

CASE REPORT

Medicine Science 2025;14(1):297-9

Investigation of the effect of exercise applied by video conferencing method on physical fitness in older adult with hypertension

 Ozgun Elmas

Siirt University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Siirt, Türkiye

Received 12 December 2024; Accepted 27 January 2025

Available online 01 March 2025 with doi: 10.5455/medscience.2024.12.164

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial-NonDerivatives 4.0 International License.



Abstract

The aim of the study was to examine the effect of exercise applied via video conferencing (VC) method on physical fitness of an older adult with hypertension. The study was conducted with a 68-year-old male older adult case. The patient was exercised using the WhatsApp program using the VC method, 3 days a week, 45 minutes each session, for 12 weeks. Before and after the 12-week exercise program, face-to-face physical fitness evaluations consisting of time-up and go, 6 minute walking test, one-legged standing test and hand grip strength tests were performed on the case. According to the assessment results, improvement was recorded in all physical fitness results of the case with the 12 weeks exercise intervention applied with the VC method. For older adult with hypertension, 12 weeks of exercise using the VC method has been found to be beneficial for improving physical fitness levels. Exercise applied with the VC method may be an alternative to face-to-face exercise practices for older adults with hypertension who cannot access health services.

Keywords: Hypertension, older adults, physical fitness, video conferencing, telerehabilitation

Introduction

Hypertension is a chronic cardiovascular disease that occurs due to impaired blood flow due to increased blood pressure and has negative effects on physical fitness parameters including physical performance, sensation, motor, muscle strength, balance and fatigue [1]. It has been stated that exercise is important and necessary to control the symptoms of hypertension and to ensure physical fitness [2]. Nascimento and colleagues concluded that 14 weeks of exercise increased muscle strength in older adults with hypertension [3]. Ruangthai et al. found that 12 weeks of exercise improved the physical fitness parameters of older adults with hypertension [4]. With the increasing use of technology for older adults who cannot leave home and live far away from health services, exercises can be performed by video conferencing using tools such as tablets, phones and applications such as WhatsApp [5]. When the literature is examined, although there are studies in which exercise intervention with video conferencing method was performed with healthy and chronically ill older adults

[6-8], there is no study examining the effect of exercise on physical fitness in older adults with hypertension with video conferencing method. Based on this, the aim of our study is to examine the effect of 12-week exercise on physical fitness in an older adult with hypertension case via video conferencing.

Case Presentation

The study included a 68-year-old male older adult with a diagnosis of hypertension for 10 years. In determining the hypertension diagnosis of the case, the person's own statement was taken into account based on the report he had previously received from the hospital. Written informed consent was obtained from the participant before participating in the study, and the research was conducted in accordance with the Declaration of Helsinki. This research was conducted between June and September 2024. The participants were required to have no other chronic disease other than hypertension, to have a smartphone or tablet or to have internet access. The case was made to exercise 3 days a week for 12 weeks (45 minutes each

CITATION

Elmas O. Investigation of the effect of exercise applied by video conferencing method on physical fitness in older adult with hypertension. Med Science. 2025;14(1):297-9.



Corresponding Author: Ozgun Elmas, Siirt University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Siirt, Türkiye
Email: ozgunelmas@gmail.com

session). Initial and final assessment was performed face-to-face. Time up and go test (TUG), 6-minute (min) walking test, one-leg stand test and hand grip strength assessments were performed before and after the intervention. All measurements were performed 2 times and the best result was recorded. Exercise intervention and evaluations for the case included in the study were performed by a physiotherapist with 10 years of experience in geriatric rehabilitation.

TUG: The person was asked to sit on a chair without armrests, get up from the chair, walk 3 meters and then sit back in the chair. The time to perform this test was recorded in seconds [9].

One-leg standing test (sec): The person was asked to bend one knee and stand on the dominant foot without support on one leg above the other knee, and the measurement was recorded in seconds [9].

6-minute walk test (m): The participant was asked to walk a distance of 30 meters for 6 minutes without stopping. The distance the participant walked for 6 minutes was recorded in meters (m) [10].

Hand grip strength (kg): Hand grip strength was assessed with a Jamar hand dynamometer using the dominant hand without support in a sitting and elbow-flexed position [11].

Exercise Program

The patient was given 15 exercises including lower extremity, trunk and upper extremity movements via video conferencing using the WhatsApp program, 3 days a week for 12 weeks, 45 minutes per session. The exercises were performed in 2 sets of 10 repetitions. 1-minute rest breaks were given between sets. The person was given a 5-minute warm-up exercise before the exercise and a 5-minute cool-down exercise after the exercise [12].

As a result of the 12-week exercise program in which the case was video-conferencing, there was an improvement in all results compared to the initial evaluations. The initial and final evaluation results are shown in Table 1.

