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The Challenging Rehab Patient Mini Series

Session One: Physiotherapy assessment and introduction to physiotherapy treatment strategies

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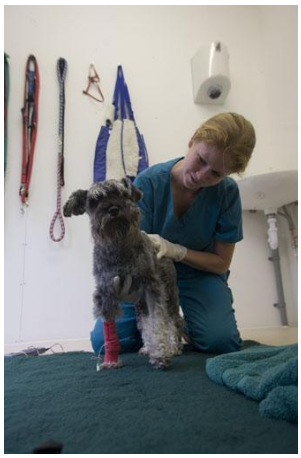

The Challenging Rehab Patient – Part 1

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An introduction to Veterinary Physiotherapy

What is physio & why is it important?

What we shall cover:
Legislations, & what is Physiotherapy? An introduction to Physio, more specifically Small Animal Physio. Why do Small Animals need Physiotherapy? The different roles of the Small Animal Physiotherapist?

Legislations

Veterinary Surgeons Act 1966 – '*No-one may practise "veterinary surgery" unless he/she is registered with the Royal College of Veterinary Surgeons*

Veterinary Surgery (Exemptions) Order 1962 – came in to play as physiotherapy & other such professionals were coming into the veterinary world, this permits "*treatment of an animal by a physiotherapist provided such treatment is given by a person acting under the direction of a vet who has examined the animal & prescribed the treatment of that animal by physio"*

Legal definition of physiotherapy = '*all kinds of manipulative therapy, excluding acupuncture, aromatherapy & homeopathy'*

What is Physiotherapy?

Definition = treatment or treatments designed to facilitate the process of recovery from injury, illness or disease to as normal a condition as possible
Concept of hands on techniques to positively influence the physiological systems of the mammalian body is not new
Physicians including Hippocrates were believed to have advocated the use of massage, manual techniques and hydrotherapies to assist in the treatment of their human patients in 460 BC

Veterinary Physiotherapy is a newer concept….
What is the Purpose of Physiotherapy?
The goal of any Physiotherapist is to: Restore, Maintain & Promote
Optimal: Fitness, Wellness & Quality of life

Treatment strategies should be proactive as well as reactive
Prevention is as important as cure/restoration
The Physiotherapist can assist in the prevention of: Compensatory movement patterns, Weight gain, Re-injury and much more….

Small Animal Physiotherapy

SA Physiotherapy has grown from the transference & application of rehabilitation skills & knowledge from the human medical world to the veterinary patient. Human rehabilitation is reportedly centuries old.

Veterinary physiotherapy is decades old, however is catching up in leaps & bounds!
The clinicians ability to develop their skills in this field relies, not only on the individuals ability to apply effective hands on techniques, but also on a good understanding of: Anatomical systems, Physiological systems & Form to Function, this is Specific to the species of patient we are treating.

Further Key to success involves; a good initial assessment, continued re-assessment, sound clinical reasoning & goal setting, & finally good communication with the owner & the patient

Importance of Physio

The increasing skills & knowledge of the vet surgeon means the veterinary patient is undergoing more advanced & complicated procedures. The aftercare needs to be advanced & improved as well and one way of this is happening is via Physiotherapy.

‘Companion animal’ is an umbrella term for a group of quadrupeds whose function varies from the lap-dog or cat to the top athlete.
To many people their pet is their only companion & it is very important that this companion has a long, comfortable & happy life, this is where small animal physiotherapy can be essential.
Athletic & working animals push themselves to the absolute limit of their musculoskeletal capacity & so the physiotherapist has a key role in optimising & maintaining this patient group in their best possible functional fitness.

Challenges in SA Rehab
Communication with the patient, owner & medical professionals involved
Huge variety in use, anatomy, biomechanics, behavior…. *within* & between the species. Cost of treatment, then after care.

The Roles of the SA physiotherapist
In-patient Therapist, Out-patient Therapist, Performance-Enhancement Therapist, Multidisciplinary Worker

In-patient Therapist can assist with the management of: Acute surgical case, Acute medical illness, Recumbent patients, Respiratory complications, Acute pain management, and much more…..

Out-patient Therapists can assist in the management of: Ongoing surgical cases, Chronic pain management, Chronic conditions, Conservative management, Performance enhancement and much more….

