

# Multimodal Therapy for the Senior Rehabilitation Patient

New Tricks for Old Dogs!

Dr. Kimberly Huppe DVM, CCRP, CVA  
MedVet Akron Rehabilitation

# Objectives:

- Overview of Aging
- Special Senior Conditions
- Patient Evaluation and Goal Setting
- Multimodal Therapies
- Therapeutic Exercise
- Comfort Modifications



“Barney” – 15 yrs

# Overview of Aging

# Who Are You Calling Old?

- AAHA Canine Life Stage and Senior Care Guidelines
  - Middle age: ~7-8 years (breed dependent)
  - Senior: The aging pet – last 25% of life expectancy
  - Geriatric – At life expectancy and beyond
- Average life expectancy of domestic dogs is 9-12 years
  - Aging and Lifespan is influenced by:
    - Genetics
    - Lifestyle
    - Nutrition

HOW OLD IS MY DOG IN HUMAN YEARS?

| SIZE OF DOG | Small   | Medium   | Large   | Giant   |
|-------------|---|--|---|---|
|             | <br>20 lbs or less | <br>21-50 lbs | <br>51-100 lbs | <br>100+ lbs |
| AGE OF DOG  | AGE IN HUMAN YEARS  |  |   |   |
| 1 Year      | 15  | 15   | 15  | 12  |
| 2           | 24  | 24   | 24  | 22  |
| 3           | 28  | 28   | 28  | 31  |
| 4           | 32  | 32   | 32  | 38  |
| 5           | 36  | 36   | 36  | 45  |
| 6           | 40  | 42   | 45  | 49  |
| 7           | 44  | 47   | 50  | 56  |
| 8           | 48  | 51   | 55  | 64  |
| 9           | 52  | 56   | 61  | 71  |
| 10          | 56  | 60   | 66  | 79  |
| 11          | 60  | 65   | 72  | 86  |
| 12          | 64  | 69   | 77  | 93  |
| 13          | 68  | 74   | 82  | 100   |
| 14          | 72  | 78   | 88  | 107   |
| 15          | 76  | 83   | 93  | 114   |
| 16          | 80  | 87   | 99  | 121   |



# Physiology of Aging

- Changes in autonomic function and hemostasis
  - Changes in blood volume and body temperature regulation
- Decreased mass of organs
- Decreased functional reserve of organs
  - Changes in cardiovascular, pulmonary, hepatobiliary, renal function
- **Cognitive Dysfunction**
- **Weight Gain**
- Decreased Immune Function
- Delayed wound healing
- **Cardiovascular Changes**
  - Decreased max HR, cardiac output
- **Nervous system changes**
  - Decreased peripheral sensation, decreased proprioception, slowed nerve conduction
- **Joint Changes**
  - Loss of water content - Articular cartilage less compliant, loss of ROM
- **Musculoskeletal changes**
  - Muscle atrophy, progression of OA, tissue stiffening, increased risk of injury
- **Tendon/Ligament Changes**
  - Loss of water content – decreased shock absorption and ROM, loss of elastic fibers/increased collagen crosslinks – increased risk of injury

# Muscle Loss: Sarcopenia vs. Cachexia

**Sarcopenia:** Age related loss of muscle mass and strength *in the absence of disease*

- BW may be stable
- Caused by decreased activity, increased cytokine production, decreased GH and testosterone, insulin resistance, decreased protein synthesis
- Associated with increased mortality (humans)
- Responds to strength training

**Cachexia:** Loss of lean body mass *secondary to disease*

- Neoplasia, CKD, CHF
- *Does not* respond to strength training



# Muscle Condition Scale



## Muscle Condition Score

Muscle condition score is assessed by visualization of the spine, scapulae, skull and wings of the ilia. Muscle loss is typically first noted in the epaxial muscles on each side of the spine; muscle loss at other sites can be more variable. Muscle condition score is graded as normal, mild loss, moderate loss, or severe loss. Note that animals can have significant muscle loss even if they are overweight (body condition score >5/9). Conversely, animals can have a low body condition score (>4/9) but have minimal muscle loss. Therefore, assessing both body condition score and muscle condition score on every animal at every visit is important. Palpation is especially important with mild muscle loss and in animals that are overweight. An example of each score is shown below.

## Muscle Condition Score

Muscle condition score is assessed by visualization of the spine, scapulae, skull and wings of the ilia. Muscle loss is typically first noted in the epaxial muscles on each side of the spine; muscle loss at other sites can be more variable. Muscle condition score is graded as normal, mild loss, moderate loss, or severe loss. Note that animals can have significant muscle loss even if they are overweight (body condition score >5). Conversely, animals can have a low body condition score (>4) but have minimal muscle loss. Therefore, assessing both body condition score and muscle condition score on every animal at every visit is important. Palpation is especially important with mild muscle loss and in animals that are overweight. An example of each score is shown below.



