

## Alignment

Our bodies are designed to work the best in an ideal mechanical alignment:

- ears over shoulders
- shoulders over hips
- hips over ankles

Everyone has variations in their alignment, however problems arise when we perform activities too far outside of this alignment or for an excessive period of time.



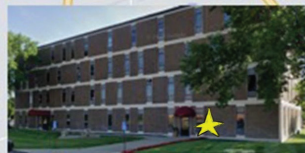
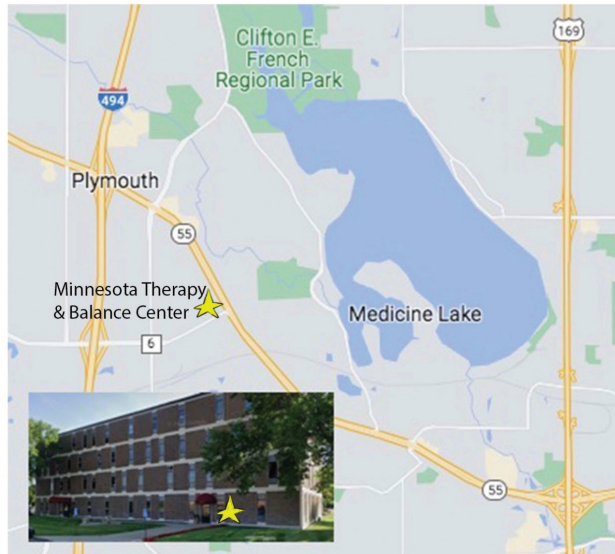
## Karen Hansen, PT, DPT

- BS in Biology from St. Olaf College, 1998
- Masters of Science in Physical Therapy from Washington University School of Medicine, 2000
- Doctor of Physical Therapy from Washington University School of Medicine, 2005
- Clinical practice since 2001 with extensive education in vestibular rehabilitation, balance retraining, neurological conditions, spinal pain, headaches, muscle imbalances, and orthopedic conditions
- Certified in Vestibular Rehabilitation
- Certified in LSVT® BIG for Parkinson's Disease
- Certified Ergonomic Assessment Specialist
- Certified in Tai Chi for Health



## Goals for Therapy

- Reduce pain and other sensations
- Improve spinal stabilization
- Improve joint mobility
- Increase range of motion and strength
- Reduce muscle spasm and myofascial restrictions
- Gain understanding of ideal body mechanics for activities at home and work
- Improve ability to perform activities of daily living



## SPINAL HEALTH AND ERGONOMIC PROGRAM



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## Comprehensive Treatment

- Thorough evaluation to determine muscle imbalances, joint restrictions, muscle spasm and fascial restrictions, spinal and extremity motion and strength deficits.



- Individualized exercise program including spinal stabilization, range of motion and strengthening exercises, use of aerobic and weight training

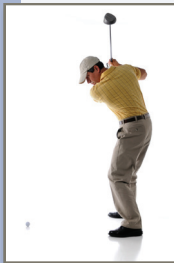
equipment, kinesiotape to encourage correct muscle recruitment, and use of exercise balls and other equipment to aid in recovery.

- Manual techniques including joint mobilization, soft tissue mobilization, myofascial release, muscle energy techniques, neural mobilization, and manual cervical traction



- Ultrasound and electrical stimulation to reduce pain, improve blood flow, and promote muscle relaxation

- Spinal decompression/ traction for the lumbar and cervical spine to promote blood flow and nutrients to the spinal structures, promote reduction in disc displacement, reduce compression of spinal nerves, reduce symptoms in the spine or extremities including pain, numbness, tingling, and burning



- Ergonomic training for correct body mechanics

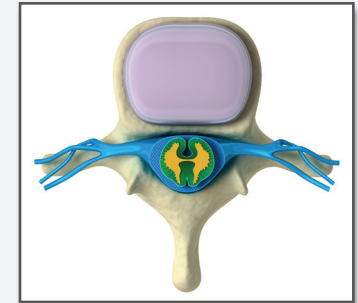


## Degenerative Joint and Disc Disease

- Top picture: normal height and alignment of disc and vertebrae with plenty of room for nerve mobility
- 2nd picture: slight loss of disc height posterior>anterior, mild roughness of vertebrae body indicating beginning of arthritis, possible nerve irritation
- 3rd picture: reduced disc height, disc elasticity reduced as disc calcifies, progression of arthritis with increased roughness of bony surfaces and bone spur formation, spinal nerve compression as nerves exit vertebrae
- 4th picture: complete loss of disc height, considerable bony changes with progression of bone spurs, significant spinal nerve compression

## Normal Disc

- The disc is compared to a jelly filled donut. The outer donut is called the annulus and the inner jelly is the nucleus.



- The nucleus is the consistency of toothpaste and helps to absorb shock as we perform daily activities.
- The annulus is fibrous and has many layers of structure.
- The flexibility of the disc allows for movements through various motions and the ability to move and carry objects without injury to other structures.
- The spinal cord sits posterior to the disc and is protected by the vertebrae. The spinal nerves leave the vertebrae in tunnels called the foramina.

## Injured Disc

- Excessive movements or forces through the spine can cause microscopic tears in the annulus as the nucleus is pushed too far in one direction.
- A disc bulge occurs as the nucleus moves through the annular tears creating an outward protrusion of the annulus.
- A herniated disc occurs once the nucleus pushes all the way through the annulus
- Both conditions can irritate or compress the surrounding structures including the spinal cord and nerves.

