

Immediate Effects of Rhythmic Auditory Stimulation on Dual-Task Performance in Chronic Stroke Patients: An Experimental Study

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Abstract—Stroke commonly impairs gait and cognitive function. This study investigated the immediate effects of Rhythmic Auditory Stimulation (RAS) on dual-task performance in chronic stroke patients using the TUG-Cognitive test. Thirty chronic stroke patients participated. No significant difference was observed between dual-task performance with and without RAS; however, both conditions demonstrated improvement over repeated testing.

Index Terms—Stroke, Rhythmic Auditory Stimulation, Dual Task, TUG-Cognitive, Chronic Stroke

I. INTRODUCTION

Chronic stroke patients frequently demonstrate impairments in mobility, balance, attention, and executive function. Rhythmic Auditory Stimulation has been proposed as a method to improve motor performance through auditory-motor synchronization. This study evaluated its immediate effects on dual-task performance.

II. METHODOLOGY

Experimental study; purposive sampling; sample size 30; age 45–60 years. Participants performed TUG-Cognitive tasks with and without Rhythmic Auditory Stimulation. Data were analyzed using paired t-tests.

III. RESULTS

No significant difference was found between dual-task performance with and without RAS ($p=0.9762$). Significant within-condition improvements were observed from Day 1 to Day 2.

IV. DISCUSSION

The findings suggest that immediate exposure to RAS does not provide additional benefit over dual-task performance alone. Improvements observed across days may be related to learning effects and neuroplastic adaptation.

V. LIMITATIONS

Immediate-effect study, single outcome measure, small sample size, non-normal data distribution.

VI. CONCLUSION

RAS did not demonstrate a significant immediate effect on dual-task performance in chronic stroke patients. Long-term studies are recommended.