

APTA Section on Geriatrics

Bone Health Special Interest Group

CSM 2009 Annual Business Meeting Proceedings

Agenda

- **Welcome & Introductions**
 - Carleen Lindsey, PT,MS,GCS – Chair
 - Nancy Abodeely, PT,MA,OCS - Vice Chair
 - Melissa Peterson, PT, PhD, GCS – Secretary
 - Wendy Katzman, PT, DPTSc, OCS – Nominating Committee Chair
 - Lucy Buckley, PT and Cindy Horn, PT – Nominating Committee members
 - Education Committee
 - Kathy Shipp, PT, MHS, PhD, Sara Meeks, PT,MS,GCS and Kathie Lampe, PT, MPT
 - Practice Committee
 - Nancy Abodeely, PT,MA,OCS, Sara Meeks, PT,MS,GCS, Myla Quiben PT, DPT, GCS, NCS, and Kathy Shipp, PT, MHS, PhD

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- Approval of minutes from CSM - Feb 8, 2008
- Reports
 - Chair report
 - 2008 Goals Progress
 - Educational input for SOG CSM 2009
 - Choices for Better Bones program made available on OSIG website (Kathy Shipp)
 - Outdated OSIG **website osteoporosis brochure and pamphlet** removed, replacement project ongoing (Nancy Abodeely)

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Chair Report – 2008 Goals (cont)

- **Blast-casts** to SOG members
 - Early notice of “Skeletal effects of exercise...” presentation to follow this meeting,
 - Bone health meetings/ websites,
 - Literature citations from Stuart Warden and Robin Fuchs, as well as 5 submissions from our members
- On-going discussions with exec committee re: developing **evidence-based guidelines for physical therapist evaluation and treatment of osteoporosis** – (Executive committee)
- Stronger presence and participation of **OSIG members at medical conferences to**
 - Promote the **PT role** in bone health
 - Educate other professionals about safe and effective exercise and activity recommendations - (Wendy Katzman, Kathy Shipp, Nancy Abodeely, Karen Kemmis, Tim Kauffman, Lucy Buckley)
- 3-year SIG officer terms – approved by SOG board

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Committee Reports

- **Education Committee**
 - Facilitates and organizes educational programs at OSIG meetings, at least one of which shall be held annually in conjunction with an OSIG business meeting
 - Coordinate programming with the Section Education Committee chair
- **Kathy Shipp reporting**
 - Facilitated CSM program: **Skeletal Effects of Exercise/ Mechanical Loading Across the Lifespan** (Stuart J Warden, PT, PhD and Robyn Fuchs PhD) for 8-11 AM today
 - Association for Healthcare Research and Quality (AHRQ) published a report on "Fracture Prevention Treatments for Postmenopausal Women with Osteoporosis"
 - Full research report, clinician summary guide, and patient guide are available at <http://effectivehealthcare.ahrq.gov>

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Committee Reports

- **Practice Committee**
 - Facilitates the identification, analysis and formulation of recommendations of **standards of practice** as related to the management of osteoporosis
 - Formulates **recommendations for entry-level practice** as related to management of **osteoporosis**.
 - Identifies, analyzes and makes recommendations regarding **reimbursement and legislation** related to management of osteoporosis
- **Nancy Abodeely reporting**

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Bone Meeting Reports

California meetings and American Society of Bone and Mineral Research

Nancy Abodeely
Kathy Shipp
Wendy Katzman

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Boning up on the West Coast 2008 from Nancy Abodeely

- **FORE No. Calif - Bone and Mineral Club, seminars**
- **UCSF 5th Osteoporosis Conference, July 17-18**
- **UCSF and FORE - California Bone and Mineral Symposium, October 24-25**

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Hot Topics 2008-9

- Bone Strength: It's not just a T score
- Fracture Risk: It's not just a T score
- Bad to the Bone: Flexion and Kyphosis
- Exercise Effects on Bone Health and Fracture Risk
- New and Novel on the Horizon: blockbuster drugs, good vibrations

