Original Paper

Electromyographic activity of the vastus medialis obliques and vastus lateralis longus muscles during squat with isometric hip adduction in athletes with patellofemoral pain syndrome and healthy athletes

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Abstract

Background and Objective: Patellofemoral is a pain syndrome, common among athletes and the therapeutic regimen based on the improvement of muscle involved in this disorder. This study was done to compare electromyography activity of the vastus medialis obliques and vastus lateralis longus during squat with isometric hip adduction in athletes with patellofemoral pain syndrome and healthy athletes.

Materials and Methods: This case – control study was carried out on 16 national team male athletes (volleyball, handball and taekwondo) aged 30-18 years with patellofemoral pain syndrome and 16 healthy male athletes. Subjects were matched based on weight, height, age, dominant of lower extremity and voluntarily participated. Electromyography activity of vastus medialis obliques and vastus lateralis longus muscles recorded by surface electrodes at 15, 30 and 45 knee flexion degrees. Paired t test was used to compare electromyography activities in each group and One-way ANOVA and Tukey post hoc test was used to compare each muscle in different angles.

Results: There was significant differences in the activity of vastus medialis obliques and vastus lateralis longus muscles in athletes with patellofemoral pain syndrome at 45 knee flexion degree (P<0.05). There were no significant differences between the muscle activities in healthy athletes at none of the knee flexion degrees. There were significant differences in the activity of vastus medialis obliques (P<0.05) and vastus lateralis longus (P<0.05) muscles at 45 degrees in comparison with muscle activities in each group in knee flexion degrees.

Conclusion: Electromyography activity of the vastus medialis obliques in healthy athletes during squat with isometric hip adduction at 45 knee flexion is greater than other degrees and in athletes with patellofemoral pain syndrome is greater than healthy athletes.

Keywords: Electromyography, Athlete, Patellofemoral pain syndrome, vastus medialis obliques and vastus lateralis longus muscles

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