



# OSTEOPOROSIS VS SPINAL STENOSIS

## THE TREATMENT DILEMMA

Sara  
Meeks  
SEMINARS

THE MEEKS METHOD



## I HAVE A DREAM

that, someday in this country and, indeed, around the world, any person, no matter their age, gender, lifestyle, ethnicity, musculoskeletal condition or any other factor, can go into any environment where exercise and movement are being taught and be given a program that is

### #1 S.A.F.E.\*

Ideally, it will also be therapeutic.

Although there is more awareness now than when I began teaching 14 years ago, there is still a lot to be done.

By taking this course, you will help me fulfill my dream.

As you learn more about movement that is

### \*SKELETALLY APPROPRIATE FOR EVERYONE

you can help me take the message of safety and therapeutic intent in movement and exercise into your own life and into the lives of others.

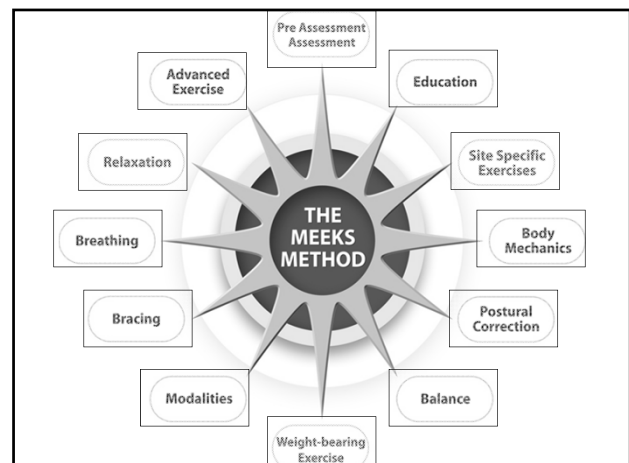
# WHAT IS THE MEEKS METHOD

## A COMPREHENSIVE 12-POINT MOVEMENT & EXERCISE PROGRAM

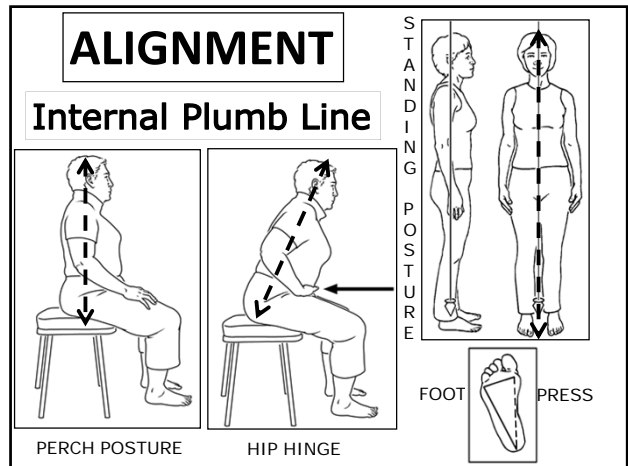
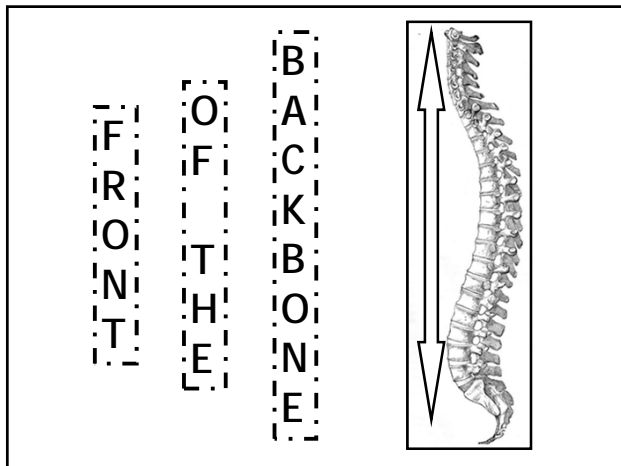
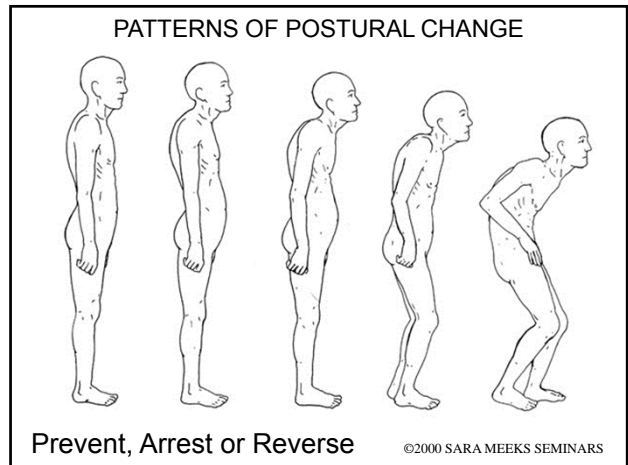
- developed around a population of patients diagnosed with osteoporosis
- useful for many diagnoses including scoliosis, spinal stenosis, spondylolisthesis, and other back pathologies
- designed with a primary objective of safety in movement from and for the bones
- based on principles of anatomical alignment, kinesiological principles of movement, and biomechanics

