Osteoporosis: An Opportunity to Serve

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Abstract

Osteoporosis is a significant, serious health challenge that offers Yoga therapy an important opportunity to serve both the public and the health care community. A review of the etiology, incidence, and risk factors of osteoporosis is followed by a discussion of known medical risk factors for Yoga students. The problem is then presented from a Yoga therapy perspective, offering additional insights, opportunities, and challenges for Yoga therapists. Practical action steps and practice development recommendations support a concluding call for Yoga therapists to bring their transformative service to this worldwide pandemic.

". . . Let go of the forecast you heard
when you were younger
than the child now clattering
up the backstairs all
laughter and gasping
for what we're here to do.
Look down. Look at the stars.
We're here so briefly, weather
with bones."[1]

The term "osteoporosis" has recently become familiar to most of us. To many it is synonymous with "old age," "thin/brittle bones," "hunched over seniors," and "fractured hips." The forecasts we have heard range from a gloomy "it's inevitable and devastating; they can't do anything anymore" to the equally extreme "it's an overhyped condition by the pharmaceutical companies and only those . . . with severe, deforming problems are really at risk." Given this wide range of forecasts, what are we, as Yoga therapists, here to do for our students?

This article is written from the premise that osteoporosis is a significant, serious health challenge that offers an ideal venue for introducing the emerging profession of Yoga therapy to the public and the health care community. We as Yoga therapists are here to bring reasoned sanity to the above-stated extremes and a compassionate depth of service to ourselves and our students who are influenced by osteoporosis. After reviewing what is known about osteoporosis, I will bring a yogic perspective on its challenges, followed by a review of what forms of care are presently available and the limitations of each. From those limitations emerges a discussion of the richness of Yoga therapy to serve and address them, including how to identify those at risk and how to modify current programming, as well as ideas for new programming. Our ability to offer both depth and breadth of service will place Yoga therapy as a peer

among the many professions that address osteoporosis and its life-altering effects. After all, from our own practice we know deep within that as "weather with bones," what affects the health of one field of weather will stir or moderate the weather in the entire community.

What We Do and Do Not Know

We do know that of every female student over 50 years of age in our classes, 1 in every 2 has low bone density and is at risk for fracture.[2] We also know that osteoporosis is not for women only: One in every 2 women and 1 in every 4 men aged 50 or older will suffer an osteoporosis-related hip, spine, or wrist fracture during their lives.[3] Further, we know that most osteoporotic vertebral fractures are caused by the stresses of everyday life such as bending over, reaching, and sneezing, not falls or traumatic accidents,[4,5] and that students who have already experienced at least one vertebral fracture have a 500% increased risk of additional fracture within 1 year.[6] Related to exercise movements for people with osteoporosis, as far back as 1984 Sinaki and Mikkelson[7] found that 89% of the people who performed only flexion exercises suffered additional fractures during the study, while 53% of those with flexion and extension exercises experienced additional fractures. Only 16% of those that limited their movement to extension suffered additional fractures. Clearly flexion exercises create harm when they are performed by students who have osteoporosis, and this has been noted in later literature.[8-10] Keep in mind that rotation of the spine increases compression forces on the vertebral bodies and that side-bending postures can be a very risky combination of flexion and rotation.

Extrapolating this information to the tidal wave of aging baby boomers should generate a sense of urgency regarding the need to address how we protect our students from harm. "Why isn't this information widely known?" and "What is osteoporosis?" are good beginning questions to increase our awareness as Yoga therapists.

Osteoporosis was only officially recognized as a disease by the World Health Organization in 1994. The disease is a silent, insidious process that affects both women and men, and to this day in many cases it remains undiagnosed by physicians, even after fracture.[11-13] Were it not for aggressive marketing by pharmaceutical companies and the dairy industry, awareness would almost certainly be even more limited than it is. It is not surprising that it is rarely screened for and identified by current movement and health providers, including Yoga teachers.