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Highlights

Bone Biology and Strength
Mary Bouxsein

Fractures and Tools for Risk Assessment and Diagnosis
Dennis Black

Physical Activity and Bone Health
Wendy Katzman

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Osteoporosis and Fracture

Osteoporosis is defined as
*“a skeletal disorder characterized by **compromised bone strength** predisposing to an **increased risk of fracture.**”*

Osteoporosis 2000

*Fracture occurs when the **load** applied to bone exceeds its **strength***

Bone strength = bone density+ bone quality

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Bone Strength and Fracture

Bone strength =
bone density+ bone quality

Determinants of Whole Bone Strength

- Morphology** - size(mass), shape, porosity, microarchitecture
- Bone Matrix Properties** - mineralization, collagen, microdamage, etc.
- Remodeling Resorption/Formation**

Our interest in bone quality is beyond our ability to measure it

- **Dennis Black, 2008**

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Bone Density Testing

- Bone density is an important predictor of fracture (Marcus R, 1992).
- DXA is a scan that approximates bone density (Bone Mineral/projected area (g/cm²))
- Originally intended to compare frequency in different populations, not for individual diagnosis
- Since 1992 used for individual diagnosis
- Does **not** distinguish significant other attributes of whole bone strength
 - 3d geometry
 - microarchitecture
 - intrinsic properties of bone matrix

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Beyond DXA and T scores

- DXA and T scores remain a clinically useful way to predict fracture risk, especially in the hip
- T scores alone are problematic, don't tell the whole story
- Emerging tools: WHO risk-based guidelines

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New methods: FRAX: 10 year probability of hip and other fractures

Fracture risk is **multifactorial**

Hip BMD combined with:

- Age
- Gender
- Weight and height
- Previous fracture
- Parent with a fractured hip
- Current smoking
- Glucocorticoids
- Secondary osteoporosis (e.g. vitamin D deficiency, hyperparathyroidism)
- Alcohol (>3 drinks a day)
- Rheumatoid arthritis

<http://www.shef.ac.uk/FRAX/tool>

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Fracture Risk Prediction

- Less than half those who fracture have osteoporosis by BMD
 - (t score < -2.5)
- Changes in BMD underestimate reduction in fracture risk (Cummings et al, 2002)
 - Change in BMD explains a small proportion (30 percent of reduction of fracture risk)
- Fracture
 - Hip
 - Fall prevention
 - Spine
 - Biomechanical modeling, factor of risk
 - Flexion and Kyphosis
 - Spine and exercise

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Physical Activity and Bone Health

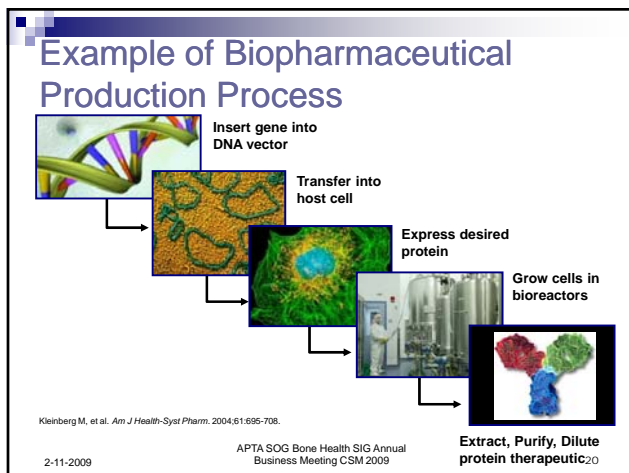
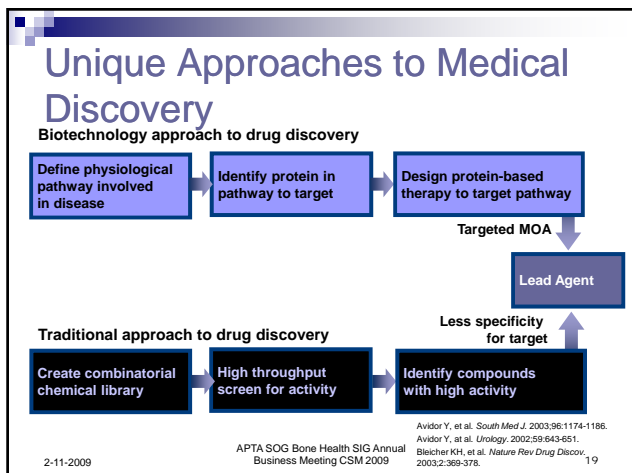
- Katzman:
 - Fight Fracture with Fitness: exercise reduces overall fracture risk
 - Effects vary with age
 - Impact exercise more effective
 - Best if started early, lifelong
 - Any stage of life
 - Best if regular
 - Bone Accrual in Children
 - Prescription based on age, fitness level, risk factors

