The College of Animal Physiotherapy

Diploma in Animal Physiotherapy

Module 6
Physiotherapy techniques

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AIMS

- To provide a broad overview of the techniques used in physiotherapy
- To practice hands on techniques and accustom students with finding ‘problems’ and treating them.
- To encourage an ‘open mind’ to all the different techniques used in the therapeutic treatment of animals

OBJECTIVES

At the end of this module you should be able to:

- Describe the benefits of and rationale behind massage and stretching
- Confidently and safely carry out a treatment using physiotherapy techniques
- Locate, identify and treat muscular problems
- Evaluate and carry out techniques to improve range of movement
- Correctly prescribe ‘owner exercises’

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PART TWO

Section 1 – Passive and active stretching
Why stretch?
Passive and active stretching and ROM
Posture
Student exercise

Section 2 – The stretches
The neck
The forelimb
The hindlimb
The back
INTRODUCTION

You have studied the therapy equipment which goes deep into tissue and aids repair at a cellular level. You will now study the manual techniques used to mobilise tissue and joints and help restore function. In basic terms, physiotherapy is the application of these manual techniques along side the use of therapy equipment. These techniques have beneficial results when used independently but when used along side therapy equipment the results can be greatly improved.

Massage therapy is a specialised skill and would take you many months to study. The range of different techniques is vast. In this module you will study some of the most used massage techniques and mobilisation skills.

As you gain experience in treating animals you will inevitably develop your own ‘style’. What works for one therapist will not always work for another. Equally what works for one animal will not necessarily have the same effect on the next. You will likely develop some new techniques tailored around your strengths and weaknesses. To have a broad understanding of this topic will help you develop an individual style that is both confident and effective.
SECTION 1
THE CAUSE

The anatomy of skeletal muscle – an overview

Skeletal muscle is attached to bone via endotendon. The origin is the point of attachment to the least moveable part of the skeleton and the insertion attaches to the more moveable part. When a muscle contracts the insertion moves toward the origin.

A synovial bursa prevents friction between muscle and underlying bone. Synovial sheaths surround tendinous structures.

Muscle fibres (cells) contain bundles of myofibrils along with the usual contents of a cell – mitochondria, endoplasmic reticulum and nuclei. Muscle fibres are large cells which are elongated, multi nucleated and of variable lengths. ‘Endoplasmic’ meaning ‘inside the cytoplasm’ and ‘reticulum’ meaning ‘network’ - The endoplasmic reticulum of a muscle cell is more specifically named the sarcoplasmic reticulum. Muscle fibres are surrounded by a cell membrane known as the sarcolemma. This membrane folds deeply into the cell forming transverse tubules (t-tubules).

Myofibrils are the contractile elements of the muscle. They are made up of sarcomeres – bands of the special proteins actin and myosin. These bands are what depict the striations seen under the microscope.

Muscle fibres are bound together to form muscle bundles and muscle bundles are bound together to form a muscle.

Muscles require a vast supply of blood and nutrients. In fact during exercise the demand for the blood supply to a muscle can be increased by up to 60 times the resting amount. Starvation of this supply can result in severe malfunction and degeneration.

How do muscles become injured?

There are many circumstances that can lead to myopathies. Perhaps the most obvious and most pertinent to a physiotherapist are injuries which occur as a result of external trauma. These will usually be caused by;

- A fall, stumble, kick or Road Traffic Accident.
• Fatigue as a result of poor fitness programmes, irregular/excessive exercise
• Inadequate warming up and cooling off
• Repetitive strain often as a result of behavioural issues and poor management or due to compensating for injuries elsewhere.

Other factors which can adversely affect muscles are;
• nutrition
• infection
• neurological disease/damage to neural tissue
• posture
  o Equine – eg; poor schooling
  o Canine – eg; looking up at owners
• ill fitting tack
• tension, anxiety or emotional stress
• metabolic disturbances

All of the above can cause a disruption to the blood/nutrition/oxygen supply and result in degeneration.

What happens in an injured muscle?
To envisage what happens inside the body in a closed wound, imagine a sharp knife cutting into a muscle in slow motion. The blade cutting through the muscle fibres would have numerous effects;
• The sarcolemma would be severed and the sarcoplasm would leak out.
• Any local neural tissue would be severed.
The above two effects will result in the muscles reduced ability to contract
• Pain responses would be initiated.
• Vascular supply would be disrupted and bleeding would occur throughout the area, resulting in bruising and haematoma.