- Evaluate BCS and MCS
- Loss of muscle mass
  - Epaxial, Gluteal, Scapular, Temporal

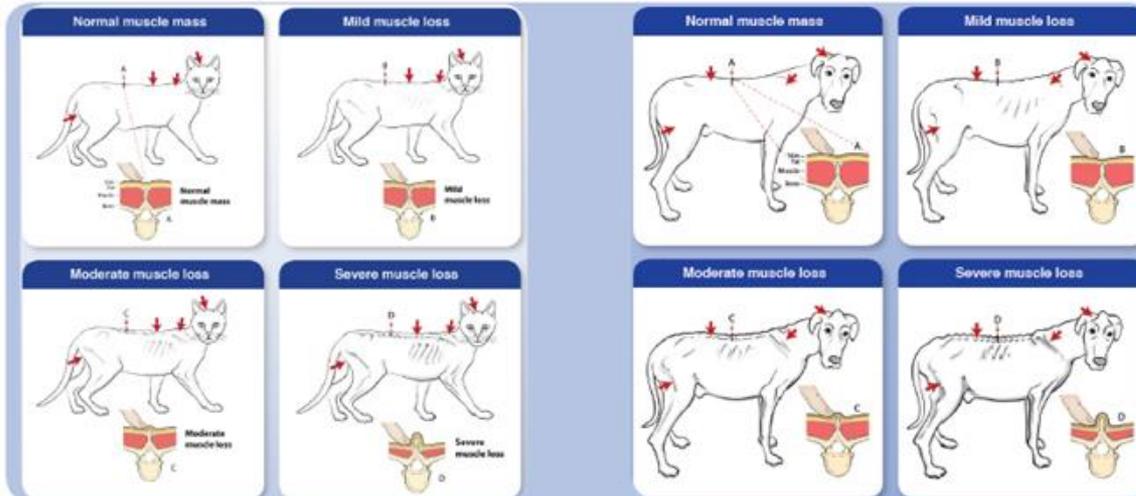


Figure 4 & 5

| Description                             | Figure |
|---|--------|
| No Muscle Wasting<br>Normal Muscle Mass |        |
| Mild Muscle Wasting                     |        |
| Moderate Muscle Wasting                 |        |
| Marked Muscle Wasting                   |        |

# What Does this Mean for Senior Rehab Pets?

- Decreased aerobic endurance
  - Cardio training is still important!
- Longer warm up periods needed
- Frequent rest breaks
- Slower surgical recovery
- Recommend multiple short vs. single long exercise sessions
- Expect cognitive dysfunction
- Pharmacologic concerns
  - Adjust drug doses
  - Multimodal therapy!
- Obesity
- Osteoarthritis
  - Most common cause of chronic pain

# A Few Special “Senior” Conditions to Consider

# Oncology and Rehabilitation

- Senior oncology patients = great Rehabilitation patients!
  - Surgical and medical oncology patients
  - Lipomas, MCT, Osteosarcoma, lymphoma, soft tissue sarcoma
- Considerations:
  - How will the cancer itself affect rehab plan?
  - How will the cancer treatment affect rehab plan?
  - Cancer pain management
  - Effects of chemotherapy and/or radiation on the patient
  - All lumps/bumps/masses should be evaluated



# Cancer: How Can Rehabilitation Help?

- Pain management
- Wound healing
- Body mechanics
- Concurrent orthopedic disease
- Body weight/condition
- Prosthetics and assistive devices
  
- Exercise and Cancer
  - Decrease cancer related fatigue
  - Improve functional activity
  - Improve immune function
- Massage
  - Pain relief, increased circulation, decreased edema
  - Caution: Coagulation state, directly over masses and over prior sx/radiation sites
- Modalities
  - Most contra-indicated over cancer site
  - Caution post-op
  - *Consider using locally for concurrent orthopedic concerns*



# Canine Cognitive Dysfunction

Geriatric changes in behavior patterns and daily routines not caused by other medical disorders

- Disorientation
- Changes in social interaction
- Changes in sleep-wake cycle
- Loss of house-training
- New fears/anxiety
- Decreased activity

TABLE 1 Senior Pet Checklist

| BEHAVIOR   | DATE | DATE | DATE |
|--|------|------|------|
| <b>DISORIENTATION</b>  |      |      |      |
| Appears lost or confused in familiar environment                                 |      |      |      |
| Decreased ability to recognize familiar people or animals                        |      |      |      |
| Abnormal response (increased or decreased) to familiar objects                   |      |      |      |
| Difficulty performing previously learned task                                    |      |      |      |
| Difficulty learning new tasks  |      |      |      |
| Getting stuck in corners or behind furniture                                     |      |      |      |
| Staring at walls or into space   |      |      |      |
| Difficulty finding the door  |      |      |      |
| Difficulty finding the food bowl   |      |      |      |
| Does not respond to verbal cues  |      |      |      |
| <b>SOCIAL INTERACTIONS</b>   |      |      |      |
| Changes in interactions with people, other animals (welcoming, playing, petting) |      |      |      |
| Decreased responsiveness to family members                                       |      |      |      |
| Decreased affection toward, or interaction with, housemates                      |      |      |      |
| Changes in exploratory behavior  |      |      |      |
| Increased irritability   |      |      |      |
| Increased aggression (lunging, snapping, biting)                                 |      |      |      |
| Intolerant of being left alone   |      |      |      |
| <b>SLEEP-WAKE CYCLES</b>   |      |      |      |
| Sleeping more overall  |      |      |      |
| Sleeping less at night   |      |      |      |
| Abnormal night-time behaviors (vocalization, wandering, motor restlessness)      |      |      |      |
| <b>HOUSE-TRAINING</b>  |      |      |      |
| Elimination in random indoor locations   |      |      |      |
| Elimination in sleeping area   |      |      |      |
| Decreased signaling to go outside  |      |      |      |
| Elimination indoors after a recent walk  |      |      |      |
| Elimination at uncommon outdoor locations (concrete)                             |      |      |      |
| <b>ACTIVITY</b>  |      |      |      |
| Aimless wandering, motor restlessness, pacing                                    |      |      |      |
| Decreased activity level   |      |      |      |
| Loss of interest in food   |      |      |      |
| Slower at obeying commands   |      |      |      |
| Repetitive behaviors   |      |      |      |

