# Evaluation of balance function in Multiple Sclerosis

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## Introduction

**Objective:** to evaluate static postural control in patients with multiple sclerosis (PwMS).

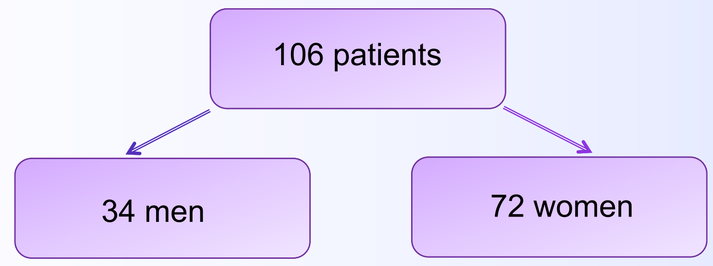
**Background**: balance control impairments are common in PwMS and may affect about three-quarters of patients during the course of the disease**.**

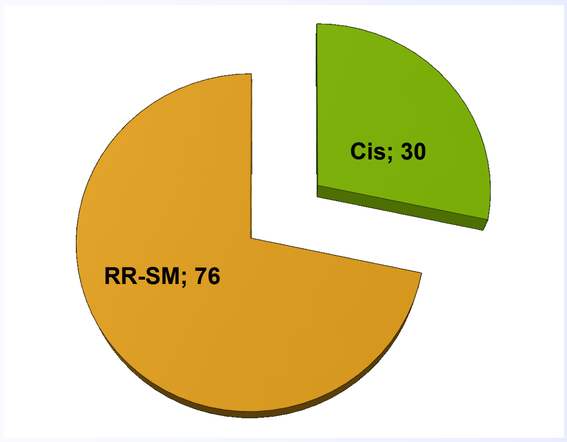
## Materials and methods

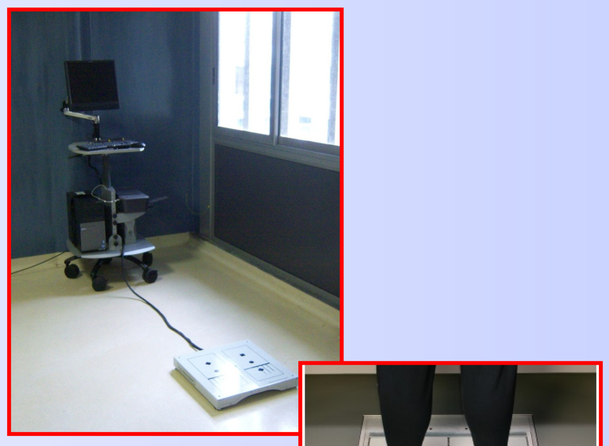
patients referring to the MS Centre of the University of Catania, from September 2013 to June 2014 were included. We used Neurocom Balance Manager® to evaluate stabilometry in order to detect Center of Pressure (COP), through **m**odified **C**linical **T**est of **S**ensory **I**nteraction on **B**alance (mCTSIB). Balance functions was assessed by validated Berg Balance Scale (BBS).

## Results

We identified a total of 106 patients, 30 (28.3%) with Clinical Isolated Syndrome (CIS), 76 (71.7%) with relapsing-remitting Multiple Sclerosis (RR-MS); 72 women (67.9%). We selected 25 healthy controls (HC) matched for age and sex. We found significant differences in stabilometric parameters between PwMS compared to CIS and HC: Total Path Length-closed eyes (TPL-CE) (PwMS 604.8±222.9 vs CIS 482.6±72.2, p<0.05; HC 477.8±77.9, p<0.05), sway area-open eyes (SA-OE) (PwMS 67.8±120.9 vs CIS 12.2±7.3, p<0.05; HC 10.8±5.8, p<0.01), sway area-closed eyes (SA-CE) (PwMS 179.2±299.6 vs CIS 17±16.4, p<0.01; HC 12.7±9.1, p<0.01), mean sway velocity-closed eyes (MSV-CE) (PwMS 60.5±22.3 vs CIS 48.3±7.2, p<0.01; HC 47.8±7.8, p<0.01). CIS group showed a lower EDSS (1.0±0.8 vs 5.7±0.9, p<0.001) and an higher BBS score than PwMS (53.8±1.6 vs 43.8±8.6, p<0.001). Significant correlations between postural stabilometric data and BBS in particular for SA-OE (r=-0.77; p<0.001) were found. Multivariate analysis showed that age (p<0.05; 95% CI 2.2-5.4) and BBS score (p<0.001; 95% CI 5.9-10.8) predicted higher value of SA-OE.