The body would respond to this insult and the healing process will be initiated;
• **Inflammation** (0-3 days) - ‘itis’ meaning inflammation and ‘myo’ meaning muscle – Myositis is inflammation of muscle. In the inflammatory stage, certain chemicals namely ‘histamine’ cause plasma to leak out of small blood capillaries. Excessive tissue damage may result in excessive inflammatory fluid – **oedema**. There will be an abundance of fluid to the damaged area.
Specialised cells migrate to this area and begin to clear away cellular debris. Due to the reduced ability of the muscle to contract, the area can become engorged with fluid and blood. Inflammation is characterised by heat, swelling and pain.

The inflammatory stage is followed by the **proliferative stage (3 -24 days)** and the **remodelling stage**, which, without assistance, may take a very long time.

**Adhesions and scar tissue** - inflammatory fluid comes from blood plasma. This fluid contains fibrinogen which may result in the formation of fibrous tissue. Fibrous bands develop between tissue interfaces, abnormally binding them together. Scar tissue and adhesion formation will restrict the contractibility and elasticity of a muscle and therefore limit its normal function.

**A Trigger point or stress point** is an area within a muscle which is highly sensitive to the touch. There is some cross over in the description of these points and their causes. Traditional Chinese medicine would describe a painful spot as an *a-shi point*. Trigger points and stress points appear to be the modern day description of *a-shi points*. Stress points are commonly described as an area where muscle tissue has been replaced with fibrous scar tissue. Trigger points are described as fibrous bands of tissue, an area of ischemia (lacking in blood), a small area of spasm or a build up of toxins – all of which are commonly interrelated.

**Lactic acid build up** – lactic acid is a bi-product of anaerobic respiration produced in the muscles. It results in fatigue and pain.

**Muscle tension and spasm.** Postural muscles maintain a level of tone when at rest. Muscles can become hypotonic (flaccid). Hypotonic muscles are floppy and un-toned. The opposite of hypotonic is hypertonic (tension). Hypertonic muscles are hard and tight. Muscle spasm is severe hypertonicity and is a guarding response to unrelenting pain. Once these muscle contractions are initiated a pain-spasm-pain cycle will take hold. This cycle needs to be broken in order to relieve the muscle of spasm.

Regional muscle spasm can be an indication of metabolic disturbances such as electrolyte imbalances or exertional rhabdomyolysis. An animal presenting with
symptoms of such conditions needs Veterinary attention. If in doubt contact the Veterinary surgeon.

Pain - Pain-spasm-pain cycle

Muscle shortening

Reduced circulation/toxin build-up

Oedema and adhesions
SECTION 2
MASSAGE

The use of massage is thought to have originated in China. However, massage has many different definitions. A diverse range of techniques are employed some of which even claim to ‘heal illnesses’. A physiotherapist is not qualified to ‘heal illnesses’ as such, so the application of massage is directed at the treatment of tissues.

For the purpose of this module massage can be broadly described as ‘the manipulation and mobilisation of the soft tissues of the body’. As a Physiotherapist you will utilise certain massage techniques to assist you in your treatment. If you choose to specialise in massage or wish to employ the use of alternative techniques then further training is that specific field will be required. There are a number of courses aiming at further training in canine or equine massage and other techniques; ask your trainers on your practical days for more information and personal recommendations on these courses and their utility for your career choices.

There are several general benefits of massage, which come about by the various techniques. Overall, massage loosens tight muscles and stretches connective tissue, relieves muscle cramps and spasms and decreases muscle fatigue, loosens joints and improves the range of motion, increases muscle strength, calms the nervous system, stimulates circulation, firms up muscle and skin tone, speeds up healing from injury and illness, and improves lymphatic drainage. The mental benefits include relaxation, improvement in length and the quality of sleep, the relief of stress, anxiety, depression and irritation, an increased ability to concentrate and an improved sense of well-being.

