

Passive and Active Exercises

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Passive exercises

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- Range-of-Motion exercises
- Stretching




Passive exercises

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- Increased joint mobility
- Increased flexibility
- Prevent adhesions
- Remodelling periarticular fibrosis
- Increased muscle and tissue extensibility
- Decreased effects of disuse and immobilisation




ROM exercises



▼ Movement of a joint throughout its comfortable degree of movement


▼ This movement is only performed by **external** forces
→ no intentional muscle contraction of the animal

! Additional pressure at the end of the comfortable degree of movement = **STRETCHING** !




ROM exercises

When?




- ALWAYS, when an animal isn't able to move the joints on its own
- Directly after orthopaedic surgery
 - Pain ↓
 - Recovery rate ↑
- In disabled pets, to avoid contractures




ROM exercises

But:




They cannot:

- ...Prevent atrophy of muscles
- ...Strengthen muscles
- ...Improve endurance




ROM exercises

When not?




Contraindications:

- If the exercises might lead to further instability or injuries
 - Unstable fractures
 - Unstable injuries of tendons or ligaments
- The communication between the therapist and the surgeon is essential !!




ROM exercises


How?





- Wait till the pet is relaxed before you start!
- Lateral recumbency
- No active muscle force of the animal desired – be careful not to frighten it
- **Exercises must not hurt!!!!!!**




ROM exercises












ROM exercises












ROM exercises




It is possible to move all joints of one leg at once

- ▼ To prepare the animal for active exercises, or
- ▼ To relearn motion patterns (E.g. after neurologic problems)




ROM exercises





How often and how long?

Number of repetitions and frequency:

- Depends on the kind of problem
- In general:
 - 15 – 20 repetitions
 - 2 – 4 x daily
 - If ROM starts to normalize you can reduce the frequency



Stretching



- ▼ Often performed together with ROM exercises
- ▼ Increases the flexibility of joints...
- ▼ ... and also of periarticular tissue (like muscles or tendons)



Stretching



- ▼ Results in an elongation of pathologically shortened tissue
- ▼ Influences the flexibility and joint moveability in normal and diseased tissue
- ▼ In contrast to ROM exercises, during stretching the tissue is moved slightly over the currently available ROM



Stretching How?



- Before stretching
 - Heat!!!
 - Start with careful pass. ROM exercises
- After stretching
 - Cold-Packs
 - Resting period
 - If possible: active exercises as a home treatment!





Active Exercises


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Goals of Therapeutic Exercises

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- Improve active pain-free range of motion
- Improve use of limb and reduce lameness
- Improve muscle mass and muscle strength
- Improve daily function
- Help prevent further injury



Benefits of Therapeutic Exercise

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- Facilitates increased rate of recovery
- Improves quality of movement
- Non-invasive
- Enhanced performance and endurance
- Positive psychological effects for owner and pet



Basic Rules of Therapeutic Exercise



- Vary the routine
- Try a number of different activities to determine what works best in an individual
- Allow patient to guide an increase in activity
- Do not hurt a patient--will slow progress



Voluntary Activities



- Standing exercises
- Slow walks
- Stair climbing
- Treadmill
- Wheelbarrowing - forelimb activity
- Dancing - rear limb activity



Other Active Exercises



- Jogging
- Sit-to-stand exercises
- Pulling/Carrying Weights
- Cavaletti rails
- Playing ball
- Tape bottle or syringe cap to foot
- Sling contralateral good limb
- Aquatic Therapy



Assisted Standing

- Bilateral pelvic and neurologic injuries
- Place dog with feet squarely underneath, support with towel or walkabout sling, let animal try to support weight; when they slowly collapse, pull back up
- Start with 10-15 repetitions bid-tid, gradually increase to 5 minutes per session







Walk-About Sling














Balancing Activities

- Weight shifting
- Balance board
- Swiss balls and PhysioRolls
- Goals are to enhance proprioceptive feedback, encourage weight shifting and muscle contraction, facilitate balance and function





Weight shifting

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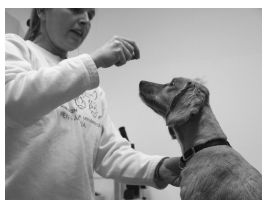
Balance Board

