Physical Therapy and the Rehabilitation Patient: Techniques You Can Use

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TECHNICIAN BOOT CAMP MEDVET

Why Did I Choose Rehabilitation?

- 2003 graduate of UC Blue Ash Vet Tech program
- Rehabilitating Olivia created new interest
- Found out about UT program
- Certified in December 2005
- Now working on my Veterinary Technician Specialty (VTS) in Physical Rehabilitation

Rehabilitation Goals & Benefits

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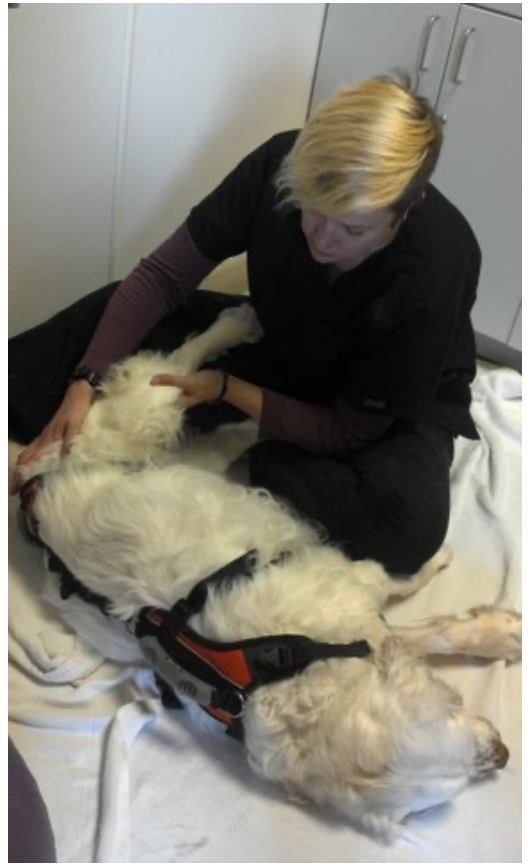
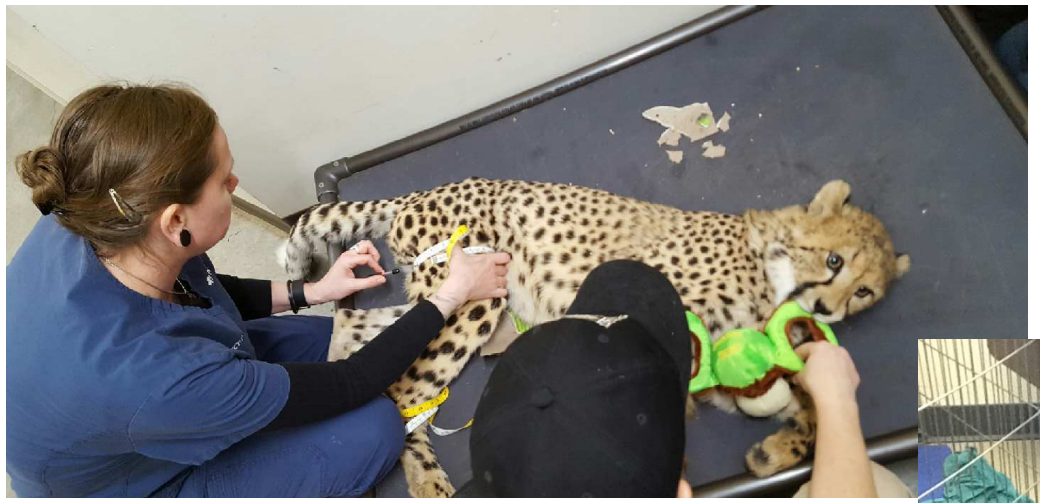
- Resolve dysfunction and return to function
- Improve quality of movement and function
- Pain relief
  - Pain impacts overall well-being
  - Pain can impact limb use