Performance Enhancement more specifically can assist in the care of: Agility athletes, Working police dogs, Working military dogs, Gun dogs, and much more…. Think about the money involved in training these dogs, especially very good dogs, it makes more sense to rehab them than to retire them!

The Future…. Now is an extremely exciting time to be involved in Small Animal Physiotherapy, this is in area that is exponentially growing with increased awareness of the potential for how physiotherapy can help the small animal patient, as well as this service being more accessible to people with the increasing number of insured animals

Introduction to Physio Assessment & Treatment
What we will cover: Why & how we assess from a physiotherapy point of view, General physiotherapy assessment, Gait assessment in more depth, Palpation

Assessment
Physiotherapy is a very assessment driven profession. Assessment is key to determining issues the patient has that can be treated by the therapist. Re-Assessment is key to determine if the treatment techniques have worked. The assessment process needs to be systematic so as not to miss any aspect & to maintain an ‘intra-therapist’ accuracy within & between patient assessment & treatment sessions. Accuracy is also key to maintain ‘inter-therapist’ reliability if for whatever reason another therapist had to take over your case.

The environment in which you carry out, & the equipment/tools you use during the assessment process is key to success & accurate outcomes. Understanding the behavior & signals from your patient is essential for your safety as well as the success of your treatment. *Also your* behavior & handling skills can make or break the success of the assessment process.

Key points to bear in mind with regards your environment include: Distractions, Temperature, Noise, Comfort, Escape, Stress levels (patient, owner & therapist!), Positioning within the room of patient & therapist, Flooring.

Key points to consider with regards assessment of behaviour: 'Normal' for the patient, Pain signals, Signals of stress & relaxation, Warning signals
Don't become too 'matey' as this will make treatment difficult if your patient is too over excited when seeing you.

Assessment begins from the moment you can see your patient. Always observe the patient prior to getting your hands on & point out to your owner what you are seeing. It is also useful to observe the owner patient interaction & how the owner handles the patient.

Observation of functional activities is very useful for providing objective markers
Some patients may require a very hands off approach to assessment & treatment therefore initial observations of movement & behaviour is absolutely essential

Prior to hands on contact always introduce your hands to the patient, the back of the hand is a lot less threatening so a good place to start. Be aware that certain parts of the body can hold significant relevance e.g. scruffed for unpleasant experiences, hence negative response if you initially try and lay your hands on the dorsal neck region

Assessment is a multimodal/multi faceted process with the different components including: General assessment which provides the 'foundation', then you have Specific assessments, including: Neurological, Orthopaedic, Musculoskeletal, Respiratory, Pain, Behavioural

General Assessment
Initial information required includes: Signalment of the patient; name, breed/species, coat colour, age, sex, use
Why is this information important? – breed associated conditions, age related conditions, sex related conditions, likely behaviour of the patient….
Owner details; contact details, is the patient insured?
Veterinary Surgeons details – legally required to work under veterinary referral

Further information required: History of Presenting Complaint (HPC)
Initiation, duration, aggravating factors, easing factors, 24 hour pattern, (monthly pattern), investigations & treatment to date
Past Medical History (PMH), Previous/ongoing medical issues, previous trauma, previous surgery… Drug History (DH), Current medications, Social History (SH), Home environment, exercise regime, use, 'kennel mates'…

After we have gained the information we then begin with our Observation, including: Static postures: Lateral recumbency, sternal recumbency, sit, stand
Look at the whole body, as well as limbs, head & neck, & core, individually
Dynamic observations are next, including: Walk, trot, gallop, postural & speed transitions, circles, slopes, steps. Again consider the animal as a whole as well as individual components. Don't forget the core!

Further Observation includes: Body condition, evidence of asymmetry, trembling, limb position & loading, head & neck position, global body posture

Gait Assessment
Term 'gait' describes the series of limb & body movement used for locomotion
Gait is made up of a series of strides, which in turn are made up the steps of individual limbs, which includes stance & swing phases
Symmetrical gaits include; walk, trot & pace, these are the ones we are interested in as we can spot asymmetries in them. Quadrupeds distribute 60% body weight through thoracic limbs, 40% through pelvic limbs. Thoracic limb responsible more for braking forces during gait. Pelvic limb responsible more for propulsive forces. Core essential for global function.

