

Long-Term Foam Roll Intervention Study of the Effects on Muscle Performance and Flexibility

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Abstract : A new innovative tool for self-myofascial release is widely and increasingly used among athletes of various sports. The application of the foam roll is suggested to improve muscle performance and flexibility. Attempts to examine acute and somewhat long term effects of either have been conducted over the past ten years. However, the results of muscle performance have been inconsistent. It is suggested that regular use over a long period of time results in a different, muscle performance improving outcome. This study examines long-term effects of regular foam rolling combined with a short plyometric routine vs. solely the same plyometric routine on muscle performance and flexibility over a period of six weeks. Results of counter movement jump (CMJ), squat jump (SJ), and isometric maximal force (IMF) of a 90° horizontal squat in a leg-press will serve as parameters for muscle performance. Data on the range of motion (ROM) of the sit and reach test will be used as a parameter for the flexibility assessment. Muscle activation will be measured throughout all tests. Twenty male and twenty female members of a Frankfurt area fitness center chain (7.11) with an average age of 25 years will be recruited. Women and men will be randomly assigned to a foam roll (FR) and a control group. All participants will practice their assigned routine three times a week over the period of six weeks. Tests on CMJ, SJ, IMF, and ROM will be taken before and after the intervention period. The statistic software program SPSS 22 will be used to analyze the data of CMJ, SJ, IMF, and ROM under consideration of muscle activation by a 2 x 2 x 2 (time of measurement x gender x group) analysis of variance with repeated measures and dependent t-test analysis of pre- and post-test. The alpha level for statistic significance will be set at $p \leq 0.05$. It is hypothesized that a significant difference in outcome based on gender differences in all four tests will be observed. It is further hypothesized that both groups may show significant improvements in their performance in the CMJ and SJ after the six-week period. However, the FR group is hypothesized to achieve a higher improvement in the two jump tests. Moreover, the FR group may increase IMF as well as flexibility, whereas the control group may not show likewise progress. The results of this study are crucial for the understanding of long-term effects of regular foam roll application. The collected information on the matter may help to motivate the incorporation of foam rolling into training routines, in order to improve athletic performances.

Keywords : counter movement jump, foam rolling, isometric maximal force, long term effects, self-myofascial release, squat jump

Conference Title : ICPESS 2016 : International Conference on Physical Education and Sport Science

Conference Location : Boston, United States

Conference Dates : April 25-26, 2016