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## CORE STRENGTHENING

K. Renee Thiebaud, PhD, PT  
The Orthopedic Store  
Physical Therapy

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## Financial Disclosure

Dr. K. Renee Thiebaud has no relevant financial relationships with commercial interests to disclose.

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## Components

- Range of Motion
- Strengthening
- Cardiovascular Training
- Sensory Retraining
- Balance
- Postural Re-education

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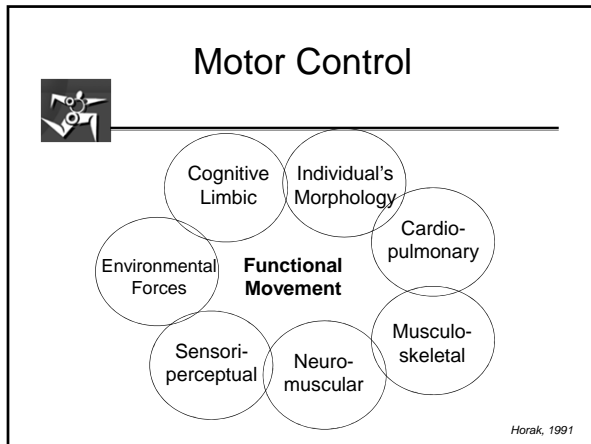
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- ## Benefits
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- Mobility
  - Stability
  - Balance
  - Strength
  - Coordination
  - Postural Control

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- ## Advantages
- 
- Activates the whole body to maintain balance
  - Facilitates midline orientation
  - Body weight distributed over dynamic base
  - Body is forced to work at the level of the weakest segment
  - Integrates strength, mobility and coordination for functional activity

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## Body Alignment



- Neutral spine alignment should be maintained during exercise

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## Exercise Progression



- Begin with 10-15 reps; increase reps/sets
- Decrease base of support
- Increase lever arm
- Increase speed
- Add resistance
- Progress from closed to open chain

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## Stabilization Exercises



- Stabilization/Postural Exercise
  - Strength
  - Flexibility
  - Proprioception
  - Aerobic Conditioning



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## Stabilization Exercises

### Muscles Contributing to Trunk Stability:

- ❖ Lattisimus Dorsi
- ❖ Rhomboids
- ❖ Trapezius
- ❖ Serratus
- ❖ Pectorals
- ❖ Abdominals
- ❖ Iliopsoas
- ❖ Obliques
- ❖ Gluteals



