

Peripheral neuropathy patients benefit more from Tai Chi than traditional exercise

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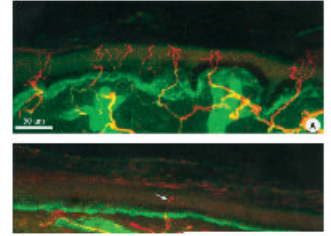


1

Peripheral Neuropathy



- 20 million Americans
- \$43 billion
- The progressive deterioration of peripheral nerves



(From Periquet *et al*, 1999)

Implications



- 15x more likely to suffer a fall (Cavanagh, 1992)
 - Increased sway (Kavounoudias *et al* 2001)
 - Reduced somatosensory function (Simoneau *et al*, 1996)
 - Reduced strength (Gutierrez 2001)
- Foot ulceration (25% of patients with DPN)
 - Altered foot pressure distributions (Nurse *et al*, 2001)
 - Reduced pain and healing capacity

3

Functional Exercise (FE)



- Richardson *et al*, 2001
- 6-weeks (3x/wk) of low-intensity, lower extremity strengthening exercises
- Results:

	Pre-exercise	Post-exercise	p*
Intervention Group			
Tandem stance (s)	17.5 ? 13.4	23.5 ? 10.9	0.004
Functional Reach (in)	10.5 ? 2.1	11.5 ? 2.2	0.0012
Unipedal stance (s)	5.4 ? 4.7	11.6 ? 10.2	0.0014
Control Group			
Tandem stance (s)	19.0 ? 11.8	22.0 ? 12.0	0.13
Functional Reach (in)	11.3 ? 3.6	11.9 ? 2.8	0.23
Unipedal stance (s)	9.3 ? 8.6	7.9 ? 5.9	0.33

4

Tai Chi (TC)



- Regulation of breathing, posture, and mind (Chi Kung)
- Yong Style – 8 movements
- Adapted for individuals with peripheral neuropathy
 - Sitting vs. Standing
 - Slight knee bend



5

Methods



- 11 subjects with diagnosed PN (5.5 ± 4.1 years)
- Measurements
 - Plantar cutaneous sensation threshold
 - Standing balance with eyes closed
 - Average velocity (VEL) of COP
 - Area inclosing 95% of the COP (A95)
 - Isokinetic peak torque (60 deg/s) of KE and KF
 - Six Minute Walk (6MW) and Timed Up-and-Go (TUG)

6

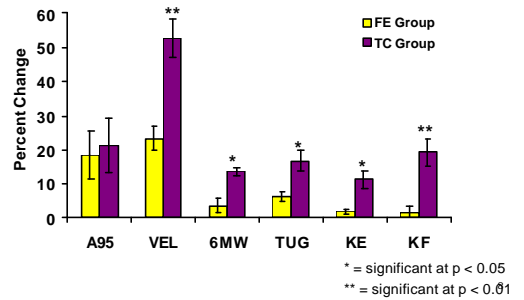
Results



- No between-group differences at time of pre-test
- Underlying cause for PN: DM, kidney disease, and idiopathic
- 10 subjects were unable to detect the 5.07 gauge monofilament on at least three of the five plantar cutaneous sites tested

7

Strength, Balance and Functional



Discussion



- Neither TC nor FE led to increased pain or sores of the feet
- Training had no effect on plantar cutaneous sensation threshold
- Six weeks of TC training led to significantly greater improvements in balance, strength, and function than did FE training

9

Why Tai Chi?



- Dissociation between increased strength and improved balance (Albright *et al*, 2003, Foss *et al*, 2002) and ambulatory function (Roma *et al*, 2001)
- "...balance was stressed on under conditions that continuously invoked body rotational movements under a progressively diminishing base of support" (Wolf *et al*, 2003)
- Emphasized controlled, whole body movements
- More attractive than other forms of exercise???

10

Thank You



11