

The Impact of the Training Program Provided by the Saudi Archery Federation on the Electromyography of the Bow Arm Muscles

Authors : Hana Aljumayi, Mohammed Issa

Abstract : The aim of this study was to investigate the effect of the training program for professional athletes at the Saudi Archery Federation on the electrical activity of the muscles involved in pulling the bowstring, maximum muscle strength (MVC) and to identify the relationship between the electrical activity of these muscles and accuracy in shooting among female archers. The researcher used a descriptive approach that was suitable for the nature of the study, and a sample of nine female archers was selected using purposive sampling. An EMG device was used to measure signal amplitude, signal frequency, spectral energy signal, and MVC. The results showed statistically significant differences in signal amplitude among muscles, with $F(8,1)=5.91$ and a significance level of 0.02. There were also statistically significant differences between muscles in terms of signal frequency, with $F(8,1)=8.23$ and a significance level of 0.02. Bonferroni test results indicated statistically significant differences between measurements at a significance level of 0.05, with anterior measurements showing an average difference of 16.4 compared to other measurements. Furthermore, there was a significant negative correlation between signal amplitude in the calf muscle and accuracy in shooting ($r=-0.78$) at a significance level of 0.02. There was also a significant positive correlation between signal frequency in the calf muscle and accuracy in shooting ($r=0.72$) at a significance level of 0.04. In conclusion, it appears that the training program for archery athletes focused more on skill development than physical aspects such as muscle activity and strength development. However, it did have a statistically significant effect on signal amplitude but not on signal frequency or MVC development in muscles involved in pulling the bowstring.

Keywords : electrical activity of muscles, archery sport, shooting accuracy, muscles

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