# CCD: How Can Rehabilitation Help?

- Exercise!
    - Mental activities and physical exercise delay the onset of dementia in adults Wilson RS, et al. Neurology 2010
    - Low impact
    - Balance, proprioception
    - Strength training
    - Activities of Daily Life
  - Cognitive Stimulation
  - Social Interaction
  - Tactile Stimulation
  - Pain management
- *CCD Patients may require quiet room/environment*



# Laryngeal Paralysis

Geriatric Onset Laryngeal Paralysis and Polyneuropathy (GOLPP)



Photo: Veazie Veterinary Clinic

## Rehabilitation Considerations:

- Post-op: Will have continued peripheral neuropathy
- **Swimming *is not* recommended!!**
  - **CAUTION** in UWTM
  - Floatation, Therapist assist
- Daily *low impact* exercise IS recommended
  - Maintain muscle condition/strengthening
  - Balance, proprioception
  - “Body weight” Exercises
- Manage concurrent orthopedic disease
- Weight Management

# Canine Obesity

## CONSEQUENCES OF EXCESS FAT IN DOGS & CATS

2014 AAHA

Reduced Life Expectancy  
Diminished Quality of Life

Skin Disorders

Chronic Inflammation

Adipose Cell

Orthopedic Disease

Kidney Dysfunction

Cancer

Respiratory Disorders

Metabolic and Endocrine Disorders

Pet Obesity Prevention  
PetObesityPrevention.org

Obesity: Exceeding ideal body weight by 15-20%+

In 2018, 56% of adult dogs in the US were considered overweight or obese!

Seniors at greater risk!

# Obesity and Rehabilitation

- **Lifelong diet restriction and radiographic evidence of osteoarthritis of the hip joint in dogs** Gail K. Smith, VMD, PhD; Erin R. Paster, DVM; Michelle Y. Powers, DVM; Dennis F. Lawler, DVM; Darryl N. Biery, DVM, DACVR; Frances S. Shofer, PhD; Pamela J. McKelvie, VMD; Richard D. Kealy, PhD JAVMA 2006
  - Lower prevalence and later onset of OA in limit fed dogs
  - Limit fed dogs lived 2-3 years longer!
- **Effects of caloric restriction and a moderate or intense physiotherapy program for treatment of lameness in overweight dogs with osteoarthritis**  
Evamaria Mlacnik, DVM; BarbaraA. Bockstahler, DVM; Marion Müller, DVM; Mark A. Tetrick, DVM, PhD; Richard C. Nap, PhD; Jürgen Zentek, DVM, PhD JAVMA 2006
  - **Conclusions and Clinical Relevance**—Caloric restriction combined with intensive physical therapy improved mobility and facilitated weight loss in overweight dogs. The combination of dietetic and physical therapy may help to improve the health status more efficiently than dietetic treatment alone.

# Weight Loss & Nutrition For Senior Patients

- 6-8% reduction in body weight resulted in decrease in severity of hind limb lameness Marshall, Vet Res Commun 2010
- Calculate RER for ideal weight
  - $\text{Kcal/day} = 70 \times (\text{BW(kg)})^{0.75}$
- Goal – 1-2% BW loss/week
- *Regular weigh ins are important!*
- Consider RX diets



WSAVA  
Global Nutrition  
Committee



# Don't Forget About Protein!

- Most senior dogs do not benefit from dietary protein restriction (unless renal disease)
- Many Senior diets have reduced protein!
- Important for optimal body condition and lean muscle
- Ideal: 1.5-2 gms/lb BW

| Key Nutrient                                   | Alteration  | Rationale  |
|--|---|--|
| Energy   | Increase or decrease  | Senior dogs have overall decreased energy requirements, but older dogs are also more likely to be underweight.   |
| Protein  | Increase, unless evidence of disease indicating protein reduction | The protein requirements of senior dogs increase with age because of the increased protein turnover.   |
| Fat  | Increase or decrease  | Senior dogs have no alteration in fat digestibility with age, so fat should increase or decrease as needed to affect the energy density of the diet.   |
| Long-chain omega-3 polyunsaturated fatty acids | No alteration or increase   | Evidence is not conclusive, but long-chain omega-3 polyunsaturated fatty acids may be beneficial in delaying the onset and progression of several physiologic aging changes as well as improving clinical signs and delaying progression of age-related disease. |
| Antioxidants                                   | No alteration or increase   | Evidence is not conclusive, but several studies indicate that dietary enrichment with a variety of antioxidant cocktails improves cognitive function. Clear dose-response relationships have not been elucidated.  |

VCNA Volume 44, Issue 4, July 2014, pages 741-759

# Patient Evaluation, Goal Setting, and ADLs

# Evaluation of the Senior Rehab Pet

## Diagnosis, Diagnosis, Diagnosis!

- Why is the dog slowing down
  - Is there pain?
  - What is primary? Secondary?
- Diagnosis = Targeted Treatment
- Complete History
- Minimum Database
  - Complete exam
  - CBC, Chem, UA, T4
  - Imaging
  - Advanced Diagnostics PRN



<https://www.eftx.org/things-to-expect-after-you-receive-an-epilepsy-diagnosis/>

# Observe the Patient!

- Posture
- Weight shifting
- Transitions
- Functional mobility
- Balance
- Gait
- Stairs, surfaces
- Activities of Daily living!