We carry out the gait assessment by Observing the animal in both walk & trot (symmetrical gaits). Watch from front, behind & both sides, look at them on Hard & soft ground, doing Straight lines, circles & backwards

Observe for the following during gait: Asymmetry, Limb position & Loading, Stance & swing times, Limb movement through swing phase, Stride length, Head & neck, spinal & tail movement and Willingness to move

Essentially we are looking for evidence of lameness, i.e. variance from normal gait
2 types of lameness:
Mechanical; congenital or acquired e.g. chondrodystophic abnormalities & Pathological, e.g. cranial cruciate

Can grade lameness out of 10
10/10 = non-weight bearing lame
1/10 = barely perceptible gait variance

Things to look out for: Thoracic Limb: 'Head Bob', Movement of ears, Position of pelvic limbs, Position of limb in question, Position of contralateral & ipsilateral limb,
Pelvic Limb: Hiking of gluteal region, Bunny hopping, 'Head Bob', Position of thoracic limbs, Position of limb in question, Position of contralateral & ipsilateral limb

Observation of Postural Transfers
'Postural transfers' describe the movement between the different positions including; lateral recumbency, sternal recumbency, sit & stand
You need to understand how a small animal will move 'normally' from one posture to another to appreciate any abnormalities.
Observe for; Loading of individual limbs, position of limbs throughout, quality of movement, willingness to move. Look at both upwards & downwards movements thinking about concentric & eccentric loading, & power output versus muscle length

Palpation
The small animal patient requires gentle hands on palpation
Gentle touch key for several reasons; Good experience for all involved, Not inducing pain & lameness, Gaining more information
Always leave the suspect area till last & remember not all small animal are used to being handled

We are feeling for: Muscle bulk, tone, texture, Swelling (measure limb circumference), Temperature, Bony landmarks, 'Lumps & Bumps'
Carry out with the patient in standing, as this allows simultaneous palpation of both sides.
Be gentle with your touch, always observe feedback from the patient
Think about your bony & muscular anatomy throughout, & be systematic

ROM
Perform with the patient relaxed in lateral recumbency, unless looking at neck ROM. Do not force the movement & always observe feedback from the animal. You can perform global limb movements &/or isolate to specific joints, think about normal quadrupedal movement planes.

Look for; abnormal tone &/or end-feel, available range of movement, presence of crepitus, integrity of supporting structures….

Assessment & Treatment
These components are not separate entities they are very interlinked
You need a good assessment process to determine what treatment modalities to utilise.
Some assessment tools can be utilized as treatment. You will need to continually reassess to determine that your chosen treatment regime is working

Treatment Options
Movement & Rehabilitation Therapies, Manual Therapies, Soft Tissue Techniques, Electrophysical Therapies, Hydro & Aqua Therapies, Expert Advise

As with assessment, the environment in which you apply treatments in, & how you behave will impact upon the success of the treatment. Always use appropriate restraints; Good condition, correctly fitting, Harness, flat collar, training lead, gentle leader….? Muzzle if appropriate. You need to ensure comfort of both the patient & the therapist, & the owner

Treatment regimes should always be individualised to the patient & should involve an integration of different treatment strategies that will compliment each other & facilitate rehabilitation, maintenance & prevention.

A good understanding of the physiological effects of treatments is essential
Treatment techniques need evidence, science based & experiential

Movement & rehab therapies encompasses a huge spectrum of treatment techniques; Passive range of movement, Active assisted range of movement, Active range of movement, Active resisted range of movement, Facilitated postural transitions & gait, Progressive exercise regimes, Obstacle courses….

Manual therapies describe hands on techniques that fall into 2 categories; Mobilizations for relief of pain &/or Stiffness, Respiratory treatment techniques
Treatment

Soft tissue techniques is another large spectrum of techniques; Massage, Myofascial release, Trigger point deactivation, Stretching, Light touch techniques

Electrophysical Therapies
Essentially these modalities utilise different forms of energy being transferred to the tissues to facilitate the healing & recovery process. Includes; Thermal energies – Hot & Cold, Nerve stimulation – TENS & NMES, Ultrasound, LASER, PEME, US

Hydro & Aqua therapies describe techniques that utilise the properties of water. Aqua therapies includes techniques such as shower work

Expert advice usually encompasses owner education & advice regarding exercise progression & husbandry issues that will impact on the function & recovery of the patient

