The Arizona Quarterly Spine
Official Newsletter of SpineScottsdale Physical Therapy and the Center for SpineHealth

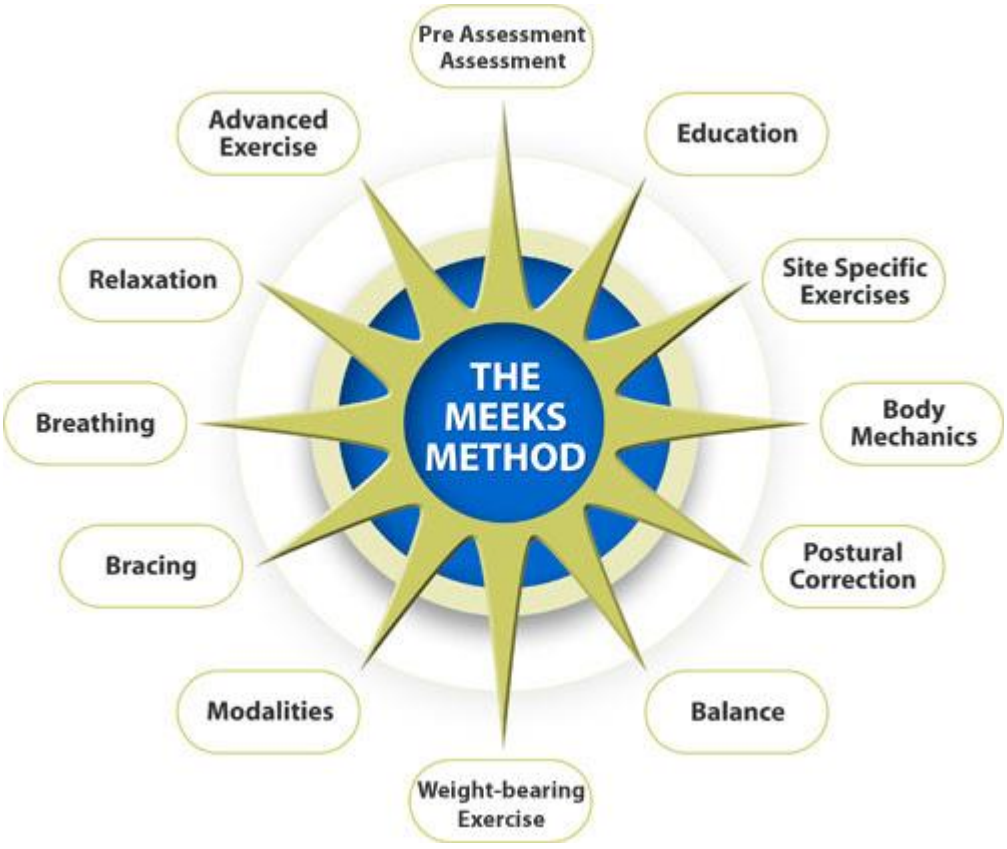
SpineScottsdale Physical Therapy

Center for SpineHealth

A Note from Shane

I recently became certified in the Meeks Method, a comprehensive 12-point approach to the physical therapy management of patients with osteoporosis. The Meeks Method utilizes several tools including a low intensity vibration device and a spinal brace for osteoporosis. I would like to share with you more information about this insurance covered SpineOsteoporosis program in this edition of **The Arizona Quarterly Spine!**

The Meeks Method of Osteoporosis Management



The Meeks Method: About Sara Meeks

Sara M. Meeks, P.T., M.S., G.C.S., K.Y.T.

- Has been a licensed, practicing Physical Therapist since 1962,
- Has specialized in the unique management implications of persons with osteopenia and osteoporosis since 1984, and
- Has developed an evidenced-based, easy, effective, comprehensive, site-specific, 12-part program for the conservative management of persons with osteopenia, osteoporosis, postural problems and back pain.
- In addition, she has been a certified Kripalu Yoga Teacher (K.Y.T.) since 1984 and has modified Yoga for safety in movement for people with bone health concerns.

SPECIALTY EXPERIENCE:

Since 1984 I have been specializing in the management of persons with osteoporosis and osteopenia. Since seeing my first patient with known osteoporosis and an acute compression fracture in 1984 and developing a successful program for that patient with no clinical pathway or treatment protocol on which to rely, I have spent my entire career focusing on the physical therapy management of people with osteoporosis. In 1996-1997, I was the director of a physical therapy clinic in which every patient I saw was diagnosed with the conditions of osteopenia and/or osteoporosis. Osteopenia and osteoporosis were the PRIMARY diagnoses of my patient population. These patients also had many other conditions commonly seen in a physical therapy population; however, they were seeing me because of my program for osteoporosis. Focusing on the condition in this way allowed me to learn more about the condition than I would ever have had an opportunity otherwise. It was during this time that I further developed and refined my comprehensive management program (The Meeks Method.)