# Evaluation of the Senior Rehab Pet

- Clinical Metrology Instruments/Client Specific Outcome Measures
  - Measure activity, mobility, function
  - Some are validated: CBPI, COI, LOAD, CSOM, HCPI
  - Help clients ID pain and functional limitations
  - Objectively measure response to treatment
  - Track response to treatment
  - Aid in end of life/QOL discussions

# Ex: Canine Brief Pain Inventory

- Pain severity
- Pain interference with function
- Quality of life Scores for each item are derived from 0–10 scale
- Scores based upon owners' assessment of pain and behaviors over past 7 days.
- Separate scores can be compared over time for pain severity, functional impairment and quality of life.
- Repeat at subsequent visits to assess response to analgesic therapy.
- Available at: [www.vet.upenn.edu/research/clinical-trials/vcic/pennchart/cbpi-tool](http://www.vet.upenn.edu/research/clinical-trials/vcic/pennchart/cbpi-tool).
- Cimino Brown D, Boston RC, Coyne JC, Farrar JT. 2007. Development and psychometric testing of an instrument designed to measure chronic pain in dogs with osteoarthritis. *Am J Vet Res.* 2007;68:631–637.

## Description of Pain

Select the value that best describes your dogs **worst** pain in the last 7 days?

No Pain 0 1 2 3 4 5 6 7 8 9 10 Worst Pain

Select the value that best describes your dogs **least** pain in the last 7 days?

No Pain 0 1 2 3 4 5 6 7 8 9 10 Worst Pain

Select the value that best describes your dogs **average** pain in the last 7 days?

No Pain 0 1 2 3 4 5 6 7 8 9 10 Worst Pain

Select the value that best describes your dogs **current** pain?

No Pain 0 1 2 3 4 5 6 7 8 9 10 Worst Pain

## Description of Function

Describe how pain has influenced your dog in the last 7 days

### General Activity

Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

### Enjoyment of Life

Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

### Ability to rise to standing from lying down

Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

### Ability to Walk

Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

### Ability to run

Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

### Ability to climb (Stairs, curbs, etc)

Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

## Overall Impression

Describe your dogs quality of life over the last 7 days

Poor Fair Good Very Good Excellent

# Create a Problem List

- Functional
  - Cannot go up stairs
  - Difficulty getting up from lying down
- Anatomic/Biomechanic
  - Decreased AROM of stifles
  - Pain
  - Pelvic limb weakness
- Disease/Comorbidities
  - Bilateral stifle OA
  - GOLPP



\*\*Be sure to address the primary concern/complaint!

# Expectations: SMART Goal Setting

- Specific
  - Create problem list
  - Define functional limits
- Measurable
  - CMIs!
- Achievable
  - Define realistic end points
  - Appropriate client expectations
- Relevant
  - ADLs
  - Different for each patient and client
- Time
  - How long will it take to see improvements?



# Goals for Senior Rehabilitation Patients

- \*\*Maintain Function and Preserve ADLs!
- Pain Management
- Maintain Muscle condition and Strength
- Maintain Cardiovascular Endurance
- Preserve Proprioception and Balance
- Preserve Cognitive Function
- Overall QOL



# Important Senior Canine ADLs

- Down to stand
  - Transition from lateral to sternal
  - Transition from sternal to stand
- Stand to eat/drink
  - Postural muscles
  - Balance
- Stand to down
- Walking
  - Surfaces
  - Endurance
  - Incline/decline
- Posture to Urinate/Defecate
  - Balance
  - Core strength
  - Incontinence?
- Stairs
  - Up vs. Down
  - Traction/surfaces
- Jumping
  - Up vs. Down



Canine Exercise Solutions

# Ex: ADL - Down to Stand

## What Movements are Needed?

- Hip, Stifle, Tarsal flexion
  - Sartorius, iliopsoas, hamstrings, cranial tibial
- Shoulder, elbow flexion
  - LH triceps, TM, lats, biceps
- Hip Extension
  - Glutes, Hamstrings
- Stifle extension
  - Quads
- Tarsal extension
  - Gastroc
- Elbow Extension
  - Triceps
- Shoulder and core stability

## What Exercises Can Help?

- Improve hind limb flexion?
- Increase glute and hamstring strength?
- Improve coordination?
- Improve core strength?

Down to stand

Assisted Transitions

Toe-pinch

3-Legged Stand with Glute

Tapping

Sit to stand

Cavalettis

# Multimodal Therapies: The Geriatric Toolbox!

“Once altered musculoskeletal function is established, it is unlikely that pharmacological intervention alone will be effective in altering chronic pain states”

Brandt, 1997 Annals of Int Med

# Multimodal Treatment for Senior Rehabilitation Patients

- Therapeutic Exercise\*
- Manual Therapy\*
- Therapeutic Modalities\*
- Supplements
- Nutrition
- Weight Management
- Activity Modifications
- Assistive Devices
- Environmental Modifications
- TCVM
- Chiropractic
- Other – Surgery, Joint Injections, Regenerative medicine etc.



# Multimodal Treatment

## Manual Therapy

### Goals:

- Reduce pain
- Restore accessory/passive/active motion
- Restore function

Assess PROM to determine where and why functional limitation to movement occurs

- A patient cannot perform an activity due to:
  - Painful joint?
  - Decreased ROM in flexion and/or extension?
  - Decreased muscle flexibility?
  - Decreased muscle strength?