The National Osteoporosis Foundation medically defines osteoporosis as the gradual and silent loss of bone. It is *not* a normal aging process, and as a systemic skeletal disease it is characterized by low bone mass and microarchitectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture.[14] Bone mass, or more specifically, bone mineral density (BMD) is the amount of bone tissue in a measured volume of space. Medicine measures the BMD through a variety of scans, the most common of which is the DEXA (dual-energy X-ray absorptiometry), which usually measures the lumbar vertebrae and hip. An individual's measurements are compared to a table of measurements for healthy normal adults (25–30 years old), resulting in a "T-score." Students who score -1 to -2.5 standard deviations below the average are said to have osteopenia, or mildly reduced bone mass (10%–20%), a precursor to osteoporosis. A score of more than -2.5 indicates osteoporosis, and for every one-point drop below the average, the risk of fracture doubles.

While density of the bone is important, the other half of the definition is the microarchitectural deterioration, or the construction of the bone tissue within the space measured. Presently this cannot be measured by medicine, though its importance is easily recognized. It is because of the latter that some people with average BMD suffer osteoporotic fractures while a few people with low BMD never experience a fracture. The best analogy for understanding this dilemma may be to recall the high school physics contest where students are given a fixed amount of material (Popsicle sticks rather than bone) and are asked to construct a bridge. Some bridges collapse easily, while others containing the same mass (same number of sticks) can hold great amounts of weight. This design factor from a yogic perspective is key to the power of proper alignment and movement in *âsana* practice. The essential point to remember for the present consideration is that we do not know which students with test scores below -1 have bones with the "strong bridge" design, only that all of them are at increased risk.

We do know these students are at increased risk, and given the limited public awareness, a properly designed health history form may be the first time students become aware

of their risk status. Many risk factors account for the increasing rates of osteoporosis and fractures, with sedentary living and calcium deficiency as two of the major components. Types of diseases that increase one's risk for osteoporosis include genetic disorders, rheumatic and autoimmune diseases, endocrine (including thyroid) disorders, hypogonadal states, digestive diseases, blood disorders, alcoholism, congestive heart failure, multiple sclerosis, emphysema, end-stage renal disease, epilepsy, idiopathic scoliosis, eating disorders, and depression.[15] Table 1 lists many of the key risk factors, and any student answering yes to the questions, especially the first three, should be encouraged to seek evaluation by a health care professional who specializes in osteoporosis. They also should be taught as an "at risk" student until proven otherwise.

Classifying someone as osteopenic (T-score: -1 to -1.5) is another area where there is insufficient information to clearly identify risk for fracture. Betz[16] makes a strong argument for a conservative approach and states, ". . . all exercise specialists should use the same precautions for clients with osteopenia as for those with osteoporosis." She notes that there is a dangerous combination of risk resulting from the fact that bone density decreases from the cervical to the lumbar spine, while bone size and ability to distribute force load decreases in the opposite direction. Someone who has osteopenia measured from the lumbar spine scan may have osteoporosis of the thoracic spine[17] with a decreased size and ability to distribute the forces. For those with osteopenia, we cannot know their complete status for certain and should err toward caution.

Other topics related to osteoporosis, including diet, long-term effects of drugs prescribed to limit bone loss, exactly which variations of movements are dangerous, and the ability to reverse bone loss are still very much unknowns in the literature (although the importance of calcium with vitamin D seems certain). The reader is cautioned against the temptation to jump on the latest book, anecdotal story, or personal experience and apply it across the board to all students. Bottom line, there is just too much we do not know about this disease process. We thus move ahead holding *ahimsâ* as our standard with the aim of discovering how much we as Yoga therapists can do to support our students at risk.

A Yogic Perspective on Osteoporosis

Imagine the frustration and dilemma osteoporosis would present to the Yoga teacher who equates Yoga with *âsana*. How could he or she teach a class if the student needs to avoid forward bends, twists, side