Below is a description of each point of the Meeks Method your would receive in this program:

1. **Pre-Assessment and Assessment:** This pre-assessment would include a questionnaire on Risk Factors and First Signs as well as asking questions about symptoms such as pain, neurological symptoms, weakness and history of falls. This pre-assessment would help the therapist determine both the tests to use for initial assessment and guidelines for exercise/movement intervention.

   Assessment includes, but is not necessarily limited to, patient history (including any screening test results on bone density and/or absolute fracture risk (FRAX)), pain, body height, photos before intervention, posture screen, range of motion, strength, balance, gait, and functional ability. The results of these tests help determine intervention and, on re-test, can be used to objectively measure progress.

2. **Education:** Education of the patient as to their condition, helping them interpret their T-Scores, leading the patient to good books and videos on osteoporosis.

3. **Site-specific Exercise:** Research has shown that one of the two most important determinants of bone density (1/3 of bone health) is muscle contraction. Therefore, the more specific an exercise program can be in targeting the at-risk areas of the body, the stronger the bones will be and risk of fracture will be reduced. The Meeks Method specifically targets strengthening of the Erector Spinae, Gluteus Medius and Gluteus Maximus muscles, the primary support muscles of the spine and hips. Research indicates that strengthening the erector spinae muscle group reduces the incidence of compression fracture in persons with osteoporosis (Sinaki, Itoi 2002.) Also, it has been shown that a decrease in hip extension is exaggerated in fallers and may limit performance (Kerrigan et al 2001) in the elderly. Stretching of the hip flexors and strengthening of the hip abductors and extensors are integral parts of The Meeks Method.

4. **Body Mechanics:** Of primary importance to the success of The Meeks Method is the instruction of the patient in good body mechanics. It is during Activities of Daily Living that people frequently injure themselves:
   - leaning over to smooth the last wrinkle out of the bedspread,
   - getting groceries out of the trunk of the car,
   - bending over to pick up an object from the floor

5. **Postural Correction:** Postural changes are frequently associated with osteoporosis, back pain and other pathology. Restoration of a more optimal anatomical alignment can help relieve back pain and other symptoms plus it can help assure better weight-bearing forces through the bones and more specific muscle contraction on the bones, thereby positively affecting bone health and strength.

6. **Balance:** If a person with osteoporosis falls, he/she is more likely to sustain a fracture which may be life-altering or even life-threatening. Prevention of the first or the subsequent fracture is the "bottom line" in The Meeks Method. Instruction in balance exercises may help prevent falls and fracture.

7. **Weight-bearing Exercise:** Weight-bearing exercise is the second most important determinant of bone strength and is recommended for persons with osteoporosis. Teaching people to walk and move in better body alignment will increase the weight-bearing forces through the bones in a more anatomically-correct pattern, thereby helping to increase bone health and strength.

8. **Modalities:** The Meeks Method also uses a low intensity vibration (livMD) device to deliver low magnitude mechanical signals to the skeleton.

How Does The LivMD Work?

Mechanical signals effect growth and renewal of tissues

The human body is designed to withstand many forces in daily life, and can adapt to differing loads generated during normal activity. These loads can be large, such as those generated while running, or they can be quite small, such as the continual tiny and high frequency signals between bones and muscles that we never have to think about. These all have a direct effect upon the growth and renewal of musculoskeletal tissues. This is very complex and involves networks of cells that are sensitive to chemical, biological and mechanical signals. We believe tissue renewal is achieved in part, by stimulation of cells within the bone marrow. The bone marrow is a reservoir of adult stem cells, which then change into other types of cells such as bone, muscle or fat during their lifetime.

Tissues decline with age

When functional loading is removed from a human, for example with increasing age and more sedentary lifestyle, the bone and muscle tissues start to decline. We believe part of the reason for the decline is the reduction of mechanical signaling across the full range of size and frequency. The LIV signal is similar to fast firing muscle contractions and we know that these fast muscle contractions decline with age. The LIV signal directly targets cells that would normally respond to high frequency signals, that have now been lost.