# Manual Therapy

## Massage

- Reduce swelling and edema
- Relieve muscle tension and spasm
- Sensory input, stimulate free nerve endings
- Improve circulation, lymphatic flow
- Calming, feels good! Build trust!
- Palpate and assess – diagnostic tool?
- Use with other modalities
- Teach owners to do at home!



Canine Exercise Solutions

# Manual Therapy

## Range of Motion (Active/Passive)

- Assisted movement through available ROM
- Pain relief, improve ROM, joint lubrication

## Stretching

- Elongate connective tissue
- Limitations in AROM due to both joint/muscle stiffness

*Follow with active motion to use the joint in the new ROM and reinforce gains*



# Manual Therapy

## Joint Mobilizations

Why? Pain and/or loss of motion secondary to musculoskeletal dysfunction

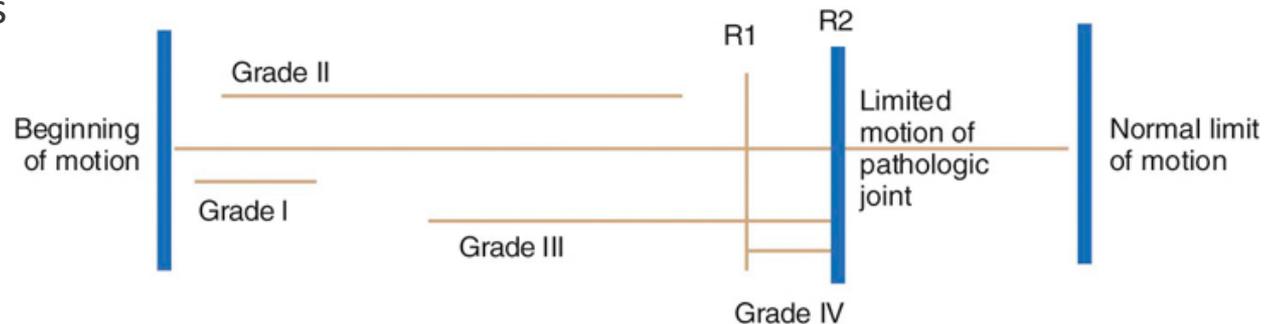
What? Passive motions performed within available ROM

## Effects of Joint Mobilization

- Stimulates nociceptive, proprioceptive and mechanoreceptor fibers
- Decrease pain, spasm, muscle guarding
- Increase awareness of joint position and motion
- Improves nutrient exchange
- Increase mobility of hypo-mobile joints
- Breakdown adhesions

## Joint Mobilizations for OA

- Distractions
  - Increase joint space, reduce pain, stimulate proprioception
- Grade I, II
  - ROM is decreased due to pain
  - Pain relief, muscle spasm
  - Treat daily
- Grade III, IV
  - ROM decreased due to stiffness
  - Improved joint motion
  - Treat 3-4x weekly
  - Follow with AROM/stretching



# Therapeutic Modalities



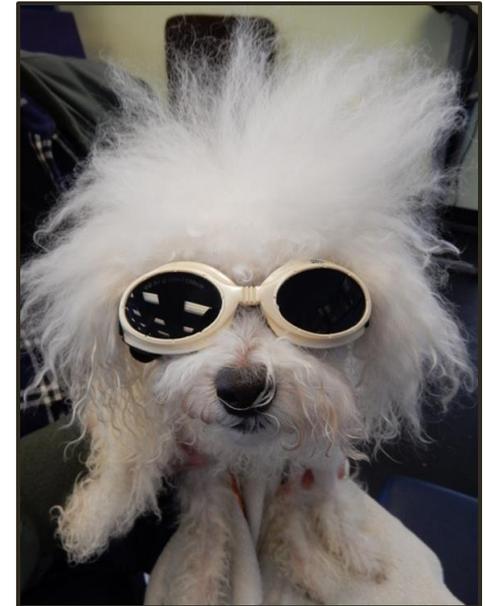
## Laser Therapy – Photobiomodulation

- Class IIIb and IV – Wattage
- Therapeutic wavelength varies between 600nm – 1000nm
- Improve cellular respiration and improve/normalize cellular function
- Vasodilation, activation of the lymphatic system, and reduction of pro-inflammatory mediators PGE2 and COX-2 enzyme.
- Pain relief, muscle spasm/trigger points, tissue healing, reduce inflammation
- “Regularly scheduled PBMT at 10 – 20J/cm<sup>2</sup> per joint for 6 weeks was successful in improving lameness and pain scores, and in lowering NSAID requirement in canine elbow osteoarthritis patients.” Looney et al, Can Vet J 2018

# Laser Therapy

## Senior Patient Considerations:

- Neoplasia
  - No evidence to show laser causes neoplasia or increases tumor growth
  - Client discussion/informed consent
  - Treat distant sites
  - Be aware of possible systemic effects
- Skin/Tissue changes
  - Fragile or thin skin
  - Decreased peripheral sensation
  - Consider decreasing power



# Therapeutic Modalities

## Pulse Electromagnetic Field Therapy (PEMF)

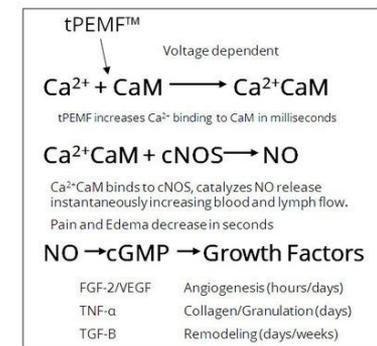
- Reduces pain and inflammation via a targeted pulsed magnetic field
  - Signal targeted to enhance binding of Ca<sup>+</sup>
  - Accelerates the nitric oxide (NO) cascade
  - Regulates inflammation, enhances healing