Rehabilitation Goals & Benefits



- Reduces pain and swelling
  - Reducing inflammation
    - Quicker recovery time
    - Earlier return of limb use
    - Increase in range of motion
- Decreases chance of other injuries
- Reduction or elimination of atrophy of muscle, bone, cartilage, ligament and tendon
- Shortens recovery time
- Improves quality of life

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Modalities You Can Use

Modalities: Thermotherapy

- Heat
  - Use after initial inflammatory phase has resolved (48-72 hours)
  - Superficial heating results in
    - Vasodilation
    - Muscle relaxation
    - Accelerates biochemical reactions (metabolic and enzymatic)

Modalities: Thermotherapy

- Applied by using
  - Heating pads
  - “Hot socks”- uncooked white rice in a tube sock, reusable and microwavable
  - Commercially available hot packs
- Always heat before stretching exercises

Modalities: Thermotherapy

- Cold
  - Use during the acute phase of tissue injury
  - After exercise during rehabilitation to reduce secondary inflammatory responses

Modalities: Thermotherapy

- Superficial cooling results in
  - Vasoconstriction
  - Reduced cellular metabolism
  - Reduced cell membrane permeability
  - Analgesia
  - Prevention or reduction of trauma related edema
  - Decreased muscle spasm

Modalities: Thermotherapy

- Applied by using
  - Ice/ice packs
  - Cold compression units
  - Ice massage
  - Vapocoolant sprays
  - 2/3 water + 1/3 alcohol in freezer bag

Modalities: Massage

- Massage
  - Increases blood flow
  - Reduces pain and muscle tension
  - Increases O2 and removes metabolic waste products from tissues
  - Mobilizes adhesions
  - Relaxation
  - Improves bonding between pet and owner and/or therapist

Modalities: Massage

- Effleurage
  - Stroking motion moves blood
  - Aids in locating areas of warmth or sensitivity
  - Can be used all over the body
- Passive Touch
  - Used to calm and gain trust, warm tissues and relax the muscle
  - Can be used all over the body
  - One handed or two fingered, no movement or pressure used

Modalities: Massage

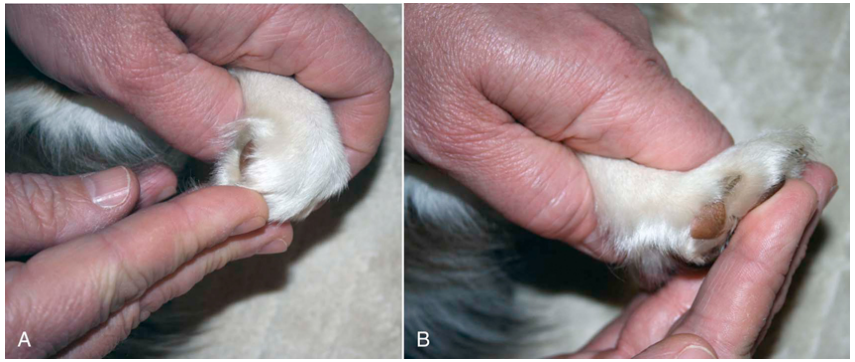
- Stroking
  - Calm area that is sensitive/sore
  - Quiet and calms pet
  - Used
- Kneading
  - Using circular motions with pressure to loosen muscle tissue

Modalities: Take ‘em to PROM

- Passive Range of Motion (PROM)
  - Relaxation
  - Prevention of joint contracture
  - Prevention of soft tissue shortening
  - Maintains mobility between the layers of soft tissue
  - Reduces pain
  - Enhances blood/lymphatic flow
  - Improves synovial fluid production/joint nutrition

Modalities: PROM

- Digits (Don't forget the toe beans!)
- Carpus
- Elbow
- Shoulder
- Hock (bend stifle to get the most ROM out of hock)
- Stifle
- Hip



