

Performance Based Disability Associated with Kinesiophobia and Self-Efficacy Among Older Adults

Neha P Patel¹, Suhasi Suvagiya², Kanika Singh³, Anuradha Sharma⁴, Pooja Mandal⁵

¹Assistant Professor, MPT (Community Health & Rehabilitation), ^{2,3,4,5} Interns, Mahatma Gandhi Physiotherapy College, Gujarat University, Ahmedabad, India.

Corresponding Author: Neha P Patel

DOI: <https://doi.org/10.52403/ijhsr.20240538>

ABSTRACT

Purpose of study: Disability and kinesiophobia which represent a participant's perception of his/her own function and activity. Self-efficacy has also been found to act as a mediator of changes in health behaviors and in use of the healthcare system. Less research published on the associations among the extent of performance-based disability, kinesiophobia and self-efficacy among older adults.

Methodology: This observational analytical study included 142 older adults who lived independently in the community. Written informed consent was taken from those willing to participate and fulfilling inclusion and exclusion criteria were included in the study. Each older adult's individual performed short physical performance battery (SPPB), kinesiophobia measured by Tampa scale for kinesiophobia -11 (TSK -11). Self-efficacy measured by generalized self-efficacy scale (GSE). Each subject was given appropriate rest period between all tests.

Results: In present study moderate negative association between performance-based disability and kinesiophobia in older adults ($r=-0.537$, $p<.001$), performance-based disability and self-efficacy in older adults ($r=0.436$, $p<.001$), between kinesiophobia and self-efficacy in older adults ($r= -0.420$, $p<.001$).

Conclusion: The findings indicate that negative association between performances-based disability and kinesiophobia, between kinesiophobia and self-efficacy in older adults. Positive association between performances-based disability and self-efficacy in older adults.

Keywords: Disability, Kinesiophobia, Older adults, Self- efficacy

INTRODUCTION

India is experiencing accelerated demographic transition. The country will face the challenge of dealing with problem of population aging in the coming decades. Amidst socioeconomic consequences, health risks among older adults are rising rapidly especially on account of non-communicable disease¹

The WHO disability model defines disability as the interplay between participation restriction, disruptions to the normal functioning of movement, and social relationships.² Disability is strongly associated with age, particularly in later life. Around 700 million people are suffering from any form of disability globally, with more than 26 million from India.

Furthermore, given the rapid pace of the ageing population in India, it is likely that the disability population will significantly increase in the coming decades particularly women given their vulnerability. More than 40 percent elderly populations in India are suffering from these functional limitations with greater proportion of them being women. But very less has been examined in of how these limitations result into disability particularly at the older ages.^{3,4}

Performance based disability such as gait speed and standing balance to represent whether or not an individual has the capacity to perform certain necessary actions. These objective measures reflect physical decline or functional limitation, in anticipation of future disability⁵. Performance-based measures can be used to evaluate discrete and specific components of the performance on specific tasks, including how the task was approached. This can point to specific disabilities which can be targeted during treatment and rehabilitation.⁶

Anxiety produced by the fear of experiencing pain as a result of movement is known as kinesiophobia. In addition to slowing the recovery process, kinesiophobia hinders rehabilitation and prolongs disability and pain. Fear and other negative or maladaptive psychological elements are among the most significant biopsychosocial factors that influence pain.⁷ Kinesiophobia could be a factor contributing to the limited and variable physical activity participation in older adults.^{8,9} Therefore, although kinesiophobia appears to be increased in the general older adult population and impacts chronic pain patients, it remains unclear whether kinesiophobia could impact physical activity and function in relatively healthy, chronic pain-free older adults.¹⁰

Self-efficacy, a person's belief in his or her ability to influence life events, has been associated with increased self-care among older persons, as well as with improvements in older persons' ratings of their healthy aging. For older adults, self-efficacy has also been related to increased energy, better

sleep, and decreased pain and discomfort as well as with overall satisfaction with life. Improving self-efficacy in aging populations is an important goal because self-efficacy has been associated with increased resilience against development of depression and with better overall health¹¹. Disability and kinesiophobia which represent a participant's perception of his/her own function and activity. Self-efficacy has also been found to act as a mediator of changes in health behaviors and in use of the healthcare system. Less research published on the associations among the extent of performance-based disability, kinesiophobia and self-efficacy among older adults.