## Ex: Assisi Loop

- FDA approved NPAID
- Veterinary studies show significant improvement in incisional pain, decreased opioid administration, lower levels of GFAP (neuroprotective), and improved proprioception after spinal surgery

- \*Can use over bandages/casts, implants
- \*Can be sent home with patients
- \*Not contraindicated with neoplasia

- Leilani X. Alvarez, John McCue, Nathaniel K. Lam, Gulce Askin, and Philip R. Fox (2019) [Effect of Targeted Pulsed Electromagnetic Field Therapy on Canine Postoperative Hemilaminectomy: A Double-Blind, Randomized, Placebo-Controlled Clinical Trial](#). Journal of the American Animal Hospital Association: March/April 2019, Vol. 55, No.
- Zidan N, Fenn J, Griffith E, Early PJ, Mariani CL, Muñana KR, Guevar J, Olby NJ. J [Neurotrauma](#). 2018 Aug 1;35(15):1726-1736. doi: 10.1089/neu.2017.5485. Epub 2018 Apr 2.



<sup>1</sup> Casper et al., SFN, 2008, BEMS 2009; Pilla, BEMS, 2009

# Therapeutic Modalities

## Electrotherapy

### 1) Transcutaneous Electrical Stimulation (TENS)

- Pain relief
- Stimulates A-beta fibers which activate inhibitory neurons at dorsal horn of the spinal cord and block transmission of pain impulses from periphery to the brain
- Release of endorphins



# Therapeutic Modalities

## Electrotherapy

### 2) Neuromuscular Electrical Stimulation (NMES)

- Electrical current depolarizes motor nerve to produce skeletal muscle contractions
- Prevent atrophy, retrain muscles
  - Non-ambulatory, weak patients
- Combine with therapeutic exercises

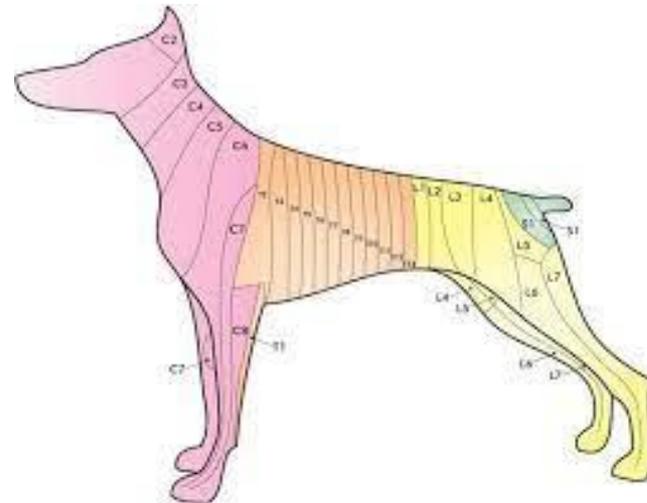


# Therapeutic Modalities

## Electrotherapy

### *Senior Cautions:*

- Seizures
- Pacemakers
- Compromised skin



# Therapeutic Modalities

## Therapeutic Ultrasound

- Modality of choice for deep tissue heating
- Most commonly used for tendon and ligament injuries
- Improves blood flow
- Warms tissues
- Improves tissue flexibility
- Decreases Pain
- Improves healing

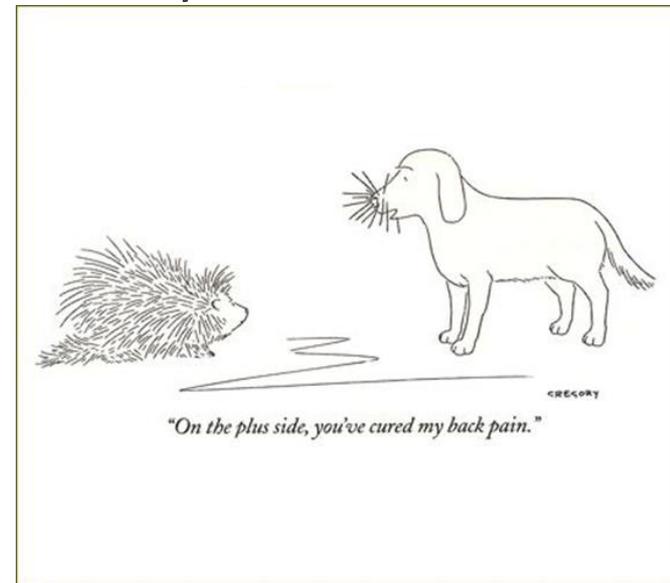


# Acupuncture

- Stimulation of specific points on the body produces a physiologic response/therapeutic effect
- Specific points correspond to different body systems
- TCVM – Qi flows through channels close to the surface of the skin
- Acu points where sensory and pain fibers converge
- Affects nervous and endocrine systems – local and systemic effects
- Release of neurohormones – B-endorphins
- Pain management
- No contraindications

Dry Needling

Electro-acupuncture



# Supplements

- Adequan Canine (PSGAG)
  - Only FDA approved injectable Disease Modifying Osteoarthritis Drug
  - Inhibits metalloproteases (MMP) – breaks the cycle of cartilage destruction
  - Recommend proactive use in OA process
  - Seniors?
- Glucosamine/chondroitin
- Omega 3 FA's
  - Most robust evidence
  - Anti-inflammatory effects – EPA, DHA
  - 50mg/kg EPA (or total 300mg/kg)
  - Therapeutic diets
- MSM
- Boswelia
- Turmeric
- Green Lipped Muscle
- UCII
- Green Tea Extract
- ALA
- Egg Shell Membrane