Table 1. Results of the initial pre-exercise assessment and the 12th week post-exercise assessment

	Initial assesment	12th week assessment
TUG (sec)	12.3	9.5
6 minute walk test (m)	390	450
One-leg standing test (sec)	18	27
Hand grip strength (kg)	25	29

sec: second, m: meter, kg: kilogram, TUG: time up and go test

Discussion

Patel et al. found an improvement in TUG and unipedal standing test results in older adults with knee osteoarthritis living in rural areas with 12 weeks of exercise applied by video conferencing method [13]. Patel et al. found an improvement

in TUG and unipedal standing test results in older adults with knee osteoarthritis living in rural areas with 12 weeks of exercise applied by video conferencing method [14]. Durutürk et al. concluded that a 6-week calisthenic exercise program applied by video conferencing method improved 6-min walk, TUG and lower and upper extremity muscle strength values in a study conducted with older adults with Type 2 DM [15]. In another study, it was concluded that 6-week quality austenic exercise applied with video conferencing method in healthy older adults improved the results of chair sit-up test, TUG, lower and upper extremity muscle strength, 6-minute walking test and one-leg stand test [12]. In our study, it was observed that the results of TUG, 6-min walk, balance and hand grip strength of older adult with hypertension with 12-week upper extremity, trunk and lower extremity exercises applied by video conferencing method improved compared to the pre-intervention period. It is thought that exercise applied with video conferencing method can improve the physical fitness levels of older adults with hypertension. However, studies comparing the results of exercise programs applied face-to-face and with different telerehabilitation methods should be planned to better understand the effects of exercise applied with this method in older adults with hypertension.

The fact that our study consisted of a single case creates a limitation in terms of interpreting the generalizability of the results. In the future, these effects can be better understood and interpreted with randomized controlled studies with larger sample sizes.

Conclusion

According to the results of the study, it was observed that the 12-week exercise program applied to the older adult with hypertension via video conferencing method improved the physical fitness level of the case. It is thought that the exercise applied via video conferencing method can be applied as an alternative to face-to-face exercise programs. It can be predicted that all older adults with hypertension can benefit from exercise applications regardless of where they live with the exercise programs applied via telerehabilitation methods.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Patient Informed Consent

Written informed consent was obtained from the older adult who participated in the study and the study was conducted in accordance with the Declaration of Helsinki.

References

1. Cemali M, Sarı M, Öztürk D, et al. Examination of the relationship between sensory processing skills, kinesiophobia and fear of falling in older adults with hypertension and normotension. *Exp Aging Res.* 2024;1-13.

2. Lopes S, Afreixo V, Teixeira M, et al. Exercise training reduces arterial stiffness in adults with hypertension: a systematic review and meta-analysis. *J Hypertens.* 2021;39:214-22.

3. Nascimento DdC, Tibana RA, Benik FM, et al. Sustained effect of resistance training on blood pressure and hand grip strength following a detraining period in elderly hypertensive women: a pilot study. *Clin Interv Aging*. 2014;9:219-25.
4. Ruangthai R, Phoemsapthawee J, Makaje N, Phimpaphorn P. Comparative effects of water-and land-based combined exercise training in hypertensive older adults. *Arch Gerontol Geriatr*. 2020;90:104164.
5. Buabbas AJ, Albahrouh SE, Alrowayeh HN, Alshawaf H. Telerehabilitation during the COVID-19 pandemic: patients and physical therapists' experiences. *Med Princ Pract*. 2022;31:156-64.
6. da Silva WA, Martins VF, Haas AN, Gonçalves AK. Online exercise training program for Brazilian older adults: effects on physical fitness and health-related variables of a feasibility study in times of COVID-19. *Int J Environ Res Public Health*. 2022;19:14042.
7. Pleguezuelos E, Del Carmen A, Moreno E, et al. Telerehabilitation improves cardiorespiratory and muscular fitness and body composition in older people with post-COVID-19 syndrome. *J Cachexia Sarcopenia Muscle*. 2024;15:1785-96.
8. Sanchez-Ramirez DC, Pol M, Loewen H, Choukou MA. Effect of telemonitoring and telerehabilitation on physical activity, exercise capacity, health-related quality of life and healthcare use in patients with chronic lung diseases or COVID-19: a scoping review. *J Telemed Telecare*. 2024;30:1097-115.
9. Lin MR, Hwang HF, Hu MH, et al. Psychometric comparisons of the timed up and go, one-leg stand, functional reach, and Tinetti balance measures in community-dwelling older people. *J Am Geriatr Soc*. 2004;52:1343-8.
10. Enright PL. The six-minute walk test. *Respir Care*. 2003;48:783-5.
11. van der Ploeg R, Fidler V, Oosterhuis H. Hand-held myometry: reference values. *J Neurol Neurosurg Psychiatry*. 1991;54:244-7.
12. Elmas Ö, Cemali M, Livanelioğlu A. Comparison of the effects of video conference and video-based home exercise on physical performance and body composition in older adult individuals. *Medicine (Baltimore)*. 2024;103:e40329.
13. Velayati F, Ayatollahi H, Hemmat M. A systematic review of the effectiveness of telerehabilitation interventions for therapeutic purposes in the elderly. *Methods Inf Med*. 2020;59:104-9.
14. Patel KV, Hoffman EV, Phelan EA, Gell NM. Remotely delivered exercise to rural older adults with knee osteoarthritis: a pilot study. *ACR Open Rheumatol*. 2022;4:735-44.
15. Durutürk N, Özköslü MA. Effect of tele-rehabilitation on glucose control, exercise capacity, physical fitness, muscle strength and psychosocial status in patients with type 2 diabetes: a double blind randomized controlled trial. *Prim Care Diabetes*. 2019;13:542-8.