### S.A.F.E.\*

\*Skeletally Appropriate For Everyone



**ALIGNMENT**  
**ALIGNMENT**  
**ALIGNMENT**  
**ALIGNMENT** IS THE *KEY*



**FUNCTIONAL MOVEMENT**  
**SIT-TO-STAND-TO-SIT**

**SIT-TO-STAND CHAIR**

- Inability to stand up out of a chair unaided is linked to a 2 fold increase in hip fracture risk Cummings et al 1995
- Weakness of lower extremities linked to impending physical frailty Judge et al 1996 Guralnik et al 1995
- Low femoral neck bone mineral density is significantly associated with a low sit-to-stand performance assessed by measurement of maximum rising strength in healthy adult women. Blain et al 2008

**Management Dilemma**

~~Spinal flexion exercises are contraindicated for persons with known osteoporosis.~~

~~Spinal flexion exercises are "indicated" for persons with spinal stenosis~~

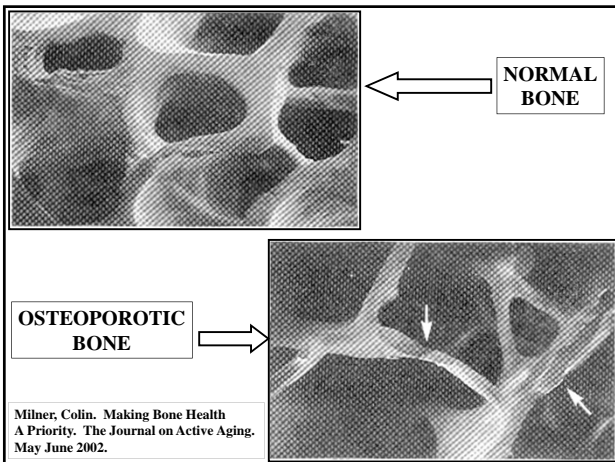
❖What would you do if you had a patient with both diagnoses?

## DEFINITIONS & DESCRIPTIONS

## WHAT IS OSTEOPOROSIS

**A musculoskeletal *disorder* with compromised bone strength that predisposes an individual to increased fracture risk**

**NIH Consensus Development Panel on Osteoporosis Prevention, Diagnosis, and Therapy. JAMA 2001**



## <sup>8</sup> BEYOND THE BONES ANATOMICAL CONSIDERATIONS

- Boney Structure
- Intervertebral Discs
- Joints
- Ligaments
- Circulation
- Neurological
- Muscular
- Internal Organs

## WHAT IS SPINAL STENOSIS

- A narrowing of the spinal canal (usually lumbar but can also occur in other areas of the spine) with subsequent neural compression
- Frequently associated with symptoms of neurogenic claudication