Modalities: Assisted Standing

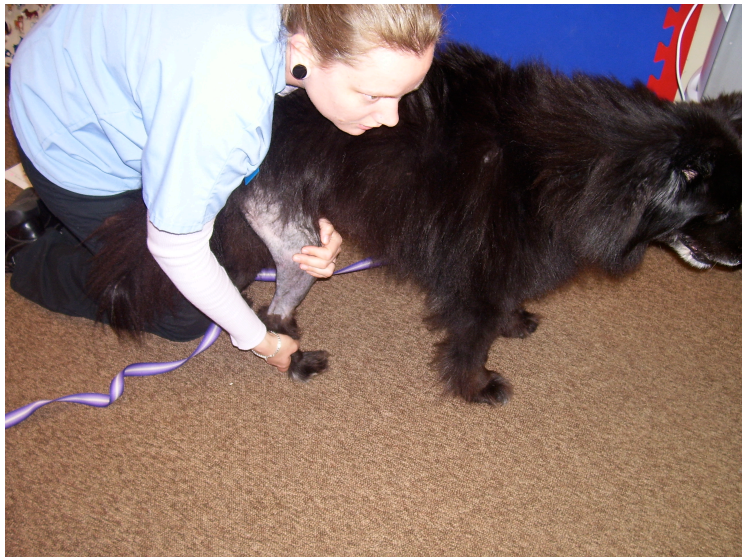
- Assisted Standing
  - Enhances strength/endurance
  - Enhances proprioception
  - Improves circulation and respiration
  - Enhances psychological well being
  - Re-educates muscles
- Help ‘Em Up Harness- be sure you know how to fit these correctly and instruct users to take them off at night
- Slings, carts, exercise roll, be creative

Modalities: Slow Leash Walk

- Controlled leash walking
  - Slow pace encourages limb use
  - Encourages normal gait pattern
  - Increases stance time of each limb
- Can be used in combination with a sling if hind end support is needed… but… never use a sling by itself, always have control of the front end with leash and harness or collar

Modalities: Therapeutic Exercise

- Bicycling
  - Gait patterning training and preservation
  - Improvement of range of motion



Modalities: Aquatic Therapy Fun Facts

- Swimming
  - Greater knee flexion than with underwater treadmill but less control
  - Strengthen muscles
  - Improve range of motion

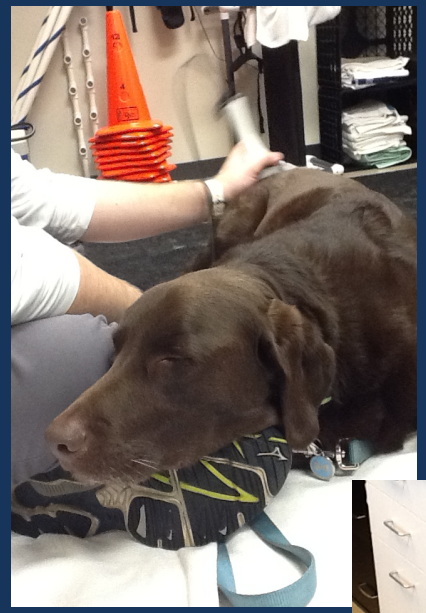
Modalities: Aquatic Therapy Fun Facts

- Underwater treadmill
  - Encourages use of all limbs
  - Gait pattern training
  - Strengthening

Modalities:Photobiomodultaion

- Photobiomodultaion therapy:
  - A form of light therapy that utilizes non-ionizing forms of light sources, including lasers, LEDs, and broadband light, in the visible and infrared spectrum. It is a nonthermal process involving endogenous chromophores eliciting photophysical (i.e., linear and nonlinear) and photochemical events at various biological scales. This process results in beneficial therapeutic outcomes including but not limited to the alleviation of pain or inflammation, immunomodulation, and promotion of wound healing and tissue regeneration.

