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Data Article

A dataset of the effects of therapeutic exercise programs on physical function in patients undergoing hemodialysis

Borja Perez-Dominguez[a], Aida Lopez-Brull[b], Sara Perpiña-Martinez[c], Jose Casaña[a], Alvaro Manuel Rodriguez-Rodriguez[d,*], Maria Blanco-Diaz[d]

[a] *Exercise Intervention for Health Research Group (EXINH-RG), Department of Physiotherapy, University of Valencia. Valencia, Spain*
[b] *Department of Physiotherapy, University of Valencia. Valencia, Spain*
[c] *Department of Physiotherapy, Pontifical University of Salamanca. Madrid, Spain*
[d] *Physiotherapy and Translational Research Group (FINTRA-RG). Institute of Health Research of the Principality of Asturias (ISPA). Faculty of Medicine and Health Sciences, University of Oviedo, 33006, Oviedo, Asturias, Spain*

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ABSTRACT

The dataset presented in this article belongs to a randomized controlled trial, conducted between November 2015 and May 2016, where therapeutic exercise interventions were implemented in patients with End-Stage Renal Diseases undergoing hemodialysis. The intervention was carried out at the Hospital de Manises, in Manises (Spain). Participants performed a 16-week exercise program either during dialysis (intradialytic) or at home, combining resistance and aerobic training. Tests were assessed prior to the dialysis session, and include several dimensions of the patient's functional status, such as functional capacity, physical performance, balance, lower limb strength and endurance, and handgrip strength. Data was collected prior to and after the implementation of an intervention. The dataset contains the raw data obtained in this data collection. The analysis consisted in the improvement of these outcomes when a therapeutic exercise intervention is implemented. Further analysis could potentially

* Corresponding author.
E-mail addresses: f.borja.perez@uv.es (B. Perez-Dominguez), lobrull@alumni.uv.es (A. Lopez-Brull), sperpinama@upsa.es (S. Perpiña-Martinez), jose.casana@uv.es (J. Casaña), alvaro.manuel.rodriguez@gmail.com (A.M. Rodriguez-Rodriguez), blancomaria@uniovi.es (M. Blanco-Diaz).

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include the stratification of the sample in several subgroups according to demographic characteristics of the participants, according to levels of compliance to the intervention and according to even more specific changes within the tests performed. For instance, the improvement of the overall assessment of the Short Performance Physical Battery Test might differ from the improvement of any of the components that build this "battery" of tests, such as gait speed, balance, or the Sit-to stand-to sit 5 tests.

Specifications Table

Subject	Nephrology and Physical Therapy
Specific subject area	Therapeutic exercise interventions in patients with end-stage renal disease undergoing hemodialysis.
Type of data	Table
How the data were acquired	Data was collected on paper and subsequently transferred into an Excel spreadsheet. Data was acquired through the assessment of several tests. Additional material used to perform these tests was a chronometer and a chair, used in the 6-Minute Walk Test, Timed Up and Go, One-Leg Standing Test, One-Leg Heel-Rise, and the Sit-to-stand to sit tests, and a handheld dynamometer used in the handgrip strength testing. Testing was performed prior to the dialysis session to avoid possible complications.
Data format	Raw
Description of data collection	Participants were recruited at the hemodialysis unit of Hospital de Manises, in Manises (Spain) after being assessed by the Head Nephrologist. Every participant was screened for eligibility and was granted permission to participate. Participants were included if they were under hemodialysis treatment for at least 3 months and had a medical stable condition. Participants were excluded if they suffered any impairment that might've limited them to perform the testing.
Data source location	Institution: Hospital de Manises City/Town/Region: Manises/Valencia Country: Spain
Data accessibility	Repository name: Mendeley Data Data identification number: 10.17632/w6bwg9zgtg.1 Direct URL to data: https://data.mendeley.com/datasets/w6bwg9zgtg
Related research article	Perez-Dominguez B, Casaña-Granell J, Garcia-Maset R, Garcia-Testal A, Melendez-Oliva E, Segura-Orti E. Effects of exercise programs on physical function and activity levels in patients undergoing hemodialysis: a randomized controlled trial. Eur J Phys Rehabil Med 2021;57:994-1001. DOI:10.23736/S1973-9087.21.06694-6

Value of the Data

- These data are valuable because they provide information of the effects of therapeutic exercise interventions in patients undergoing hemodialysis, showing the change over time in physical capacity, functional capacity, balance, lower limb strength and endurance, and handgrip strength.
- The data could be of great use for researchers implementing exercise interventions in patients with End-Stage Renal Disease. This raw data could also be used both as a comparison for future interventions and as part of a systematic review analyzing the overall effects of exercise in this population.

- These data provide information regarding many components that could be considered to define physical functioning, such as strength, endurance, and balance. This displays a more complete analysis of the overall benefits of exercise interventions in this population.
- These data could be reused to further analyze and better understand the changes obtained from this intervention.