Muscle strengthening and hand education.
Good interpretation of touch and palpation is vital to successful treatment. A massage therapist would argue that there is no substitute for the ‘use of your hands’. Physiotherapy equipment can produce some amazing results however it is essential that the therapist can receive and understand the feedback from the tissues. This can only be done through touch. Time should be taken to palpate animals available to you, feeling the tissues beneath your fingers and allowing your mind to interpret this feedback. Good practice is to start this process of sensitising your touch on friends and family as the verbal feedback will help you to learn.
Your muscles will need to strengthen and adapt to treating animals. When you first start to work all day it is likely you will be exhausted and in great need of a massage yourself. Practising on your own animals will help you to build up relative muscles and for those of you who will treat horses, vigorous grooming sessions will help develop your strength. Be aware of using each side of your body equally, when exercising. To be very one sided is a big disadvantage when treating animals.
**Massage techniques**

It is essential that the animal accepts your presence before you can start treatment. Allow the animal to smell you, lick you and investigate you. You must never rush this time. Animals are very sensitive and will know if you are rushed. If the animal does not accept you the session will be largely wasted.

**Stroking**

Stroke the animal before you start any treatment. This will give the animal chance to become accustomed to your touch.

**Effleurage**

All massage sessions should start and end with effleurage. This warms up the muscles, enhances drainage and relaxes the animal. Effleurage also initiates a natural opiate release providing some pain relief. **Refer to your Neurology module for the effect of ‘rubbing tissues’**.

An effluerage movement is a smooth, continuous, slow stroke using the flat of the hand. The fingers are gently held together and moulded to the contours of the patient’s body in a relaxed manner. The fingers naturally proceed the palm of the hand as it moves along the body and do apply some pressure, but most of the pressure during this movement is applied by the palm of the hand. Even pressure is applied, but the amount of pressure may differ between outward and return strokes, with more pressure applied in the direction towards the heart, and slightly less in the return movement to repeat the sequence. The speed of the motion should remain steady throughout the sequence and contact must be maintained with each stroke moving smoothly and continuously into the next. The movement is usually repeated several times over the same area of the body.

Effluerage will induce relaxation, and also has some notable physical effects. Effluerage stimulates an increase in the blood supply to the tissues worked and stimulates the nerves. It facilitates cleansing of the skin, relaxes muscle fibres and reduces muscle tension. Effluerage will also promote the flow of blood and lymph to and from the area worked and stimulates the sebaceous glands, softening the skin. It should not be used near an area of inflammation, infection, acute or subacute injury. Other contraindications are open wounds, contagious skin conditions and areas of bruising.

Time spent on effluerage can be significantly reduced if phototherapy is applied.

**Pétrissage (compression)**

Once the animal is relaxed and the muscles are warmed up deeper tissue work can
Petrissage comes from the French “pétrir”, meaning “to knead”. There are a range of petrissage techniques, namely lifting, kneading, skin rolling, muscle rolling and wringing. The overall technique is to lift tissue from or press tissue against supporting structures, at the same time as compressing the tissue by squeezing or rubbing. This technique constricts and then releases the blood vessels supplying the tissue in question, washing the area with fresh arterial blood. The direction of massage on the extremities should be towards the heart. The overall benefits include increasing circulation leading to increased supply of nutrients and oxygen to muscle, softening superficial fascia, decreasing muscle tension, and restoring mobility by decreasing adhesions. It also promotes the flow of tissue fluids, reducing swelling and resolving inflammation. Rigorous or deep petrissage will also decrease muscle spasms. The technique should only be employed once the tissues are warmed, and should not be used on bony or delicate areas or those that are inflamed, in cases of herniation, pregnancy, or intensively performed over recent scars or muscle strains.

The first petrissage technique is lifting, where the tissues are compressed against their underlying structures, and are then lifted, squeezed and released. This series of manipulations should be performed in a controlled, rhythmic manner that is not too rapid. It is usually a single-handed action where the thumb is one component and two to three fingers are the other component to grasp the tissues being treated. The cleft between the thumb and index finger of the therapist’s hand remains in contact with the patient’s skin to maintain the depth of the effect and prevent pinching.

The next technique is kneading, where the skin and its underlying structures are moved in a circular, rotating motion on the underlying structures (muscles, tendons, ligaments and bones). The tissue is lifted and rolled away from the bone, and then back towards the bone with a squeezing, compressive action. This may be performed using different parts of the therapist’s hand/fingers, depending on the area being kneaded.

