

**Comparing the Effects of Rehabilitation Swallowing  
Therapy vs. Neuromuscular Electrical Stimulation  
Therapy among Stroke Patients with Persistent  
Pharyngeal Dysphagia: A Randomized Controlled Study**

Wutichai Permsirivanich MD\*,

Suttipong Tipchatyotin MD\*, Manit Wongchai BSc (Occupational Therapy)\*,

Vitoon Leelamanit MD\*\*, Suwanna Setthawatcharawanich MD\*\*\*,

Pornchai Sathirapanya MD\*\*\*, Kanitpong Phabphal MD\*\*\*,

Uma Juntawises MSN\*\*\*\*, Achara Boonmeeprakob BSc (Nursing)\*

\* *Department of Orthopedic Surgery and Rehabilitation Medicine, Faculty of Medicine,  
Prince of Songkla University, Songkhla, Thailand*

\*\* *Department of Otolaryngology, Head and Neck Surgery, Faculty of Medicine,  
Prince of Songkla University, Songkhla, Thailand*

\*\*\* *Department of Internal Medicine, Faculty of Medicine, Prince of Songkla University,  
Songkhla, Thailand*

\*\*\*\* *Songklanagarind Hospital, Faculty of Medicine, Prince of Songkla University,  
Songkhla, Thailand*

**Background:** Dysphagia after stroke is associated with increased mortality, higher dependence, and longer hospitalization. Different therapeutic strategies have been introduced to improve swallowing impairment. There are no current studies that compare rehabilitation swallowing therapy (RST) and neuromuscular electrical stimulation therapy (NMES).

**Objective:** To compare treatment outcomes between RST and NMES intervention in stroke patients with pharyngeal dysphagia.

**Study design:** A randomized controlled study.

**Material and Method:** Twenty-three stroke patients with persistent pharyngeal dysphagia (RST 11, NMES 12) were enrolled in the present study. The subjects received 60 minutes of either RST or NMES treatment for five consecutive days, had two days off, and then five more consecutive days of treatment for a four-week period or until they reached functional oral intake scale (FOIS) level 7. The outcome measures assessed were change in FOIS, complications related to the treatment and number of therapy sessions.

**Results:** There were no significant differences in the stroke characteristics and the VFSS results between the two groups. At the end of treatment, the average numbers of therapy sessions per subject in the RST and NMES groups were  $18.36 \pm 3.23$  and  $17.25 \pm 5.64$ , respectively, a non-significant difference. Average changes in FOIS scores were  $2.46 \pm$

1.04 for the RST group and  $3.17 \pm 1.27$  for the NMES group, statistically significant at  $p < 0.001$ . No complications were observed in either group.

**Conclusion:** While both RST and NMES therapy showed a positive effect in the treatment of persistent dysphagia in stroke patients, NMES was significantly superior.

**Keywords:** Deglutition disorders, Electric stimulation therapy, Neuromuscular junction, Stroke, Therapy