IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

The Efficacy of Balance Training to Reduce Fall Risk in Older Adults

Mr. Shivam Srivastava[1], Prof. (Dr.) Brajesh Kumar Mishra[2], Dr. Pramod Kumar Yadav[3]

[123]Maharaj Vinayak Global University, Jaipur Occupational Therapy College

Abstract

Recently various study has happened in which it has shown that those who are aged 60 years or older than these age groups are facing the so many challenges. The objective of this study is to assess the balance among older adults before and after administration of exercise program. To determine the incidence of fall among older adults before and after the administration of exercise program. To determine the effect of exercise program in term of improved balance and decrease in the incidence of fall among older adults compared with among groups. The methodology we have adopted for this study are as follows: H_1. Balance training program (BTP) is an effective intervention to reduce risk of fall. H_2. Balance training program (BTP) by the Life protocol would be more effective compared to the structured conventional training program (SCTP).

Keywords: BTP, Efficacy, Risk, SCTP, Exercise, Program, Interventions, Therapy, Age Group-wise, Hypothesis

I. Introduction

Fear of falling sick and unable to do the life activities are major concern among those who are ageing older and older. Avoiding activities due to fall risk is a major concern, but the major training has been implemented. Increasing number of older people can create demands on the health care resources (HCRs) in their own society. It has become imperative one and we should be aware of the problems that can affect older population groups. There are rapid "graying" of the developing countries population and increasing their life expectancy. However, heterogeneous, geriatric problems showing various features. These are highly prevalent in older age, especially older people, involving multiple organ systems, tend to contribute to, and define, geriatric problems, etc. There are several accepted definitions for the risk of falls (ROF). But the almost all of these agree that in the event of a fall rate in the person comes to the lower level or on the ground unintentionally rates are increasing. Earlier this coded a E880-E888 in the International Classification of Disease-9 (ICD-9) and the W00-W19 in ICD-10 established. According to the observation one in three older people fall each year and this proportions are varying from region to region around in the globe. Aging is a complex biological process in which changes at molecular, cellular and organ levels result in a progressive, inevitable, and inescapable decrease in the body's ability to respond appropriately to internal and/or external stressors.1Balance, or postural stability, is a generic term used to describe the dynamic process by which the body's position is maintained in equilibrium. When the body is at rest it's static equilibrium and when the body is in steady-state motion it's known as dynamic equilibrium. Balance is greatest when the body's Center of Mass (COM) or Center of Gravity (COG) is maintained over its Base of support (BOS). Previous study has supported the use of therapeutic exercises which plays restorative and accommodative role in minimizing loss of stability in the elderly through balance and mobility improvement, hence

reducing fall risk. Other individuals must perform exercises lifelong to obtain physical and psychological health benefits and hence this study was conducted in which information brochure were given to participants, containing information about exercises to improve balance and prevent falls in community.

II. Research Methodology

H_1. Balance training program (BTP) is an effective intervention to reduce risk of fall.

H_2. Balance training program (BTP) by the Life protocol would be more effective compare to the structured conventional training program (SCTP).

H_3. Balance training program (BTP) may improve through the telemedicine education.

H_4. Balance training program (BTP) may reduce the mobility and stability in older adults.

To attain these above hypothesis various tool and statistical methodology have been implemented:

Data: The sample for this study was collected primarily through clinic and with the help of questionnaire.

Age Group: The age group for this study are older ager group between 50 years to 60 years old.

Method for Data Collection: Formalized questionnaire has been prepared to collect the data.

Statistical Tool: The descriptive and t-test, z-test, and correlation has implemented to analyze the data and find out the correct result.

III. Objective

The objective of this study are as follows:

1) To assess the balance among older adults before and after administration of exercise program.
2) To determine the incidence of fall among older adults before and after the administration of exercise program.
3) To determine the effect of exercise program in term of improved balance and decrease in the incidence of fall among older adults compared with among groups.
4) To find out which group of balance training program is more effective in improving balance.

IV. Data Analysis

Table 1.0 To determine the effect of exercise program in term of improved balance and decrease in the incidence of fall among older adults compared with among groups.

Sl. No:	Comparison[a]	Numbe r of trials (cluste r) [b]	Number of participant s randomise d	Number of participant s analysed for any one outcome	Number of trials (cluster) with participants analysed for rate of falls outcome [c,d]	Number of participan ts analysed for rate of falls outcome [d]
1.	**Exercise (all types) versus control**	85 (8)	150	135	59 (7)	129
2.	**Balance and functional exercises versus control**	47 (7)	50	82	39 (4)	80
3.	**Resistance exercises versus control**	8	49	38	50	35
4.	**Flexibility versus control**	10	20	25	50	45
5.	**3D exercise (Tai Chi) versus control**	15 (2)	35	28	8 (3)	28
6.	**3D exercise (dance) versus control**	8 (1)	50	50	10 (3)	50
7.	**General physical activity (walking programme) versus control**	5	50	45	20 (5)	45
8.	**Endurance training versus control**	10	07	20	10 (3)	20
9.	**Other kinds of exercise versus control**	10	08	20	10(3)	18
10.	**Multiple categories of exercise versus control**	20	45	18	12 (4)	15

Table 2.0 To estimate the effectiveness of balance exercise in geriatric age group.