Table 1: Partial List of Risk Factors for Osteoporosis and Fracture

- History of fractures
- Postural deformity:
  - Scoliosis/kyphosis (humpback or rounded shoulders)
- Height loss (more than 1 inch) Caucasian, Northern European, or Asian ethnicity
- Family history
- Menopause
- Phenotype: small, fine bones
- Limited vitamin D/calcium
- High caffeine consumption
- Alcoholism
- Physical inactivity
- Smoking
- Late menarche
- Irregular menstrual cycles
- Amenorrhea (all causes)
- Previous/early hysterectomy
- Anorexia/bulimia
- Anticoagulants (e.g., heparin)
- Anticonvulsants
- Chemotherapeutic drugs
- Gonadotropin-releasing hormone agonists
- Lithium
- Methotrexate
- Thyroid hormone therapy
- Daily use of corticosteroids (prednisone, glucocorticoids)
- Early menopause (before 45)
- Irregular periods
- Nulliparity (childlessness)
- Lactose intolerance
- Neurological impairment
- Balance impairment
- Intestine or Crohn's Disease

bends, and most inversions? Fortunately, Yoga is far deeper and richer than *âsana* alone. Kraftsow[18] presents an age-based model of practice development that describes midlife as *sthira karma* (to stabilize), during which *prânâyâma* becomes the most important aspect of practice. This is followed by the senior years, or *laya karma* (to merge), during which meditation and prayer become most important, with *âsana* and *prânâyâma* practiced in service to meditation and prayer. Keeping in mind the primacy of the *yama ahimsâ*, we can use such a model to broaden our perspective of osteoporosis as a cultural pathology to which we bring a fear-based understanding to the teaching opportunity it offers both students and ourselves.

It is important to understand that osteoporosis is not an isolated mechanical design flaw in certain individuals. As Yoga therapists we know that the strength and form of our bones is a physical manifestation at the *anna-maya-kosha* level of not just the individual's human experience, but also a reflection of the collective human experience to that point in time. Figure 1 illustrates just a portion of the interwoven tapestry that influences bone health.

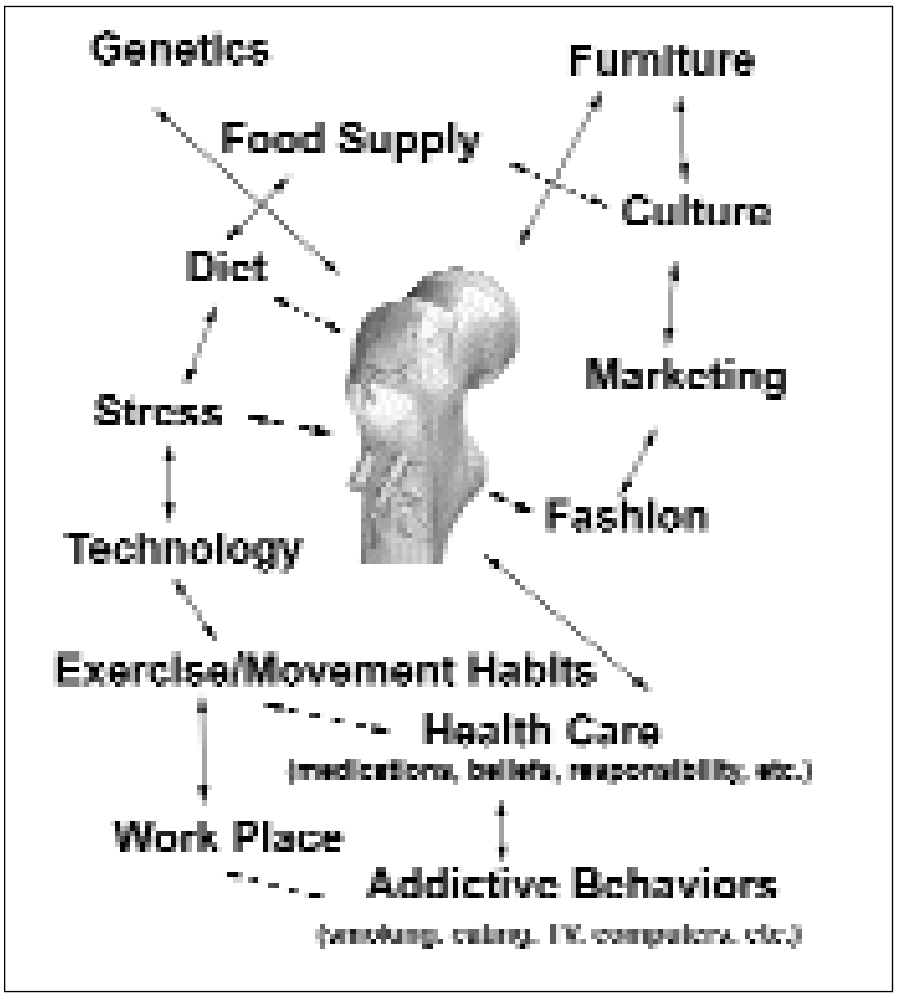

Figure 1: Factors influencing bone health

Yes, there are genetic and ethnic influences, but there are also large systems factors, including work environments, technology, food supply, health care, marketing, culture, fashion, and so forth that all manifest in the huge collective bone-health challenge outlined above in the description of risk levels.