Anders, J. *et al.* (2015) Low-level light/laser therapy versus photobiomodulation therapy. *Photomed Laser Surg.* 33 (4):183-184



Modalities: Photobiomodultaion

- Light travel as bundles of energy called photons
- Photons activate enzymes
- Laser provides light energy to cells which convert to chemical energy and stimulate natural healing and pain relief
- Increased ATP levels
- Changes in cell permeability
- Macrophage activity increased
- Increased collagen production
- Acceleration of inflammation phase during wound healing
- Stimulates cartilage
- So many indications!

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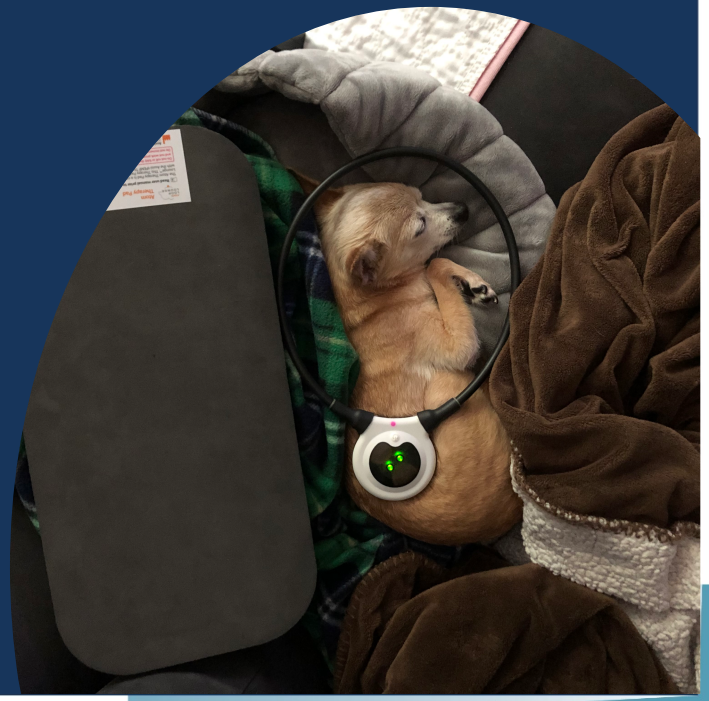
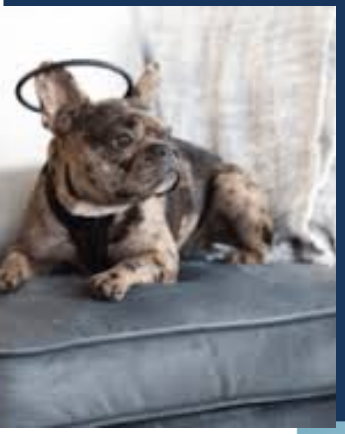
Modalities:Photobiomodultaion

- Contraindications:
  - Locally injected medication sites
  - Malignancy
  - Pregnancy
- Precautions:
  - Active epiphyses
  - Hemorrhage
  - Testicles
  - Thyroid gland
- Considerations:
  - Protective eye wear for patient (if treatment area is near eyes) and anyone within 5 feet of laser in use



Modalities: Assisi Loop (tPEMF)

- Targeted pulsed electromagnetic field (tPEMF)- electric current running through a coiled wire
- Specifically configured to modulate the nitric oxide (NO) signal regulating inflammation and healing
  - NO is a principal anti-inflammatory molecule which reduces pain and edema and improves blood flow



Modalities: Assisi Loop

- The loop sends low level pulse of energy which affects only the challenged cells and tissues enhancing the binding of calcium to calmodulin speeding the Nitric Oxide cascade allowing the body to naturally heal itself.
  - Assisi Loop has been specifically calibrated to affect this.
- The action of the loop helps to:
  - Reduce pain and swelling
  - Increase healing
  - Increases blood flow which enhances muscle function, bone healing and blood oxygenation
  - Decreased inflammation
  - Speeds recovery from surgery and trauma
  - Now found to help with anxiety
- Available in 10cm, 20cm Loops and Atom and Air Lounges