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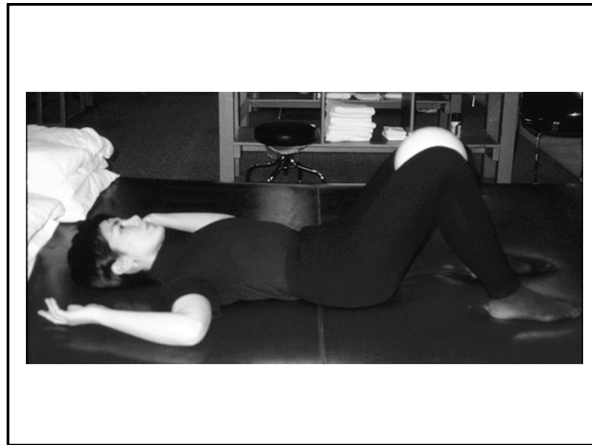
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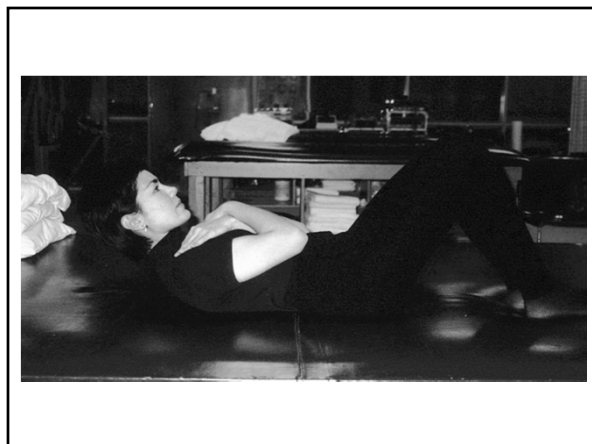
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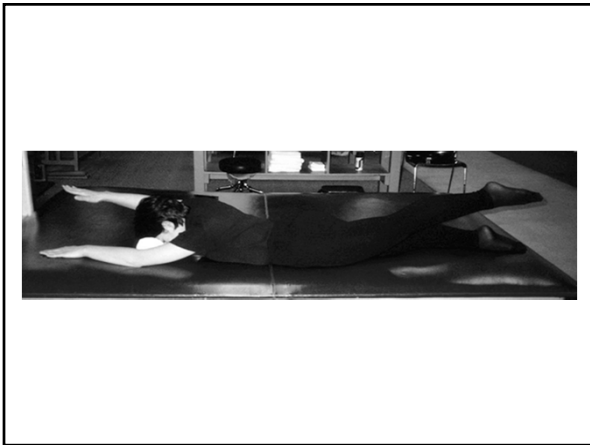
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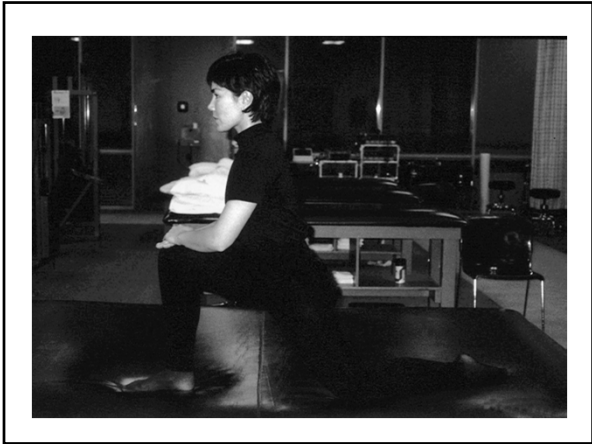
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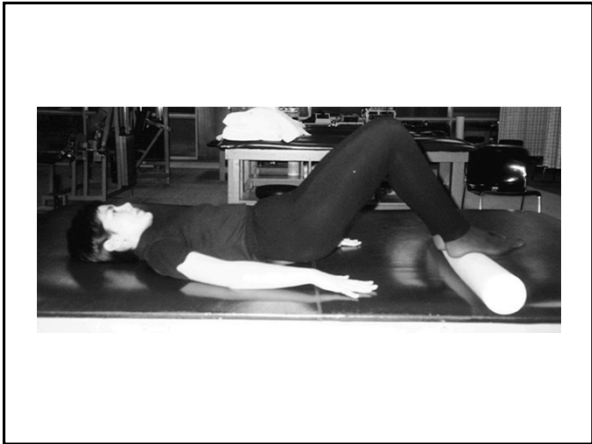
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# Flexibility

