

Clinical application of the 2022 Clinical Practice Guideline and Delphi Study on Management of Patients With Suspected or Confirmed Osteoporosis

Carleen Lindsey, PT, MScAH, GCS

The Academy of Geriatric Physical Therapy (AGPT) and APTA charged our research group with the development of two evidence-based documents (EBD) on the management of osteoporosis, published in the April/June 2022 Journal of Geriatric Physical Therapy. EBDs are systematically developed products that direct clinical decision-making and reduce practice variation. This session will educate physical therapists on the application of this clinical practice guideline (CPG) which was focused on specific exercise for preserving or increasing bone density, together with our second document based on a Delphi survey the outcomes of which were to: (1) identify the range of examination and plan of care components considered important to physical therapists' care for patients with osteoporosis, (2) determine which components should be considered essential, and (3) achieve consensus on the final list of essential components and related operational definitions. Clinical implementation will be presented in the form of 2 case studies: one for a post-menopausal woman with a history of vertebral compression fractures, and one for a pre-menopausal woman. Application for men with osteoporosis will be discussed, although there is currently insufficient evidence to support a CPG for application to men with osteoporosis. It should be noted that while the CPG cannot address osteoporosis in transgender individuals due to insufficient evidence, a recent review concluded that treatment of osteoporosis in transgender persons follows the same guidelines as cisgender persons.

1. Understand the current body of evidence for the two osteoporosis projects:
 - a. Clinical practice guideline for the management of osteoporosis that focuses on interventions to maintain bone mass in premenopausal women, postmenopausal women, and men.
 - b. Delphi survey project on the management of osteoporosis beyond interventions directed at bone mass.
2. Understand the challenges surrounding implementation and clinical application.
3. Understand and apply examination and interventions to maintain or increase bone mass in adults"

1. Avin KG, Nithman RW, Osborne R, Betz SR, Lindsey C, Hartley GW. (2022) ""Essential components of physical therapist management of patients with osteoporosis: a Delphi study."" J Geriatr Phys Ther 45(2): E106-E119.
2. Bazell C, Hansen D, et al. (2019). Medicare cost of osteoporotic fractures. Milliman Research Report, National Osteoporosis Foundation.
3. Bruno AG1, Burkhart K1, et al. (2017). ""Spinal Loading Patterns From Biomechanical Modeling Explain the High Incidence of Vertebral Fractures in the Thoracolumbar Region."" J Bone Miner Res 32(6): 1282-1290.

4. Burge R, Dawson-Hughes B, et al. (2007). "Incidence and economic burden of osteoporosis-related fractures in the United States, 2005-2025." *J Bone Miner Res* 22(3): 465-475.
5. Conley RB1, Adib G2, Lindsey C, et al. (2020). "Secondary Fracture Prevention: Consensus Clinical Recommendations from a Multistakeholder Coalition." *J Bone Miner Res* 35(1): 36-52.
6. Eisman JA, Bogoch ER, et al. (2012). "Making the first fracture the last fracture: ASBMR task force report on secondary fracture prevention." *J Bone Miner Res.* 27(10): 2039– 2046.
7. Giangregorio L, Papaioannou A, et al. (2014). "Too fit to fracture: exercise recommendations for individuals with osteoporosis or osteoporotic vertebral fracture." *Osteoporos Int* 25(3): 821-835.
8. Giangregorio LM1, McGill S, et al. (2015). "Too Fit To Fracture: outcomes of a Delphi consensus process on physical activity and exercise recommendations for adults with osteoporosis with or without vertebral fractures." *Osteoporos Int* 26(3): 891-910.
9. Hart NH, Nimphius S, et al. (2017). "Mechanical basis of bone strength: influence of bone material, bone structure and muscle action. ." *J Musculoskelet Neuronal Interact.* 17(3): 114–139.
10. Hartley GW, Roach KE, Nithman RW, Betz SR, Lindsey C, Fuchs RK, Avin KG. (2022). "Physical therapist management of patients with suspected or confirmed osteoporosis: a clinical practice guideline from the Academy of Geriatric Physical Therapy ." *J Geriatr Phys Ther.* 45(2): E120-E126.
11. Harvey NC1, Odén A3, et al. (2018). "Measures of physical performance and muscle strength as predictors of fracture risk independent of FRAX, falls and BMD: A meta-analysis of the Osteoporotic Fractures in Men (MrOS) Study." *J Bone Miner Res.*
12. Katzman WB1, Vittinghoff E2, et al. (2016). "Thoracic kyphosis and rate of incident vertebral fractures: the Fracture Intervention Trial." *Osteoporos Int* 27(3): 899-903.
13. Katzman WB1, Vittinghoff E2, et al. (2017). "Targeted spine strengthening exercise and posture training program to reduce hyperkyphosis in older adults: results from the study of hyperkyphosis, exercise, and function (SHEAF) randomized controlled trial." *Osteoporos Int* 28(10): 2831-2841.
14. Kemmler W1, Häberle L, et al. (2013). "Effects of exercise on fracture reduction in older adults: a systematic review and meta-analysis." *Osteoporos Int* 24(7): 1937-1950
15. Salari N1, Ghasemi H2, et al. (2021). "The global prevalence of osteoporosis in the world: a comprehensive systematic review and meta-analysis." *J Orthop Surg Res* 16(1): 609.
16. Stevenson MO and Tangpricha V (2019). "Osteoporosis and bone health in transgender persons ." *Endocrinol Metab Clin North Am.* 48(2): 421–427.
17. Tran TH1, Wing D1, et al. (2016). "Correlations among four measures of thoracic kyphosis in older adults." *Osteoporos Int* 27(3): 1255-1259.
18. Weaver J, Sajjan S, et al. (2017). "Prevalence and cost of subsequent fractures among U.S. patients with an incident fracture. ." *J Manag Care Spec Pharm.* 23(4): 461–471.

19. Xiao CM1, Kang Y2, et al. (2016). "Effects of Elastic Resistance Band Exercise on Postural Balance, Estrogen, Bone Metabolism Index, and Muscle Strength of Perimenopausal Period Women." J Am Geriatr Soc 64(6): 1368-1370.
20. Zeytinoglu M1, Jain RK2, et al. (2017). "Vertebral fracture assessment: Enhancing the diagnosis, prevention, and treatment of osteoporosis." Bone 104: 54-65.

Ms Lindsey is a member of the AGPT Workgroup "EBD/CPG Osteoporosis" and represents APTA as a member of ASBMR's international secondary fracture prevention coalition. She has participated in bone-health research, presented continuing education courses, written bone-health related chapters for geriatric rehabilitation texts and was the primary developer of the UCHC rehabilitation department Osteoporosis Prevention Program. She has held numerous service positions for APTA Geriatrics Bone-Health Special Interest Group. She treats an outpatient caseload composed of osteoporosis, balance, musculoskeletal and women's health patients of all ages at Canton PT, Connecticut, and is also adjunct instructor in the UConn, Storrs PT program.