

## Effects of activity repetition training with Salat (prayer) versus task oriented training on functional outcomes of stroke

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### Abstract

Stroke is one of most disabling condition which directly affects quality of life. The objective of this study was to compare the effect of activity repetition training with salat (prayer) versus task oriented training on functional outcomes of stroke. The study design was randomized control trial and 32 patients were randomly assigned into two groups. The stroke including infarction or haemorrhagic, age bracket 30-70 years was included. The demographics were recorded and standardized assessment tool included Berg Balance Scale (BBS), Motor assessment scale (MAS) and Time Up and Go Test (TUG). The measurements were obtained at baseline, after four and six weeks. The mean age of the patients was 54.44±10.59 years with 16 (59%) male and 11(41%) female patients. Activity Repetition Training group showed significant improvement ( $p<0.05$ ) and is effective in enhancing the functional status as compare to task oriented training group. The repetition with motivation and concentration is the key in re-learning process of neural plasticity.

**Keywords:** Task-Oriented training, Activity-Repetition Training, Salat, Functional ambulation.

### Introduction

There is multiple rehabilitation approaches widely used to achieve the optimal level of function in stroke patients. The main focus of all neuro-developmental approaches is the re-learning process through repetition of tasks which improves the neural plasticity in post stroke.<sup>1</sup> The constraint induced movement therapy to promote the utilization of affected limb is considered a good option in acute rehabilitation.<sup>2</sup> The concept of virtual reality training to improve the functional and motivational level of stroke patients is also in practice.<sup>3</sup> Task oriented is widely established motor re-learning approach which directly enhances the functional status through repetitive activities in enriched environment.<sup>4</sup> Lack of interest, proper follow up, motivation, and accurate task repetition practice are the draw backs in the process of re-learning.

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How to indulge a stroke patient in repetitive activities? This is one of challenging question in recent years of neuro-rehabilitation. The Salat (prayer) is one of classical example of repetition of physical activity with interest and passion. It is directly linked with heart, spine, and memory, and concentration, spiritual and psychological aspect along with cognitive abilities of human beings. Standing, bowing, prostration and sitting are the different aspects of salat (prayer) ritual.<sup>5</sup> The addition of Salat (prayer) in a routine task oriented training approach will explore the new horizon in stroke specific context. This additional activity will not only improve the number of repetition of multiple task but also enhance the motivational and psychological status of stroke patients. This study will determine the effects of practicing Salat (prayer) activity with maximum repetitions on functional status in task oriented training of stroke patients.

### Methods and Results

The study was a randomized control trial conducted in the Physical therapy and Rehabilitation department of Pakistan Railway Hospital from July 2015 - January 2016. Sample size was based on availability of sample in specific time frame. Initially 32 inpatients were enrolled through inclusion criteria by purposive non-probability sampling technique and randomly assigned into two groups through toss and trial method into Activity Repetition Training group ARTG (n=16) which is interventional group and Task oriented training group TOTG (n=16) which is control group. Inclusion criteria were either type of stroke, post minimum 03 months, and age bracket 30-70 years with disability level 1-4 on Modified Rankin scale. Three patients in ARTG failed to complete intervention because of some medical reasons so total 12 patients in ARTG completed six weeks intervention period. On the other hand one patient withdrew due to pain or unwillingness to travel so total 15 patients in TOTG completed the exercise programme. The intervention comprised numerous functional tasks designed to strengthen the upper extremity and certain activities for lower extremities in order to enhance walking balance, gait, speed and distance. The intervention was a tailored whole body training protocol providing 60 minutes/day, 4 days/week for 6 weeks with increasing number of repetitions. Four

**Table-1:** Shows the details of interventional protocol.

Groups	Total Number of sessions	Time	Repetitions in 1st -2nd week	Repetitions in 3rd-4th weeks	Repetitions in 5th -6th weeks
ARTG	30	60min	100-120Reps	200-220 Reps	300-320 Reps
TOTG	30	60min	50-60Reps	80-100 Reps	100-120 Reps

**Table-2:** Mann- Whitney -U Test shows Median, IQ, mean rank value, z-value and P-values of outcome measure of both groups at baseline, 4 & 6 week of intervention.