Skin rolling is a petrissage technique where the skin is lifted and rolled between the fingers and thumbs of both hands. This technique is commonly used on the abdomen, thighs, and back, and can also be used with care around some joints. This allows a release in the superficial restrictions between the skin and underlying tissues and can release any adhesions in the superficial fascia. The technique should first be performed in the direction in which the skin moves easily, and the direction of pull is then changed to the direction of restriction. This can be uncomfortable where there is considerable fascial restriction.

Muscle rolling is an advanced petrissage technique, where pressure is applied to compress muscles laterally. This can be used to stretch muscles and/or to stimulate circulation in the muscles treated.
The final petrissage technique is wringing. Here, the soft tissues are compressed against the underlying structures prior to lifting them. The lifted tissues are then pulled gently away from the underlying structures using the fingers of one hand, whilst the thumb of the hand gently pushes the tissue back towards the underlying structures. With smaller areas of tissue, only the tips of the therapist’s fingers and thumbs need to be used to perform wringing movements. In larger areas, more of the therapist’s hand should be used to wring the tissues effectively.

**Tapotment (percussion)**

Tapotment is used to stimulate tissue. Tapotment causes muscle contraction followed by relaxation. This makes it a very useful technique to help maintain muscle tone. This is the same principle as the age old method of ‘strapping’ horses – used to maintain and build muscle tone and increase circulation.

Tapotement, also known as percussion, is a general term for manipulations that have a striking or blow-like character. The word is derived from the French verb “tapoter”, meaning to tap or pat. The specific techniques are tapping, cupping, plucking, hacking, pounding, pummelling, shaking and vibrations. The movements have in common the rapid, rhythmic movements of the therapist’s hands, originating from a relaxed wrist, striking the body briskly and alternatively at a rate of 4 to 10 strikes per second. Tapotement has a hyperaemic effect, increasing local blood circulation, warming and softening the underlying tissues. The technique stimulates nerve endings, producing tiny muscular contractions, increasing the overall muscle tone. Cupping can be used over the upper and middle back to loosen mucous in the lungs, and in the appropriate circumstances, can be helpful to patients with respiratory problems. Tapotement also helps to reduce fatty deposits and tones muscle areas. Tapotement should only be used on fleshy areas of the body and not on bony areas. It should not be used on the spine, over hypersensitive areas, directly over the kidneys, over paralysed, flaccid or compromised muscle tissue, over suspected or confirmed fractures, and, in humans, over varicose veins.

Tapping is a much lighter movement than other percussive movements, and can be performed at a slower rate. The therapist’s hands are poised over the area to be worked on while loose and relaxed. The tips of the fingers are then used to gently tap the area. This is gentle, but with sufficient intensity to produce a slightly hollow sound on contact with the patient. Movements are kept light, and different fingers may be used. This is only performed for a short period of time before moving on to the next movement in the sequence. This is often appropriate for small areas of the body, and can be used in delicate areas such as the head and face, because of its light...
percussive movements.
During the cupping technique, the palmer aspect of the hand is shaped into a “cup” configuration by slightly flexing the fingers and closing the hand into the form of a “cup” by adducting the thumb to meet the index finger. The hand is loosely held in this form and used to softly strike the patient’s body with a loose, rhythmic wrist action. The centre of the palm of the hand does not make contact with the patient, and the hollow shape leads to a clapping sound. This is a very stimulating movement and is difficult to master.

Plucking is a tapotement technique where the therapist’s fingers are outstretched and the tissue is picked up between the thumb and fingers of both hands, which are used alternately. The tissue is lifted quickly but briefly, and the tissue must not be gripped too hard.

Hacking is a movement whereby the therapist’s hands are held outstretched with the fingers and thumb outstretched from the arm and in loose contact with each other. The movement must come from the wrists. Both hands are used to alternately strike the patient’s body, but are positioned so that both hands work on the same area of the body, rotating so as to clear each other during the action. Only the tips of the fingers strike the patient, and the fingers remain relaxed so the movement is light.

Pounding is a movement where the therapist’s hands are loosely clenched into fists with the thumbs lying uppermost and flat against the clenched index fingers. It is the lightly clenched little finger of each hand that makes contact with the patient, but the movement is otherwise similar to hacking. This is one of the less used massage techniques.

