

3836563 SIPT/M : MAJOR: PHYSIOTHERAPY; M.Sc. (PHYSIOTHERAPY)

KEY WORD : ISOKINETIC TRAINING/ EFFECTS OF VELOCITY/  
KNEE MUSCLES

NONGDNAPAS CHAROENPANICH: EFFECTS OF VELOCITY ON  
CONCENTRIC ISOKINETIC TRAINING OF KNEE MUSCLES IN THAI MALES.  
THESIS ADVISOR: ROONGTIWA VACHALATHITI Ph.D. (PHYSIOTHERAPY),  
ANANPAT IMPOOLSUP M.D., 148 p. ISBN 974-661-612-9

The purpose of this study was to investigate the effects of low and high velocities of concentric isokinetic training on the performance of right knee flexor and extensor muscles in Thai male subjects aged between 18 and 30 years. The isokinetic device used in this study was Biodex system II (Biodex Corporation, Shirley, NY). Peak torque, total work, average power and hamstring/quadriceps torque ratio (h/q ratio) were measured in this study. Forty-five males were randomized into three groups (15 subjects each): control group, low (60°/sec) velocity and high (240°/sec) velocity training groups. All subjects in each group were matched by age, weight and height. Both training groups were trained at a frequency of 3 times/week for 4 weeks. Three tests were performed at the 1<sup>st</sup> and 7<sup>th</sup> days of the training program and one day after the training program using six velocities (30, 60, 120, 180, 240 and 300°/sec).

The results demonstrated that the parameters measured in the control group showed no significant difference at pre, during and post training sessions. For low and high velocity training groups, the peak torque, total work and average power significantly increased in all testing velocities at pre, during and post training sessions ( $p < 0.05$ ). There was no significant difference in the percentage of h/q ratio, except at the test velocity of 30°/sec in the high velocity training group. The results of this study showed the overflow phenomenon across velocities in both training groups.

In conclusion, both 60 and 240°/sec training velocities were found to strengthen knee muscles. The training program should be set 3 times/week for at least 2 weeks to produce a significant increase in muscle strength.