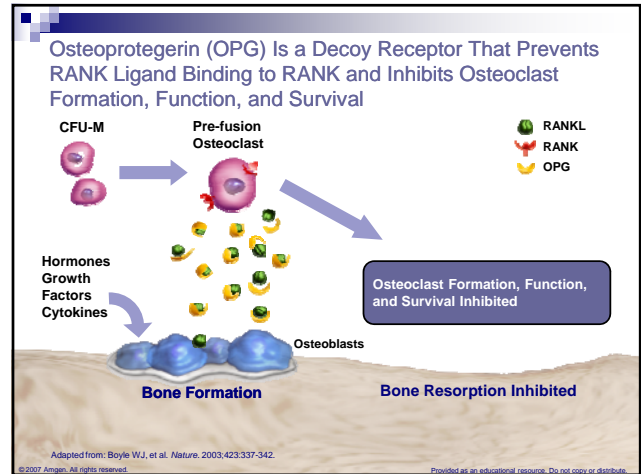
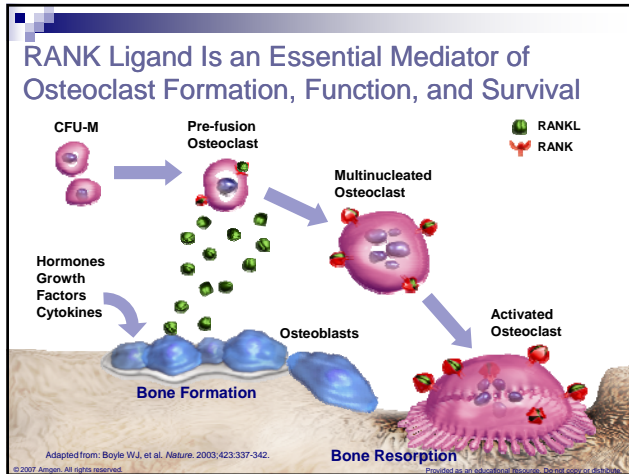
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ASBMR 2008 from Kathy Shipp

- A New Osteoporosis Drug will be available Soon!
- Denosumab is a **fully human monoclonal antibody** that targets the receptor activator of the nuclear factor kappa B ligand (RANKL), a key mediator of osteoclast formation, function and survival
 - It is a biopharmaceutical – made from an endogenous protein
 - The therapeutic protein molecule is large and would be destroyed by digestive juices, so it is administered by subcutaneous injection twice a year

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RANK Ligand Plays a Key Role in Osteoporosis and Other Conditions of Bone Loss and Destruction

Postmenopausal Osteoporosis

Treatment-Induced Bone Loss

Cancer-Related Bone Destruction

Bone Erosion in RA

Hofbauer LC, Schoppa M. JAMA. 2004;292:490-495.
Eghbali-Fatourehchi G, et al. J Clin Invest. 2003;111:1221-1230.
Hofbauer LC, et al. Endocrinology. 1999;140:4382-4389.
Theinault RL. Oncology. 2004;16(suppl 3):11-15.
Gravallese EM, et al. Arthritis Rheum. 2000;43:250-258.
Roodman GD. N Engl J Med. 2004;350:1655-1664.
Kong Y-Y, et al. Nature. 1999;402:304-309.
Kitazawa S, et al. J Pathol. 2002;198:228-236.

