

PREDICTING LEVELS OF PERFORMANCE ON THE TIMED “UP AND GO” TEST WITH STROKE SUBJECTS:

A DISCRIMINANT ANALYSIS

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INTRODUCTION

Hemiparetic subjects show poorer performance in the Timed “Up and Go” test (TUG) compared to healthy subjects [1,2,3]. However, these comparisons were never conducted in groups having different functional levels. In health conditions related to acquired brain injuries, such as stroke, several different inter-related variables may contribute to specific levels of functioning [4]. Therefore, it is important to know these different levels of functioning and the types of functional variables that would predict these levels. Thus, the aims of this study were to compare hemiparetic and healthy subjects with different levels of functioning, determined by the TUG (slow, intermediate and fast performances), and to point out functional variables, selected according to the International Classification of Functioning, Disability and Healthy (ICF) [4,5,6], that could be combined to predict levels of performance.

METHODS

Twenty-two community hemiparetic (54.73±15.42 years) and 22 healthy subjects (54.73±15.38 years) were matched by gender, age, and levels of physical activity. Each group was divided into three sub-groups: fast (seven subjects), intermediate (seven subjects), and slow TUG (eight subjects). All subjects performed the TUG and were assessed regarding their quadriceps strength (ICF category of body structure and function), maximal gait speed (ICF category of activity), and quality of life (ICF category of participation). ANOVAs were employed to investigate the main and interaction effects between groups and sub-groups. Discriminant function analyses were applied to predict group membership ($\alpha=0.05$)

RESULTS AND DISCUSSION

For both groups, the three sub-groups were significantly different regarding the TUG performance: Hemiparetic: $F=26.21; p<0.013$; and healthy: $F=32.73; p<0.006$. Significant interactions were found between the groups and sub-groups ($F=21.35; p<0.001$): Faster hemiplegics showed similar performances to all of the healthy sub-groups. Maximal gait speed and quality of life showed two statistically significant discriminant functions ($p=0.008$) and correctly classified 86.4% of the original grouped cases (Table 1).

CONCLUSIONS

Hemiparetic subjects with the fastest TUG showed similar performance to healthy subjects and group membership was correctly classified for the majority of the subjects for only the functional variables related to activity levels and participation.

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Table 1: Descriptive statistics (Means±SD) of the TUG Trials (s) for the Stroke and Control Sub-Groups

	Fast	Intermediate	Slow	ANOVA – Sub-groups	ANOVA – Groups*Sub-groups
Healthy	7.26±0.54	9.02±0.78	11.35±1.36	$F=32.73; p<0.006$	
Stroke	12.76±2.93	20.99±3.22	28.4±20.09	$F=26.21; p<0.013$	$F=21.35; p<0.001$

Table 2: Results of the Discriminant Analysis for Classifying Level of Functional Performance

Actual Group	Predicted Group Membership				TOTAL
	Healthy	Stroke-Fast	Stroke-Moderate	Stroke-Slow	
Healthy	21 (95.5%)	0	1 (4.5%)	0	22
Stroke-Fast	2 (28.6%)	3 (42.9%)	2 (28.6%)	0	7
Stroke-Moderate	0	1 (12.5%)	7 (87.5%)	0	7
Stroke-Slow	0	0	0	7 (100%)	7

Total of original grouped correctly classified: 38 (86.4%)