



International Conference on
Kinesiology and Biomechanics

November 05-06, 2018 Singapore

Posters

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

Changing of mechanical properties of bone tissue by loading and unloading hanging

Maxim Baltin, Fedianin A, Zaytsev M, Baltina T and Sachenkov O
Kazan Federal University, Russia

Studies performed in conditions of a microgravity models and microgravity models with putting on animal's feet. All tests were conducted on nonlinear laboratory rats (180-200 g). As a model of gravitational unloading we used antiorthostatic support model. All experiments were performed according to bioethical standards and were approved by local ethical committee of the Kazan Federal University. The femoral bones were dissected from all tested rats with following weight measurement, density evaluation and measurement of geometrical parameters. At the end, the stress tests with a three-points bending were performed. After testing Young's module an ultimate stress was calculated. It was investigated on different groups: Control, microgravity models for 7 days of unloading hanging and models 7 days of unloading hanging with putting on animal's feet for 3 hour every day. In hypogravitational models Young's module decreased slightly, but ultimate stress decreased significantly. In case of putting on animal's feet Young's module restores its value (deviation about 5%) and ultimate stress increases up to 33% (in comparison with hypogravitational models). Against the background of control group ultimate stress decreased up to 45%. These results emphasize that the bone strength can be decreased by influence of external forces.

Biography

Maxim Baltin has graduated from the Kazan Federal University with a bachelor degree in Physiology. He has graduated from the Kazan Federal University in the laboratory of motor neuro-rehabilitation.

Baban.Bog@mail.ru

Notes:

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

Changing of anisotropic properties of bone tissue during unloading hanging

Artur Fedianin, Baltin M, Zaytsev M, Ereemeev A, Baltina T V and Sachenkov O
Kazan Federal University, Russia

Studies performed that anisotropic properties of the bone tissue changes significantly in case of changing the activity. All tests were conducted on nonlinear laboratory rats (180-200 g). As a model of gravitational unloading we used antiorthostatic support model. All experiments were performed according to bioethical standards and were approved by local ethical committee of the Kazan Federal University. The femoral bones and shoulder bones were dissected from all tested rats with following weight measurement and measurement of geometrical parameters. Bones was scanned on μ CT in diaphysis, metaphysis and epiphysis regions. After scanning the bone porosity was calculated. The structure of porosity medium was analyzed in terms of fabric tensor. It was investigated different groups: Control and hypogravitational on different time of unloading hanging (7, 14, 21, 30 and 40 days). The result of anisotropic properties of diaphysis of the bone were as follows: Main stiffness directed in longitudinal direction, structure of bone tissue looks like adaptive to bending with compression. Anisotropic properties of a femur changes after some period of unloading: Main stiffness direction turns at an angle relative to longitudinal direction. The value of the angle increases in dependence of time of unloading. In transverse plane stiffness changes aspect ratio of stiffness in radial and tangent directions. These results emphasize that bone tissue in unloaded bones adapt to external forces and anisotropic properties of the tissue changes significantly.

Biography

Artur Fedianin has begun the scientific research in the field of Fundamental Medicine still being a student of the 2nd course of Department of Human and Animal Physiology, KFU. Since 2013, he is a part of the research group at Kazan Federal University which is engaged in development of methods of stimulation of neuroregeneration at such diseases as an injury of a spinal cord and an atrophy of skeletal muscles and bones. He did his graduation from KFU.

artishock23@gmail.com

Notes:

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

Using Vicon to evaluate the change in the motor function during electro stimulation in rats

Mikhail Zaytsev, Baltin M, Fedianin A, Akhmetov N, Baltina T and Sachenkov O
Kazan Federal University, Russia

