customers to be impressed with quality materials, so choose the colour and paper design carefully, as it should look vibrant and expensive.

Radio

Local radio stations tend to have a target audience, which makes it easier for precise marketing opportunities. Hearing the same advert four times a day can have a subconscious effect, and before we know it we are singing the jingle that goes along with the advert.

If you can afford radio advertising, you are going to be reaching thousands of potential clients. It is important you consider the effect of a good radio campaign and whether you would want to have thousands of clients! Would your business be able to cope with high demands, because if you only want to have 10 clients a week, then radio campaigns may actually promote too much business and be a waste of money.

Websites/Internet

Building a professional looking website can be expensive, but this will depend on what your service is. If you are aiming for a site that contains information only, for example the treatments that you offer, the price and contact details, this can be built relatively inexpensively, and be managed by yourself. However, if you wish to sell products, and require online purchasing facilities the costs are going to rise.

Consider your needs carefully, as your site may work well as an additional marketing tool alongside another medium, and only cost a small annual fee for the domain name.

Websites that are designed and worded poorly will not get a second glance. They need to state clearly what services you have to offer, and be very reader friendly, in a clear font and a good size. Web sites that are littered with too much information can put a reader off, losing potential custom.

Directory Advertising

Now with the use of the internet, it is possible to place your advert with online directories such as yell.com and pay less for your advertising. Some websites allow you to join and place your advert for free. Research your chosen area well to see what competition you have before deciding on what type of advert you want as it is going to need to stand out from the others.

All adverts are going to be placed within categories, so if you are offering more than one therapy, you may need to choose which therapy to go with, or spend more money.

Newspaper Advertising

Newspapers are a cost effective way to reach a mass audience, though you cannot choose who your audience are going to be. Local papers can have a large circulation of readers but only a percentage of them are going to be your target audience, causing a great deal of wastage.

Print is relatively cheap and can be altered quickly, for example when advertising special offers, such as three treatments for the price of two, but it is very easy for small adverts to be lost amongst a page of large text. Having said that, a small advert is better than no advert and readers will soon start to recognise your name.

Again research your area of services to see what your competition is doing.

Leaflet Drops

A5 sized flyers can be printed relatively cheaply and are a good way of reaching a target audience, especially in a particular location as they can be included as inserts into other publications being delivered. Ensure that you consider where your leaflets are going to be distributed as a large majority of them will end up in the rubbish bin. If you do employ a company to deliver your leaflets, it is well worth carrying out some independent research once they say they have done the mail shot to ensure they have actually delivered your leaflets, as requested. It has been known for companies to not even carry out the job and destroy the leaflets.

Flyers can also be used successfully on notice boards in local community and health centers, libraries or shops, but it is essential that your leaflet gets your message across quickly as otherwise they will not receive a second glance.

Demonstrations/ Taster Sessions

The nature of the beauty and holistic business lends itself well to offering demonstrations and taster sessions, and with a little preparation and thought, you can reach your target audience at minimal expense, just your time. Most large towns and villages offer health and well being days and these give the practitioner an ideal opportunity to advertise their services. Be very aware of the usual issues when offering mini sessions, as you usually would with a full treatment, such as taking contra-indications into account and offering after care. It is also important that your insurance covers you for workshop/taster sessions rather than full treatments.

These types of events usually just charge a nominal fee for hiring the space, so offering taster treatments at a low price can generate a lot of business, now and in the future.

Gain some confidence and try carrying out a demonstration at a local group, for example a mother and toddler group, or a pamper party. This is an ideal way to reach out at those who are going to be your most likely customers, but are not exactly sure of what it is you offer.

Donations

It may seem strange that when you are trying to sell your services, you are being advised to give them away instead. Donating your service, for example in a raffle, or auction will undoubtedly get you noticed and give you "free" advertising. Most clients will then re-book other treatments with you.

Some local radio stations carry out yearly fundraising events and this is a fantastic way to get some free advertising to a huge audience, even if it does cost you an hour of your time.