MATERIALS & METHODS

Observational analytical study conducted at housing societies of Ahmedabad with purposive sampling. Study duration was September 2023 to December 2023. A sample size was estimated on the basis of pilot study and the sample size obtained was 142. $N = \{Z\alpha + Z\beta\} / C^2$, Where; $C = 0.5 \times \{(1+r)/(1-r)\}$ $r =$ correlation coefficient. Males and females, 65 years, or > 65 years old older adults included in present study. Severe Musculoskeletal disorders (OA, RA, and LBP etc.), Neurological disorders (stroke, Parkinson, multiple sclerosis etc.), Severe cardiovascular or pulmonary disease (PVD, COPD, asthma and pulmonary TB etc.), Recent traumatic conditions, Any type of recent surgery (last 3 months), Dementia, depression, etc., Any assistive device (cane, crutch, walker etc.), Malignancy were excluded in present study.

Total 192 geriatric individuals were screened, out of which 28 individuals did not match the inclusion criteria and 22 were not interested in this study. So 142 geriatric were included in the study. This observational analytical study included 142 older adults who lived independently in the community. Geriatric individuals were explained about the study. Written informed consent was taken from those willing to participate and fulfilling inclusion and

exclusion criteria were included in the study. Assessment was done according to the proforma for both the groups. Each older adults individual performed short physical performance battery (SPPB), kinesiophobia measured by Tampa scale for kinesiophobia -11 (TSK -11). Self efficacy measured by generalized self efficacy scale (GSE). Each subject was given appropriate rest period between all tests.

Short physical performance battery (SPPB):¹²

The short physical performance battery (SPPB) is a group of measures that combines the results of the chair stand and balance test, and gait speed. It has been used as a predictive tool for possible disability and can aid in the monitoring of function in older people. The scores range from 0 (worst performance) to 12 (best performance). The SPPB has been shown to have predictive validity showing a gradient of risk for mortality, nursing home admission, and disability. SPPB comprises three assessments: balance test; 4 m walk test; and chair stand test.

Each SPPB component (balance, walk, and chair stand) was marked from 0 (inability to perform the test) to 4 (best possible performance).

(1) Balance test:

Participants were asked to keep their feet in a side-by-side position, then in a semi-tandem position, and finally in a fully tandem position, each for 10 s. For the balance test, participants unable to remain in a tandem stance received 0 points; those who maintained this position for 1–10 s earned 1 point; and >10 s earned 2 points.

(2) 4 m walk test

Participants walked at their usual speed. For the 4 m walk test, participants who could not walk four meters received 0 points; those who completed it in ≤ 1.10 m/s, 1.11–1.24 m/s, 1.25–1.36 m/s, and ≥ 1.37 m/s received 1, 2, 3, and 4 points, respectively.

(3) Chair stand test

Subjects were asked to stand up and sit down five times as quickly as possible. This task was only conducted once. Participants who could not complete the chair stand five times received 0 points; those who completed it in ≥ 9.70 s, 8.15–9.69 s, 6.85–8.14 s, and ≤ 6.84 s earned 1, 2, 3, and 4 points, respectively. The highest possible overall score was 10 points.

Tampa scale for kinesiophobia -11 (TSK -11)^{13,14}

Fear of pain, movement and injury was assessed with the shortened version of the TSK, the TSK-11. The TSK-11 is an 11-item questionnaire that eliminates psychometrically poor items from the original version of the TSK to create a shorter questionnaire that is comparable to the original 17 item version. Items on the TSK-11 are scored from 1 (strongly disagree) to 4 (strongly agree). Thus, total TSK-11 scores range from 11–44 points with higher scores indicating greater fear of pain, movement, and injury.

Generalized self efficacy scale (GSE)

The General Self-Efficacy (GSE) scale is a ten item scale. It assesses the strength of individual's belief his or her own ability to respond difficult situations and to deal with any associated obstacles or setbacks. This is self-administered scale which normally takes 2 to 3 minutes to complete. For each item there is four choice responses from "not at all true" which scores 1 to "Exactly true" which scores 4. The scores for each of the ten items are summed to give a total score. The score on this scale reflects the strength of an individual's generalized self-efficacy belief. Thus the higher score, the greater is individual's generalized sense of self-efficacy.¹⁵

STATISTICAL ANALYSIS

Data analysis was done using SPSS version 20 and Microsoft excel 2019.