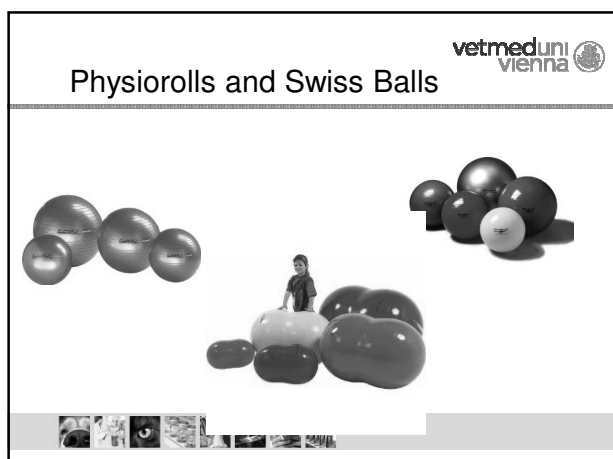
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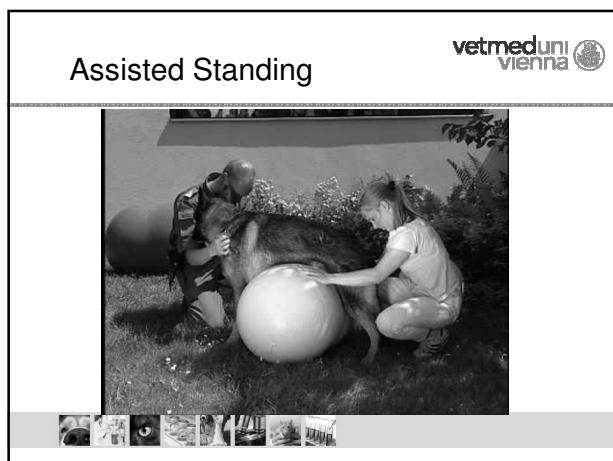


Side Bending and Cervical Flexion & Extension

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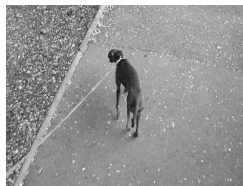
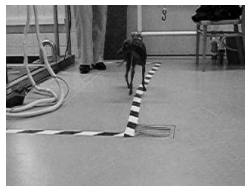


Slow Walks



- Perhaps the most important therapeutic exercise in the early post-op period
- Must do at a speed to encourage weight-bearing
- Behavior modification - praise when touch limb down, speak in a sharp tone when hold it up
- Up and down inclines and hills





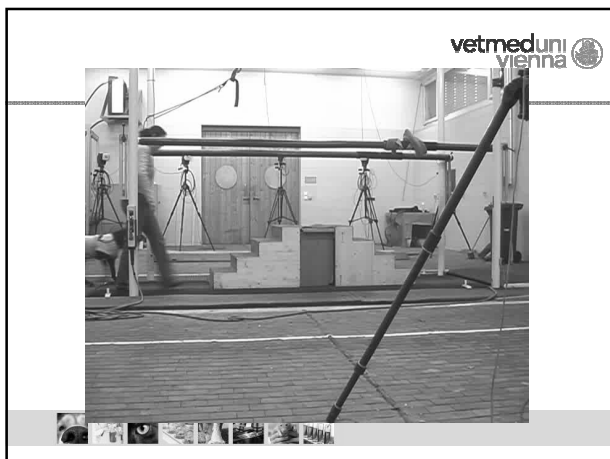
Stair Climbing



- Useful to improve power in rear limbs
- May start if repair is stable and dog is consistently using the limb at a walk with decreased lameness
- Must begin slowly to encourage proper use of rear limbs
- Begin with 5-7 steps, increase to 2-4 flights side-tid



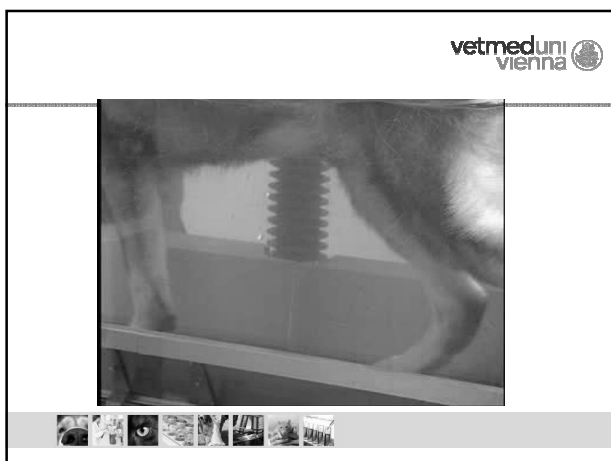


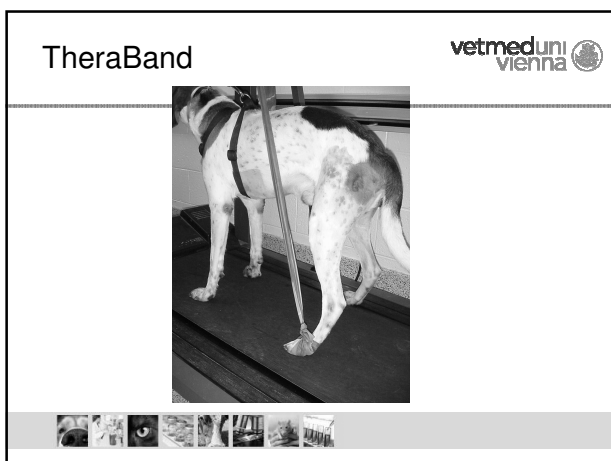


Treadmill

- Very useful modality
- Most dogs trained to leash readily take to treadmill
- Harness, sides useful
- Variable speed, timer, ability to change incline
- Useful for patterning gait, encouraging early use of limb