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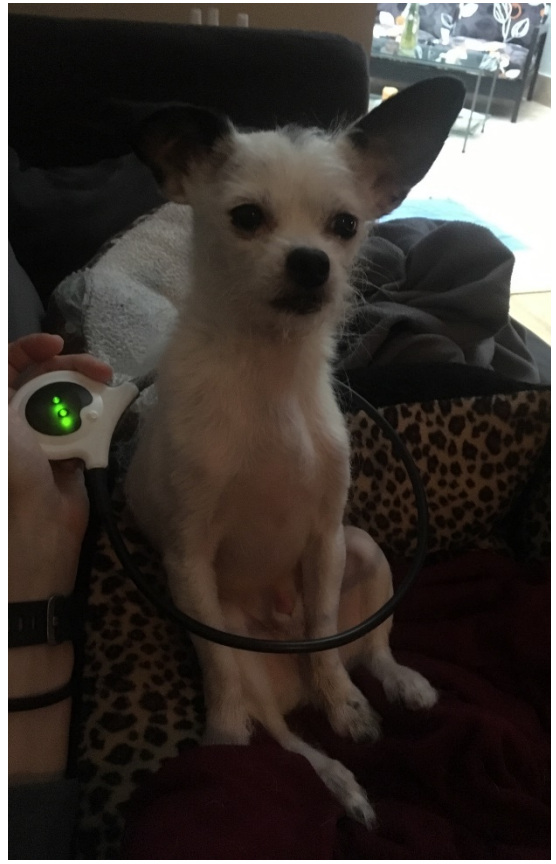
Modalities: Assisi Loop

- Home use
- Indications:
  - IVDD
  - COMS/Chiari-Like Malformation
  - Post-op
  - Arthritis/OA
  - Medial shoulder
  - Muscle strain
  - OCD
  - Panosteitis
  - Wobblers
  - Etc...
- Contraindications:
  - Pacemakers
  - Pain pumps/insulin pumps
  - Highly oxygenated environments
  - Gravid uterus



Supplements

Supplements

- Glucosamine (a chondroprotectant)-
  - Helps to slow the progression of osteoarthritis
  - May take 4-6 weeks to see improvements
  - Benefits improved when combined with Chondroitin
  - Many available
  - Dosage: approximately 500 mg glucosamine and 400 mg chondroitin per 25 pounds
    - Usually double the dose for the first 4-6 weeks then maintenance dose for life

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Supplements

- Fish Oils (Omega 3 Fatty Acids)
  - Have a role in reducing inflammation associated with osteoarthritis
  - Important to start at a very low dose and gradually increase to maintenance dose (to avoid GI upset)
  - Eicosapentaenoic Acid (EPA) ar Docosahexaenoic acid (DHA) re inflammatory processes

Supplements

Omega 3s dosing:

Body Weight (KG) (1 pound = 2.2 kg)	DHA/EPA Combined dose/day (mg)	Body Weight (KG) (1 pound = 2.2 kg)	DHA/EPA Combined dose/day (mg)
5	1000	45	5500
10	1750	50	5750
15	2500	55	6250
20	3000	60	6750
25	3500	65	7000
30	4000	70	7500
35	4500	75	8000
40	5000	80	8250

Supplements

- T-Relief
  - Homeopathic remedy for acute cases
    - Has been used long term for chronic IVDD patients
  - Can be used safely with other pain/inflammation relieve
  - Can be given on “bad days”

< 15 pounds	¼-1 tablet orally 2 times a day
15-30 pounds	1-1½ tablet orally 2 times a day
30-70 pounds	1 ½-2 tablets 2 times a day
>70 pounds	2-3 tablets 2 times a day