In this study, three outcome measures were taken, one is performance based disability

which is quantitative in nature, measured by SPPB and second one is measure of kinesiophobia, measured by TSK-11 and self efficacy measured by GSE, which is qualitative in nature.

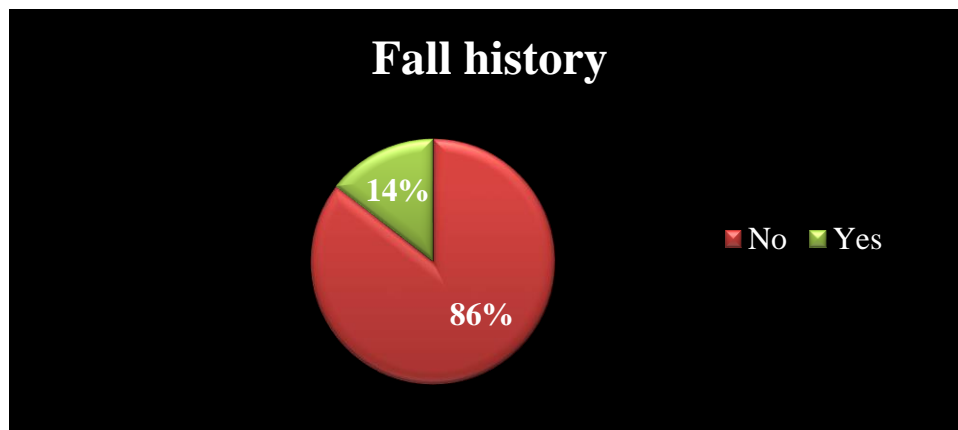
Prior to statistical tests, the data was screened for normality. As the sample size was more than 50 in Kolmogorov-Smirnov test (KS test) used to check normality.

Data of all the outcomes were not normally distributed. Association performance based disability and kinesiophobia using SPPB and TSK-11, performance based disability and self efficacy using SPPB and GSE and kinesiophobia and self efficacy using TSK-11 and GSE were done by non – parametric

test – spearman’s correlation. Level of significance was kept at 5% ($p < 0.05$).

RESULT

The present study was conducted Performance based disability associated with kinesiophobia and self efficacy among older adults in Ahmadabad city. Total 142 participants, completed the study. The mean age of participants was 67.82 ± 6.19 years. 52% female and 48% male participated in present study. 14% older adults were history of fall in last one year (Graph 3). Table 1 and Graph 3,4,5 shows association between is performance based disability, kinesiophobia and self efficacy among older adults.