Treatment techniques will be covered in much more depth in the next couple if lecture dates, the following information is intended to simply introduce the basics & start you thinking about the different treatment options available to the physiotherapist, as well as how different modalities can compliment each other

Movement Therapies
Passive Range of Movement (PROM): Moving the limb or joint through available range involving no muscular effort by the patient, you need to know normal range & movement plane so as not to puch too far & know if reduced, you also need to know what the normal end feel is, again to determine if any abnormalities. This is best performed in lateral recumbency, as soft tissue tensions are completely reduced, and for the same reason, the animal has got to be relaxed

PROM - Technique; Relax the patient into lateral recumbency, Introduce you touch gently, (relaxation & light touch techniques), Isolate the limb or joint to be mobilised, Gently move the distal portion relative to the proximal through the desired movement pattern, Continually monitor the patients behaviour

The Benefits of PROM include; Regain lost ROM, Maintain soft tissue length, Relaxation, Prevent contractures or tethering, Prevent capsular tightness, Maintain joint nutrition.

Cautions & Contraindications include; Articular #, Pain, Muscle spasm, Poor skin integrity.

Active Range of Movement (AROM): Movement of the joint or limb through available range involving active muscular contraction**.** You need to know how strong the patient is and understand principles affecting muscle strength**;** Speed of contraction & Muscle length

AROM can be done in lateral recumbency, in functional postures, in water…

Active Assisted AROM – One Technique: Place the animal in lateral recumbency with the limb in midrange, Utilise non-noxious flexion withdrawal reflex, As the patient actively flexes limb therapist helps facilitate through the normal active range, Progress the exercise by reducing the level of facilitation and taking the limb into end of range positions. Further progress by taking the animal into supported sit/stand then repeat flexion withdrawal exercise

The benefits of AROM include; Maintain muscle strength, Improve muscle strength, Improve function, Assist drainage of lymphatic's, Relieve pain….

Cautions & Contraindications include; Pain, Unstable #, Severe muscle spasm

Facilitated transitions: Assisting the patient through normal change of posture utilizing correct movement pattern & so engaging the correct muscle group. For this technique you need to know key points of control on the patients body: Head & neck**,** Sternum**,** Ventral abdominal region, Tuber ischia, Stifle
Facilitated transitions – Technique
Relax the patient into the desired starting posture e.g. supported sit, Use verbal encouragement to move into stand, at the same time encourage the stifle into extension with one arm (can also influence the core) with the other assisting hip extension from the ischial tuberosity

The Benefits of Facilitated Transitions include; Muscle strengthening, Engages reflexive movement patterns, Easier handling, Re-educates normal movement patterns…

Cautions include; Pain, Skin integrity, Sex of patient

Manual Techniques
Physiological Mobilisations: The definition of Physiological movement is; the normal active movement available at any synovial joint, e.g. flexion, extension, abduction, adduction, internal & external rotation**.** You need to know normal planes & patterns of movement of the limb & the individual joints within the limb**,** you also Need to know 'normal' available range. Prior to application of the treatment you need determine if desired outcome is pain relief &/or gaining ROM. This technique is usually Used when pain/loss of range is associated with the joint, not soft tissue

Physiological Mobilisations – Technique:
Aim to deliver grade 1,2,3, or 4 mobilisation; Grade I – Small amplitude no resistance (R), Grade II – Large amplitude no R, Grade III – Large amplitude go into R, Grade IV – Small amplitude go into R

Relax the patient in lateral recumbency. Use 3-4 oscillatory movements of the desired area for a couple of seconds, using the appropriate grade, then Reassess pain &/or movement restriction

The benefits of Physiological Mobs include; By reducing pain, restriction motion & ROM will improve, By increasing motion causing stiffness/pain so this will reduce

Contraindications & Cautions include; Joint instability, Infection, Malignancy, Severe pain, Joint replacements

Soft Tissue Techniques
Massage: Manipulation of soft tissues of the body to have beneficial physiological & psychological effects**.** This technique is based upon the fatc that The main constituent of connective tissue is collagen, collagen has crimp so demonstrates stress-strain behaviour,

this behaviour can be demonstrated by a stress-strain curve**.** Massage produces most of its effects in the toe region of this curve

Massage – Technique: Relax the patient into lateral recumbency, Introduce your hands to the patient then begin gentle long strokes, best to start around the region of the scapula (as long as non-painful). Build upon your initial long strokes with appropriate techniques including: Long & short strokes, Effleurage, Compressions, Hand/thumb kneading….