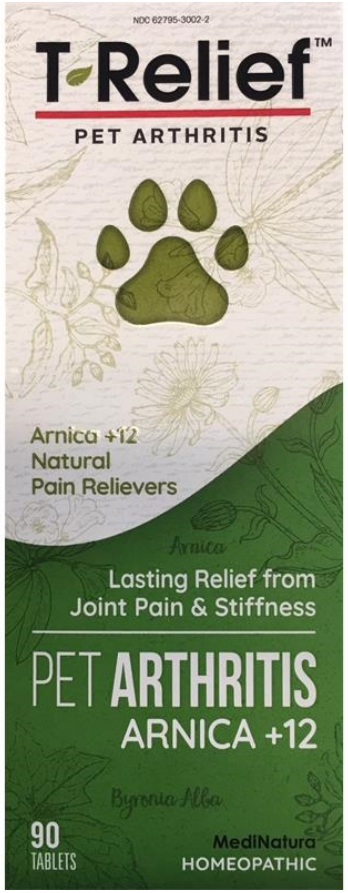
Supplements

- T-Relief Arthritis-
  - Homeopathic remedy for chronic conditions
  - Should be given for daily for life
  - Safe to use with other pain/inflammation relievers
  - Has been shown to have similar effects as carprofe

<15 pounds	½-1 tablet 2-3 times a day
15-30 pounds	1-1 ½ tablet 2-3 times a day
30-70 pounds	1 ½-2 tablets 2-3 times a day
>70 pounds	2-3 tablets orally 2-3 times a day

Supplements

- T-Relief New Pet Line



Supplements

- Adequan® Canine (polysulfated glycosaminoglycan) is an FDA-approved, injectable, disease modifying osteoarthritis drug (DMOAD) for dogs. Inhibit enzymes that break down cartilage, reducing joint damage
  6 weeks-8 months of age (hip dysplasia in young dogs) 5mg/l
  IM
  Adult dogs 2mg/lb IM
- Recommended dosing per UT Rehabilitation Courses:
  2 times a week for 4 weeks (induction)
    - Once a week for 2 weeks
    - Once every other week
    - Once every three weeks
    - Once every 4 weeks for maintenance
- Labeled for IM injection but can do SQ (it does absorb slower and is off label)

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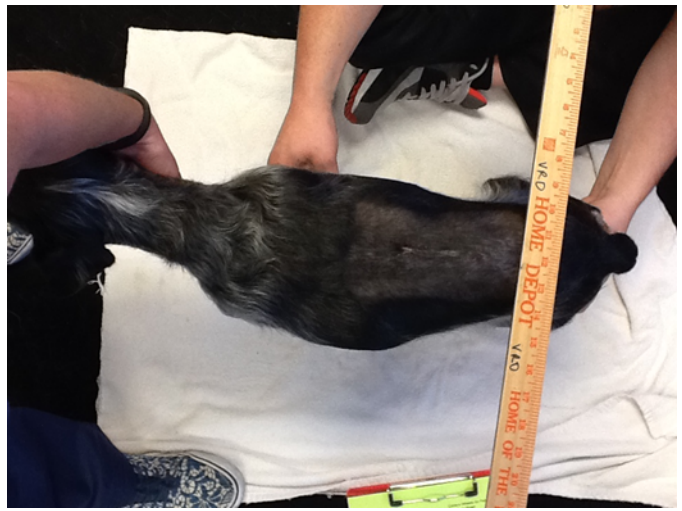
Assistive Devices

Assistive Devices: Carts

- Carts (best fits come from professional measuring and fitting)
  - Eddie's Wheels
  - Walking Wheels

Assistive Devices: Carts

- Measuring



Assistive Devices: Dog Leggs

- Dog Leggs
  - Shoulder Stabilization System (Rx needed)
    For medial shoulder
  - Instability
  - Hygroma
  - Protective padding for older dogs

