A study on the effects of Brain Gym on the cognitive functioning of seniors in Guangzhou, China

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Background

Dementia (also known as neurocognitive impairment) directly reduces cognitive functioning, including memory, attention, orientation, abstract thinking etc. These symptoms will lower the self-care ability and social skills of the senior, resulting in various kinds of stress for the senior and their family caregivers.

On the other hand, if the deterioration of cognitive functioning does not reach the degree of dementia but is clearly worse than the general senior of the same age, the seniors may suffer from mild cognitive impairment (MCI). They face a higher risk of developing dementia. Delaying the development of dementia and mild cognitive impairment for the senior may improve their quality of life as well as their caregivers.

This study aims to investigate the treatment effects of Brain Gym®, a non-pharmacological intervention, on improving the cognitive functioning of the seniors with MCI and decreasing their depressive levels.

Methods

A total of 18 social service centers, which are situated in Guangzhou, China, took part in this study. Out of the 18 social service centers, nine centers were randomly selected to receive the Brain Gym intervention. Senior members of these nine centers who were 60 years old or above were invited to join the Brain Gym group. A total of 55 senior members took part in the Brain Gym group, at least eight out of twelve sessions in a span of six weeks. Each intervention session consisted of at least 15 minutes of Brain Gym activities, which included Sipping Water,

Brain Buttons, The Cross Crawl, Hook-ups and The Thinking Cap. A total of 140 senior members were recruited from the nine remaining social service centers to join the control group which did not contain any special intervention components.

To assess the levels of cognitive functioning and depression for the study participants, both the participants in the intervention group and in the control group completed the Hong Kong version of the Montreal Cognitive Assessment (MoCA-HK) and the Geriatric Depression Scale (GDS) at the start and approximately six weeks after the start of the study. The same questionnaire was used at both time points.

Repeated-measures analysis of covariance (RANCOVA) was used for data analysis to investigate the effect of the Brain Gym intervention on the levels of cognitive functioning and depression. Gender and education years were used as covariates in the RANCOVA. The level of statistical significance was set at 0.05 in this study.

Results

The Brain Gym group was composed of significantly more females (χ^2 [1]=5.70, $p < 0.05$) and had significantly fewer education years (t [188]=2.38, $p < 0.05$) than the control group. The results of RANCOVA found that, compared to the control group, the Brain Gym group scored significantly higher in the total score of MoCA-HK over time (F [1,188]=10.87, $p < 0.001$, partial η^2=0.05), particularly in abstraction (F [1,188]=5.93, $p < 0.05$, partial η^2=0.03) and delayed recall (F [1,188]=8.49, $p < 0.01$, partial η^2=0.04). Meanwhile, the Brain Gym group scored significantly lower in depression relative to the control group over time (F [1,184]=6.24, $p < 0.05$, partial η^2=0.03). All treatment effects were of small effect sizes.

Conclusion

In order to slow down the deterioration of cognitive functioning and improve their quality of life, the current study recommends seniors to adopt a brain-healthy life style and to engage in more Brain Gym activities.