The benefits of Massage include; Improve circulation, Improve lymphatic flow, Soften adhesion, Relieve muscle spasm, Stimulate release of endorphins…

Contraindications & Cautions include: Systemic infection, Skin integrity, Malignancy, Circulation issues, Animal not being massage familiar

Stretches: This technique is Used to lengthen pathologically shortened soft tissue structures**.** Best when used in conjunction with techniques including massage & heat**.** We are Aiming to permanently lengthening tissues**.** Stretching Works in the linear region of the stress strain curve**.** You Need to know what joints influence the soft tissue, e.g. muscles crossing 2 joints will be stretched by movement of both these joints

Stretches – Technique: Relax the animal into lateral recumbency, isolate the tissue to be stretched then gently move the distal portion of the limb relative to the proximal into resistance, Hold for 15-30seconds. May be better tolerated if heat & massage applied first, followed by gentle PROM leading into the stretch. For muscles crossing 2 joints always stretch by movement of individual joints one at a time initially

The Benefits of stretching include; Lengthening shortened tissue, Restoring normal movement, Prevention

Contraindications & Cautions include; Severe pain, Tissue integrity, Severe muscle spasm

Electrophysical Therapies
Hot & Cold: Utilises the physiological effects of hot & cold to positively influence the healing process & rehab.

Physiological effects of Heat: increase elasticity of collagenous structures, increase cell metabolism, increase blood flow via vasodilatation…

Physiological effects of Cold: decrease cell metabolism, decrease blood flow via vasoconstriction, slow down nociceptive transmission…
Electrophysical Therapies

Hot & Cold application: Relax the patient into the most appropriate position. Cold = wrap in damp tea towel & place in-situ for 10-15minutes, best used in combination with elevation & compression.
Hot = apply for 10-15minutes to the desired area continually monitoring the patients response

Benefits of heat include; Improve elasticity of tissue, Improve blood flow, Relieve muscle spasm, Increase cell metabolism, Pain relief. Heat tends to be used for sub-acute & chronic conditions
Benefits of cold include; Vasoconstriction, Slowing nociceptive transmission, Decrease cell metabolism. Tends to be Used for acute injury

Contraindications & Cautions to thermal therapies include: Altered skin sensation, Infection, Temperature of the patient, Hypersensitivity

TENS – Transcutaneous Electrical Nerve Stimulation: Extensively used in human medicine to assist pharmacological pain management strategies. It *Is* possible to apply in the small animal patient**.** TENS Works on the pain gate theory. Application can be simply around the painful area or via the spinal nerve that supplies the area in question

2 types of TENS; High frequency; 50-150Hz with short pulse duration (40-80μs), stimulates large diameter afferent fibres, creating comfortable paraesthesia without muscle contraction (conventional TENS)

Low frequency; 1-4Hz with long pulse duration (150-250μs), stimulates large diameter afferent & efferent fibres, creates muscle contraction

TENS Can be used to reduce drug doses & so side effects

TENS – Technique: Relax the patient into most appropriate position. Best to clip area for application of electrodes, but can be done using gel to achieve connection between the electrodes & skin. Slowly increase intensity up to tolerance (indicated with behavioural response). Increase intensity as able throughout treatment

Hydro & Aqua Therapies
Hydrotherapy: Utilises the properties of water for therapeutic benefits; Buoyancy, Hydrostatic pressure, Viscosity, Thermal properties

You Need to understand principles of centre of buoyancy, density of tissue & how factors including amputation will effect how an animal will move in the water

Expert Advise
This aspect of therapy involves Owner education with regards: Exercise regimes, Progression of exercise, Compensatory movements & overload, Husbandry issues….