While proper alignment and movement are critical to generating quality bone development at all stages of life, from a yogic perspective these are just one part of the offerings of Yoga. Within the many layers of connection are unlimited opportunities to facilitate awareness of the unbroken unity of all reality. As teachers of this expanded consciousness of unity, we should not waiver in the face of what can seem an insurmountable tangle of systems complexity. In the words of organizational management expert Peter Senge[19] in Senge et al.'s recent work *Presence*, "What is most local is most systemic." When our students learn that the effects of what they eat, how they breathe, how they sit, or how they move all influence their bone health, the transformation has only begun locally. In addition, this new knowledge awakens them to act within the larger systems to change consumer demands, modify home and work furnishings, stand up to incomplete or poorly informed health care, and so on. Beyond the material or food-body *kosha*, students are empowered to explore and honor the more subtle effects of osteoporosis, including the fear, tension, pain, breathlessness, social limitations, body image, and spiritual isolation the disease may generate.

The ripples of influence fostered by this multiple-level healing bring about deeper awareness of self-care. The latter then transforms the larger community consciousness surrounding *ahimsâ*. Constantly remembering to literally keep the front of the spine open and long, a practice rec-

ommended for those with low bone density, metaphorically and energetically opens one's heart. This creates the courage (Fr. "large heart") to act with conviction in bringing change to the larger macrocosm the disease of osteoporosis represents. The pressing need for such integral, comprehensive yogic instruction is clear when one considers the limited focus of most sources of support for those with osteoporosis.

Current Services and Limitations

There is a wide variety of services that support people with low bone density. Each has strengths and weaknesses in its current approach as described in Table 2, including general Yoga instruction.

The current gaps or weaknesses in services reveal areas where the new profession of Yoga therapy can provide a service not presently offered. As it develops, Yoga therapy will build on the strengths of movement, community, and awareness available in general Yoga instruction. By assuming even higher standards of competency in safety, bringing an emphasis on health over pathology, and offering the full breadth of integral service, Yoga therapy will become a key profession to which to turn in the twenty-first century when addressing complex, whole-person health challenges like osteoporosis.

Yoga Therapeutic Service

Yoga therapy can become a key resource for those challenged by compromised bone health and at risk for skeletal fracture. In order to take its rightful place among other professional services, the profession must adopt a level of understanding and education beyond the current Yoga teacher training standards. A case in point is Lew. Lew presented to the author as an 81-year-old client with back pain, sciatica, post-cardiac bypass, and osteoporosis. It is beyond the scope of this article to

Table 2: Current Osteoporosis Services

	STRENGTHS	WEAKNESSES
Health Clubs & Personal Trainers	Variety of equipment and environments; cost; proximity; social atmosphere	Level of supervision; limited training for bone health; lack of screening; supplement emphasis; athletic and "front of the body" emphasis
Physical Therapy	Risk awareness; movement knowledge; evaluation skills	Cost; emphasis on mechanics only; narrow focus of programming; no social support
Chiropractic	Ease of access; cost (initial)	Varied exercise/ movement instruction; no social support; tendency toward dependent relationship; narrow focus of programming
Physicians	Testing; pharmaceutical support; evaluation of contributing medical conditions	Cost; lack of exercise knowledge; limited focus to tests; emphasis on pharmaceuticals
Yoga	Can address all aspects of the human experience; many tools to support safe movement and balance, posture, and awareness; fosters community support	Often unaware of risks; failure to communicate the risks when known; may resist safety measures due to fixed preconceptions of what "yoga" is
Pilates	Promotes posture, flexibility, and core strength	Limited training for bone health; does not address psycho/ social/spiritual issues

provide a full case report for Lew or instruction in thorough student management from a Yoga therapy perspective. He is instead introduced here to illustrate the need for the higher standards necessary to support our future students. He also is introduced to demonstrate the powerful results our profession can offer if it is more accessible to and better accepted by the public.