**Siebert et al: 2009**

## WHAT IS SPINAL STENOSIS

- First described in 1899 by Sachs and Frankel who described patients with lumbar or lower-extremity pain who walked bent forward and whose symptoms were relieved by laminectomy
- A narrowing of the spinal canal or the various tunnels through which nerves and other structures communicate with that canal
- Narrowing can be the result of:
  - Shape of the canal
  - Degenerative changes that alter size of canal
  - Movement of one anatomic segment in relation to another

**Nowakowski P, Delitto A, Erhard RE. 1996**

### Classification of Spinal Stenosis

- Primary
  - Spinal canal constricted due to a congenital abnormality or a postnatal development disorder
  - Extremely rare
- Secondary
  - Compression of neural elements due to one or more acquired conditions such as degenerative changes in vertebral body, facet joints or discs
  - May occur in late stages of infection or following a fracture
  - Iatrogenic stenosis may occur postsurgically—excessive scar tissue or proliferation of bone

Nowakowski P, Delitto A, Erhard RE. Lumbar spinal stenosis. Phys Ther. 1996;76:187-190

Spinal Stenosis is caused by mechanical factors and/or biochemical alterations within the intervertebral disk that lead to

- disk space collapse
- facet joint hypertrophy
- soft-tissue infolding and
- osteophyte formation which
- narrows the space available for the thecal sac and exiting nerve roots.

Issack et al: Degenerative lumbar spinal stenosis: evaluation and management. J Am Acad Ortho Surgeons 2012

## RISK FACTORS

### SIGNS and SYMPTOMS

for

## OSTEOPOROSIS

A silent condition until a symptomatic fracture occurs

## NON-MODIFIABLE RISK FACTORS

- Female
- Family History
- Post-Menopausal – Natural or Surgical
- Advanced Age
- Caucasian or Asian
- Delayed Puberty/Irregular Menstrual Cycles
- Early Menopause
- Men over age 75
- Nulliparous-having had no children
- Small Boned

## MODIFIABLE RISK FACTORS

- Smoking
- High Alcohol Intake
- Caffeine (more than 2-5 cups/day)
- Sedentary Lifestyle/Over-Exerciser
- Men-Low Testosterone
- High Protein Diet (Meat)
- Low Calcium Diet
- Eating Disorders

## DISEASES AND CONDITIONS

AIDS/HIV  
 Ankylosing spondylitis  
 Blood and bone marrow disorders  
 Breast cancer  
 Chronic obstructive pulmonary disease (COPD), including emphysema  
 Cushing's syndrome  
 Depression  
 Diabetes  
 Eating disorders, especially anorexia nervosa  
 Female athlete triad (includes loss of menstrual periods, an eating disorder and excessive exercise)  
 Gastrectomy  
 Gastrointestinal bypass procedures  
 Hyperparathyroidism  
 Hyperthyroidism  
 Inflammatory bowel disease, including Crohn's disease and ulcerative colitis  
 Kidney disease that is chronic and long lasting

Liver disease that is severe, including biliary cirrhosis  
 Lupus  
 Lymphoma and leukemia  
 Malabsorption syndromes, including celiac disease  
 Multiple myeloma  
 Multiple sclerosis  
 Organ transplants  
 Parkinson's disease  
 Polio and post-polio syndrome  
 Poor diet, including malnutrition  
 Premature menopause  
 Prostate cancer  
 Rheumatoid arthritis  
 Scoliosis  
 Spinal cord injuries  
 Stroke  
 Thalassemia  
 Thyrotoxicosis  
 Weight loss

**NOTE**

This list may not include all diseases and conditions that may cause bone loss.