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Denosamab

- The phase III clinical trial, FREEDOM, results were presented at ASBMR 2008
Oral presentation #1286 Cummings S et al.
 - 7,808 postmenopausal women with osteoporosis (25% with prevalent vertebral fracture) randomized to at Denosamab vs. placebo
 - At 3 years, risk of fracture was reduced by
 - 68% vertebral fractures
 - 40% hip fracture 40%
 - 20% any non-vertebral fracture

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More About Denosomab

- Good safety profile, similar adverse and serious adverse events between groups
- Also presented
 - STAND trial: women taking 1x/week alendronate randomized to continue alendronate or start denosomab Oral presentation #646 Brown J et al.
 - Denosomab group had significantly increased bone density at hip and all other sites
 - DECIDE trial: more than 75% of subjects preferred injections to oral pills and twice-yearly to weekly dosing Abstract #434 Gold DT et al.
- Note that this drug is an antiresorptive (like the bisphosphonates), not an anabolic (like rPTH)

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Finally....RCT Results of Kyphoplasty!!!!


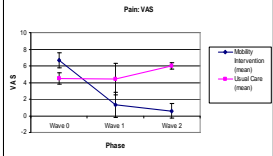


- 300 subjects with 1 to 3 vertebral fractures randomized to kyphoplasty or conservative care Oral presentation #1243 Cummings S et al.
- At one year
 - Quality of life was better in kyphoplasty group
 - No significant difference in incident vertebral fractures; however, both groups had high rate of new VF
- Conservative care did NOT include PT

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PT Management of Acute Vertebral Fracture

- Pilot study, subjects randomized to PT home visits vs. usual non-surgical care
- Intervention – training to keep spine stable during transition movements, use of 4 wheeled walker
- Pain and self-reported function improved at 1 and 3 months in PT group
- Poster #2061 Thursday 11:00 – 12:30 CSM 2009
- Poster #411 ASBMR 2009

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2008 Research Report Of Relevance for BHSIG Members

Wendy Katzman

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Factors Associated with Kyphosis Progression in Older Age (Kado, DM et al, 2008)

- Longitudinal study of 1074 women aged 65 + from the Study of Osteoporotic Fractures
- Radiograph @ baseline, ≈5 yr, ≈15 yr; prevalent vertebral fractures, BMD, disc height, grip strength, gait speed, health history @ baseline, ≈5 yr
- Kyphosis 44.9° (12°) progressed 6.7° (2.5°) 15 yr
- All variables associated with kyphosis; family hx of hyperkyphosis, ↓ disc height, low baseline grip strength associated worsening kyphosis

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Does Alendronate Use Prevent Kyphosis Progression in Older Women? (Kado, DM, et al 2008)

- Prospective cohort study of the effects of alendronate on progression of kyphosis in 6459 women aged 55-81 with low BMD from FIT
- Kyphosis angle @ baseline, 4.2years
- Mean kyphosis angle 47.6° (11.9°); mean change 3.9°(9.3°) in both groups w/o baseline VCF; mean change 4.1°/4.3° in RX/placebo groups with baseline VCF
- Alendronate RX no effect on kyphosis progression

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Nominating Committee/ Elections

- Chair – Wendy Katzman, PT, DPTSc, OCS
- Slate
 - Chair
 - Carleen Lindsey, PT, MScAH, GCS
 - Elected (for remainder of 3-yr term) – term ending 2011
 - Nominating Committee Members
 - Tim Kauffman, PT, PhD
 - Elected (for remainder of 2-yr term) – term ending 2011
 - Karen Kemmis, PT, DPT, CDE
 - Elected (for 3-yr term) – term ending 2012

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Terms of Office – Current Officers