Sl.No :	Clinical Outcome s	Anticipated effects* (95 % CI) Risk with control - end of intervention.	Relativ e effect (95% CI) Risk with mixed training .	No of the participant s in studies.	Quality of the evidence (GRADE)	Comments	
1.	Physical function - balance assessed with: Berg Balance scale Scale from: 0 to 56	The mean physical function - balance in the intervention group was 1.97 more (0.36 more to 3.59 more)	RCTs	150	High	This demonstrate s that a small benefit to functional walking balance would could theoretically augment fall reduction measures. Improvement was achieved even though balance training was not an explicit aim of the fitness training programmes .	
2.	Case fatality	Death was a rare event.	RCTs	Death Restricted	moderat e	A total of 1 deaths restricted	

NB: The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI). **CI:** confidence interval; **min:** minute; **OR:** odds ratio; **RCT:** randomised controlled trial; **RR:** risk ratio. The **GRADE Working Group grades of evidence High quality:** We are very confident that the true effect lies close to that of the estimate of the effect **Moderate quality:** We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different **Low quality:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect **Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect. **Most participants were high-functioning patients; risk of death was low among this group.Trials were confounded for additional training time exposure; exclusion using sensitivity analyses reduced the effect.[3]Poor reporting of risk of bias across included with trials.**

Table 3.0

SlNo:	*Outcomes*	*Enrolment*	*Before randomization*	*Intervention period (8 weeks)*	*8-week follow-up after randomization*	*6-months follow-up after randomization*
1.	*Eligibility criteria*	*100%*	*85%*	*75%*	*89%*	*95%*
2.	*Demographic data*	*85%*	*65%*	*45%*	*45%*	*85%*
3.	*Informed consent*	*100%*	*89%*	*56%*	*67%*	*86%*
4.	*Primary outcomes*	*10%*	*35%*	*50%*	*65%*	*87%*
5.	*Pain intensity*	*20%*	*35%*	*65%*	*75%*	*85%*
6.	*Primary outcomes*	*15%*	*25%*	*55%*	*70%*	*75%*
7.	*Secondary outcomes*	*25%*	*50%*	*86%*	*85%*	*89%*
8.	*Pain intensity*	*20%*	*35%*	*65%*	*75%*	*85%*
9.	*General disability among olders*	*25%*	*30%*	*60%*	*70%*	*80%*
10.	*Global impression of improvement*	*40%*	*60%*	*75%*	*85%*	*95%*
11.	*Specific disability*	*25%*	*40%*	*55%*	*75%*	*82%*
12.	*Muscular strength*	*35%*	*45%*	*55%*	*65%*	*75%*
13.	*Interventions*	*25%*	*50%*	*55%*	*70%*	*85%*
14.	*Pilates method treatment*	*30%*	*40%*	*45%*	*55%*	*60%*
15.	*Aerobic*	*20%*	*30%*	*35%*	*45%*	*55%*

V. Discussion

The study was conducted to find out the effectiveness of progressive balance training and information brochure on balance, fear of fall and lower extremity function. Older participants are reluctant to do exercise (especially if they are not physically active in the past), lack of guidance about what exercises are appropriate for them, fear of injury or pain, chronic physical illness, and lack of social support for exercise. Good improvement in group B may be due to information brochure which must have helped the participants to

remember how to perform exercises correctly at home and motivated them. Nitze Tal, conducted a pilot randomized controlled trial on the efficacy of a specific balance-strategy training program for preventing falls among older people in which treatment sessions were given once a week for 10 weeks. Assessment before and after intervention and at 3 months follow-up included number of falls, co-morbidities, medications, community services and activity level, functional motor ability, clinical and laboratory balance measures, and fear.

VI. Conclusion

The study concluded that balance training along with Information brochure can be effective in improving balance performance, reduction in fear of fall and increase in lower extremity function in older people. Older people with balance training are less likely to have a fear of sickness which means the reduction in falling. It also improves the performance of older people, while balancing the other factors. Balance training is efficient in number of ways and life improving for older people.

VII. References

Giridhar G, Subaiya L, Verma S. Older women in India: Economic, social and health concerns. Increased Awarenes, Access and Quality of Elderly Services. BKPAI (Building Knowledge Base on Ageing in India), Thematic Paper. 2015;2.