Figures 2 and 3 illustrate Lew's complex pre-instruction posture. Figure 4 shows the significant effects of 35 minutes of initial modified *âsana* instruction, including decreased forward head, improved kyphosis, and change in arm posture. Figure 5 shows one of the adapted *âsanas* that addressed his unique and complex presentation, including accommodation for (A) lumbar stenosis and (B) nerve root adhesion, using (C) thoracic roll for kyphosis and (D) cervical roll.

Not included in the photographs is work we did concerning:

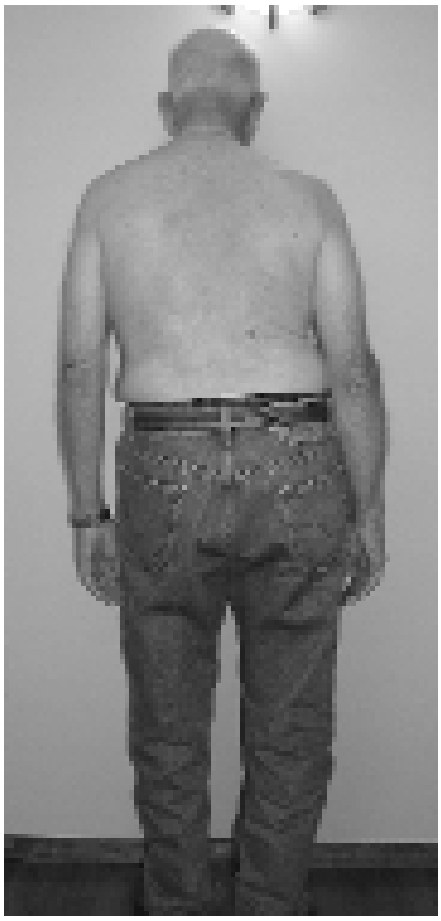

Figure 2

Figure 3

- social support to balance 1) Lew's loss of peer-group support through death of its members and 2) pressures from his more active spouse to keep up with her
- psycho/social/spiritual issues about the fragility of life and Lew's declining ability to function in his vocation as an outdoor nature photographer
- maintenance of Lew's empowerment to be active yet safe, including functional instruction in lifting and traveling in his RV
- nutritional modifications

No other therapeutic service provides such a broad, comprehensive, and health-focused approach. The ability to provide such care brings with it the responsibilities of advanced study and, most importantly, knowing one's limits as a therapist. The Yoga therapist also must know how to work cooperatively with other professionals to ensure the student's safety and optimal outcome. We need to increase our learning and experience to include studies such as Greendale et al.[20] on the effect of Yoga on hyperkyphosis in women. In the meantime, the reader can immediately begin to create opportunity out of the challenges raised by this new awareness of osteoporotic risk in your student population.

Following are some practical tools and immediate action steps to help transform our Yoga therapy practice.

Right Action for Bone Health

Consider moving with firmness and flexibility to:

1. First determine your own bone health. Get your baseline bone density test and learn if you are at risk. Teach by modeling non-harming behavior, including having students model certain postures if they are inappropriate for your own bone health.
2. Institute a health history tool for all your students that includes screening for fracture risk. Offer a letter for those at risk to give their primary physician to alert him or her regarding the safety concern you have identified and ask for the physician's help. You become the "safe" Yoga therapist to whom the physician can refer his or her other patients

