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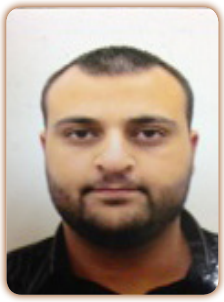

Faris Alshammari

Hashemite University, Jordan

Effective way to stretch the hamstring muscle: Randomized clinical trial

Background: Hamstring muscle is a major muscle that contributes to human body posture. Shortening and tightness of hamstring muscle affect postural alignment and lower quarter mechanics resulting in possible mechanical pain.

Purpose: The aim of this study was to find a new effective way in stretching hamstring muscle to improve muscle's flexibility and body mechanics.

Subjects: 60 subjects will be recruited from students at the Hashemite University who are between 18-25 years old. They will be included in this study if they have limited flexibility of right hamstring muscle, defined as a limitation in knee extension 20 degree or more with 90 degree of hip flexion. Also, they must be healthy. Subjects will be excluded from the study if they have a history of lower back, hip joint, or knee joint pathology. Subjects will be assigned randomly into 3 independent treatment groups.

Design: A single blinded randomized clinical trial design.

Methods: Range of motion of knee extension was measured with hip at 90-degree flexion in supine position using a Goniometer. Then, subjects received passive hamstring stretch (PHS), passive hamstring stretch followed by neuro-dynamic of sciatic nerve (ND) or passive hamstring stretch followed by 3 sets of 10 repetitions of active knee extension to the end of the range (QA).

Results: The preliminary results were calculated based on 10 subjects in each intervention group (total N=30). There were no significant differences in baseline muscles flexibility, subject's age and BMI among groups. There was no significant difference in the improvement of hamstring muscles flexibility among groups. Hamstring flexibility increased significantly in the ND group post intervention compared to pre-intervention (26.65±7.95 vs. 34.95±8.42; P=0.002). Also, hamstring flexibility increased significantly in the QA group post intervention compared to pre-intervention (24.40±7.35 vs. 35.05±9.59; P=0.000). However, the improvement of hamstring flexibility in the PHS group was not significant (29.75±8.01 vs. 34.90±7.35; P=0.062)

Conclusion: Neurodynamic of sciatic nerve and quadriceps muscle activation add more effect to hamstring flexibility following a passive hamstring stretch.

Discussion: The improvement in the PHS group was not significant possibly due to small sample size. Even though the improvement was significant in ND and QA groups, the increase of hamstring flexibility was more in QA group compared to ND group.

Novelty of the Current Study: According to our best knowledge, in the previous studies there was no usage of Neurodynamic or Quadriceps Activation techniques in conjunction to PHS in order to improve Hamstring muscle flexibility.

Biography

Faris Alshammari has a BSc in Physical Therapy from the Hashemite University, Jordan. He pursued his higher education in USA at Loma Linda University where he achieved a Master's degree in Physical Therapy in 2010 and PhD in Rehabilitation Science in 2015. He is an Assistant Professor at the Hashemite University, Physical and Occupational Therapy Department, Jordan. He has published more than 24 papers in reputed journals. He has also invented new intervention (Tactile Feedback System) to improve body balance in the elderly.

faris3310@yahoo.com