Halpin SJ, McIvor C, Whyatt G, Adams A, Harvey O, McLean L, Walshaw C, Kemp S, Corrado J, Singh R, Collins T. Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: a cross-sectional evaluation. Journal of medical virology. 2021 Feb;93(2):1013-22.

Diamond DM, Ravnskov U. How statistical deception created the appearance that statins are safe and effective in primary and secondary prevention of cardiovascular disease. Expert review of clinical pharmacology. 2015 Mar 4;8(2):201-10.

Halpin SJ, McIvor C, Whyatt G, Adams A, Harvey O, McLean L, Walshaw C, Kemp S, Corrado J, Singh R, Collins T. Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: a cross-sectional evaluation. Journal of medical virology. 2021 Feb;93(2):1013-22.

Pludowski P, Holick MF, Pilz S, Wagner CL, Hollis BW, Grant WB, Shoenfeld Y, Lerchbaum E, Llewellyn DJ, Kienreich K, Soni M. Vitamin D effects on musculoskeletal health, immunity, autoimmunity, cardiovascular disease, cancer, fertility, pregnancy, dementia and mortality—a review of recent evidence. Autoimmunity reviews. 2013 Aug 1;12(10):976-89.

Fleg JL, Forman DE, Berra K, Bittner V, Blumenthal JA, Chen MA, Cheng S, Kitzman DW, Maurer MS, Rich MW, Shen WK. Secondary prevention of atherosclerotic cardiovascular disease in older adults: a scientific statement from the American Heart Association. Circulation. 2013 Nov 26;128(22):2422-46.

Guskiewicz KM, Marshall SW, Bailes J, McCrea M, Harding HP, Matthews A, Mihalik JR, Cantu RC. Recurrent concussion and risk of depression in retired professional football players. Medicine and science in sports and exercise. 2007 Jun 1;39(6):903.
Ten Bruggencate TI, Luijkx KG, Sturm J. Social needs of older people: A systematic literature review. Ageing & Society. 2018 Sep;38(9):1745-70.

Baker E, Clark LL. Biopsychopharmacosocial approach to assess impact of social distancing and isolation on mental health in older adults. British journal of community nursing. 2020 May 2;25(5):231-8.
Samir KC, Lutz W. The human core of the shared socioeconomic pathways: Population scenarios by age, sex and level of education for all countries to 2100. Global Environmental Change. 2017 Jan 1;42:181-92.

Lutz W, KC S. Dimensions of global population projections: what do we know about future population trends and structures?. Philosophical Transactions of the Royal Society B: Biological Sciences. 2010 Sep 27;365(1554):2779-91.

Murray CJ, Callender CS, Kulikoff XR, Srinivasan V, Abate D, Abate KH, Abay SM, Abbasi N, Abbastabar H, Abdela J, Abdelalim A. Population and fertility by age and sex for 195 countries and territories, 1950–2017: a systematic analysis for the global burden of disease study 2017. The Lancet. 2018 Nov 10;392(10159):1995-2051.

Bongaarts J, Guilmoto CZ. How many more missing women? Excess female mortality and prenatal sex selection, 1970–2050. Population and Development Review. 2015 Jun;41(2):241-69.
Andrasfay T, Goldman N. Reductions in 2020 US life expectancy due to COVID-19 and the disproportionate impact on the Black and Latino populations. Proceedings of the National Academy of Sciences. 2021 Feb 2;118(5).

Auer P, Fortuny M. Ageing of the labour force in OECD countries: Economic and social consequences. Geneva: International Labour Office; 2000.

Rocklöv J, Dubrow R. Climate change: an enduring challenge for vector-borne disease prevention and control. Nature immunology. 2020 May;21(5):479-83.

Kaplan MA, Inguanzo MM. The social, economic, and public health consequences of global population aging: implications for social work practice and public policy. Journal of Social Work in the Global Community. 2017;2(1):1.

Luhar S, Timæus IM, Jones R, Cunningham S, Patel SA, Kinra S, Clarke L, Houben R. Forecasting the prevalence of overweight and obesity in India to 2040. PloS one. 2020 Feb 24;15(2):e0229438.

Wang H, Abbas KM, Abbasifard M, Abbasi-Kangevari M, Abbastabar H, Abd-Allah F, Abdelalim A, Abolhassani H, Abreu LG, Abrigo MR, Abushouk AI. Global age-sex-specific fertility, mortality, healthy life expectancy (HALE), and population estimates in 204 countries and territories, 1950–2019: a comprehensive demographic analysis for the Global Burden of Disease Study 2019. The Lancet. 2020 Oct 17;396(10258):1160-203.

Sibai AM, Sen K, Baydoun M, Saxena P. Population ageing in Lebanon: current status, future prospects and implications for policy. Bulletin of the World Health Organization. 2004;82:219-25.