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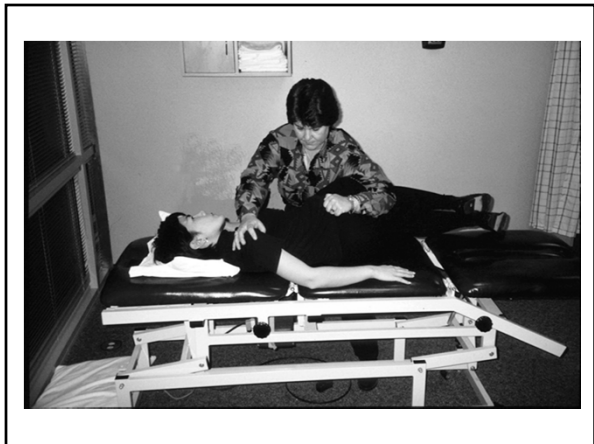
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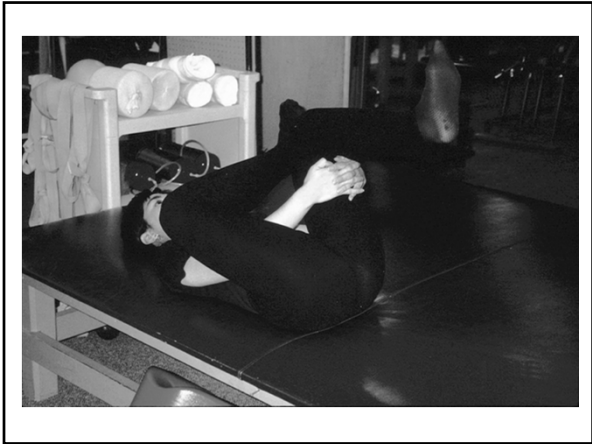
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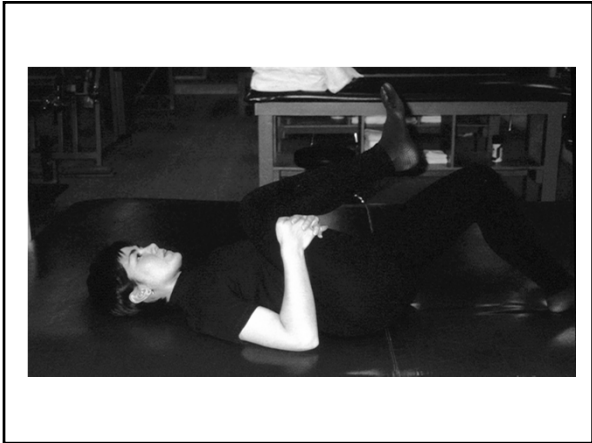
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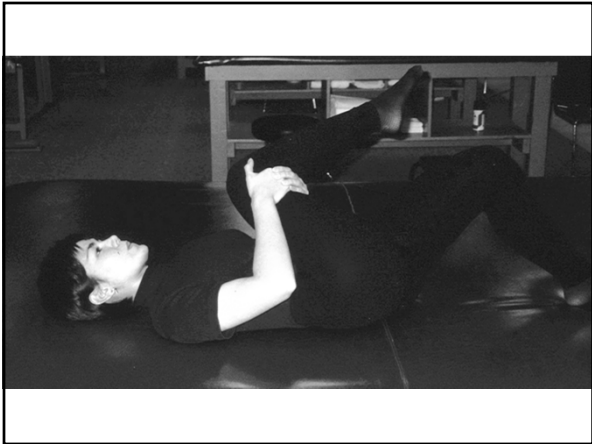
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### Stabilization Exercises



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- Muscles for Functional Activities:
  - ❖ Biceps
  - ❖ Triceps
  - ❖ Pectorals
  - ❖ Gluteals
  - ❖ Quadriceps
  - ❖ Hamstring
  - ❖ Gastroc / Soleus



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### Guidelines



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- When weight training
  - > High reps
  - > Low load/resistance
  - > Proper posture
- Squats & Shoulder press directly load the spine