**MEDICATIONS**

Aluminum-containing antacids  
**Antiseizure medicines (only some) such as Dilantin® or Phenobarbital**  
 Aromatase inhibitors such as Arimidex®, Aromasin® and Femara®  
 Cancer chemotherapeutic drugs  
 Cyclosporine A and FK506 (Tacrolimus)  
 Gonadotropin releasing hormone (GnRH) such as Lupron® and Zoladex®  
 Heparin  
 Lithium  
 Medroxyprogesterone acetate for contraception (Depo-Provera®)

Methotrexate

**Proton pump inhibitors (PPIs) such as Nexium®, Prevacid® and Prilosec®**

**Anti-rejection drugs in organ transplant patients**

Selective serotonin reuptake inhibitors (SSRIs) such as Lexapro®, Prozac® and Zoloft®

**Steroids (glucocorticoids) such as cortisone and prednisone**

Tamoxifen® (premenopausal use)

Thiazolidinediones such as Actos® and Avandia®

Thyroid hormones in excess

**NOTE**

This list may not include all medicines that may cause bone loss.

**SIGNS and SYMPTOMS**

for

**SPINAL STENOSIS**

Also frequently a silent condition

The clinical consequences of compression are

- neurogenic claudication
- varying degrees of leg and back pain
- major cause of pain & impaired QOL in the elderly

Issack et al: Degenerative lumbar spinal stenosis: evaluation and management. J Am Acad Ortho Surgeons 2012

A retrospective review of 62 patients admitted for spinal stenosis--31♀ and 31♂, mean age 71.8

- Positional radiculopathy 92%
- Low Back Pain 95%
- Pseudoclaudication 75%
- Mild motor loss 24%
- Pain during spinal extension 70%
- Adoption of a forward-flexed posture 24%

Radu AS and Menkes CJ 1998

Questionnaire sent to physicians to rate level of certainty that a given symptom would be related to a diagnosis of Spinal Stenosis

**MOST COMMONLY SELECTED**

- Leg pain while walking 66%
- Must sit down or bend 66%
- Flex forward while walking 49%

**OF INTERMEDIATE VALUE**

- Normal foot pulses 19%
- Back pain 16%
- Leg pain 15%
- Relief with rest 14%
- Sensory deficits 12%

**LESS THAN 5%**

- Problems with balance
- Have fallen recently
- The sacroiliac joint is not the main pain generator

Sandella et al. 2012

## PRIMARY CONSEQUENCES OF OSTEOPOROSIS

- Fracture of minimal trauma – Colles, Vertebral, Hip, Ribs, Pelvis, Any Bone In The Body
- Loss of body height with consequent compression of internal organs and other structures
- Postural changes – hyperkyphosis, protruding abdomen, secondary scoliosis
- Impaired Quality of Life

## VERTEBRAL BODY

- Bones of spine usually first to show signs of osteoporosis
- Primarily trabecular bone
- Fractures occur during movement that includes  
***TRUNK FLEXION***

- After one vertebral fracture, the risk for having a 2<sup>nd</sup> vertebral fracture increases 5 fold!
- 1 woman in 5 will sustain a 2<sup>nd</sup> vertebral fracture within 1 year
- Only 20-30% of all compression fractures are symptomatic<sup>1</sup>

*International Osteoporosis Foundation 2005  
Report of the Surgeon General on Bone Health Oct 2004  
<sup>1</sup>[www.nih.org](http://www.nih.org) accessed November 30, 2011*

Silent fractures are one of  
the main reasons  
to avoid flexion forces on  
the spine.