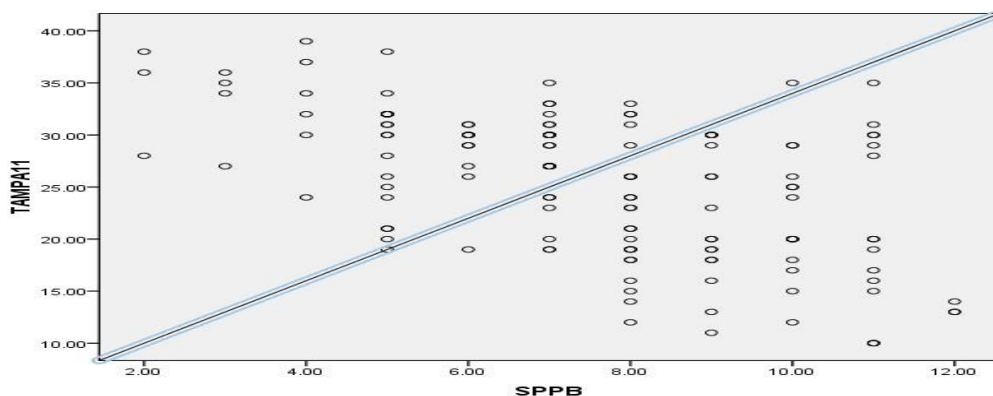


Graph 1: History of fall in last one year among older adults

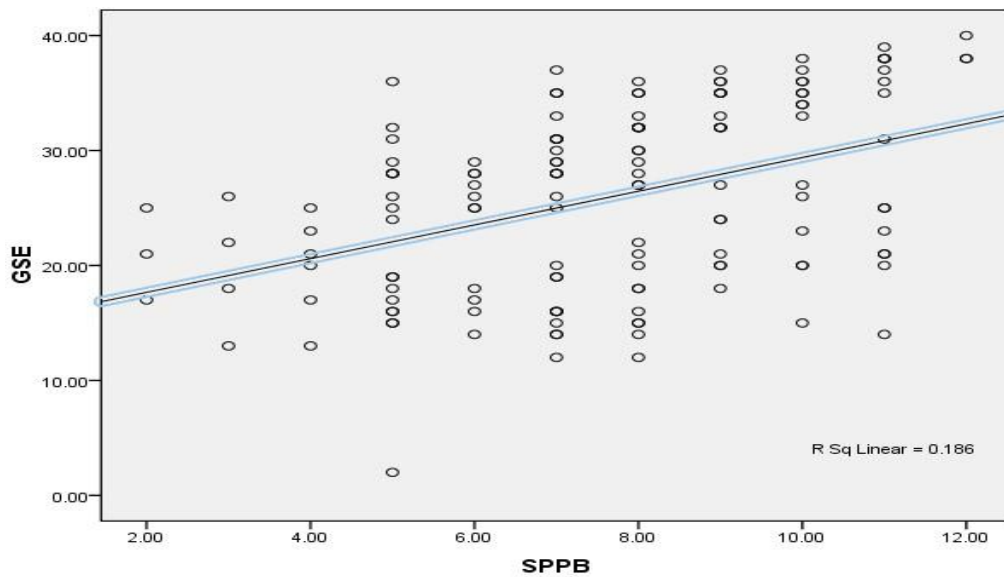
ASSOCIATION BETWEEN IS PERFORMANCE BASED DISABILITY, KINESIOPHOBIA AND SELF EFFICACY

Outcome measures	Spearman correlation coefficient (r - value)	p – value
SPPB and TAMPA11	-0.537	<0.001
SPPB and TAMPA11	0.436	<0.001
GSE and TAMPA 11	-0.420	<0.001

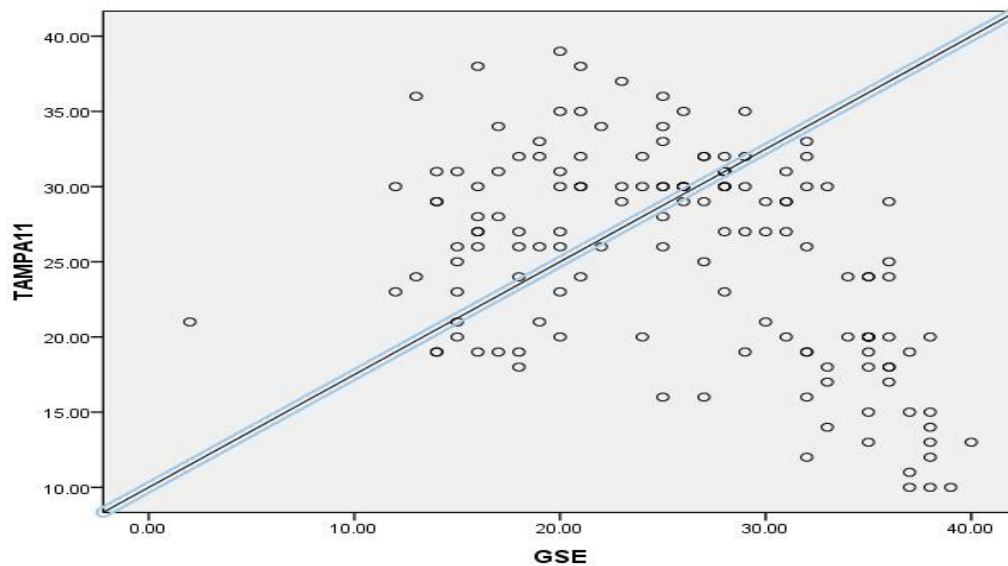
Table 1: Association between SPPB test, GSE and TAMPA 11



Graph 2: Association between SPPB and TAMPA 11



Graph 3: Association between SPPB and GSE



Graph 4: Association between GSE and TAMPA 11

DISCUSSION

The present study was to find association performance-based disability and kinesiophobia using SPPB and TSK-11, performance-based disability and self-efficacy using SPPB and GSE and kinesiophobia and self-efficacy using TSK-11 and GSE among older adults.