# Therapeutic Exercise

# Therapeutic Exercise

*The foundation of a rehabilitation treatment plan!*

- Functional strengthening – condition a movement vs. a muscle
- Balance and coordination
- Work on ADLs
- Use different exercises to achieve the same goal
- Create home exercise plans

# Designing a Therapeutic Exercise Plan

- 4 Important Parts
  - Balance
  - Strength
  - Endurance
  - Flexibility
- 4 Important Principles
  - Specificity
  - Variation
  - Overload
  - Progression
    - FITT
- Expectations For Progress



<https://www.dreamstime.com/illustration/cartoon-dog-fitness.html>

# Extrapolating Exercise Recommendations from Senior Humans to Senior Canines!

- Aerobic: 3 days/week
  - 20-30 mins with warm up and cool down
- Strength: 2-3 days/week
  - 10-15 rep max
  - Exercises performed with good form/without fatigue.
  - 1 set of multiple exercises targeting same muscle group
- Balance and skills: Daily
  - (20 mins)
- Stretch: Daily
  - after walks

## Example Rx:

- In Clinic sessions 2x weekly – UWTM, Ther Ex, advanced balance skills, manual therapy
- Home Exercise Plan – Brisk walk 1x weekly, Ther Ex 1x weekly, balance skills, PROM/active stretching

# Seniors: Activity Modification

- Water!
- Daily low impact exercise
- Walking, hiking, swimming, sniffing
- Gradual increase in duration and intensity as able
- Short duration, frequent activity
- No more than 2-3 exercises per day
- At least 2 rest days/week
- Rest days should still include walking and dynamic stretching



Canine exercise solutions

**\*\*Incorporate therapeutic exercises into daily activities!**

# Choosing Therapeutic Exercises

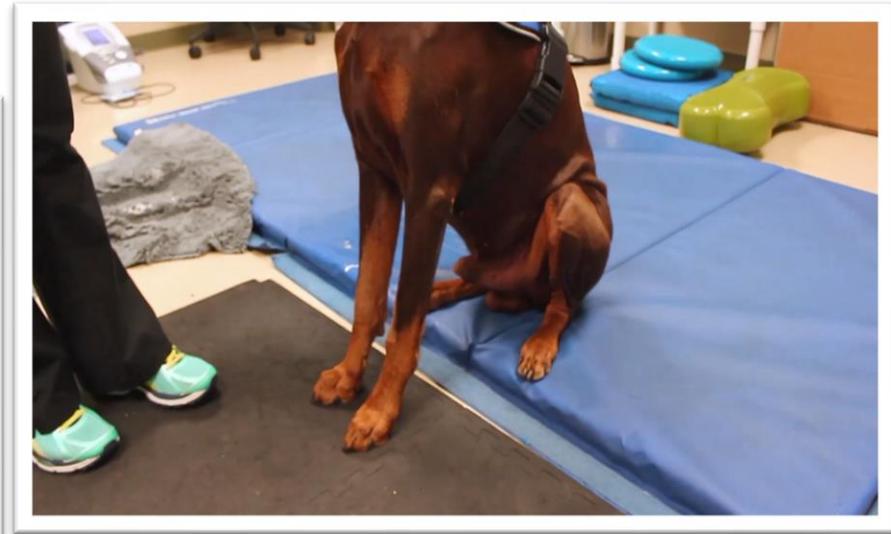
Choose exercises based on functional limitations

- Remember ADLs!
- What exercises will help meet patient/client goals?
- Slow controlled leash walks
- Paw shakes/cookie stretches
- Walking in tall grass or deep snow
- Step stretch after walks
- Figure 8s
- Mattress walking
- Happy butt rub
- 3-legged stands
- Hydrotherapy
- Tail traction