## PRIMARY CONSEQUENCES OF SPINAL STENOSIS

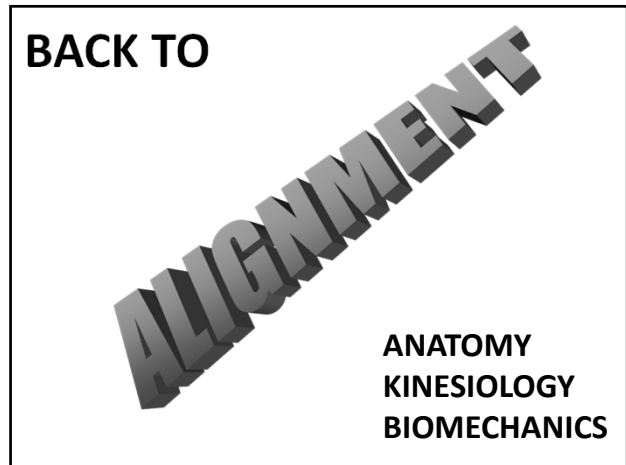
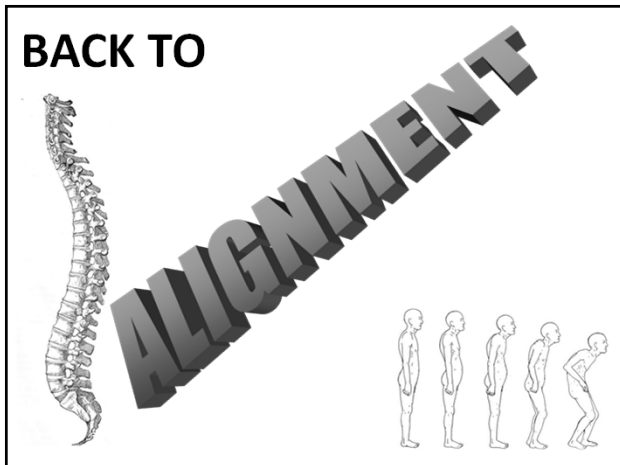
- Neurogenic claudication
- Varying degrees of back and leg pain
- Impaired quality of life
- Weakness of lower extremities
- Inability to walk more than a few meters without severe pain and “buckling” of lower extremities

QUESTION?

MANAGEMENT

with

THE MEEKS METHOD



**PRINCIPLES OF THE MEEKS METHOD**  
Site-Specific Exercise  
**UN-LOAD the Vertebral Bodies**

**DECOMPRESSION**  
Single Best Exercise for Most Back Pain  
**TENSILE FORCE**

**Decompression Exercise**

- Supine or as close as possible
- Hips and Knees bent, Feet Flat on Foot Triangle of Support – to relieve pull of lower extremity musculature on vertebral column
- Arms turned up and about midway between shoulders and hips
- Cervical spine neutral with support under head and/or neck as needed

**In Cases of Back Pain**

- 90/90 – to further reduce pull of lower extremity musculature on vertebral column
- Arms and cervical spine as above
- In cases of more severe pain, knees may need to be brought closer to chest while keeping lower legs supported

And Or ----->

- Elevate upper body by lying on a wedge or elevating head of table, hinging at the hip and keeping spine elongated
- This position further relaxes the hip flexors and hamstrings (at insertion) so that back can relax and re-align
- Elevate both lower extremities and upper body at the same time
- Patients with Spinal Stenosis and Osteoporosis (and other diagnoses also) like this position
- Upper body may need to be more elevated & legs at 90/90

**Wings of Collarbone**

- Start in Decompression Exercise Position
- Identify Collarbones
- Take a breath in and, as you breathe out,
- "Lengthen" Collarbones out towards Shoulders
- This leads into.....

**Shoulder Press**

- Press Shoulders Down Towards Supporting Surface
- Hold 2-3 seconds
- Release
- Repeat 3-5X

### Head Press

**A**

- If cervical spine is in extension, tuck chin SLIGHTLY towards chest\*
- FEEL weight of head on supporting surface
- INCREASE weight of head on supporting surface
- HOLD 2-3 seconds
- RELEASE
- REPEAT 3-5x

**B**

- If cervical spine is in flexion, tilt chin SLIGHTLY upwards\*
- FEEL weight of head on supporting surface
- INCREASE weight of head on supporting surface
- HOLD 2-3 seconds
- RELEASE
- REPEAT 3-5x

\*Cervical spine should be in neutral before pressing the head downward

### Leg Lengthener

- Straighten one leg down to supporting surface
- Dorsiflex ankle by pressing HEEL outward
- Lengthen leg by pulling pelvis away from ribs
- Hold 2-3 seconds
- Repeat 1X
- Do other leg

