

## Abstract

**Title :** Validity and Reliability of the 6-minute Walk Test Over a Distance of 6 Metres in People With Multiple Sclerosis

**Introduction:** The 6-minute walk test (6MWT) is used to monitor patients with multiple sclerosis (MS) in physiotherapy (Baert et al., 2014). It represents their walking endurance and is strongly associated with their real activities of daily living (Baert et al., 2014; Dalgas et al., 2012). However, it's often impossible to use it at the physiotherapy practice and at patients' homes because the distance of 30 m is not always available to carry it out. It is even recommended to write "not applicable" to these situations by the Academy of Neurologic Physical Therapy (Moore et al., 2018).

**Objectives:** To validate a new version of the 6MWT over a distance of 6 m and to verify its test-retest and intra-rater reliability. To analyze the factors influencing a possible difference between the two tests, and specially the time to turn in a complete circle as on a shorter distance the half turns will be more frequent.

**Patients & method:** Validation study on 21 patients with MS, EDSS between 3 to 6.5, who performed twice the 6MWT on 6 m, once the 6MWT on 30 m and turned in a complete circle (360 Degree Turn Test) while timed.

**Results:** The 6MWT on 6 m is very highly correlated with the reference 6MWT on 30 m ( $r = 0.98$ ,  $p < 0.01$ , IC 0.98 to 0.94). Its test-retest and intra-rater reliability is excellent (ICC 0.996 and 0.979 respectively). However, a difference in performance between the 6MWT on 6 m and the reference 6MWT is present and 50% is explainable by the time taken to turn around (360 Degree Turn Test). Other factors that account for this difference include gender, time since relapse, age and weight of the person. The degree of agreement between the 6MWT on 6 m and the 6MWT shows a greater difference than the minimal important change and a proportional bias is noticeable. A transformation coefficient of 1.34 is therefore needed to use the 6MWT on 6 m interchangeably with the 6MWT.

**Conclusion:** The 6MWT on 6 m is valid and reliable. In order to compare its results to those of the standard test and thus to compensate for the proportional bias, a coefficient must be used. Since then, it can be use in all practices and at patients' homes. These results make a valuable instrument available for a wider use.