In present study moderate negative association between performance-based disability and kinesiophobia in older adults ($r=-0.537$, $p<.001$). Greater fear of movement predicted poorer performance on performance-based measures of physical function as evidenced by fewer chair-stands

in 30s, slower chair-stand speed, slower gait speed, and overall lower total scores on the SPPB.¹⁰ These results are similar to a study conducted by Tkachuck and colleagues who showed that kinesiophobia uniquely predicted sit-to-stand and stair climbing performance in a heterogeneous sample of patients with chronic pain.¹⁶ The data on the effect of kinesiophobia on other performance-based measures has been mixed. Studies have shown that kinesiophobia is related to the functional capacity of the trunk flexors and extensors in low back pain.¹⁷ The findings from the present study reveal that high extent of

kinesiophobia contributed greatly to the increasing level of disability.

In present study moderate positive association between performance-based disability and self-efficacy in older adults ($r=0.436$, $p<.001$). Self-efficacy had a significant predictability to the extent of disability of patients with low back pain patients.¹⁸ This might interfere with the patient functional abilities which could undermine home or family responsibilities, recreation, social activities, occupation, sexual behavior, self-care and life-support activities. John JN et al found that reduced self-efficacy and increased fear avoidance are related to higher disability, a clinician may be interested in knowing the main characteristics potentially influencing pain self-efficacy.¹⁹

In present study moderate negative association between kinesiophobia and self-efficacy in older adults ($r= -0.420$, $p<.001$). Similar findings done by Odole AC et al.¹⁸ Pain severity, self-efficacy, and disability should be frequently assessed and included when planning rehabilitation programs, to reduce the detrimental impact on kinesiophobia. PANG YH et al found that inversely correlated with kinesiophobia and self-efficacy in female elderly patients.²⁰

Limitation of present study: Medical condition was not taken. Multivariate analysis was not done between age, gender, history of fall, performance-based disability, kinesiophobia and self-efficacy among older adults.

CONCLUSION

The findings indicate that negative association between performances-based disability and kinesiophobia, between kinesiophobia and self-efficacy in older adults. Positive association between performances-based disability and self-efficacy in older adults. It is vital to examine factors associated with these differences and to develop interventions covering the characteristics of self-reported disability, performance-based disability, and ADL support systems. By applying a more

comprehensive approach to study disability and aging, environment, and social integration, it may be possible to identify additional moderating and mediating factors. This will provide clearer guidance for how to intervene to improve social integration in later life.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCE

1. Anushree KN, Mishra PS. Prevalence of multi-morbidities among older adults in India: evidence from national sample survey organization, 2017-18. *Clinical Epidemiology and Global Health*. 2022 May 1; 15:101025.
2. Bonner M. Disability: Definitions, value and identity. CRC Press; 2023 May 5.
3. Pengpid S, Peltzer K. Prevalence and correlates of functional disability among community-dwelling older adults in india: results of a national survey in 2017-2019. *Elderly Health Journal*. 2021 Jun 10;7(1):18-25.
4. Patel R, Srivastava S, Kumar P, Chauhan S, Govindu MD, Jean Simon D. Socio-economic inequality in functional disability and impairments with focus on instrumental activity of daily living: a study on older adults in India. *BMC public health*. 2021 Dec; 21:1-3.
5. Suzuki R, McCarthy MJ. Self-reported and performance-based disability measures have a different impact on the degree of social integration among older Americans. *Journal Of Gerontology And Geriatrics*. 2023 Oct 30; 71:218-27.
6. Nielsen LM, Kirkegaard H, Østergaard LG, Bovbjerg K, Breinholt K, Maribo T. Comparison of self-reported and performance-based measures of functional ability in elderly patients in an emergency department: implications for selection of clinical outcome measures. *BMC geriatrics*. 2016 Dec;16(1):1-7.
7. Raizah A, Alhefzi A, Alshubruqi AA, Hoban MA, Ahmad I, Ahmad F. Perceived