### Leg Press

- Straighten one leg down to supporting surface
- Dorsiflex ankle by pressing heel outward
- Press entire leg down into supporting surface as if to make impression of leg in the surface
- Hold 2-3 seconds
- Repeat 1X
- Do other Leg; Do both legs together

Uni- and Bi-Lateral

### The Role of the Muscles of the Lower Extremities in Spinal Alignment

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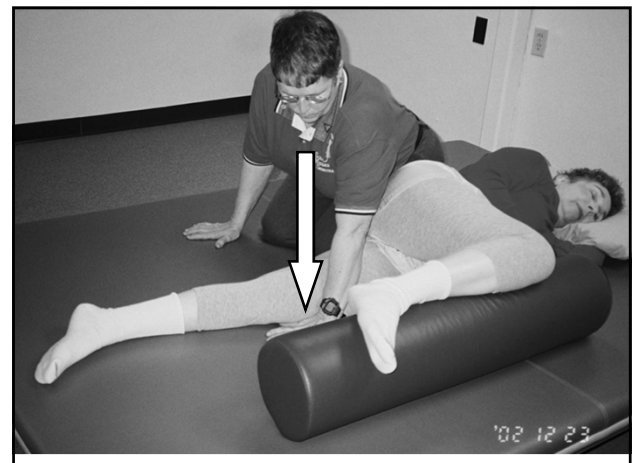
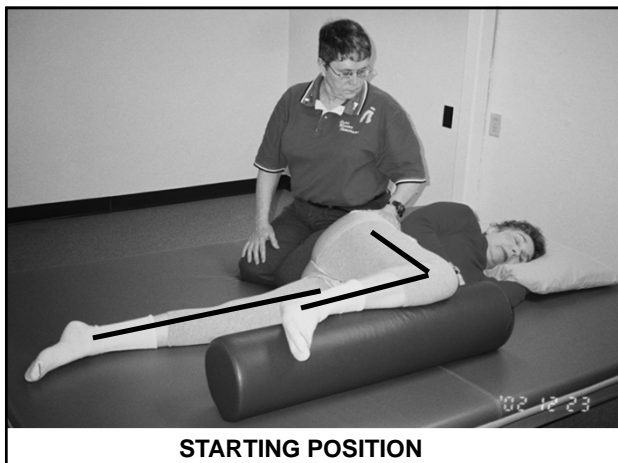
Figure 44. Right-angle seating produces a C-shaped spine. Perching is halfway between sitting and standing, but retains the postural advantages of standing—the S-shaped spine.