Pummelling involves the therapist’s hands being loosely clenched into fists with the thumbs flat against the hand. The wrists remain loose and both hands strike the body alternatively. Pummelling is not always included in massages, but is particularly useful to tone the muscles and for its invigorating effect. It is often confined to the gluteal and upper thigh areas.

Shaking is a technique where the part of the body being worked on is grasped or surrounded and is shaken, either from side to side or from the surface towards the deeper parts. This can encourage the patient to “let go” when a patient is unconsciously holding onto tension.

Vibrations involve the tissues being pressed and released in an “up and down” movement, often a fine trembling movement applied with the palmar surfaces or just some of the fingertips of either or both hands. This is not a commonly used technique, but can soothe irritated nerves, loosen scar tissue, relax muscles, and stimulate circulation and glandular activity.
**Friction**
The aim of friction massage is to irritate the target tissue to initiate the healing response. This technique is used to break down adhesions and scar tissue, to mobilise adhered tissue interfaces and to stimulate repair to chronic recurring injury. The word friction is derived from the Latin “frictio” meaning “to rub down”, and is often used after petrissage. Friction movements involve pressing tissues against a supporting surface using a repeated rubbing action. These are generally a small variety of techniques by which specific anatomical structures are manipulated using the fingers or thumbs only. They are precise movements focused on a very small area of the body. Friction should not be continued for too long and should never be performed over recently strained muscle or scar tissue, over any type of inflammation or skin infections, or in pregnancy. During pregnancy the hormone relaxin is produced, which results in softening of ligaments, tendons and fascia. This increases the risk of dislocation of joints if certain friction techniques are used. In humans, friction should not be performed over varicose veins. Friction helps to break down fatty deposits and can be useful in obesity, in addition, it helps to eliminate any accumulated waste products and can break down adhesions associated with a well-healed scar. Friction is the best technique for muscle spasms, as it sinks deep into the muscle tissue. It also increases the local temperature by increasing cellular activity, promotes an increase in local blood flow, and can provide temporary analgesia to the area being treated. Circular frictions are applied using the tips of fingers or thumbs using some pressure and a circular, stationary manipulation. The depth of the pressure may be increased gradually over a short series of 3-4 circles before pressure is released and the movement repeated. Frictions should not be performed for an excessive amount of time. Transverse frictions are manipulations with precise actions that are performed by the tips of only one or two digits, such as the tip of a thumb, the tip of the index or middle finger, or two finger tips together. The fingertips are moved backwards and forwards across the structure being worked such that there is no movement between the therapist's fingers and the patient's skin, but there is movement between the structures being worked and the overlying tissues/skin.

**Stress point and trigger point therapy**
Applying direct pressure over trigger or stress points initiates a neural response within the muscle which in turn reduces local spasm and sensitivity. Apply vertical pressure over the target point using the same finger arrangement as for ‘friction’. Rather than moving the digits as in friction, maintain direct pressure for
20-30 seconds. After this time period release the pressure for 30-40 seconds then re-apply if needed. For chronic trigger points intersperse your work with effleurages. As the tissue begins to react to neural messages you will feel the nodule melt away under the pressure. Once this occurs the treatment should cease and if necessary, be repeated two or three days later.

Passive movements are the final technique used in Swedish massages. This should only be used once the tissues are warmed up, as cold stretching can damage muscle tissue and lead to injury. A passive movement is one in which the joint is moved by the therapist, not the patient, and the therapist moves the joint through the normal range of motion without the active contribution of muscle contraction from the patient. This normally applies to limbs in a non-weightbearing position. This is aimed at maintaining or restoring a normal range of movement together with helping muscle flexibility, allowing good joint mobility. This produces stretching of joint capsules, ligaments, muscles, skin and connective tissue. There is elongation of the muscle bodies and tendons and blood supply is improved. This technique also helps to trigger the normal proprioceptive mechanisms within the body, allowing monitoring of limb placement and movement. It must not be used where there is injury in or around the joint. The movements used may be rotation, flexion and extension, separating and closing, bending, raising, pulling, turning, depression and elevation. The movements chosen depend upon the joint in question, for example, rotation is more useful in a ‘ball and socket’ joint such as the hip than in a ‘hinge joint’ such as the elbow.