- kinesiophobia and its association with return to sports activity following anterior cruciate ligament reconstruction surgery: a cross-sectional study. *International Journal of Environmental Research and Public Health*. 2022 Aug 30;19(17):10776.
8. McNeely LR, Dudley RI. Kinesiophobia Prevalence Among College Athletes. In *International Journal of Exercise Science: Conference Proceedings 2021* (Vol. 14, No. 1, p. 39).
 9. Koho P, Borodulin K, Kautiainen H, Urho K, Pohjolainen T, Hurri H. Finnish version of the Tampa Scale of Kinesiophobia: Reference values in the Finnish general population and associations with leisure-time physical activity. *Journal of rehabilitation medicine*. 2015;47(3):249-55.
 10. Naugle KM, Blythe C, Naugle KE, Keith N, Riley ZA. Kinesiophobia predicts physical function and physical activity levels in chronic pain-free older adults. *Frontiers in Pain Research*. 2022 Apr 27; 3:874205.
 11. Scult M, Haime V, Jacquart J, Takahashi J, Moscowitz B, Webster A, Denninger JW, Mehta DH. A healthy aging program for older adults: effects on self-efficacy and morale. *Advances in mind-body medicine*. 2015;29(1):26.
 12. Pavasini R, Guralnik J, Brown JC, di Bari M, Cesari M, Landi F, Vaes B, Legrand D, Verghese J, Wang C, Stenholm S. Short physical performance battery and all-cause mortality: systematic review and meta-analysis. *BMC medicine*. 2016 Dec; 14:1-9.
 13. George SZ, Lentz TA, Zeppieri G, Lee D, Chmielewski TL. Analysis of shortened versions of the tampa scale for kinesiophobia and pain catastrophizing scale for patients after anterior cruciate ligament reconstruction. *The Clinical journal of pain*. 2012 Jan 1;28(1):73-80.
 14. Koval NP, Aravitska MH. Dynamics of kinesiophobia and physical functioning parameters in the elderly adults with sarcopenic obesity under the influence of the physical therapy program. *Clinical and Preventive Medicine*. 2023 Sep 30(4):88-95.
 15. Whitehall L, Rush R, Górska S, Forsyth K. The general self-efficacy of older adults receiving care: A systematic review and meta-analysis. *The gerontologist*. 2021 Sep 1;61(6):e302-17.
 16. Tkachuk GA, Harris CA. Psychometric properties of the Tampa Scale for Kinesiophobia-11 (TSK-11). *The Journal of Pain*. 2012 Oct 1;13(10):970-7.
 17. Crombez G, Vlaeyen JW, Heuts PH, Lysens R. Pain-related fear is more disabling than pain itself: evidence on the role of pain-related fear in chronic back pain disability. *Pain*. 1999 Mar 1;80(1-2):329-39.
 18. Odole AC, Ogunlana MO, Dada O, Williams OO. Kinesiophobia, self-efficacy and pain-related disability in patients with non-specific low back pain. *African Journal of Physiotherapy and Rehabilitation Sciences*. 2016;8(1-2):38-43.
 19. John JN, Ugwu EC, Okezie OC, Ekechukwu EN, Mgbejedo UG, John DO, Ezeukwu AO. Kinesiophobia and associated factors among patients with chronic non-specific low back pain. *Disability and Rehabilitation*. 2023 Jul 31;45(16):2651-9.
 20. PANG YH, ZHANG HJ, LIU T. Mediating effect of self-efficacy on relationship between kinesiophobia and physical activity among female elderly osteoporosis patients. *中国公共卫生*. 2020 Apr 30;36(4):628-31.

How to cite this article: Neha P Patel, Suhasi Suvagiya, Kanika Singh, Anuradha Sharma, Pooja Mandal. Performance based disability associated with kinesiophobia and self-efficacy among older adults. *Int J Health Sci Res*. 2024; 14(5):293-299. DOI: <https://doi.org/10.52403/ijhsr.20240538>
