The Effect of Hamstring Muscle Tightness on Knee Joint Proprioceptive Sense

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Objectives: Hamstring muscle tightness is a major musculoskeletal problem that predisposes the knee to injury . Proprioception sense is an important factor for injuries and we have not found any studies on the effect of hamstring muscle tightness on knee joint proprioceptive . Therefore, the aim of this study was to determine the effect of hamstring muscle tightness on knee joint proprioceptive sense.

Methods: 61 healthy individuals, without any orthopedic or neurological symptoms that affect the knee joint proprioception sense, were included in this study. Individuals' socio-demographic data were recorded. Hamstring muscle tightness was measured with active knee extension (ACE) method by using goniometer. Individuals with hamstring muscle tightness (ACE over of 20 °) was Group 1 and individuals without tightness (ACE 20 ° and under) was Group 2. Proprioceptive component of joint position sense and kinaesthesia was evaluated for the sense of proprioception. Prosport 1000 PMS (Tümer Machine Ankara, Turkey) instrument was used and visual, auditory, tactile, sensory input have been eliminated. Passive placement method and 20 and 40 degrees of knee flexion target angles was used for measurement. For joint position sense target angle predict degree, for kinesthesia perceive movement sense degree was recorded. Instrument moved 10 degrees/sec for joint position sense and 0.4 degrees/sec for kinesthesia. All measurements were repeated three times for dominant and non-dominant side. SPSS version 21 was used for statistical analysis and p values of 0.05 and less were considered evidence of statistically significant findings. Mann-Whitney U rank test was used to compare findings of two groups.

Results: Individuals' socio-demographic data were similar (p> 0.05). No difference was found between the groups' dominant and non-dominant sides' AKE values (p> 0.05). Similarly for dominant and non-dominant side kinaesthesia values in 20 °and 40°, joint position sense values in 20 ° and 40 ° did not show statistically significant differences between the groups (p> 0.05).

Conclusion: This study showed that hamstring muscle tightness was not effective on knee joint kinesthesia and joint position sense for both dominant and non-dominant side. This result indicates that joint position and kinesthesia were not effective enough to show the effect of hamstring muscle tightness on knee joint proprioception, so other proprioceptive components like muscle strength, range of motion, strength and agility could be considered.

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