Variables	Median±IQ ARTG	Median±IQ TOTG	Mean Rank ARTG	Mean Rank TOTG	z-value	P-value
MAS at baseline	17.0±16.0	12.0±12.0	15.41	12.1	1.09	0.27
MAS after 3 weeks	32.0±9.0	28.0±9.0	16.41	12.1	1.66	0.09
MAS after 6 weeks	45.0±12	36.0±9.0	17.82	10.33	2.47	0.01
BBS scale at baseline	8.5±12.25	4.0±8.0	16.45	11.33	1.7	0.08
BBS after 3 week	35.0±12.00	18.0±11.0	18.09	10.13	2.6	0.01
BBS after 6 week	45.0±12	31.0±12.0	18.41	9.09	2.8	0.05

MAS: Motor Assessment Scale

BBS: Berg Balance Scale

ARTG: Activity Repetition Training Group

TOTG: Task Oriented Training Group

IQR: Interquartile range.

sets of all tasks with 25 repetitions each were done in a session by the patients in ART group (activity Repetition Training) and were instructed to perform 3 sessions at home with same repetitions. On the other hand patients of TOT (Task oriented Training) group performed three sets of 20 repetitions per session and were instructed to practice one session at home with same repetitions. Examples of increasing task difficulty included transporting marbles from the hand to the fingertips, stacking cans, circle drawing, sit to stand activity, wheel rotation activity, stationary bicycling, balance training on even surfaces then on uneven surfaces both with eyes open and eyes closed, double leg stance, single leg stance, Tandem walk, bridal walk. Balance training on wobble board, gait training in a parallel bar and practicing Salat Postures i.e. standing, bowing, prostration, sitting and moving neck towards right and left (Table-1).

SPSS 20 was used for data analysis. Mann Whitney -U test was applied to compare the efficacy of both groups. There was significant difference ( $p < 0.05$ ) noted after 06 weeks of training in ARTG as compared to TOTG. The BBS and MAS showed significant improvement ( $p$ -value  $< 0.05$ ) after 04 and 06 weeks of training in ART group. Hence ART group was more effective in improving the functional status as compared to TOTG. (Table-2).

## Discussion

The result concluded that there was marked improvement in functional status, balance outcome and mobility level in

activity repetition training with salat (prayer) as compared to routine task oriented training in stroke patients. Previous studies have reported positive functional outcomes of repetitive activities in stroke rehabilitation.<sup>6</sup> Leroux in 2006 in a study conducted on balance and mobility of stroke survivors concluded, that task oriented training has better result on functional level with maximum repetition of tasks.<sup>7</sup> The RCT conducted on ambulatory function of acute stroke patients noted that physical activity is the key to ambulatory functional recovery in stroke survivors; its effect becomes significant if it involves more weight-bearing exercises of the lower limbs.<sup>8</sup> Studies have reported that Salat (prayer) activity improves mental and physical health as it involves minimum effort, comprises of short duration and is a free hand exercise.<sup>9</sup> The findings of this study states that activity repetition training through task oriented approach improves motor recovery very effectively as compared to traditional therapies. The main part is the repetition with interest and motivation. Virtual reality is a good tool to engage stroke patients for performing repetitive activity with interest and concentration.<sup>10</sup>

Several limitations need to be considered. First, sample size was small, time duration was less and physiological marker was not added in this study to assess neuroplasticity. Pain and fatigue was noted in some patients and no tool was used for the assessment of pain and fatigue level. Salat (prayer) activity was added to ART group only. Future studies should document its effect in

both groups.

The study concludes that it is feasible to achieve maximum activity repetition training along with salat (prayer) and it brings better results as compared to simple task oriented training. The findings of this research are noteworthy because preliminary outcome data suggest that this intervention is beneficial in stroke patients.

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