Wheelbarrowing



- Recommend muzzling dog
- Lift rear limbs off of ground and move forward
- Dogs with normal proprioception will move the forelimbs so they do not fall
- May require sling support
- May wheelbarrow up and down inclines for greater effect on muscle strengthening



Wheelbarrowing



Dancing Exercises



- Recommend muzzling dog
- For strengthening and range of motion of rear limbs
- Lift forelimbs off ground
- Dogs with normal proprioception will naturally move the rear limbs as the animal "dances" backwards
- May dance up and down inclines



Dancing Exercises



- Dogs will also dance forward, but may be more difficult because dogs may simply try to put forelimbs down
- Get behind dog, place arms under axillary region to support and walk forward
- Dancing backwards strengthens hip, stifle, and hock extensors



Dancing Exercises

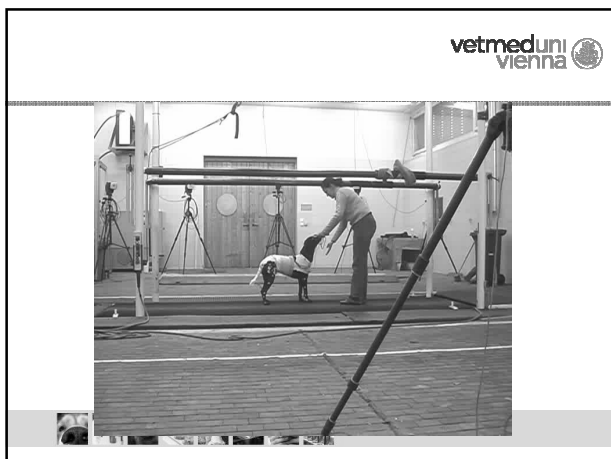


Sit-to-Stand Exercises



- Helps strengthen hip and stifle extensors
- Combine with training (may use low calorie treat)
- May be easier to back into a corner
- Concentrate on sitting and standing correctly (straight)
- Start with 5-10 reps sid-bid, work up to 15 reps tid-qid





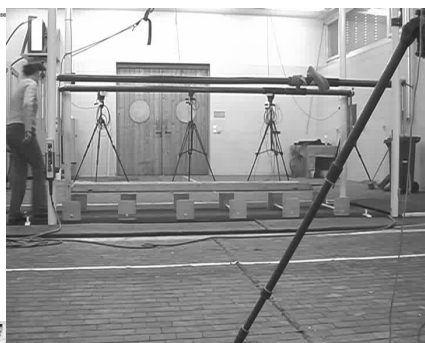
Cavaletti Rails



- Rails or poles spaced apart on the ground
- Useful to help dogs lengthen stride and use limbs
- Begin with walking, progress to trotting
- May raise the height of the rails to encourage greater active flexion and extension of joints

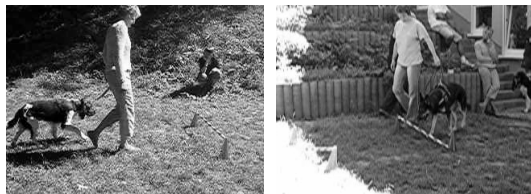


Cavaletti Rails



Cavaletti

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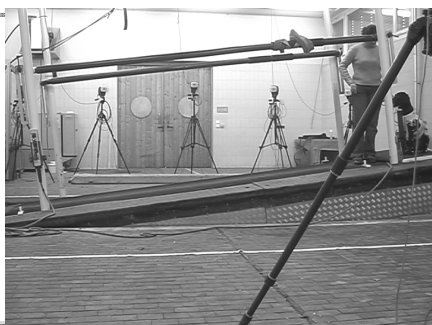
Incline

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Decline

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Giving Paw



Controlled playing



- Controlled is the key
- Begin on leash - avoid explosive activity in the early post-op period
- Graduate to ball playing in an enclosed area
- As the animal nears full return to function, do off-leash activity



Canine Carts



<http://handicappedpets.com>

<http://www.wheelchairsfordogs.com>

<http://www.doggon-de.com>

