

## **Bone Building and Protection Program: Evidence Based Physical Therapy Program for People with Osteoporosis**

This physical therapy program has been designed for people who have osteoporosis, either recently diagnosed or long standing. It is based on results of controlled research studies of physical therapy interventions which showed:

1. Stimulation of bone growth and increased bone mineral density (BMD). BMD will stay the same or increase 2 to 3%  
(Note: These results were independent of response to osteoporosis medications.)
2. Improved function in daily activities
3. Reduce the risk of fractures
4. Reduce the risk of injury causing falls

This program has been designed with four levels of difficulty to allow the therapist to safely treat clients with different levels of severity:

**Acute Fracture:** Hospitalized with acute fracture and pain. Client needs assist with ADL's and mobility.

**Frequency of treatment:** Twice a day, Monday through Friday, daily on weekends and holidays. Work with nursing for positioning and safe mobility.

**Level 1:** Person with an acute compression fracture or person with a history of multiple compression fractures of the spine and moderate to severe postural deformity.

**Frequency of treatment:** once or twice per week until functional goals are met, usually 6 weeks post fracture.

**Level 2:** Healed compression fracture, mild postural deformity

**Frequency of treatment:** once or twice a week for 2 to 3 weeks until goals are met and client demonstrates understanding and compliance with program.

**Level 3:** Healed compression fracture (or other fracture such as hip) with no postural deformity.

**Frequency of treatment:** One or two sessions over 2 to 4 weeks for instruction and demonstration of understanding and compliance.

**Level 4:** Diagnosed with osteoporosis but no fractures

**Frequency of treatment:** One or two sessions over 4 weeks for instruction and client demonstration of understanding and compliance.

The therapy program will include:

1. Instruction in proper body mechanics with focus on positions and motions which increase the risk of fracture in osteoporotic bone.
2. Postural instruction
3. Balance exercises to reduce fall risk
4. Safe stretches and stretches to avoid
5. Impact loading to stimulate bone growth and increase bone mineral density
6. Safe strengthening exercises, specifically designed for each level of severity and modified for each client's personal needs and limitations

Key References:

Ayalon, J., Simkin, A., Leichter, I. & Shlomit, R.; Dynamic Bone Loading Exercises for Postmenopausal Women: Effect on the Density of the Distal Radius; Arch Phys Med Rehabil, Vol 68, May 1987.

Braith, R.W., Magyari, P.M., Fulton, M.N., Aranda, J., Wlaker, T., Hill, J.A.; Resistance Training and Alendronate Reverse Glucocorticoid Induced Osteoporosis in Heart Transplant Recipients; Journal of Heart and Lung Transplantation, Vol. 22, no 10, pp1082-1090.

Cussler, E., Lohman, T.G., Going, S.B., Houtkooper, L.B., Metcalfe, L.L., Grint-Wagner, H.G., Harries, R.B. & Teixeira, P.J.; Weight Lifting in Strength Training Predicts Bone Changes in Postmenopausal Women; Medicine & Science in Sports & Exercise; Sept, 2002, pp 10-17.