At the end of the session Effleurage should be used as directed above to aid the removal of waste from the tissues. This is very important. If this is not done the toxins could settle in the tissues causing further problems. It is important to ensure that fresh water is available to the animal after treatment and to let owners know to expect that their dog or horse might drink more after a treatment. This is normal as the animal flushes any released toxins out of their system.

**Regular techniques used in everyday back treatments**

Any of the above techniques can be used in day to day physiotherapy. However a combination technique is commonly used for horses with ‘sore backs’. After the application of phototherapy along the area to be treated the muscles should be ‘rubbed through’. Make a fist and use the flat part of your knuckles or use the heel of your hand. Application should start at the wither and follow through the area to be treated. Strokes should initially be light and as the muscle relaxes extra pressure should be applied. It will be evident when to stop as the muscles
will soften and become more pliable under your touch. Stress and trigger points which have not ‘rubbed out’ can be treated with ultrasound, cross fibre friction or with trigger point therapy.

The backs of horses tend to ‘lock up’. A similar thing is noted in donkeys or pack horses who are required to carry a heavy load. In the area where the longissimus meets the medial gluteal and the gluteal fascia, it is common to find lack of movement and rigidity. This can affect lateral flexion and cause a shortened stride and lack of performance. Show jumpers who are ‘locked up’ often have fences down and dressage horses loose stride length and cadence and begin to struggle with lateral movements. This area can be freed by mobilising the tissues after routine phototherapy and ‘rubbing through’. The area can be mobilised in a variety of ways. Pressure applied to the ventral edge and effectively squeezing up toward the spine will usually be enough to release the area (see below). This is more effective if the related hind limb is not weight bearing. Ultrasound can be applied, pelvic exercises and hind limb stretches (see next chapter) can help to further mobilise the area if required. Results show that the release of this area makes a significant and instantaneous improvement in the horses’ performance, which is appreciated by the rider the next time the horse is ridden.
**Contraindications**

Massage is a safe form of therapy however there are some conditions where the application of massage would be contraindicated:

- In the presence of acute inflammation
- Immediately after injury where there is haemorrhage
- If the subject is dehydrated
- If there is any infection or a raised temperature
- In the presence of skin irritations, fungal or bacterial infections.
- Over an open wound or burn
- In areas of active bone growth
- In cases of colic or exertional rhabdomyolysis (Azotouria)
- In the presence of an inflammatory condition such as phlebitis or a bruised area
- If cancerous tumours or cysts are present
- With bleeding disorders eg haemophilia
- During pregnancy
- Generally, any condition where an increase in circulation would be a disadvantage.

“There are two quotes that those involved in therapy should remember ‘If in doubt, keep out’ and ‘better to be safe than sorry’ “ (Mary W Bromley Massage techniques)

**Exercises:**

- Begin to ‘educate your hands’ by palpating friends and family and as many animals as you can. The purpose of this exercise is to develop your understanding of the sensory feedback you receive from your hands and fingertips.
- Find time to have a sports massage. This will help you to understand what you are trying to achieve and the sensations of the different techniques which you will be applying to animals.
SECTION 3
OTHER INFORMATION

Some other techniques

There are many other techniques available, which potentially could become part of your treatment. However it is important to fully understand a technique before you use it. Don’t be scared to modify your work. You will come across techniques which you find more effective than others. Providing you understand these fully, you can incorporate them into your treatment. Amongst some of these treatments are:

- **Shiatsu** – *shi* (finger) *atsu* (pressure). Shiatsu is an oriental healing art. The aim is to increase relaxation, circulation and aid healing through finger pressure and stretching. By exerting static pressure over specific points in the body it is thought that it is possible to correct internal malfunctioning, to promote and maintain health and to treat specific diseases. These specific areas seem to correspond to meridians and acu points.

- **Acupressure** – Stimulation of acu points with pressure to influence the natural flow of energy along the path of meridians. The aim is to achieve body harmony and balance within all systems. Refer to page 167 of ‘the new equine sports therapy’ for further reading on acupressure.

- **The Bowen technique** – The release and rebalance of body energy by light touch to the skin in order to allow the body to heal itself. Application of light precise ‘rolling’ of the skin - interspersed with frequent pausing – stimulates nerve endings in the underlying fascia.