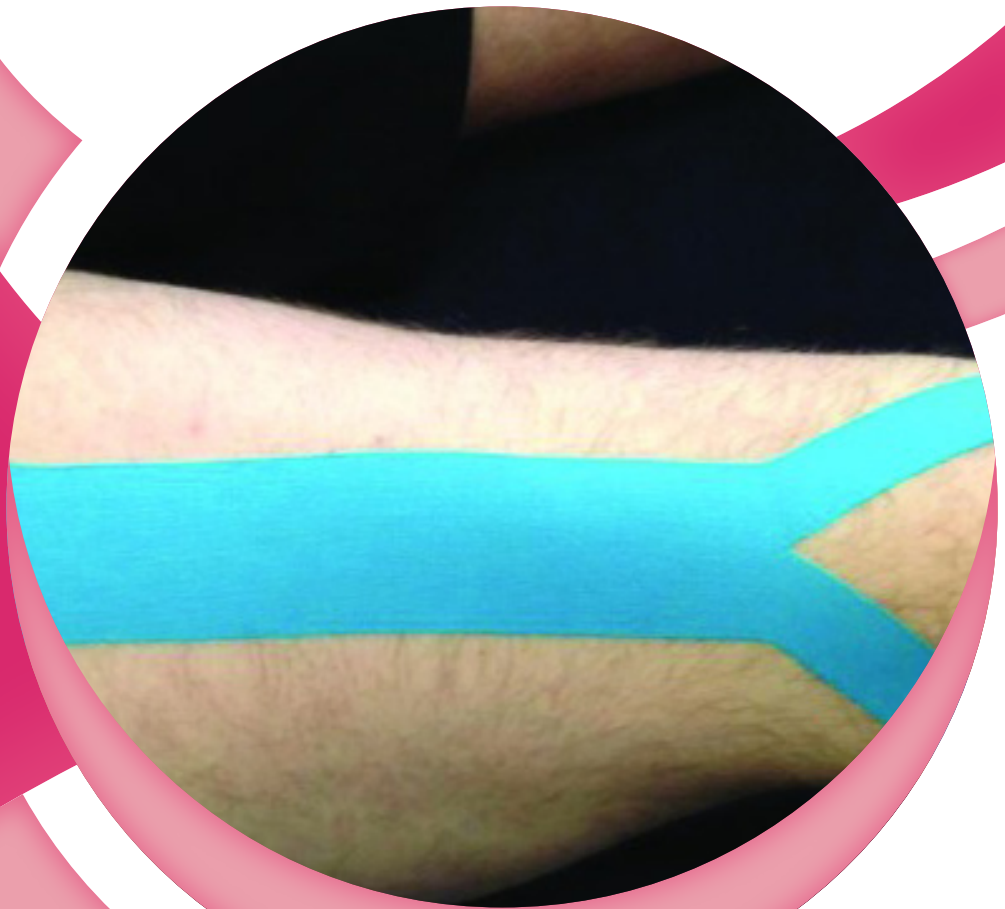
The main objectives of our study were the motor symptoms of Parkinson's disease. Neuro stimulation is an electrical effect on brain structures through percutaneous or implanted electrodes. In research we used video analysis of motion (Vicon system) to evaluate the change in the motor function and understand the effectiveness of the electro stimulation. In the video analysis of motion using specialized infrared cameras, the position and movement of the object in space is monitored. After that, we get data of the position of each of the markers, which can potentially be used to analyze the disturbance of the motor function and its subsequent recovery. In the work, video analysis was used to analyze the movement of rats, Parkinson's patients before and after electro stimulation. Electro stimulation is one of the most effective ways to combat the symptoms of Parkinson's disease. In the study video data of the motion was analyzed to understand the influence of electro stimulation on quality of the motion function. It was shown that the variation in angular values in the joints of the pelvic limb of a rat during walking, high values of the standard deviation may indicate the presence of muscle tremor. The results also show that electrical stimulation of the spinal cord has a positive effect on restoration of locomotion after neuronal damage caused by the model of Parkinson's disease in rats. It can be concluded that electrical stimulation of the spinal cord has a positive effect on the biomechanical characteristics of locomotion in Parkinson's disease.

Biography

Mikhail Zaytsev is currently pursuing Bachelor's degree program in the Kazan Federal University, Institute of Fundamental Medicine and Biology.

collsomike5@gmail.com

Notes:



International Conference on
Kinesiology and Biomechanics

November 05-06, 2018 Singapore

Accepted Abstracts

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

The effect of myofascial trigger points treatment on muscle elasticity, strength and function

Anastasios Efstratiadis, G Ploutarchou, E Lazoura and P Georgiadou
European University of Cyprus, Cyprus

Introduction: The appearance of Myofascial Trigger Points (MTrPs) on human body can cause variety of changes, such as inflexibility, loss of strength and dysfunction of the intramuscular mobility. MTrPs are separated in active and latent MTrPs and they can be created by many direct and indirect causes. Therefore, each MTrPs category creates specific symptomatology and it can affect in different ways the daily life of the human body. Thereby MTrPs can be treated with different interventions, which namely present different action mechanism but all of them have similar results.

Purpose: The purpose of the review is to illustrate through the contemporary arthrography the effect of the different ways of treating MTrPs and whether the treatment of the points affects the elasticity, strength and function of the muscles.

Method: The review was primarily based on clinical trials or randomized clinical trials that were conducted over the last five years to validate existing knowledge. For the computer search, online databases of PubMed and Google Scholar were used to retrieve articles. Studies that used children, elderly and animals were excluded.