- Continuing Officers Terms:
 - Vice Chair
 - Nancy Abodeely
 - Term ending 2010
 - Secretary
 - Melissa Peterson
 - Term ending 2012
 - Nominating Committee
 - Cindy Horn
 - Term ending 2010

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Old Business – OSIG Name Change

- 2008 Motion: To rename Osteoporosis SIG: Bone Health SIG
 - MOTION PASSED!
- Proposal – explore collaboration with SOWH re 2-day bone health cont-ed course – faculty from SOG and SOWH
 - Need lead person to volunteer if this is to be a committed goal
 - Motion tabled until lead person identified
 - Chair spoke with SOWH after meeting
 - Will consider the proposition for 2011 if support from both section SIG's

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New Business

- Call for **Committee volunteers**
 - Use sign-in sheet
 - **Or anytime**
 - **Join by contacting** committee chairs through BHSIG web-site on SOG page!
- Call for 1-2 page bone health related articles for **GeriNotes** 2x/ year
 - **Email ideas to chair** for committee review

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New Business (cont)

- **CSM 2010 Programming Ideas**
 - Submit your ideas by **email to the Chair ASAP** for consideration by **APRIL 1, 2009**
 - **Need to include topic, description, objectives, suggested speaker!**

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2009 Bone Health related meetings/conferences

- **8th International Symposium on Osteoporosis: *Translating Research into Clinical Practice* April 1 – 5, 2009** Marriott Wardman Park Hotel, Washington, DC.
<http://www.nof.org/professionals/iso2008/index.htm>
- **ASBMR: New Frontiers in Skeletal Research: Bone, Fat and Brain Connections. April 27-28, 2009.**
<http://www.asbmr.org/meeting/meetingsindex.cfm>
 North Bethesda Marriott Hotel and Conference Center; Bethesda, MD, USA
- **ASBMR 31st Annual Meeting: September 11-15, 2009**
<http://www.asbmr.org/meeting/meetingsindex.cfm>
 Colorado Convention Center, Denver, Colorado, USA

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Reports of Practice Activities

by OSIG Members

Tim Kauffman, PT, PhD (verbal report)
 Karen L. Kemmis, PT, DPT, CDE
 Sherri Betz, PT

Certified Exercise Expert for Aging Adults (CEEAA), Karen L. Kemmis reporting

- Section on Geriatrics
- The rationale:
 - Benefits of effective exercise programs for the full spectrum of aging adults are overwhelmingly positive.
 - The unique role of PTs in providing these services is unequivocal.
 - Further education is needed to enhance PTs ability to examine and provide quality exercise to yield optimal benefit.

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Certified Exercise Expert for Aging Adults (CEEAA)

- PTs should be the exercise experts!
- Process:
 - Three 2-day courses address different and increasingly complex aspects of exercise design and delivery
 1. Introduction and examination
 2. Exercise prescription and consensus guidelines
 3. Special populations, complementary exercises, motivation, drug and nutritional considerations, and marketing
 - Each course includes a section on osteoporosis

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Certified Exercise Expert for Aging Adults (CEEAA)

- Home-based examination for Courses 1 and 2
- On-site skills assessment
- Following all 3 courses there will be a final, comprehensive, home-based examination
- Course series:
 - Central: Alabama State University in Montgomery, AL in March, August, and October
 - West Coast: San Diego, CA in July and December 2009 and with CSM in Feb 2010
 - East Coast: Boston, MA


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National Osteoporosis International Symposium on Osteoporosis

- April 1-5, 2009
- PT's presenting:
 - Kathy Shipp, PT, PhD
 - Karen Kemmis, PT, DPT, CDE
 - Carleen Lindsey, PT, MScAH, GCS

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Sherri Betz reporting on:



In partnership with The Foundation For Osteoporosis Research and Education (FORE)

FORE FRAC® Campaign
10,000 Frac® Assessments by May!

