

**Thesis Title** A Comparison of Cyclic and Sustained  
Passive Stretching to Increase Range  
of Motion of the Restricted Knee

**Name** Pakdee Thiptawee

**Degree** Master of Science (Physiotherapy)

**Thesis Supervisory Committee** Prasit Gonggetyai, M.D., F.A.C.S.  
Prayode Boonsinsukh, M.Sc.(Physiology)  
Siriporn Thitilertdecha, M.Sc.(Anatomy)

**Date of Graduation** 19 November B.E. 2535 (1992)

#### ABSTRACT

Patients with restriction of joint motion is a problem frequently encountered by many therapists. The restricted knee may lead to decrease in efficiency of activities daily living of a person. Physical therapists should be seeking the techniques of treatment to treat these patients appropriately and effectively in order to decrease the cost of rehabilitation. Therefore, the two clinical passive stretching techniques, an experimental cyclic and a favored sustained stretching techniques, were designed and developed by using motorized traction machines and some mechanical devices which were simple and safe in clinical application. The purpose of this study was to clarify the effects of cyclic stretching technique on ROM and to compare the efficacy of the two stretching techniques on ROM increases in patients with restricted knee due to pathological connective tissues.

Twenty-six male patients with definite criteria were randomly allocated into two treatment groups which were no statistically

significant difference of an age, body weight and initial active and passive ROM between the two groups ( $P > 0.05$ ). Group 1 patients (13 males) underwent cyclic stretching (CS), and group 2 patients (13 males) underwent sustained stretching (SS) of their restricted knees. The stretching procedures of both groups were performed for 30 minutes once daily for 10 treatment days within 3 weeks. The active and passive ROM of knees (degree of knee flexion) were assessed before and after each treatment in both groups. The patient's satisfaction in treatment of both groups was recorded.

In group 1, the results showed that both active and passive ROM of post-treatment of each stretching treatment were highly significantly increased from pre-treatment ( $P < 0.01$ ). After the last treatment, the final active and passive ROM were highly significantly increased from the initial ROM ( $P < 0.001$ ). These clarified that the cyclic stretching technique was effective enough for increasing ROM in patients with restricted knee problem. When compared the ROM increases between group 1 and group 2, the results showed that 1) there was no significant difference of both active and passive ROM gained from before initial and after final treatment between the two groups, 2) there was no significant difference of both active and passive pre-treatment ROM of each treatment from treatment No. 2 to 10 and no significant difference of the sum of both active and passive pre-treatment ROM from treatment No.2 to 10 between the two groups, 3) there was no significant difference of both active and passive total ROM of both pre and post-treatment from treatment No. 1 to 10 between the two groups ( $P > 0.05$ ) and 4) only gained active ROM of treatment No. 5 and 8, and only gained passive ROM of treatment No.8 of group 2 were significantly greater than those of group 1 ( $P < 0.05$ ), however there was no significant difference of the sum of both active and passive ROM gained from treatment No. 1 to 10 between the two groups ( $P > 0.05$ ). These

results concluded that the efficacy of cyclic and sustained stretching techniques on ROM increases in the patients with restricted knee was not different.

All patients in this study satisfied cyclic stretching technique than sustained stretching technique only, and this technique was recommended over the sustained stretching technique.