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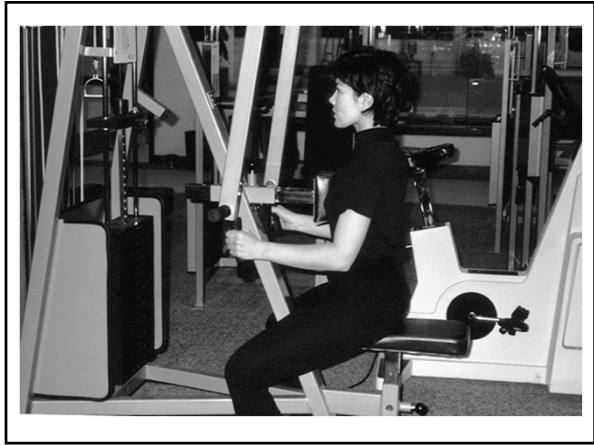
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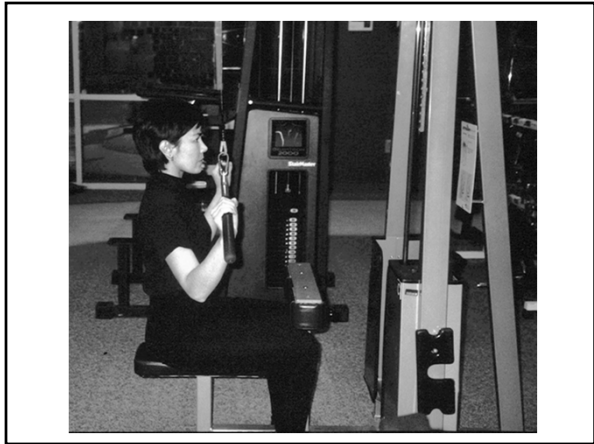
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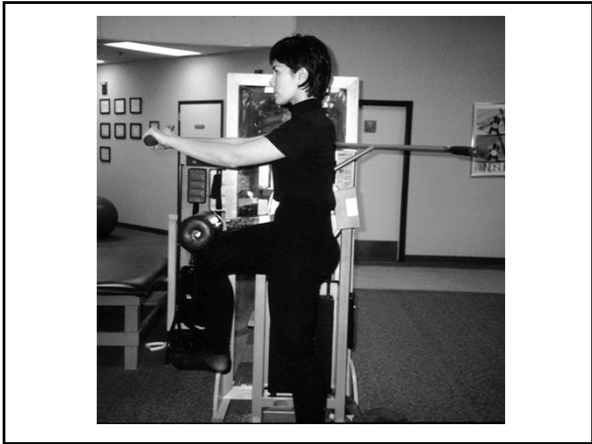
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Swiss Ball

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## Ball Selection



When sitting on the ball, the hips and knees are at 90° angles

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## Recommended Ball Size



Height	Ball size
5' 6" and shorter	55 cm
5' 7" – 6' 1"	65 cm
6' 2" – 6' 8"	75 cm
6' 9" and taller	85 cm

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## Trunk Rhythmic Stabilization



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## Marching



Leg marching



Arm/Leg marching

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## Kickout



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## Bridges



Calves on ball

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## Bridges



Feet on ball

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## Bridges



Bridge with leg lift

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## Hamstring curls



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### Hamstring curls



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### Hamstring curls



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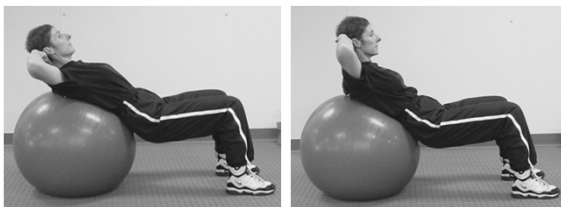
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### Abdominal curls



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### Abdominal curls



Obliques

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### Trunk rotation



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### Trunk rotation



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### Trunk rotation



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### Pike tuck



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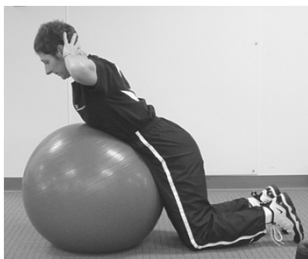
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### Upper spine extension



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### Arm/Leg raise



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### Push ups



Hips

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### Push ups



Calves

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### Push ups



Feet

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### Push ups



Elbows on ball

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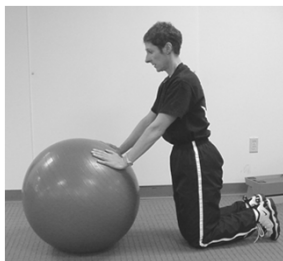
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### Push ups



Hands on ball

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Push ups



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Push ups



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Push ups



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### Push ups



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### Shoulder stabilization



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### Shoulder Rhythmic Stabilization



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## Arm raise



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## Saws



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