

# To Study The Effect Of Land Exercises VS Aquatic Exercises On Balance In Elderly

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## Introduction

Ageing is a complex biological process that is progressive in nature. There is a decline observed in the muscle mass and the sensorimotor systems which may contribute to decreased balance and stability while walking. Balance is one of the most crucial intrinsic risk factor for the occurrence of falls. Falls are the leading cause of fatal and non fatal injuries among the elderly. Multiple studies indicate that a structured exercise program helps in improving balance and reducing risk of falls. Exercises can be performed on land as well as in water. Thereby the need of the study to evaluate the effect of land vs aquatic exercises on balance in the elderly.

## Objectives

1. To find out the effect of land exercises on balance scores in elderly.
2. To find out the effect of aquatic exercises on balance scores in elderly.
3. To compare the effect of land and aquatic exercise on balance score in elderly.

## Materials and Methods

A Randomised Control Trial with 40 elderly's selected based on the inclusion criteria; randomly divided in 2 groups. Balance was assessed using Tinetti POMA scale. The Elderly between the age of 60 - 75yrs were with a low and medium risk of fall on Tinetti POMA scale were included in the study. The elderly with neurological disorders, respiratory conditions, total hip or total knee joint replacement, hospital admission in past 6 months and those whose score indicates high risk of fall on Tinetti POMA scale were excluded.

## Procedure:

The study was approved by the Institutional Ethical Committee, the subjects were recruited based on the inclusion and exclusion criteria. Informed consent was taken. The subjects were randomly divided in two groups. Exercises were done 3 times a week on alternate days.

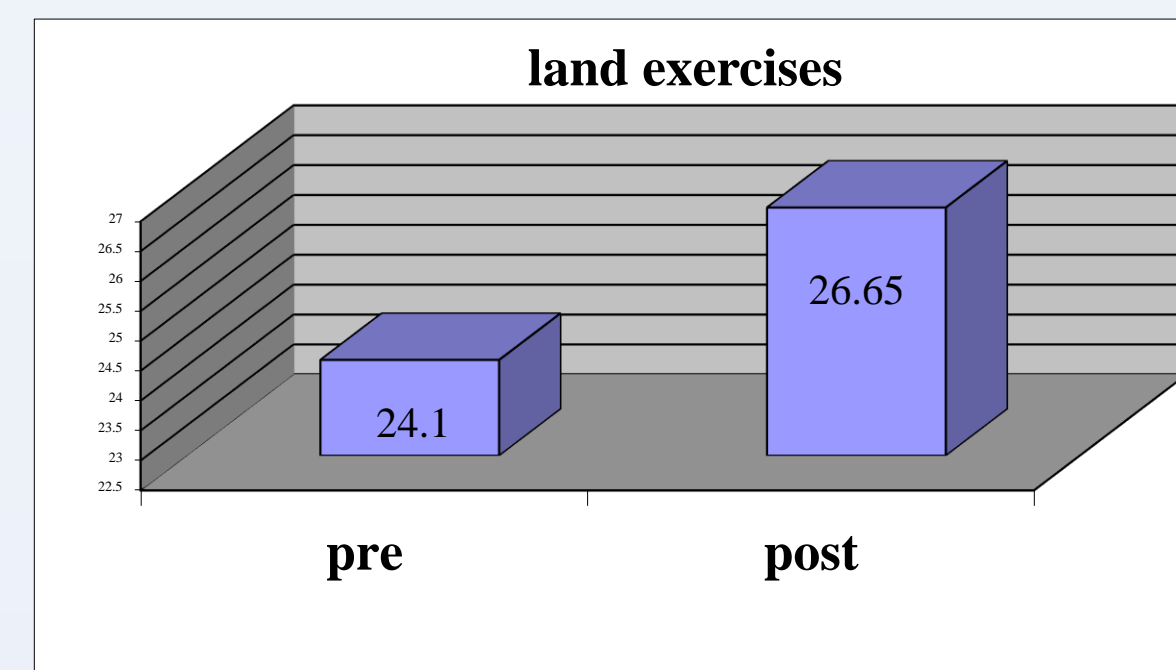
1. Below are the walking activities :Walking forward 11 feet. Marching forward 11 feet. Sidestepping without crossing legs 11 feet. Tandem walking 11 feet.
2. Below are the exercise activities : Marching in place. Hip flexion/extension . Hip abduction/adduction. Toe raises/heel raises. Shallow knee bends. Sit to stand from chair in land group. Sit to stand from pool shelf in aquatic group.

