

Name of the Ph.D. Scholar: Majumi. M

Name of the Supervisor: Professor. M. Ejaz Hussain

Title of the Thesis: Studies on the effect of exercise interventions for prevention of falls in community dwelling elderly adult fallers

ABSTRACT

Introduction & Background

International Classification of Functioning, Disability and Health (ICF) is a framework adopted by WHO to assess the health and disability. Falls in older adults is a major cause of morbidity and mortality. The study 1 aimed to use the ICF framework for risk stratification of falls in older adults based on body structure and function, activity limitation and environmental factors domains of ICF. The study 2 tried to find effect of different type of balance training programme on improving the mobility, balance and on falls in community dwelling older adults.

Methods

Study 1

Included 255 subjects from the geriatric clinic (OPD) of All India Institute of Medical Sciences, New Delhi. The body mass index (BMI), grip strength, depression score (Geriatric depression scale:short form; GDS-S) and co morbidities were used to assess body function and structure domain, timed up and go (TUG), Berg balance scale (BBS) and elderly fall screening test (EFST) scores were used for activity domain, self reported cause of fall, medications and uses of assistive device for environmental factors.

Study 2

78 subjects were included. The subjects were from Ansari Health Centre and physiotherapy clinic of Centre for Physiotherapy and Rehabilitation Sciences, Jamia Millia Islamia New Delhi. They were assigned to either of two groups (group A and group B). Subjects in the group A underwent specific balance training and subjects in group 2 underwent sensory balance training. Strength training of lower limb muscles were common to both the groups. The total duration of training was for 10 weeks with frequency of 3 times per week. The outcome measures were timed up and go test, BBS, Tinetti POMA, falls with a follow-up period of 6 months muscle strength of ankle and knee muscles, proprioception, reaction time, co contraction index around ankle joint muscles

Data analysis

Study 1

Multiple logistic regression analysis was done to find the association of falls and the variables studied by calculating the unadjusted and adjusted odds ratio. Individual analysis were done between subjects with no fall and one fall (model 1) , one fall and more than one fall (model 2) and no fall and more than one fall (model 3).

Study 2

A mixed ANOVA was used to find the effect of time, group and time x group effect on the outcome measures studied. The negative binomial regression test was used to find the difference, in falls , between the groups after 6 months follow up.

Results

Study 1

There was an association of fall in analysis in subjects with no fall and one or more falls for, BMI, grip strength (kg), GDS-S score, no. of co morbidities, chronic pain, TUG, BBS, TUG (s), BBS, EFST, slip/trip, walking cane, hypoglycemic and antihypertensive medications (unadjusted and adjusted odds ratio).The diabetes, and hyper tension showed association for adjusted odds ratio only. In subjects with one fall and more than one fall, TUG, BBS, EFST, GDS-S score, NSAIDS and antidepressants use showed a significant association with fall (unadjusted and adjusted odds ratio).

In study 2 it was observed the TUG and POMA showed a significant main effect for time, group, and group X time effect. The BBS scores showed only a group X time effect. The proprioception showed a significant main effect for time and group X time effect, the reaction time showed only a significant effect for time. The isometric knee extensor strength, plantar flexors, dorsiflexor and leg press showed a significant effect for time only. The co contraction index (CI)- eyes open, CI-Eyes open foam and CI-eyes closed foam showed a significant effect for time and group X time effect. The falls during follow up period didn't show any significant difference between the groups, but there was reduction of falls in both groups.

Conclusion

The ICF can be a model covering various aspects of health for fall risk assessment in community dwelling older adults. The different modes of balance training can be used to improve the balance along with resistance training of lower limb to improve mobility and reduce falls in community dwelling older adults.