- **TTouch** – TTouch was created by Linda Tellington-Jones. It aims to expand the subjects general awareness and improves trust, balance and coordination. TTouch is delivered through an interactive technique comprised of ‘non-habitual touch’ and exercises. Understanding of this method is a useful adjunct to physiotherapy. Not only for the effects of touch but the ground exercises greatly improve proprioception and body awareness.

- **Myofascial release** - This technique is delivered through various techniques, many of which are similar to those we have already covered. For example stretches and trigger point therapy are included. This treatment is based on the fact that the whole body is interconnected by connective tissue and therefore any disturbance which compromises its function will affect the normal workings and harmony of the body. The technique works on scar
tissue and areas of superficial fascia which have adhered to the skin and underlying musculature.

**Evaluating your aims**

It is beyond the parameters of this course or indeed any course or training programme to teach you what to do in every different circumstance. Each case you see will vary in some way from the last. Even Vets, after years of training and experience, come across situations they have not seen before. The key to providing the correct treatment is to evaluate your aims. Always go back to basics. Identify your aims for each case. This will be a dynamic exercise as your aims will change through the course of the treatment depending on how the animal responds and progresses. Once you have clearly identified what you want to achieve (and avoid) you can apply the correct treatment.

**Owner exercises**

It can be beneficial to leave the owner with massage techniques and stretches to perform between visits. You can show the owner how to gently massage and stretch their animals. However avoid teaching them anything which could potentially put them in danger and avoid this altogether of you believe the owner is not competent enough to take due care. If the exercises are for a childs’ pony advise the parents or the yard manager how to perform the exercises, not the child.

Stick to simple techniques, do not attempt to teach them anything too specialised. Show the owner how to warm the tissues. Highlight the importance of effleurage before and after treatment otherwise they could make the condition worse, not better! The tissues can also be warmed with heat pads or by gentle exercise.

Ensure that the animal is happy with all the exercises you intend to leave with the owner. If the animal is anxious or upset with any of the stretches or objects to any of the massage techniques then these should be avoided. Highlight to the owner that they perform these exercises at their own risk.

**How soon to mobilise post-operation?**

There are varying guidelines, based on ongoing research, for how soon to mobilise joints and tissues after surgery. This largely depends on the individual circumstances such as the type of surgery performed and the state of the tissues and joints before the operation. Some texts and expert advice will recommend not to
mobilise for 5 days some will advise to start while the animal is still under anasthetic. As with many cases in physiotherapy or indeed Veterinary medicine there is no ‘hard and fast rule’. It will come down to your judgment (guided by the vet) of the individual circumstances. When making a judgment call always evaluate your aims.

Lets go back to basics –AIMS;
Post op aims are
- Control inflammation and oedema
- Control pain (caused by the presence of toxic substances and pressure on neural receptors)
- Limit muscle atrophy/strengthen tissues
- Improve range of movement
- Limit adhesion and scar tissue formation
- Heal incision

The reduction of swelling and oedema will;
- Reduce pain
- Reduce the chance of suture breakdown
- Reduce the formation of adhesion and scar tissue
- Reduce further damage to surrounding tissues

Early massage and PROM would benefit the patient by;
- Aiding drainage
- Reducing the formation of adhesions in the tissues and joints (it is more beneficial to reduce their formation than break them down after they have formed)
- Nourishing and lubricating the joints
- Improving range of movement

But could potentially cause;
- Increase circulation, leading to;
  - Increased inflammation
  - Increased oedema
  - Suture breakdown
  - Increased chance of adhesion formation
By looking at the above you we can make the conclusion that ‘it would be beneficial to start early gentle mobilisation (if suitable for the individual case) but ONLY IF;

- The Vet agrees
- Measures are taken to control the inflammation

And NEVER;

- Without the Vets consent
- If there is any doubt
- If your exercises will inflame the site further or put too much strain on the operation site.
APPENDIX 1
SAMPLE PROTOCOL
POST-OPERATIVE EXTRACAPSULAR CRANIAL CRUICATE LIGAMENT RUPTURE REPAIR

This is an example plan. Each and every case must be treated individually. The Vets plan must be followed with the complimentary physiotherapeutic treatments. For example; if the Vet doesn’t want the dog weight bearing for 3 weeks after surgery then you must follow that plan and keep the dog happy and the joints and muscles nourished until weight bearing can commence. The Vet may ask your opinion and then you can give him your thoughts and ideas. However it is NOT your place to design a plan without the vets input or to go against any of the Vets wishes.