Assistive Devices: Braces

- Braces
  - Carpal Hyperextension
  - Conservative management of CCL

Assistive Devices: Wraps

- Supportive wraps:
  - Carpal Hyperextension
  - Knuckling
  - Hock Hyperextension/flexion

- TheraPaw
  - https://www.therapaw.com/

Resources

https://healingoasis.edu/

canineequinerehab.com

canine rehabilitation.com

CANINE REHABILITATION INSTITUTE

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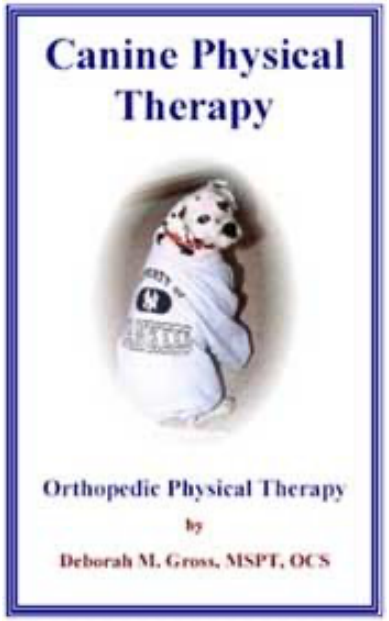
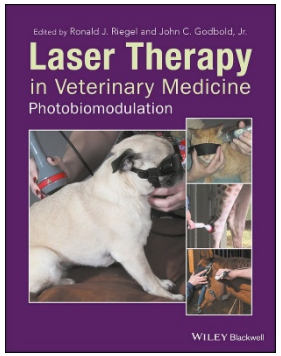
Literature


Canine Physical Therapy
Orthopedic Physical Therapy
by
Deborah M. Gross, MSPT, OCS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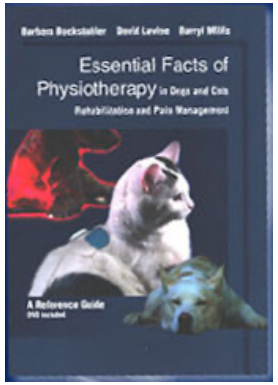
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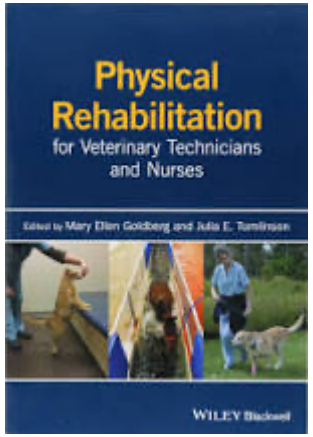
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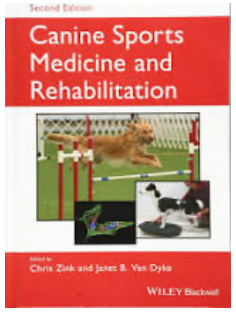
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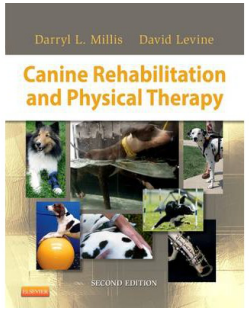
Darryl L. Millis David Levine
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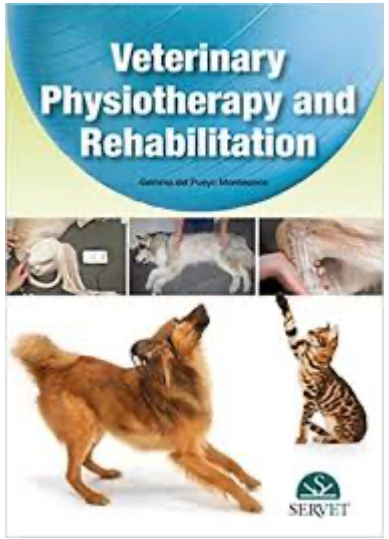
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