

Functional capacity of haemodialysis patients assessed for the first time

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Credit: Asociación RUVID

Over 2 million people receive haemodialysis treatment worldwide. Their physical condition is affected by hours of forced physical inactivity while they receive the treatment several times a week, exacerbated by muscular atrophy derived from chronic kidney disease. This affects activities such as walking or standing up from a chair. Several studies

have shown the efficacy of exercise during haemodialysis sessions. Now, a team headed by Professor Eva Segura has evaluated three physical condition tests that are typically used to study exercise during haemodialysis to determine their suitability for these patients.

The results have been published in *PLOS One*. This study is part of the reliability research conducted on physical condition tests for [haemodialysis](#) patients published in *Physical Therapy* in 2011.

This new research involved 71 patients of the haemodialysis units of the Hospital de Terrassa and the Hospital Universitario Doctor Peset in Valencia, who have been receiving haemodialysis sessions for at least three months. Their [functional capacity](#) and mobility levels have been assessed with three tests, the repeatability of which had never yet been tested in haemodialysis patients.

The first of the tests, known as the Short Physical Performance Battery, evaluates the functionality of the lower limbs with tests that measure balance, normal gait speed and the ability to rise from a chair. The One-Legged Stance Test measures the ability to remain standing on one leg, and the Timed Up and Go [test](#) evaluates the time needed to stand up, walk three meters, walk back and sit down again.

Physical condition and dialysis sessions

Lucía Ortega, author of the thesis, says, "No prior research had determined the reliability of these tests in patients subjected to haemodialysis to evaluate their functional mobility and the risks of low physical condition, the probability of falling. Nor had the minimum change values been established, which should alert doctors on functionality issues for this type of patient. Doctors could then apply measures to contribute to the improvement of their physical condition as soon as possible. We must not forget that these are patients who spend

several hours lying down, both during the haemodialysis sessions, and during the recovery period afterwards, and several days a week, which affects their [physical condition](#) and can have consequences on their health."

The results of the research show the high reliability of these three functional mobility tests for patients undergoing haemodialysis sessions for a [chronic kidney disease](#) in the terminal stage, and establish values for detecting relevant variations in the clinical field.

Professor Eva Segura, who led the research, says, "These tests can help determine when it is necessary to intervene to preserve these people's physical and functional abilities as they are subjected to long treatment sessions. They are also useful for assessing the improvements in mobility that are derived from carrying out exercise during the dialysis sessions. This is a line of work that we have conducted at the CEU UCH for more than 10 years, and we currently apply virtual reality techniques with the help of video games to favour adherence to physical exercise. It is essential to have reliable, low-cost tests, that are widely available to any haemodialysis unit that has an interest in registering the evolution of their patient's functional capacity."

More information: Lucía Ortega-Pérez de Villar et al. Test-retest reliability and minimal detectable change scores for the short physical performance battery, one-legged standing test and timed up and go test in patients undergoing hemodialysis, *PLOS ONE* (2018). DOI: 10.1371/journal.pone.0201035

Eva Segura-Ortí et al. Test-Retest Reliability and Minimal Detectable Change Scores for Sit-to-Stand-to-Sit Tests, the Six-Minute Walk Test, the One-Leg Heel-Rise Test, and Handgrip Strength in People Undergoing Hemodialysis, *Physical Therapy* (2011). DOI: 10.2522/ptj.20100141

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