Importance of Customer Service

It is important to know at this stage, that to look for new customers costs at least five times more than keeping them, so it is essential for the success of your business to offer excellent customer service. Replying to phone messages, being there on time, polite and approachable are just a few ways of offering a great service. The communication techniques that you apply to your customers are very important. The tone of your voice, the type of questioning you use, your listening skills, body language and facial expressions will all indicate your interest in your clients.

Complying with Advertising Standards

Any printed material you produce must conform to general laws governing printed and broadcast material. It must not criticise another company or the service it provides, or make claims that you can cure someone. You can look on the Committee on Advertising Practice (CAP) website for specific guidance.

Record Keeping

Unfortunately, there is a part of running a business, which some people find tiresome and therefore overlook. However, it is an absolute essential that you keep all of your records up to date and in an organised style to make your life easier. If you do not keep records you will not be able to show sufficient evidence

of both your income and any outgoings you may have. It will be therefore be difficult to be able to work out how much tax you have to pay.

There may be penalties for failing to keep adequate records which back up a tax return so it is essential that you record everything. Good records will also allow you to manage your business effectively, for you to be able to see if you are making a profit or a loss.

There are no laws on how you design your records, but they need to represent your business. Some people choose to open a separate business bank account to run their finances, but this is not essential. You will be charged to run a business account and will incur a cost for paying in cheques. What is important is that you keep a separate record of your business and private banking.

With computer programmes set up, it is now very easy to keep most records on a spreadsheet rather than in a paper format. This can save a great deal of time and will allow you to add or delete any information and to keep a running total, however, if you keep any computerised records make sure you back up data often to prevent losing any information. It is also possible to purchase accounting packages which are ideal to be used in small businesses.

Cashbook

This is a record of all of the income and outgoings that you may carry out. Generally, the records will consist of a series of columns which contains information on:

Date of transaction
Deposits or income
Expense's
Reason i.e. what you bought
Cheque number/visa
Balance

It is sensible to keep a page per month, and at the end of the month, you total all of your deposits, your expenses and then balance your accounts with your statement. Get into a regular habit of checking your statements against your own records. Once you have your balance, you carry it forward to the next month, whether it is a profit or a loss.

In order to complete your cash book, you will need to keep your receipts, cheque book stubs, copies of invoices and receipts and delivery notes.

Purchase Day Book

This book is used to record any invoices that you receive from suppliers for any purchases that you make, such as the supply of oils or beauty products. Enter the details of each invoice into your book and give it a number. That way you have a

record of what you have spent or owe. Each time you make a payment, enter it in the date paid column.

Sales Day Book

This book records any invoices you may send out if you are selling a product, for example aromatherapy oils. Each invoice raised should be recorded in your book and given a number. Once the payment has been made, you can enter it into the date invoice paid column. This gives you a record of exactly how much money the business is owed. You can also chase unpaid invoices if necessary.

Stock Records

If you keep stock it is important that you keep a record of all the stock that you hold. This will allow you to see what stock you are holding and to avoid running out. It is also essential that you record any stock that is used for personal usage. When you complete your annual self assessment, it will be necessary to include the amount of stock that you are holding as this has a value.

Petty Cash Book

This book records any small cash transactions, such as paying for an advert to go into a shop window, or postage stamps. Most cash books operate with a small float, for example £30 as and when the money is used, it is replaced. Using a petty cash book will prevent you taking lots of small amounts out of your business account.

Receipts

All receipts need to be kept in a monthly file, so that they correspond with the monthly account. You can use A4 envelopes or plastic files for this. When the month has ended, attach these receipts to your bank statement and file them away.

Mileage Record

If your business involves traveling, ensure you keep a record of the mileage carried out for each journey. Get into the habit of taking the mileage at the beginning and end of each business journey.

Wages Book

This obviously applies to those who are employing staff. It is a record of all individual employees, their tax and national insurance as well as the net pay. You can obtain form P11 from HM Revenue & Customs to record these details.

