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Effects of pronator teres muscle friction massage on supination range of motion, strength in individuals with and without supination limited range of motion

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Background: Pronation and supination are forearm motions used in sports activities and functional tasks in everyday life. Several studies have suggested that continuous forearm pronation movement can lead to musculoskeletal disorders. It can cause pain, shortness of pronator muscles, and exposure of the pronator to neuropathic damage by compressing the median nerve or the anterior interosseous nerve.

Purpose: To investigate the effects of friction massage techniques on the pronator teres muscle on supination range of motion (ROM) and supinator strength in individuals with and without limited supination ROM.

Methods: In total, 26 subjects (13 with limited supination ROM and 13 healthy subjects) volunteered to participate in this study. We used a customized wrist cuff. Supination ROM and supinator strength were measured with a 9-axis inertial motion sensor and load cell. The friction massage protocol was executed with the pronator teres muscle in a relaxed position. Then supination ROM and supinator strength were measured again.

Results: There was no significant interaction effect on supination ROM, which was significantly greater in the limited supination and control groups. A post hoc t-test revealed that the limited supination group achieved a significantly increased post-test supination ROM compared to the pre-test value. In addition, the control group achieved a significant increase in post-test supination ROM compared to the pre-test value. There was no significant interaction effect on supinator strength. Supinator strength was significantly greater in the limited supination and control groups. A post hoc t-test revealed a significant difference in supinator strength between the pre- and post-test values in the limited supination group.

Conclusion: Friction massage helps restore a limited ROM of the forearm supination motion and immediately increases supinator muscle strength. This technique can be used as an intervention method to improve muscle strength in patients with limited supination ROM.

Biography

Jun-Hee Kim is a PhD candidate in the Department of Physical Therapy at Yonsei University. He is a Senior Researcher in Lab of Kinetic Ergocise based on Movement Analysis (KEMA) and involved in the research projects of Yonsei University in the focus on musculoskeletal rehabilitation through cooperating with the industry.

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