

1. Title: Clinical Implications for Patterned Sensory Enhancement (PSE) on stroke patients

2. Abstract

The purpose of this study was to investigate the immediate effect of Patterned Sensory Enhancement (PSE) technique on the motor function of the affected upper limb in hemiplegic stroke patients by comparing the use of PSE and simple rhythmic cue. PSE uses music's rhythmical, melodic and dynamic-acoustical elements to provide temporal, spatial and force cues for movements, which reflect functional exercises and activities of daily living (Thaut, 2005).

16 participants were assigned to the experimental group (n=8) and control group (n=8). While performing six different upper limb motions, musical stimuli applying the PSE technique was presented for the experimental group and simple rhythmic cue using the metronome was applied for the control group. The results showed that while the significantly increased range of motion (ROM) was found in the experimental group with the immediate use of PSE ($p < .05$), the control group did not show significant change. This study implies that the use of musical elements in cueing for upper limb motion immediately leads to significant improvement in ROM by providing sufficient temporal, spatial, and dynamic information for expected motor performance. Based on Gestalt's principles, we can see that the spatial cues of PSE techniques for upper limb-motion training are significant. Furthermore, upper limb movement and direction is more diverse than lower limbs movement, hence can move more in sync with the different pattern of music.

Also, patterns of music are not restricted to a repetitive rhythm or tempo. They contain a much broader scope of dynamics and direction. Therefore, the range and diverse movement of upper limbs is a useful part of the body to convey such musical components, as opposed to lower limbs, which in turn is an appropriate part of the body to show that PSE is an effective intervention. This study shows that PSE is customizable to stroke patients and can be adjusted and varied according to the movement range and function of the patient.

3. Short BIO

Hye Young Park, Ph. D., KCMT, Korea

Dr. Hye Young Park is an assistant professor in music therapy at Kosin University in Korea. One of her main researches involves Neurological Music Therapy including the validity of MIDI piano for the rehabilitation of stroke patients. Park obtained her Ph.D from Ewha Womans University and

also worked as a music therapist at Ehwa Music Rehabilitation Center and Seonam Hospital.

4. Extended version of CV

Dr. Hye Young Park is an assistant professor in music therapy at Kosin University in Korea. One of her main researches involves Neurological Music Therapy including the validity of MIDI piano for the rehabilitation of stroke patients. Park obtained her Ph.D from Ewha Womans University and also worked as a music therapist at Ehwa Music Rehabilitation Center and Seonam Hospital. Her researches have been published in several international journals among them “Relationship between output from MIDI-keyboard playing and hand function assessments on affected hand after stroke” in *NeuroRehabilitation*, “A comparative study on the attitudes and uses of music by adults with visual impairments” in *Journal of Visual Impairment & Blindness*, and “An analysis of life scripts of adults who have congenital visual impairments” in *Korean Journal of Visual Impairment*.