

Fall Risk Assessment in Elderly with and without history of falls. Relationship between disorders of balance, fear of falling and gait changes. A comparative study

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INTRODUCTION

Fall can be defined as an unexpected and unintended occurrence that leads an individual to fall to the ground from a higher level or from the same level.

Fear of falling was first reported by Bhala, O'Donnell and Thoppil as "Ptophobia" ie phobia activities performed in the standing position. Fear of falling should be considered a serious and common problem in the elderly, but can not directly cause a fall.

The occurrence of falls reduces the variability of gait patterns, improving control of body position. Decrease speed and stride length helps stabilize the gait pattern.

OBJECTIVES

The aim of this study was to assess the changes that occur in balance, fear of falling and kinematic parameters such as stride length, velocity and time support in elderly with and without a history of falling. Main objective was also to verify whether a relationship exists or not between changes in evaluated gait parameters, balance and fear of falling.

SAMPLE

Non-probability, convenience, consisted of 30 elderly volunteers.

- WHF Group: 15 individuals with a history of falls;
- WOHF Group: 15 individuals without history of falls.

INCLUSION CRITERIA

WHF group:

- Having ≥ 65 years;
- Having suffered 1 or more falls during the last year;
- Sign the informed consent.

WOHF group:

- Having ≥ 65 years;
- Have not suffered falls over the past year;
- Sign the informed consent.

EXCLUSION CRITERIA

- Products need to perform gait support;
- Possess a condition affecting the lower limbs and/or the gait.

MATERIALS AND METHODS

- Kinovea®
- Berg Balance Scale
- Falls Efficacy Scale

The kinematic evaluation was performed in the dominant leg. The stride length, speed and duration of support were assessed using the program Kinovea and for assessment of balance and fear of falling were assessed using the Berg Balance Scale and the Falls Efficacy Scale.

RESULTS

	WOHF	WHF	p
Berg scale score	52,47±2,50	47,87±2,75	0,000
Falls Efficacy Scale score	97,67±4,17	94,80±7,78	0,281
Time of right support (s)	74,74±21,99	78,93±9,12	0,966
Time of left support (s)	84,00±12,18	80,33±9,69	0,645
Stride length (cm)	110,35±12,42	102,59±14,39	0,165
Speed (m/s)	0,87±0,16	0,96±0,51	0,756

Speed	Berg scale score		Stride length	
	r	p	r	p
	r=0,027	p=0,889	r=0,507	p=0,004
Berg scale score	Unipodal left support time	Unipodal right support time	Stride length (cm)	
	r	r	r	p
	r=-0,010	r=-0,136	r=0,393	p=0,032
	p=0,959	p=0,472		
Falls Efficacy Scale score	Speed		Berg scale score	
	r	p	r	p
	r=0,024	p=0,901	r=0,234	p=0,214

CONCLUSION

There were no significant differences in the parameters analyzed, except for scores on the Berg Balance Scale ($p=0.000$) between groups with and without history of falls. However, there is a decrease in the length of the stride and duration of left leg support and the increased length of right leg support, the speed and the fear of falling. The relationship between the parameters obtained, there is only statistically significant result between speed and stride length ($r=0.507$, $p=0.004$) and between the score of the Berg Balance Scale and the stride length ($r=0.393$, $p=0.032$). Although not having obtained statistically significant results we can conclude that the elderly with a history of falls have changes in speed and stride length that can be related to balance disorders and the aging process itself. However, it is concluded that the use of the Berg Balance Scale is more sensitive and effective in the detection of changes occurring in the individual after a fall, and subsequent evaluation of the risk of falling that performing a kinematic analysis.

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