\*\*From THE CHAIR by Galen Cranz W.W.Norton & Co. NY,NY

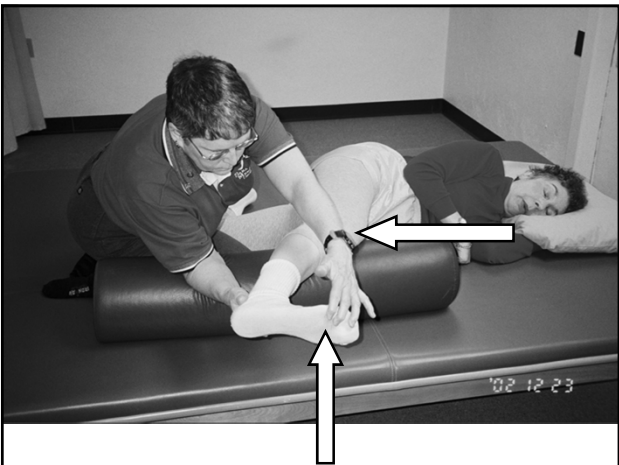
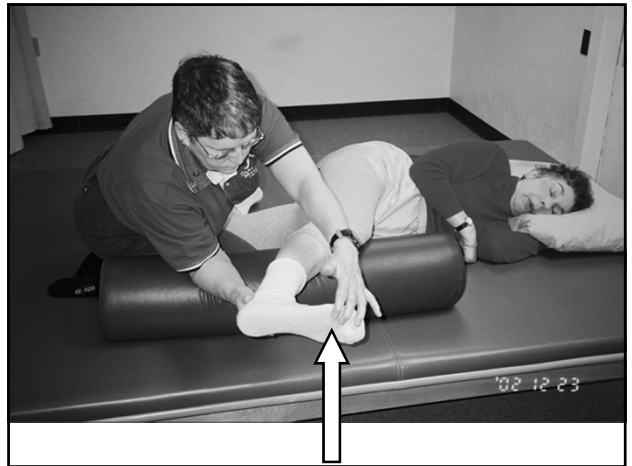
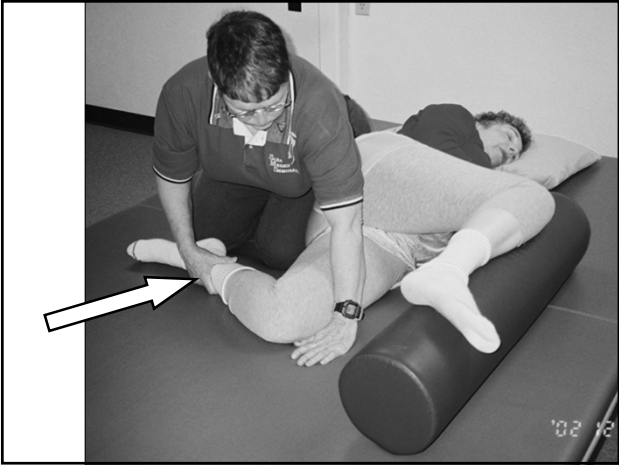
## SPECIFIC, ACTIVE-ISOLATED STRETCH

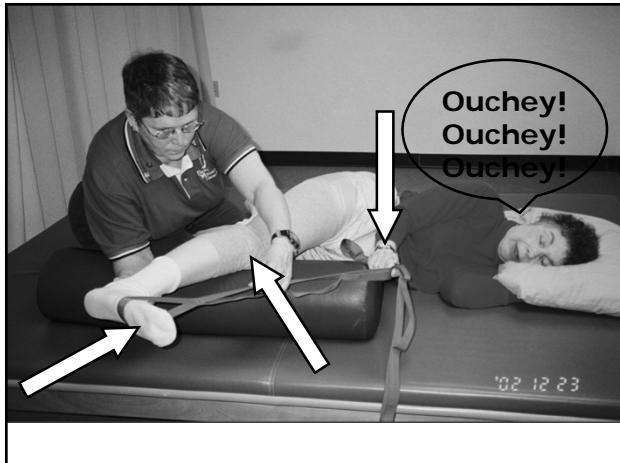
for

- Quadriceps
- Hip Flexors
- Opposing Hamstrings
- Gastrocnemius
- Long Toe Flexors









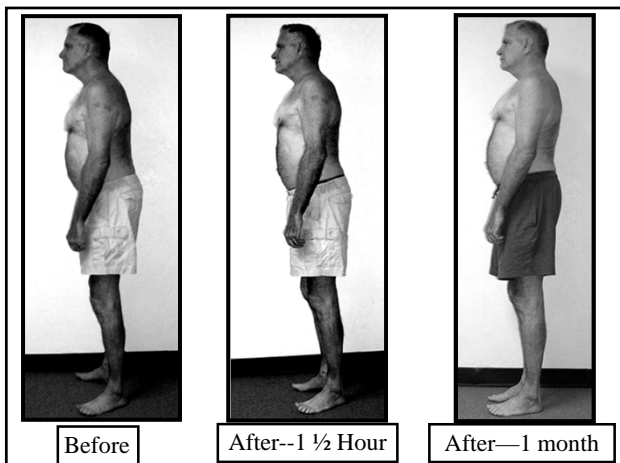
**SUMMARY OF STRETCHING ROUTINE**  
**Four Movements**