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Research Studies, Information Programs, & Bone Density Testing Dedicated To:

- Informing the medical community and pharmaceutical companies of osteoporosis research
- Conducting bone density testing program
- Promoting better understanding of the incidence of low bone mass in Northern California and beyond

Information and Communication Dedicated To:

- Establishing chapters of support to expand the knowledge base in the community
- Providing communities education regarding bone health

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■ **NOTE: This slide and the next are preliminary drafts only**


Fracture Prevention:
 It's a frightening realization when you find out that you have fragile bones. There's not a lot of information out there about the types of movements and exercises you should avoid. But there are a lot of folks making recommendations to do more weight bearing exercise, walking, tai chi, strength training, etc. First and foremost, you will need to begin to protect yourself from fractures especially of the spine (vertebral bodies), the hip (neck of the femur) and the wrist.

Spine Protection: Avoid all forward bending of the mid back or the waist. Avoid rapid or slow twisting of the spine, sidebending and lifting heavy objects with a rounded back. Learn to lift objects with an optimal or neutral spine posture. Avoid getting out of bed with a rounded back. Roll to your side first then push yourself up to sitting with your elbow. Avoid sitting on the toilet in a slumped position. In regard to exercise, avoid all abdominal crunches, curl-ups, oblique rotations, and rollups. Add exercises that extend or arch the mid back.

Hip Protection: Basically, hip fractures occur when you have a fall. So, the best way to prevent hip fractures is to improve your balance. Standing on one leg every day like when you are waiting in line at the grocery store or brushing your teeth is a good time to practice your balance. Make sure you have something sturdy nearby to hold on to if you feel unsteady. Avoid planting your feet and twisting in place or doing strong hip rotation stretches like the pigeon pose in yoga to prevent hip fractures. Add exercises that strengthen the buttocks and extend the hip like standing on or on all 4's lifting your leg behind you.

Wrist Protection: The wrist also fractures with falls onto outstretched arms. If you practice your single leg standing balance you will minimize your risk of falling. Doing quadruped (All 4's hands and knees) exercises will help to strengthen your wrist. For more information on specific exercise programs, please consult a licensed Physical Therapist with expertise in working with osteoporosis conditions.
 Now, you are on the road to better bone health!

Prevent Fractures!




What to do and more importantly, what not to do, when you find out that you have osteoporosis or low bone density!

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NOTE: This slide and also the preceding slide are preliminary drafts of work in progress

Prevent Fractures!

Avoid:



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Sherri R. Betz, PT www.americanbonehealth.org

BHSIG Goals for 2009

- Update web information on osteoporosis and bone health
- Update BHSIG powerpoint for public presentations
- Strong committee participation and collaboration, identify chairs
- Clarify terms of office with SOG and amend standing rules accordingly
- Recognize BHSIG members' bone health activities in research and education
- Bone Health Educational session recommendation for CSM 2010
- Secure sponsor for BHSIG annual meeting for 2010 CSM in San Diego

Bone Health Education Web Sites

- **National Osteoporosis Foundation:** <http://nof.org/>
- **American Society for Bone and Mineral Research:** <http://www.asbmr.org/index.cfm> Webcast of 30th Annual Meeting: <http://app2.capitalreach.com/esp1204/servlet/tc?cn=asbmr&c=10169&s=20406&e=10440&&>
- **Foundation on Osteoporosis Research:** <http://www.fore.org/> Includes "webinar" CME opportunities: <http://www.fore.org/webinar.html>
- **FRAX** – WHO fracture risk assessment tool: <http://www.shef.ac.uk/FRAX/>
- **NIH Bone Health page:** http://www.nichd.nih.gov/health/topics/bone_health.cfm
- **Bone Health and Osteoporosis:** A Report of the Surgeon General (2004) http://www.surgeongeneral.gov/library/bonehealth/chapter_9.html

Thank You!

To all who made this meeting and the following presentation possible!

Skeletal Effects of Exercise/Mechanical Loading Across the Lifespan:

- Evidence from Basic Science & Clinical Studies
- Stuart J Warden, PT, PhD and Robyn Fuchs PhD