You nee to maintain Close contact & co-working with the different veterinary professionals to achieve the best possible outcome for the patient & owner

This has been a whistle stop tour of the world of assessment & a very brief introduction to a small number of treatment regimes utilized by the physiotherapist. The main Take home messages are: Always assess & continually reassess, The best treatment regime is always the integration of a number of different treatment tools, Never inflict pain, Always look after yourself, Maintain good communication at all times with the owner, veterinary surgeon & most importantly the patient

SOAP Notes & SMART Goals
An introduction to documenting findings & Goal forming
Notes & Goals
Good documentation & note taking is essential for several reasons including Records & Legalities

Goal setting is key for a good structured treatment plan & to ensure outcomes the owner desires, & the patient needs are achieved

SOAP Notes
To be able to produce good documentation needs structure
Using the 'SOAP' note method ensures good assessment, reassessment & continuation of treatment plans & goals of treatment
SOAP =**S**ubjective, **O**bjective, **A**ssessment, **P**lan

Subjective: Refers to observations open to interpretation by the individual e.g. 'the patient seems unhappy'. These observations Are not always consistent between interpreters but are still an essential component of the assessment
SOAP

Examples of Subjective observations /assessments include: The mood of the patient, The 'fluidity' & quality of movement, How 'normal' the behaviour of the patient is for them, Willingness of the patient to do tasks

Objective observations: Observations & findings that are not open to interpretation, Essential 'markers' that any individual can identify e.g. non-weight bearing lame or the patient is unable to stand independently… Are essential for assessment & key to determine improvement & successful treatment strategies

Examples of Objective Assessment Markers include: Joint angle measured with goniometry, Limb circumference measured with tape measure, The ability to carry out a 'task' independently e.g. the patient can walk without any support. Toileting is a very good marker as well as goal

Assessment:
Subjective & **O**bjective Ax will lead you to your Treatment choices,
the clinician will then **a**ssesses the outcome of the session, how the patient tolerated/managed the treatment & any comments that may be useful for follow-up treatment sessions, and will finish with a **P**lan for future sessions.

Plan: As essential as the rest of the assessment & treatment documentation. Need to document short term & long term plans. Key if another therapist needs to carry out any follow-up treatment. Gives owners & therapists alike structure & focus for the treatment sessions as a whole

Need to bear in mind some key points when note taking: that they are Legible, they are no good if anyone other than the documenter can read them! They are written in a timely fashion and if you use abbreviations or similarly short hand you need to define them initially in your note taking.

SMART Goals
Short term & long term goals need to be determined
Short term goals can be as simple as 'in the next couple of days the patient will be able to stand independently to eat'
Long term goals are usually focussed on what the owner desires the patient to achieve by the end of their rehab sessions

SMART Goals: As with note taking & documentation, goal setting is much more easily achieved if done in a structured manner
SMART goals give this structured approach
SMART: **S**pecific, **M**easurable, **A**chievable, **R**elevant, **T**imely

Specific: Goals need to be well defined so everyone involved has a good understanding of the desired outcome of treatment. Goals that are easily understood & well defined are more likely to be achieved. Rehab & motor re-education also requires specificity of training & movement patterns

Measurable: Need to use quantifiable terms for the goal so objectively everyone can determine if the goal is being achieved, Needs to utilise objective assessment & markers, Essential to know when the goal has been achieved

Achievable: Agreed between the therapist & all parties involve, Need to realistic & so possible to achieve, for example 10 year old Polly the sedentary miniature dachshund will not become an agility pro (having never competed in her life!) Sometimes owners need reminding that they will not be as active in later life, so why should they expect their pet to be?....

Relevant: Also realistic, reasonable & rewarding, Very similar, reinforcing the specificity & the achievability of the desired outcome & goal. Always try & be relevant to the condition being treated

Timely: Certainly more difficult but will be lead by your experience. Owners will ask the question 'how long do you think it will take?' – in reply 'how long is a piece of string!' *however*

you can use your knowledge of healing processes, muscle memory, physiology etc to make an educated approximation of how long it may take.

For both documentation & goal setting the therapists best friend will be good solid objective markers
Remember objective markers are those that are open to no interpretation
Huge number of markers in the small animal rehab world, one example is '*the patient can move from sit to stand independently*'
Markers
You knowledge & 'catalogue' of potential markers will grow throughout the duration of your experience, to start you off here are a few: Using the limb vs non weight bearing, Circumference for oedema or muscle bulk, Weight, ROM measured by goniometry, Stride length…

To conclude
This is the end of the lecture today
I hope you now feel you have a better understanding of what physiotherapy is & why it's important for the small animal patient.

You feel you understand the basic principles involved with assessment from a physiotherapy point of view.

You are starting to build an idea of treatment options available to the physiotherapist, when they are appropriate but also when they are not appropriate for use.