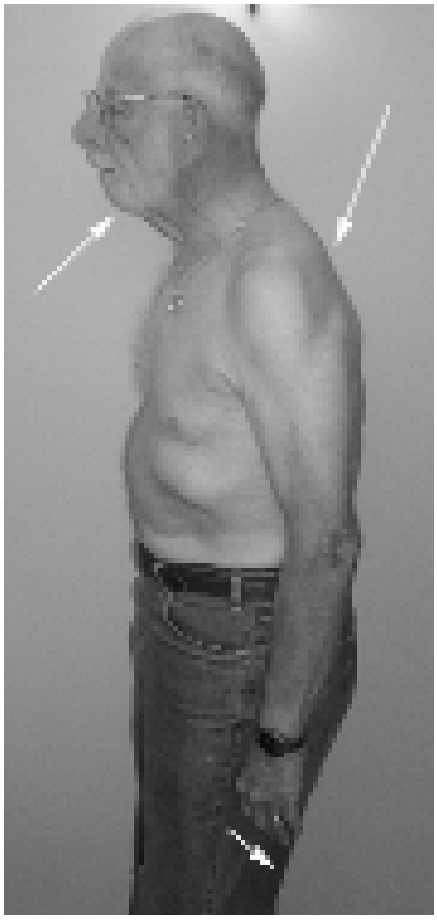

Figure 4

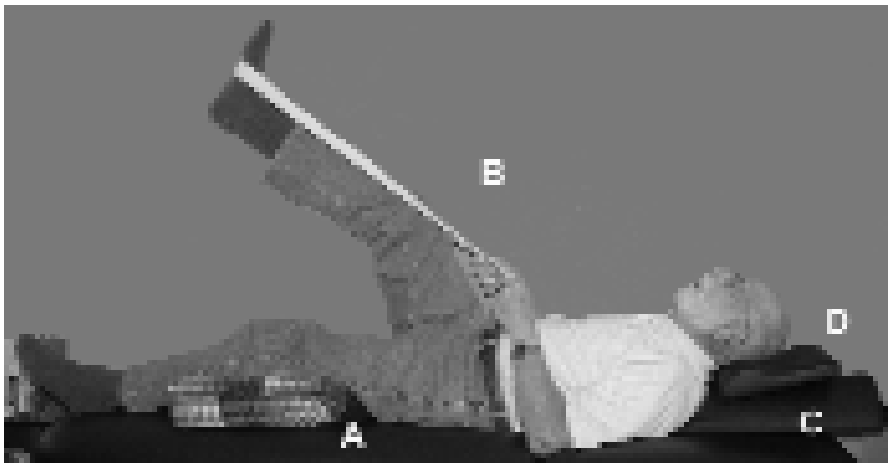

Figure 5

with confidence. (See the "Resources for Osteoporosis" table below for samples of both the health history tool and the letter.)

3. For those students at risk, eliminate forward bends, twists, side bends, and most inversions until you receive additional training in appropriately modifying *âsanas* and evaluating student movement for safety. Practice *ahimsâ* and err in favor of safety.
4. Create special classes for bone health and postural care. Make them fun and positive and guarantee postural results. Pre-class postural photos and post-class graduation pictures are great motivators and wonderful advertising for your practice.
5. Offer special workshops on functional Yoga off the mat to include hobbies, gardening, sports, and work.
6. Spread the word at service organizations, social clubs, bookstores, senior centers, etc. Bring along before and after photos and offer words of encouragement and possibility. No one else talks openly about the fear, social isolation, and spiritual void that osteoporosis can create—be a voice of empowerment.
7. Sara Meeks, P.T., describes osteoporosis as, ". . . a pediatric condition that manifests in adulthood." Create programming for youth to begin making deposits in their bone banks and offset the effects of videogames, computers, and other teen postural hazards and habits.
8. Network with your local health care community to offer joint programming on bone health. You will gain additional knowledge while sharing the power of Yoga therapy as an integral health practice.
9. Study voraciously, read across disciplines, and ask many questions. Be wary of anyone that professes to "know" the answers regarding osteoporosis.
10. Join the International Association of Yoga Therapists (www.iayt.org), to contribute to the development of this exciting new profession for the twenty-first century. Working together, we will create a fair forecast, as we learn what we are here to do in our brief time as weather with bones.

Resources for Osteoporosis

Sample Health History: http://www.myrehab.com/healthhistorydsr.pdf

Sample Referral Letter to Physician: http://www.myrehab.com/docreferral.pdf

"Ask a Therapist" discussion board: http://www.dynamicsystemsrehab.com/forum/forumdisplay.php?f=22

Safe Yoga for Osteoporosis Training: http://www.sarameekspt.com

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Endnotes

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