Appointment Diary

Keep a record of all the treatments that you carry out and any cancellations. Keep these records for up to five years.

Capital Allowances

This is a record of any purchases that you make on equipment that is used for your business, such as cars, furniture, specialist equipment, computers and other items. When you submit your self assessment, you can list these purchases and claim for them over time rather than for the whole cost at the time of purchase. The reason for doing this is so you can reduce your tax bill by deducting a proportion of the costs.

For equipment, the standard annual allowance is 20%. Your accountant or HM Revenues & Customs will be able to advise you on what is classed as capital allowance.

Your business records should be kept for five years and ten months after the end of the tax year the records relate to. They should be filed first in month order, then in years, running from each tax year. If for some reason, your records are destroyed, it is essential you notify the HM Revenue & Customs.

Likely Problems Encountered

When you are dealing with people it is inevitable that problems are going to occur. You are undoubtedly going to have "no shows" which can be highly annoying as not only are they a waste of your money, but of your time as well. One way of trying to reduce this is to make a courteous reminder before the appointment, maybe the day before, especially if the appointment was made several weeks previously. Most "no shows" are not deliberate, and the client will want to re-book with you, so how you deal with it is also important to maintain that custom.

Cancellations can also be a problem, so some therapists have a cancellation policy that they inform all of their clients of. This could be a charge if not enough notice is given. Again, some cancellations cannot be helped, so use your own judgement. One of the most important qualities a good business person can have is flexibility. Do not be too rigid with your rules as you may alienate your customers.

17. WHAT HAPPENS NEXT?

This training manual needs to be studied in-depth before your practical training begins. You will spend around 8-9 months now working on case studies to include 100 treatments.

You will need to ensure that you can:

carry out an in-depth consultation
perform a relaxation treatment
carry out a full reflexology treatment
label a blank foot
show that you have a thorough understanding of the relevant anatomy, physiology and pathologies
give aftercare advice.

Read all your theory notes and other literature around the subject.

The school is available for support and guidance during and after your training. Further training or refresher sessions are available if required.

Well done and enjoy!

18. CONTACT DETAILS & RECOMMENDED READING

CONTACT DETAILS

Head of Holistics	:	Allie Maisey - email holistics@wsbht.co.uk
Tutor	:	Chrissy Farrar - email cmf959@btinternet.com
WSBHT Address	:	706 Delta Office Park Welton Road Swindon Wiltshire SN5 7XS
Telephone	:	01793 73 77 33
Mobile	:	07824 337333
Website	:	www.wsbht.co.uk

RECOMMENDED READING

Basic Anatomy & Physiology
H.G.Q. Rowett
Hodder Arnold
ISBN 9780719585920

Reflexology: Healing at Your Fingertips
Barbara Kunz, Kevin Kunz
DK Publishing
ISBN 9780789493538

The Reflexology Handbook: A Complete Guide
Laura Norman
Piatkus Books
ISBN 9780749927387

Better Health with Foot Reflexology
Dwight Byers
ISBN 978189113007

19. SELF ASSESSMENT

Do I have a good understanding of?

- ✓ Hygiene, health & safety □
- ✓ Anatomy of the feet □
- ✓ Anatomy, physiology and pathologies □
- ✓ Mapping of reflexes □
- ✓ Massage routine □
- ✓ Contra-indications □
- ✓ Contra-actions □
- ✓ Equipment & products □
- ✓ Aftercare □

Can I:

- ✓ Set up my area □
- ✓ Complete a thorough consultation □
- ✓ Complete a reflexology treatment □
- ✓ Give aftercare advice □

Well done!

20. NOTES

21. ACCREDITATION

This course is accredited by:

Vocational Training Charitable Trust (VTCT)

WSBHT is registered with UKRPL

UK Register of Learning Providers No: 10027055

Medical Disclaimer
It is advised that you take medical advice if you or any of your clients have a health problem. Any qualification from WSBHT will not qualify you to advise on any medical condition or to diagnose a condition.

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