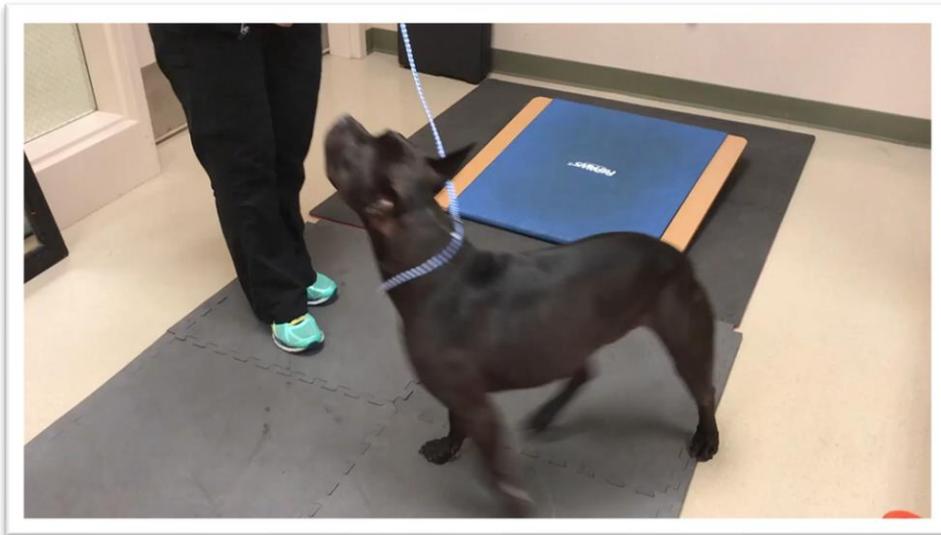
# Therapeutic Exercise

- Cavalettis
- Paw shakes



# Therapeutic Exercise

- Sit to Stand
- Inclines, Ramps



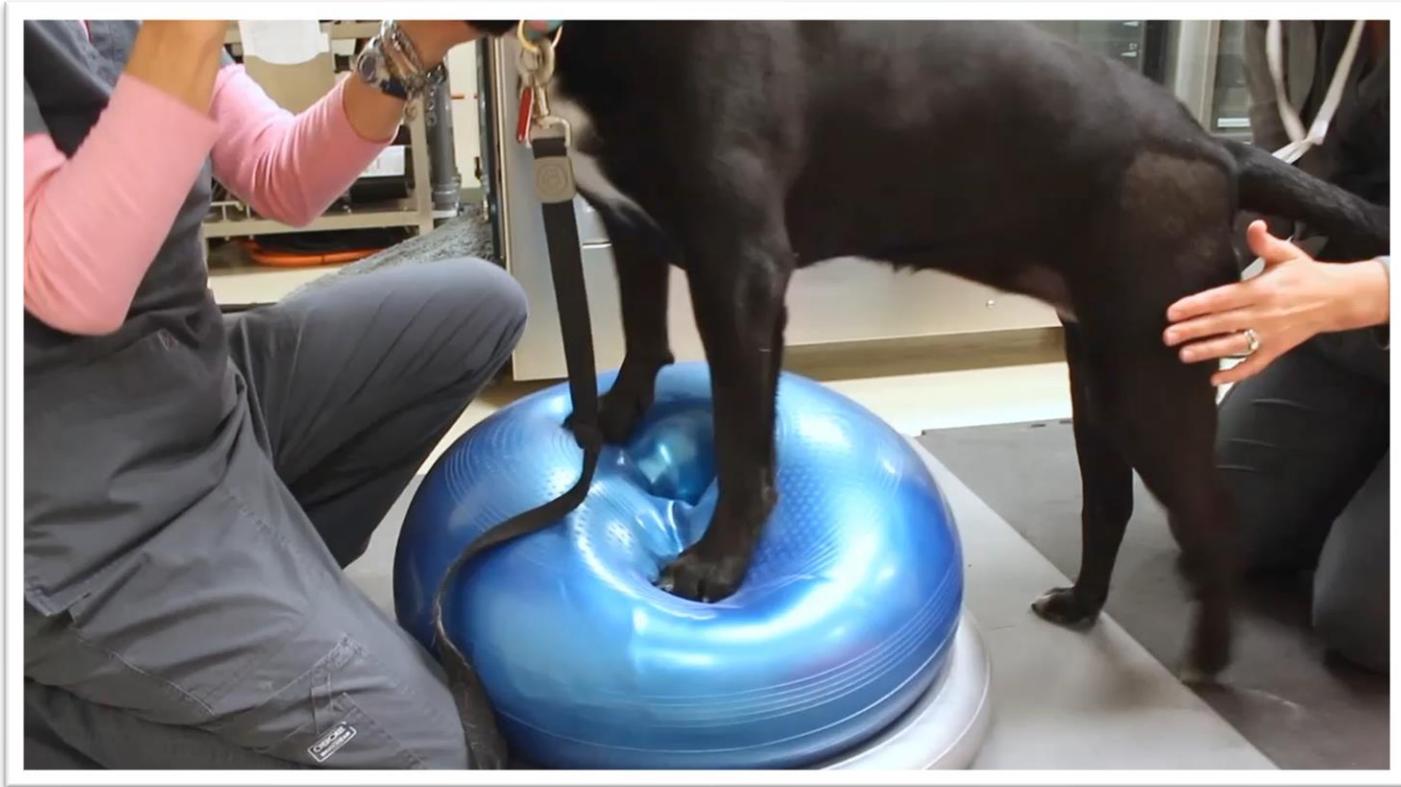
# Therapeutic Exercise

- Happy “Butt Rub” Dance



# Therapeutic Exercise

- Step Stretch



# Therapeutic Exercise

- Figure 8s



# Therapeutic Exercise

- Cookie Stretches



# Therapeutic Exercise

- Toe Pinches



# Therapeutic Exercise

- Hydrotherapy!



# Tools for Comfort

# Environmental Modifications

- Warm packs
- Ramps/Pet stairs
- Orthopedic Beds
- Raised bowls
- Stair runners/Area Rugs
- Keep nails/paws trimmed



# Assistive Devices

[www.helpemup.com](http://www.helpemup.com)

[www.ruffwear.com](http://www.ruffwear.com)

[www.dogleggs.com](http://www.dogleggs.com)

[www.pawzdogboots.com](http://www.pawzdogboots.com)

[www.orthopets.com](http://www.orthopets.com)

[www.therapaws.com](http://www.therapaws.com)

[www.toegrips.com](http://www.toegrips.com)

[www.handicappedpets.com](http://www.handicappedpets.com)



# End of Life/Hospice

The role of the Rehabilitation Practitioner

- Maintain acceptable QOL
- Long term relationship with patients
- Help determine when it is “time”
- Advocate for the pet
- Support for the family

Resources:

- [Lapoflove.com](http://Lapoflove.com)
- Grey Muzzle app



# Contact

Dr. Kim Huppe

[kim.huppe@medvet.com](mailto:kim.huppe@medvet.com)

Referral phone: 330 665 4996