Domiciliary gaze stability and oculomotor exercises improves balance after stroke. BetterBalance, a randomized controlled trial

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BACKGROUND
As mechanisms of gaze stability, both visual stabilization and the vestibuloo-ocular reflex are needed to coordinate the movements of the head, trunk and pelvis during walking1,2. Balance impairment after stroke is strongly associated with more severely impaired motor function, a decrease in recovery potential and an increase of the number of falls3,4.

METHODS / RESULTS
Randomized open controlled trial registered at ClinicalTrials.gov (NCT02280980).

Consent obtained and baseline assessment (n=71)
Block randomization with stratification by age, functionality (Motor Assessment Scale) and balance/risk of fall (BBS ≤ 45 points or and TUG > 14 seconds)
Observational group (OG) n=35 current rehabilitation program (CRP)
Intervention group (IG) n=36 CRP + domiciliary plan of gaze stability and oculomotor exercises (twice a day, three weeks)
Primary outcome: the incidence of falls.
Surrogate outcome: the variation of the estimated risk for falls by Berg Balance Scale (BBS) and Timed Up and Go Test (TUG): minimum difference of 4 seconds in TUG and 4 points in BBS.

Inclusion Criteria: 3 to 15 months after the diagnosis of stroke; balance deficit (positive Romberg Test); ability to walk alone 3 meters.
Exclusion Criteria: previous balance problems, severe osteo-articular problems, previous exposure to oculomotor or gaze stability exercises.

Sample: Aged 60-87 years old (median OG 73 years; IG 74 years). Similarly distributed by gender, type of stroke and reported falls before recruitment.

CONCLUSIONS/IMPLICATIONS
This trial did not reach power to assess the efficacy of the intervention as actually preventing falls, although evidence was obtained that complementary oculomotor and gaze stability exercises decrease the estimated risk for falls. This decrease is larger in females.

Domiciliary oculomotor and gaze stability exercises are a promising approach as a complement in the physiotherapy intervention after stroke, whenever balance impairment is present. Given the high incidence of falls in these patients and their social and economic impact, this can be an efficient strategy to improve balance and reduce the risk for falls.


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