1. Objective

This dataset [1] belongs to a randomized controlled trial [2] aimed at assessing the effects of several therapeutic exercise interventions on patients undergoing hemodialysis. The objective of this dataset was to assess the improvement in several outcomes related to the patient's overall well-being in patients with End-Stage Renal Disease undergoing hemodialysis after the implementation of a therapeutic exercise intervention, to observe the effectiveness of this intervention. Raw data show values prior to and after the completion of the intervention, and these data can be used to conduct further analyses or to replicate the trial and compare the obtained data with this one.

2. Data Description

The dataset was collected between November 2015 and May 2016 and it includes a document with two Excel spreadsheets that present raw data involving the results for the assessments prior to and after the therapeutic exercise intervention. The data included results from the following tests: Short Performance Physical Battery Test [3], that is a combination of physical tests that assess balance, gait speed and lower limb functional strength that scored over a total of 12 points, Timed-Up and Go [4,5], that is a mobility test, Sit-to stand-to sit 10 and 60 [6,7], that assess resistance and strength of the lower limb muscles, One-Leg Heel-Rise [6], that assesses the strength and endurance of the triceps surae, and handgrip strength [6], assessed through dynamometry.

The dataset first includes the balance assessment included in the Short Performance Physical Battery Test [3], and the balance assessment of the One-Leg Standing Test. Patients who were unable to perform the test the day they were assessed were registered as extreme values (999,00) that were considered outliers in the analysis.

Following that, a second component of the Short Performance Physical Battery Test [3], gait speed, was assessed. Patients were asked to perform the test twice, and the time it took (in seconds) for the patient to walk the testing distance was registered. To complete the assessment of the Short Performance Physical Battery Test [3], the Sit-to stand-to sit 5 test was performed, registering the time (in seconds) the patient required to complete the test.

After that, the Timed-Up and Go [4,5] test was performed, registering the time (in seconds) the patient required to complete the test three consecutive times. After that participants performed the Sit-to stand-to sit tests [6,7]. Firstly, participants performed the STS-10 test and the time (in seconds) required to complete it was registered. Following that, participants performed the STS-60 and the number of repetitions they were able to complete within 60 seconds were registered. For both tests, the rate of perceived exertion was also registered using Borg's scale of perceived exertion.

Testing continued by assessing the strength and endurance of the triceps surae through the One-Leg Heel-Rise. This test was performed in both lower limbs, and the number of repetitions the participant was able to complete, and the rate of perceived exertion were registered. Then, handgrip strength was assessed for both upper limbs using dynamometry, registering (in Newtons) the exerted force of three consecutive tests for each upper limb, and registering the maximum peak force exerted during the three trials. To conclude with the physical performance testing, functional capacity was assessed through the 6-Minute Walk Test [8,9]. Heart rate, and

systolic and diastolic blood pressures were registered before and after the test, as well as the perceived exertion level and the number of meters the participant was able to walk.

3. Experimental Design, Materials and Methods

The dataset belongs to a two-parallel group trial where participants were randomly allocated using simple randomization in either a group that performed a therapeutic exercise intervention during dialysis or a group that performed a therapeutic exercise intervention at home. Participants performed a therapeutic exercise program, and several physical tests were conducted prior to and after the intervention to assess change over time.

Researchers in charge of the assessments and data analysis were blinded to which group the participant was allocated, to avoid bias. The same researcher in charge of the assessment prior to the intervention, performed the assessment after the intervention to the same participant. The researchers in charge of the assessments were previously trained on how to conduct the tests, and protocols on how to conduct the tests were developed to ensure standardization throughout the whole assessment process.

The assessments were conducted in an independent room that was adjacent to the Hemodialysis Unit of the Hospital. Every test was conducted in this room except the 6-Minute Walk Test, that was conducted in an adjacent corridor to the Hemodialysis Unit that was previously prepared to conduct the assessment.

Ethics Statements

The relevant informed consent was obtained from the participants, the research was carried out in accordance with the Declaration of Helsinki and was approved by the Ethical Committee of Hospital de Manises (registration number 2015/0193). The protocol for the study was registered in ClinicalTrials.com with the reference NCT04051515).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Effects of therapeutic exercise on physical performance and activity levels in patients undergoing hemodialysis (Original data) (Mendeley Data).

CRediT Author Statement

Borja Perez-Dominguez: Conceptualization, Investigation, Resources, Data curation, Writing – original draft; **Aida Lopez-Brull:** Investigation, Data curation, Writing – original draft; **Sara Perpiña-Martinez:** Investigation, Data curation, Writing – original draft; **Jose Casaña:** Methodology, Resources, Supervision; **Alvaro Manuel Rodriguez-Rodriguez:** Conceptualization, Methodology, Supervision; **Maria Blanco-Diaz:** Conceptualization, Methodology, Supervision.

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