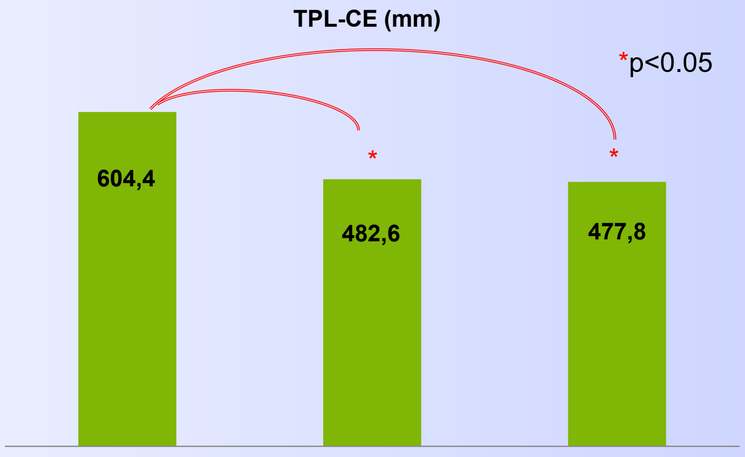



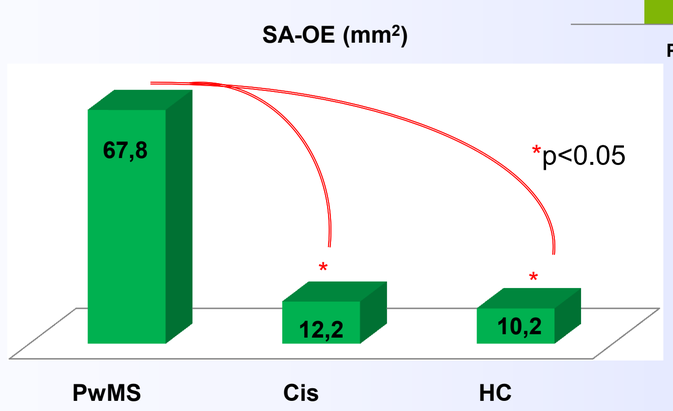

**Feet positioning**

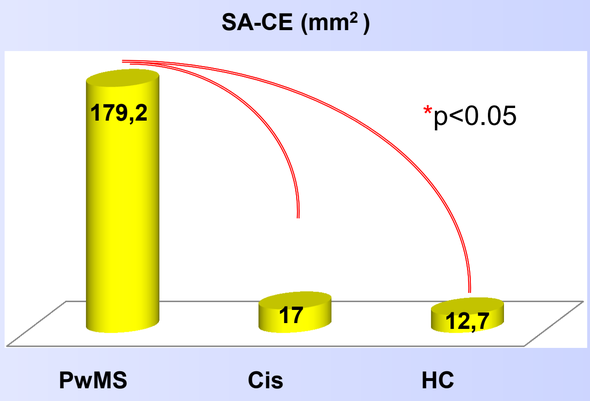
**S (Short): 76-140 cm**

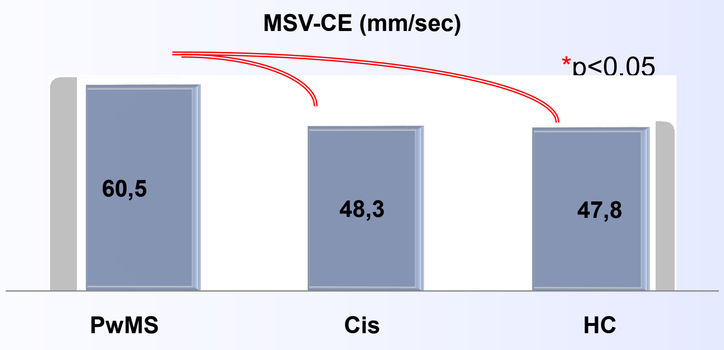
**M (Medium): 141-165 cm**

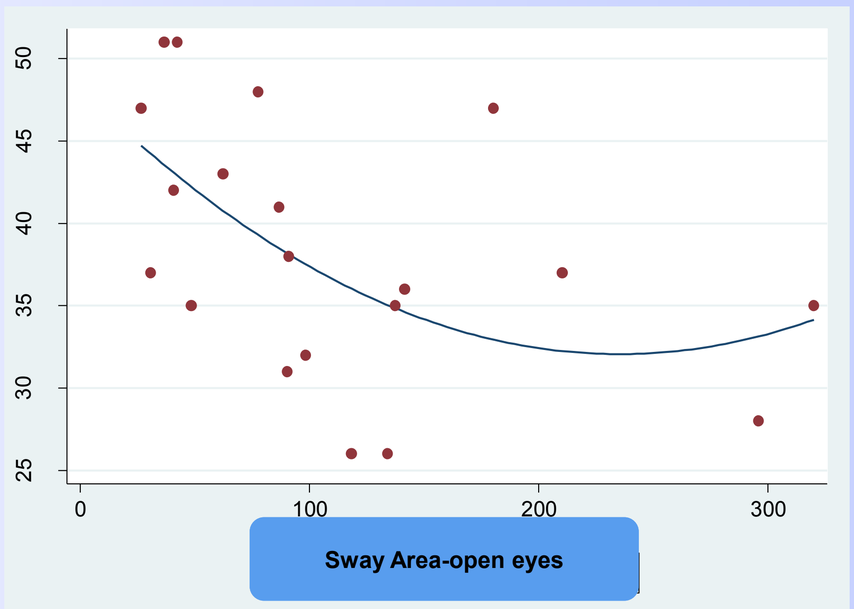
**T (Tall): 166-203 cm**




## Conclusion

Our results demonstrate that it is possible to evaluate postural control on PwMS. BBS and age may predict postural instability.

## References

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