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Measurement of walking capacity after stroke in the Soweto community

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ABSTRACT

Aim: The aim of this study was to quantify the level of ability and in particular walking ability of a group of stroke survivors resident in Soweto, between 3-6 months post incident.

Design: Descriptive study in which comfortable walking speed over ten metres is correlated with the distance covered in six minutes and two minutes.

Subjects: Forty one subjects after stroke divided into two groups. Twenty six with a Barthel Index initial score of ≤60 and fifteen with a score >60.

Main Outcome Measures: Walking speed and two and six minute distance were compared between groups. In addition actual distance walked in six minutes was compared with the distance predicted by the ten-metre walking speed test and the distance predicted by normative reference equations. Heart rate was measured during the six minute walking test. Functional ability was compared using the Barthel Index within ten days post stroke and three to six months.

Results: Of those who survived 90% of subjects were able to walk independently after stroke. The mean walking speed of 0.55 m/s demonstrated a strong correlation with the distance walked in six minutes (R^2=0.816). However it underestimated the distance walked in six minutes by 7.4%. There were no significant differences between groups for the walking tests. The two minute walking test distance accurately predicted the results of the six minute walking test distance (R^2=0.97). The average distance walked in six minutes by subjects after stroke was 40% of the distance predicted for healthy adults. For the functional walk test 95.5% of subjects had a heart rate within normal recommended limits. The functional walk test together with a measure of exertion (heart rate) may indicate an individual's ability to sustain submaximal activity. Subjects had minimal rehabilitation training. Lower limb pain did not significantly lower the walking speed (p=0.18) or distance walked in six minutes (p=0.17). Mean Barthel Index score at three to six months was 85.78 indicative of independence with minimal assistance. Although the mortality rate for the Barthel Index group with a score less than 60 is 30.7%, the prognosis of survivors was not uniformly poor.

Conclusion: This study demonstrates that though a high percentage of subjects recovered independent walking after stroke in the Soweto community with minimal rehabilitation, their walking speed and distance walked are indicative of limited walking capacity. Walking speed and the two minute walking test could be used to predict functional walk test performance. Pain in the paretic lower limb though commonly reported did not appear to affect walking speed or distance walked. The use of the Barthel Index to predict activities and/or survival merits further investigation.