Each session lasted for 20-30 minutes. Subjects exercised to their tolerance level and were allowed to rest periods as needed. Subjects were instructed to report any discomfort immediately. Land exercises were conducted indoors in an assisted living recreation area. The subjects exercised in a water level based on their height; the water level was between their waist and nipple line. After 6 weeks balance scores of the subject's were assessed using Tinetti POMA scale.

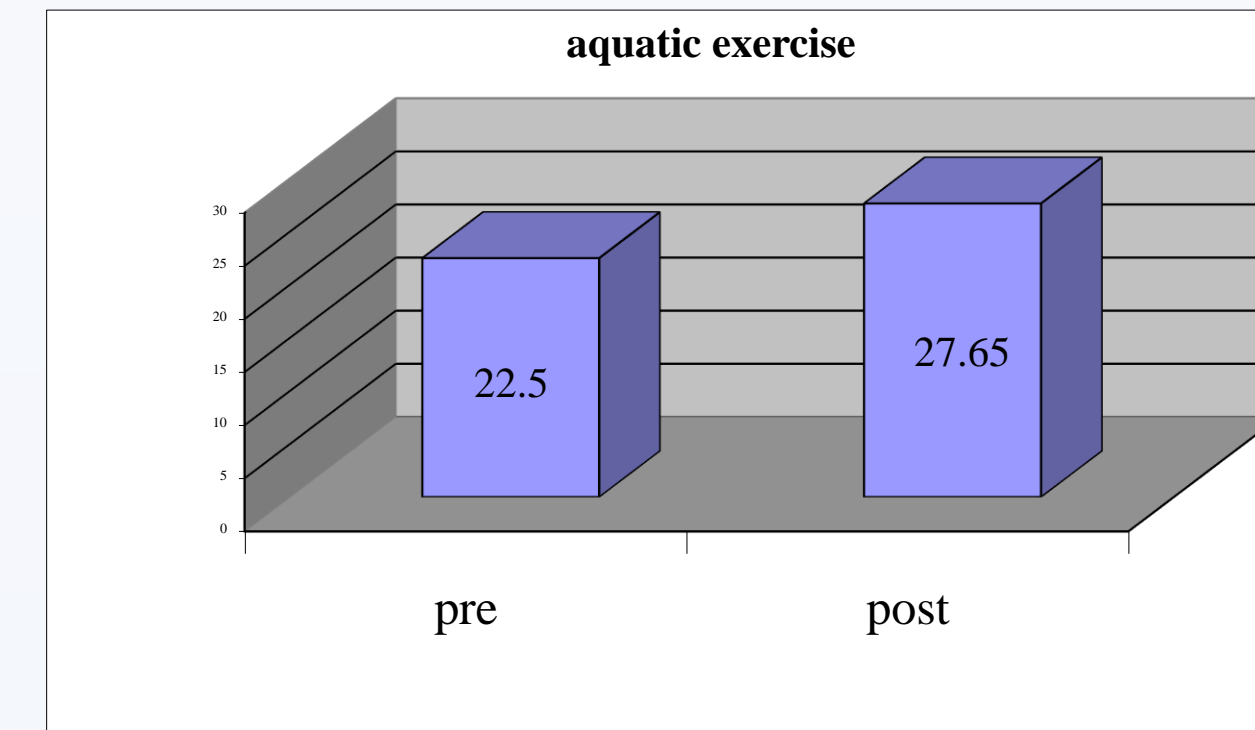
## Results

Data was collected and analyzed using the SPSS 12 software with the level of significance set at 0.001

1. The balance scores obtained before and after in each group were statistically analysed using Wilcoxon matched pair signed rank test.

