The effect of the body type on the electrical activity of the abdominal muscles during gait

Oral Presentation

1Rasool Ferasat * ; 2Heydar Sadeghi

[1]Ph.D. student. Department of Sport biomechanics, Faculty of Physical Education and Sport Sciences, University of Azad Central Tehran Branch, Tehran,Iran(rferasat11@gmail.com)

[2]Full Professor, Department of Sport Biomechanics and Injuries, Faculty of Physical Education and Sport Sciences, University of Kharazmi, Tehran, Iran

Abstract

Introduction: Since body features are different from one person to another, muscles performance could be influenced by physical features of the body. The aim of this study was to investigate the effect of the body type on the electrical activity of the abdominis muscles during gait.

Methods: Eighteen male students aged 20 to 30 years were selected to participate in this study, while they were placed into three groups: endomorphs, mesomorphs and ectomorphs. To define the body type of the subjects and in order to put them in three different groups the Heath-Carter somatotyping method was utilized. This method includes ten anthropometric measurements (age, weight, width of elbow–humerus, width of knee-femur, the highest arm peak, the highest size of calves, infraspinatus muscle fat, supraspinatus muscle fat, The triceps brachii muscle fat, and the inner fat in calves). Using electromyography, the electrical activity of rectus abdominis muscle, internal oblique muscle and external oblique muscle was recorded during gait. The mean and the standard deviation were used to describe the data and ANOVA and post-hoc Tukey were utilized for comparison between three body types at the significance level of $p \leq 0.05$.

Results: The results showed that there is a significant difference in the RMS of external and internal oblique whose average percentage is higher in endomorphs in comparison with the other two types. The duration of electrical activity was only significant for the internal oblique during gait and its mean was higher for the endomorphs.

Conclusion: According to the findings of the study, we could claim that the difference in the performance pattern of the muscles in the abdominis area during gait is influenced by body type.

Keywords

body type; Muscle activity; abdominis muscles; gait

References:

1. Ackland TR., Elliott B., Bloomfield J. (2009). Applied anatomy and biomechanics in sport: Human Kinetics Champaign, IL.

2. Allard P, Nault ML, Hinse S, LeBlanc R, Labelle H. (2001). Relationship between morphologic somatotypes and standing posture equilibrium. Ann Hum Biol; 28(6):624-33.

3. Bale, P., Goodway, J. (1990). "Performance variables associated with the competitive gymnast". Sports Medicine; 10, 139-145.

4. Bergmark, A. (1989). Stability of the lumbar spine: a study in mechanical engineering. Acta Orthopaedica Scandinavica, 60(sup230), 1-54.