# GAIT SPEED AS PREDICTOR OF FRAILTY

**Spanish full text**

**Introduction:** Frailty is an observable and quantifiable clinical syndrome that can be defined as a progressive age-related decline in physiological systems that results in decreased reserves of intrinsic capacity, which confers extreme vulnerability to stressors and increases the risk of adverse health outcomes.

In the coming decades, the proportion of frail older individuals is expected to increase considerably. Their management entails a high cost, which will have a significant impact on the health system. The promotion of health actions aimed at preventing and reversing the state of frailty could improve patient management and reduce the associated health costs. The detection of this syndrome is a key aspect in this regard, with gait speed having been described to as a good predictor of frailty, although the information on its sensitivity and specificity is disparate, as well as the parameters used to measure it.

**Aim.** To conduct a systematic review of the literature in order to determine the diagnostic validity of the gait test as an indicator of frailty, and based on this evidence to propose a framework for establishing a protocol for its implementation.

**Method.** A search of the biomedical literature was conducted in May 2017 without a time limit, which was updated in January 2018, in the following databases: HTA (Health Technology Assessment), DARE (Database of Abstracts of Reviews of Effectiveness), NHS EED (Economic Evaluation Database of the National Health Service) and the Cochrane Plus library, as well as in specific databases of clinical practice guidelines (National guideline clearinghouse, SIGN, CPG: Infobase: Clinical Practice Guidelines) and in general biomedical information databases (Medline, Embase and the ISI database). The studies that were used were selected according to previously established inclusion and exclusion criteria.

**Results and discussion.** A total of 1464 publications were retrieved, from which 66 articles were selected for full reading, including 10 studies corresponding to six systematic reviews, two observational studies and two expert consensus papers. In general, the quality of the studies was limited, and numerous scales or measurements were located to identify frailty, without any of them having achieved universal use and/or a homogeneous form of application, or an interpretation that could be recommended for use by health professionals. These included Fried's phenotype for frailty, the SHARE (Survey of Health, Ageing, and Retirement in Europe), the Frailty Index, el SPPB (Short Physical Performance Battery), the PRISMA-7, the clinical frailty scale (Frail), Gérontopôle tool, etc., which referred to obtaining good results. In our health context, the consensus document of the Ministry of Health, Social Services and Equality (MSSSI) on the prevention of frailty recommends screening, but does not propose a single instrument, and points to different options for detection, indicating that the SPPB is preferred, and gait speed or the Timed Up and Go test as other possible options.

Gait speed stands out in the literature as a common denominator among the different tools for measuring frailty, and is increasingly used as an indicator of the occurrence of adverse health

events in older people because of its simplicity and easy applicability. However, the data on the sensitivity and specificity of this test depended among other parameters on the definition of frailty, the type of scale or criterion used in its measurement, the rhythm at which the gait is carried out, and the cut-off point used (m/s), etc. Taking into account these limitations, the sensitivity obtained was high, with values between 78-99%, but with a low specificity that ranged between 64-84%, depending on the cut-off point used.

The review of the literature did not bring to light a standard protocol for measuring gait speed, presenting a high variability with very heterogeneous parameters in relation to the distance to be travelled, the cut-off point, the way to measure it (using chronometers, or biomechanical body sensor systems), the gait rhythm, with or without acceleration, number of repetitions, etc.

## Conclusions

- The adequacy of the assessment of the elderly and the detection of frailty syndrome is a key factor for positively influencing healthy ageing and assessing risk in aggressive/invasive interventions, as well as for reducing the inadequate use of health resources.
- In general, the evidence recommends increasing the detection of frailty in the healthcare setting in order to make a guided clinical decision and evaluate the effectiveness of its treatment. Gait speed is a common denominator among the different tools for measuring frailty, although the level of quality of the studies that were retrieved was not high.
- These studies suggest that gait speed measurement can be used as a tool for detecting frailty in elderly persons from the general population due to its high sensitivity, simplicity and viability; the fact that it does not require sophisticated devices or equipment and is not limited to a particular specialty; and that it is at least as sensitive as other more complex tools currently used in healthcare practice.
- The simplicity of performing the gait speed test with results similar to more complex tests such as SPPB, makes it a viable option that could replace the latter as a first line screening test.
- The review of the literature has not recovered any standard protocol to measure gait speed, and the parameters used have a high variability with respect to the distance and how to measure it.
- In the absence of a standard protocol for measuring gait speed, and in case of using it as a tool for frailty detection, it would be advisable to establish a framework of consensus with the aim of establishing a consensual protocol for its possible inclusion in the NHS.