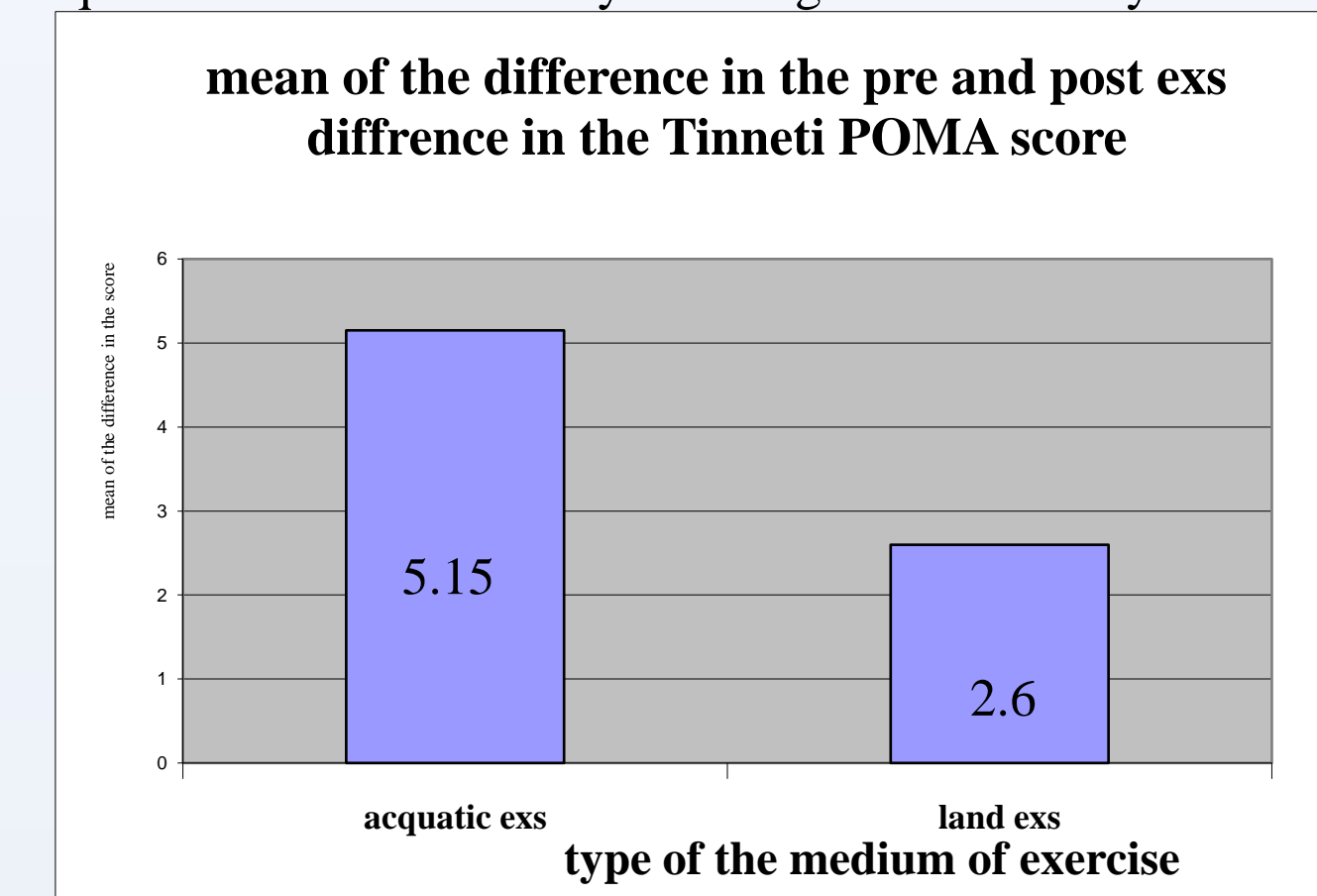


The two-tailed p value <0.0001, considered extremely significant.



The two tailed p-value is <0.0001, considered extremely significant.

2. The comparison between the data of land exercises and aquatic exercises was analysed using Mann Whitney Test.



The two tailed p-value is <0.0001, considered to be extremely significant.

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## Conclusion

This study was designed to compare the effectiveness of similar balance retraining interventions performed in a land versus aquatic environment. **The results of this study demonstrated that regardless of the exercise medium, significant improvements in balance were achieved, although more improvement was seen in aquatic group.** Subjects exercising in water were more comfortable as they weren't worried about falling during the exercise. Also buoyancy of water helps to increase the muscle strength without putting much load on joints. Exercising in water may be more appropriate than on land for those with musculoskeletal impairments. Joint loading diminishes relative to the depth of immersion

## References

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