Effect of different frequencies of continuous ultrasound on mechanical muscle strain/ Mohamed Mostafa Mohamed Mohamed Essa: Misr University for Science and Technology, Faculty of Physical Therapy, Department of Biomechanics. Supervisors: Prof. Dr. Salam Mohamed El-Hafez, Dr. Nagui Sobhi Nassif and Dr. Sohair Mohamed Abdel Rahman. Thesis: M.Sc; Biomechanics, 2010.

Abstract:

The purpose of this study: was to investigate the load–deformation response of skeletal muscle under the effect of different frequencies of continuous ultrasound. Thirty New-Zealand rabbits weighing 2-2.5 kg, aging 5-6 months were used and divided into three groups. They were treated with 1-MHz continuous ultrasound for single dose (group A) , treated with 3-MHz continuous ultrasound for single dose (group B) and no treatment for the third group (control group ; group C) . Then a dissection of plantaris muscle of the rabbits was done and taken for the mechanical testing experiment . A tensile testing machine (Instron instrument serial no.53479) was used to measure the load subjected to the specimen at high yielding point and its corresponding deformation . The result of the study: showed that deformation of the samples in response to the applied load at the high yielding point revealed a significant difference between group (A) and control group (C) , non statistical significant difference between group (B) and control group (C). Non statistical significant difference between group (A) and group (B) . The result of this study agree with the findings in some clinical researches which support the application of ultrasound within the program for musculoskeletal problem. Conclusion: With the limitations of this study it can be concluded that ultrasound regardless its frequency prior to stretching has significantly influence on the extensibility of the muscle.

Key Words:

Continuous ultrasound, ultrasound frequencies, mechanical strain, tensile strain, skeletal muscle.