If at any stage in the rehabilitation the dog becomes lame or deteriorates then go back to the previous stage until the dog is ready to move on again. A rushed rehabilitation plan will be counterproductive. Just because the last dog you treated recovered quickly, doesn’t necessarily mean the next one will. Always consider your aims and if in doubt ask the Vet.

It is also important to remember that – although the aim of rehabilitation is to return the affected part to full function – this is not always possible. Irreparable changes may have occurred before your treatment had begun.

Immediately after surgery
- Cryotherapy around the site for 15 minutes or PEMF base 50Hz pulse 5Hz for 10 minutes. (Ensure a towel is placed between the ice pack and the animal. Also be aware of lack of feedback from the animal as he is still anaesthetised).
- Blue light phototherapy to the wound for 2 minutes.

Next day – to day 3. To be repeated 2 – 3 times daily
- Commence treatment ½ hr to 1hr after administration of an anti-inflammatory drug from the Vet. PEMF base 200HZ pulse C for 10 minutes
- Gentle effleurage to surrounding muscles toward the lymph nodes
- PROM of the stifle in all planes
- PROM of all other limbs
- Blue light phototherapy over operation site
• Cryotherapy or PEMF base 50Hz pulse 5Hz

Day 4 – first treatment – providing there is NO INFECTION
• Ultrasound to the surrounding tissues. Mode 3 for 5 minutes.
• Electrostimulation for 5 minutes
• PROM to affected limb and all other limbs
• Standing
• Red and infrared light phototherapy to operation site

Second treatment
• PMEF base 50Hz pulse 17.5Hz for 10 minutes
• Red phototherapy to body followed by full body massage
• PROM of affected limb and stretches to other limbs
• Red and infrared phototherapy to operation site

Third treatment
• Same as above – time permitting

Cryotherapy may be administered after sessions if required.

Continue treatment as above making changes as the dog improves.
• Walks may increase in time as weight bearing improves and gentle hill work can start.
• Exercises to increase weight bearing and proprioception can be introduced.
• Electrostimulation can be increased up to 15 minutes and then reduced to every other day when other exercises start or when muscles have sufficient strength.
• When stitches are removed and the incision is completely healed, walking through water, water treadmill or gentle swimming can start. Aquatic exercise at this stage should be for about 2 minutes. Dogs must be supported and be lifted in and out of the. Struggling out the pool can cause re-injury.
• Ultrasound can be applied as stretches commence or just before, to increase the effects of stretching.
APPENDIX 2
EXAMPLE EXERCISES TO LEAVE WITH OWNER

Horse with pottery gait due to a hoof condition. Tight shoulder muscles and stilted gait.
- Horse hottie to warm superficial shoulder muscles before exercise.
- Effleurage – pettrisage – effleurage to shoulder muscles and carpal extensor muscles.
- Follow with front limb stretches.
- Complete above –if time allows - before each time the horse is ridden. If time is not available for massage every day advise owner to warm the horse up before completing stretches.

Young dog with persistent muscle spasm in lumbar spine. This appears to be due to excessive excited mannerisms.
- Hot packs or alternate hot cold hot, to sore area before exercise.

Badly schooled horse with no topline and upside down muscles. Hypertrophy and tension in the brachiocephalicus muscle. Sore, weak back muscles and muscle spasm.
- Horse hottie over back muscles before exercise.
- Effleurage – petrissage – effleurage to the brachiocephalicus muscle. Warm muscles along the crest to the withers with either horse hottie or effleurage. Pay particular attention to the poll area this may benefit from some petrissage or friction.
- Front limb retraction stretch.
- Active neck stretches side to side and down between knees.
- Massage as above to back muscles

Jack Russell with sore neck caused by constantly ‘looking up’.
- Heat or heat, cold, heat to the neck.
- Effleurage – petrissage – effleurage to the neck muscles and shoulders
- Active neck stretches side to side and down between knees
- Scapular rocking and mobilisation to relieve tension between shoulder blades