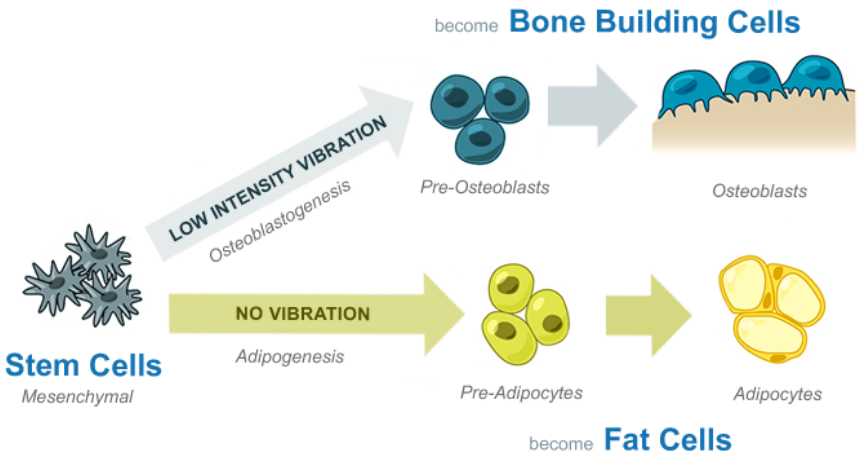
Stimulation of Adult Stem Cells

LIV signals stimulate cell behavior within the bone marrow and encourage growth in the surrounding musculoskeletal tissues. Recent scientific experiments have shown that LIV stimulation increases bone cells and leads to a reduction in fat cells. This is illustrated in drawing below which shows the increased activity of stem cells (Mesenchymal Stem Cells) in becoming bone building cells (Osteoblasts) and not fat cells (Adipocytes).

The scientific research into LIV has also found that the mechanical signals are self-targeted and self-regulatory. In other words, they rebuild the most deconditioned tissue and adjust as that tissue becomes stronger.

25 Years of Research

Our understanding on the role of mechanical signals and their effect on tissues has been acquired over 25 years and through research funded by government and other agencies. Over 110 peer-reviewed publications describe the basic science and the clinical efficacy of low-intensity vibration. Visit the Science and Research section of the website which explains the science in more detail.



9. **Bracing:** Many people with osteoporosis and other back pathology have long-standing postural changes (most often, an increase in the thoracic kyphosis - called a hyper-kyphosis) so that they are unable to maintain their new posture that has resulted from the program. These people may need a brace. The one used in the Meeks method is the Spinomed. The Spinomed is a new concept in bracing in that it is an active brace. It directly supports the back and has been shown to increase the strength of the erector spinae muscle, reduce thoracic kyphosis, reduce pain, increase vital capacity, reduce limitations in ADL's, reduce body sway and improve well-being (Pfeifer 2004.) The Spinomed Brace is the most significant contribution to the conservative management of osteoporosis and compression fracture EVER in that it strengthens the body part that it is designed to protect -- the back.

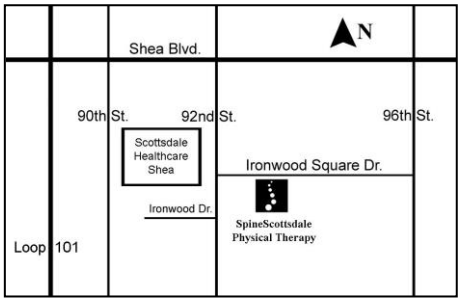
10. **Breathing:** Many persons with osteoporosis and other postural problems have compromised lung function. Assessment of breathing patterns and instruction in breathing exercises, targeting the intercostals and diaphragm muscles, is an integral part of the The Meeks Method. Because the diaphragm muscle also serves to help stabilize the back for movement of the extremities, it is vital to teach diaphragmatic breathing along with core control exercises to help strengthen this muscle.

11. **Relaxation:** Many people with osteoporosis and other physical problems that bring them into a physical therapy office have anxiety, fear, depression and other emotions associated with the diagnosis. Instruction in relaxation techniques can help with these associated conditions.

12. **Advanced Exercises:** After a 6-8 week physical therapy intervention, many people will want to continue a fitness program in the gym, a Yoga or Pilates class, or in some other exercise environment. The Meeks Method includes guidelines for safe and therapeutic movement in these environments and prepares the patient for the advance exercise.

Moving in the Right Direction!

Bridging the Gap Between SpineRehabilitation and SpineHealth!



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