The Influence of Ai Chi on Balance and Fear of Falling in Older Adults: A Randomized Clinical Trial

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Introduction. Falls are a major problem in older adults, leading not only to an increase of incapacity but also to an increase of morbidity and mortality. Complications of falls include fractures, dependence and fear of falling (FOF), among others. When training balance on land, an individual's performance may be diminished by a lack of confidence or a fear of falling. In an aquatic environment, waters inherent viscosity serves like a postural support, promoting confidence and reducing the fear of falls. Aquatic therapy has the capacity to prevent deterioration in and increase the quality of life within the elderly community as well as promote their independence. Many studies investigate the efficacy of exercises programs in the aquatic environment.

Recently, Sova and Konno described a variant of Tai Chi, carried out in the aquatic environment named Ai Chi. Ai Chi is a technique of aquatic active relaxation related to T'ai Chi and Chi Gong, created by Dr. Jun Konno, in Japan. It consists of a progression of simple and slow exercises of the arms, legs and torso, with gradual narrowing of the basis of support, combined with deep breathing. It has been suggested that it has positive effects in older adults with coordination and balance deficits. However, to our knowledge, experimental evidence is very scarce to support those claims. Currently, only one study on Ai Chi has been published, showing the effects of Ai Chi in chronic stroke patients. Therefore, the aim of this study was to examine the effect of an Ai Chi program on balance and fear of falling among older adults.

***Methods*.** Thirty older adults were randomly allocated to either an experimental or a control group. The presence of exclusion or inclusion criteria was established using both a structured interview and physical assessment. The inclusion criteria were aged 77-88 years and had either a high or a medium risk of falling (POMA score between 0 and 24). Exclusion criteria were any physiotherapy treatment or participation in physical activity during the study and standard contraindications to hydrotherapy19 as well as an absence from the Ai Chi sessions for more than 4 sessions.
Characteristics of the participants are shown in table 1. The groups had a baseline similarity regarding age (Mann-WhitneyU=82.0,p=0.202), sex, fear of falling (Mann-Whitney U=75.0, p=0.119) and balance (total: Mann-Whitney U=66.0, p=0.053; static: Mann-Whitney U=69.5, p=0.073; dynamic: Mann-Whitney U=68.5, p=0.066).

All participants were assessed with the Tinetti Performance-Oriented Mobility Assessment (POMA) to measure balance capabilities and the Falls Efficacy Scale (FES) to measure fear of falling at 0 and 6 weeks. The organization did not allow for a follow up measurement.

***Intervention*.** Individuals assigned to the experimental group received 16 Ai Chi sessions, according to the sequence suggested by Sova and Konno. The exercises were undertaken in a 6 week period. The program was completed at a community aquatic centre being conducted by a physiotherapist, certified as instructor of Ai Chi by "Aqua Dynamics Institute".
The control group did not receive any instructions and were not encouraged to change their physical activity, ADLs or social habits during the study.
Before the intervention was carried out, 2 sessions to allow for the mental adjustment of the elderly to the aquatic environment were performed, since many of the participants had never experienced aquatic therapy or had a significant fear of falls.

***Results*.** The experimental group had a statistically significant increase in balance (Wilcoxon Z=-3,289; p=0.001) but not in fear of falling (Wilcoxon Z=-1,024; p=0,306), whereas the control group showed no significant change in balance (Wilcoxon Z=-1,140; p=0,254) and a significant increase in fear of falling (Wilcoxon Z=-2,528; p=0,011). Table 2 shows clinically significant effects sizes for balance of 1.3 for the tPOMA, with 1.1 and 1.4 for bPOMA and gPOMA respectively. A clinical significant ES for the FES was also reached (1.5), but depended on the fact that fear of falling increased in the control group.

***Conclusion*.** This investigation's findings suggest that an Ai Chi program leads to a clinical relevant increase of both static and dynamic balance in older people. There is a tendency to decrease fear of falling., although statistical significance has not been reached., but since fear of falling increased in the control group, a clinical relevant difference could be shown.

References

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