- a. Knee flexion of bottom leg, top leg with hip/knee at 90/90, resting on support
- b. Knee extension of top leg with hip in as much flexion as possible, bottom knee held in flexion, hip in neutral
- c. Ankle dorsi-flexion of top leg with knee in extension
- d. Quad sets of top leg with ankle dorsi-flexed (very specific to posterior knee)
- e. Patient assist with multi-looped strap



**CASE REPORT**

- 65 year old female
- DX Severe Lumbar Spinal Stenosis, Spondylolisthesis, DDD, Facet Joint Syndrome
- Symptoms included severe back pain, numbness, tingling and weakness both LE's (L>R), walking with forward-flexed posture--endurance about 10 feet before buckling of left leg
- Scheduled for neurosurgery
- Began The Meeks Method
- Within 2 weeks, felt significantly better
- Cancelled neurosurgery
- Within 6 months, she went dancing in Trinidad and hiking in Alaska
- Able to continue work and daily life as previously



**BRACING**

**SPINOMED IV**

**Spinal Orthosis for Osteoporosis**  
 Useful for other back pathology



Use for Support, Fitness & Activity Programs  
for People with Osteoporosis, Spinal  
Stenosis & Other Back Pathology

- Lightweight
- Can be worn under clothing--inconspicuous
- Easy to Don and Doff
- **Strengthens rather than weakens  
the body part it is designed to  
protect – the back**
- Can be fit to a very severe thoracic  
hyperkyphosis

## BRACING WITH THE SPINOMED

Spinal Orthosis for Osteoporosis

“The Spinomed orthosis is the single, most  
significant advancement in the conservative  
management of osteoporosis and  
compression fracture EVER.”

*Sara M. Meeks, PT, MS, GCS*

Use of the Spinomed is part of the  
comprehensive approach pathology of  
The Meeks Method  
to osteoporosis and other back pathology

In the management of your patient population

WHAT IS  
YOUR  
NEXT STEP?

Raven

Mikki

Rosie

3<sup>RD</sup> ANNUAL CONFERENCE  
THE MEEKS METHOD  
PUTTING PRINCIPLES INTO PRACTICE  
MAY 20-22, 2013  
MINNEAPOLIS MN

KEYNOTE SPEAKER  
KATHY SHIPP, PT, MHS, PHD  
ASSISTANT PROFESSOR  
DIVISION OF PHYSICAL THERAPY  
DUKE UNIVERSITY

For PDF's of

- PowerPoint (color) Presentation
  - Re-Alignment Routine (beginning  
exercises of The Meeks Method)
- send email to  
[sara@sarameekspt.com](mailto:sara@sarameekspt.com)

Reference list available through  
[ptseminars.net](http://ptseminars.net)

For information on the Spinomed

[spinomed@mediusa.com](mailto:spinomed@mediusa.com)

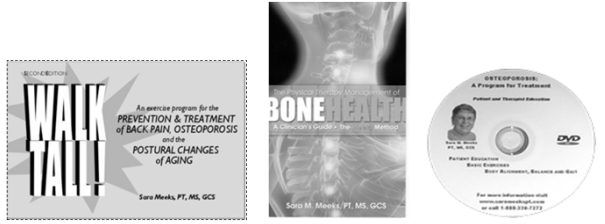
Sit-To-Stand Chair

[endorphin.net](http://endorphin.net)

Exerstrider Walking Poles

[walkingpoles.com](http://walkingpoles.com)

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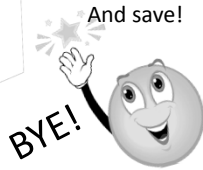


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- She receives re-imbusement for shipping and handling of the Spinomed Orthosis to and from on-site seminars plus a small speaker's fee
- She recommends only products that enhance practice.

**THANK YOU**

Hope to meet you someday In one of my on-site seminars Check out locations on my website Prices are going up next year Register **SOONER NOT LATER** And save!



**QUESTIONS?**

