The Effects of Closed Kinetic Chain Exercise and Open Kinetic Chain Exercise on the Knee Position Sense in the Normal Adults

The purpose of this study is to investigate the effects of closed and open kinetic chain exercise for increasing knee joint function on the knee position sense in the normal adults. Thirty normal adults (male 15, female 15; mean age: 22.13 ± 2.58 years) were participated in this study into two groups, each with 15 people. The group I was trained that closed kinetic chain exercise on the knee joint and the group II was trained that open kinetic chain exercise on the knee joint. Exercise programs performed for 4 weeks, 3 times a week were using Shuttle 2000–1 closed kinetic chain exercise and Knee Extensor open kinetic chain exercise (HUR, Finland). The results of this study were as follows: 1) There were statistically significant decreasing of measuring error degree in 0–20° were found between before and after training in closed kinetic chain exercise (p<.05). 2) There were statistically significant decreasing of measuring error degree in 21–40° were found between before and after training in closed kinetic chain exercise (p<.05). 3) There were statistically significant decreasing of measuring error degree in 41–60° were found between before and after training in closed kinetic chain exercise (p<.05). 4) There were statistically significant decreasing of measuring error degree in 0–20° were found between before and after training in open kinetic chain exercise (p<.05). 5) There were statistically significant decreasing of measuring error degree in 21–40° were found between before and after training in open kinetic chain exercise (p<.05). 6) There were statistically significant decreasing of measuring error degree in 41–60° were found between before and after training in open kinetic chain exercise (p<.05).

In conclusion, these results suggest that closed and open kinetic chain exercise has increased in the knee joint proprioception between before and after training. Especially, closed kinetic chain exercise could be more useful intervention than open kinetic chain exercise for increasing proprioceptive sense.

Key words: Closed Kinetic Exercise: Open Kinetic Exercise: Proprioception

INTRODUCTION

Proprioceptive sense, composed of both movement sense and position sense. Collecting sensory information from mechanical receptors include ligaments, muscles and joints. It also detects and balances movements of various body parts to prevent the body’s excessive joint flexion and extension(1, 2, 3).

As a part of the proprioceptive sense, the position sense has the ability to determine and to remember exactly where a particular body part is in a space, thus to fulfill a role of stabilizing joints(4, 5, 6). Furthermore, it transmits that movement signals received from a special form of mechanoreceptor called neuroterminal of the central nervous system(7, 8). It is also responsible for consolidating movement signals from various receptors such as muscles, tendon and joint as well as a visual and a scalar vestibule so
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CONCLUSION

In conclusion, both groups (UTG and OTG) were positive effect in gait velocity and physical function on people with stroke. However, UTG was superior to improving affected weight bearing, stance phase and emotional aspect than OTG. Further studies are needed to determine whether underwater treadmill exercise can improve long-term functional independence and quality of life in neurological patients.

REFERENCES