Results: Dry Needling seems to reduce the level of pain and hypersensitivity. Moreover, the effects of this treatment over the short term appear to be long-term. Shockwave therapy has significant results (1500 pulse, 2 times per week), may help reduce MTrPs and in the long run can reduce pain and increase the range of motion. Therapeutic ultrasound (3 Hz, 0.132 w/cm², 4 h) can be applied at local MTrPs with successful pain reduction, but this success seems to be as effective as placebo treatment. Ischemic pressure reduces local pain levels while increasing the range of motion of the involved joints. It is important to note that the effects of ischemic pressure are not only short-term; however, it has long-term results as well. The Ergon-IASTM technique of peritoneal release seems to be an effective tool for pain management and treatment of MTrPs, because after their application they appear to reduce pain levels and increase the range of motion. The same results appear to be with the application of a roller (Foam Roller).

Conclusion: Several ways of managing MTrPs have emerged from time to time, However, through contemporary articles; the most effective tools are Dry Needling, shockwave, Ischemic Pressure, ERGON and Foam Roller. More studies of high methodological quality are needed in the future to examine the most effective form of treatment.

tasose@hotmail.com

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

Analysis of work immersion program of Manila Central University Senior High School (MCU-SHS): Basis for program development toward Bachelor of Science in Physical Therapy (BSPT)

Er D Petil Jr

Manila Central University, Philippines

The implementation of the K-12 educational reform institutionalized the ladderisation toward a bachelor's degree program. One of the goals of the K-12 basic education program is to develop the competencies, work ethics and values relevant to pursuing further education and joining the world of work among learners. The goal of work immersion program is to become familiar with the workplace, employment simulation and to apply competencies in areas of specialization in authentic work environment. This analysis looked at the Work Immersion Program (WIP) of MCU-SHS whose interest is pursuing career in physical therapy and two physical therapy professors that handle PT subjects that also assigned to handle and supervised SHS students. SHS Students underwent an eighty (80) hours of orientation, simulation activities about PT subjects and practice. At the same time, the investigation looked into the surrounding issues and problem influencing the decision making of the SHS students leading to physical therapy professions. Crucial to the understanding of agency in the preparation of program toward a successful work immersion program of the kaleidoscope of physical therapy profession as to nature of work, work ethics, and discipline and to apply the competencies in physical therapy with authentic work environment.

erpetil@yahoo.com

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

Comparative analysis of virtual reality versus progressive resistive exercises in improving arm function of patients with hemiplegic in Bacoor, Cavite

Er D Petil Jr¹, Bob O Jimenez², Darwin Panganiban², Lachica L M², Catacutan J² and Logronio A Y²¹Manila Central University, Philippines²St. Dominic College of Asia, Philippines

Virtual reality (gaming console) and Progressive Resistive Exercises (PREs) have emerged as recent treatment approaches in stroke rehabilitation. In particular, the game console is used to aid in portraying and calculating body positioning, visual perception, balance and gross motor skills while PREs is a strengthening technique that basically used by the physical therapist in treating impairments particularly muscle weakness. PREs can be administered *via* different forms; the study utilized PNF D1 Flexion, Extension patterns through resistive bands. The principle states that to improve muscle performance and functionality, it should exceed the metabolic capacity of the muscle and challenged to perform at a level greater than to which it is accustomed. Aim of this study is to improve the arm function of patients with hemiplegic by using new dimensional approach. Quasi experimental group pre and posttest design is used in the study. Retrospectively, all the post-stroke patients who are at the age range of 40-70 years old were reviewed with selection criteria and been oriented with informed consent. 15 participants were randomly array into three variable groups; the two groups were distributed to the experimental group that represents the Nintendo Wii and the PREs group. The remaining group represents the control group which undergoes stretching technique and Range of Motion exercises (ROM) in the upper extremity. They were subjected into 15 treatment sessions and assessed two times by using the modified Fugl-Meyer Assessment of Physical Performance for the functional mobility of the affected upper extremity of the post-stroke patients. Assessment was imposed before starting our first the treatment session and after the final session. The modified Fugl-Meyer Assessment of Physical Performance demonstrates that virtual reality has the highest mean scores among all the interventions done with a $M=55.80$, $SD=2.168$ followed by the PREs ($M=48.20$, $SD=6.340$), and lastly the control group which is the lowest post-test mean score ($M=40$, $SD=1.581$). There is a significant difference on the post-test scores of the PREs as compared to virtual gaming console. With the computed significant value of $p=0.035$ suggests to accept the null hypothesis. This shows evidence that gaming console is a far more effective treatment than PREs for post-stroke patients in improving the mobility of the affected upper extremity.

erpetil@yahoo.com

Notes:

International Conference on

KINESIOLOGY AND BIOMECHANICS

November 05-06, 2018 Singapore

Neck position accuracy, kinesthesia, kinematic impairment, motor control and pain: A randomized control trial study in patients with upper trapezius muscle trigger point before and after fatigue

Mehdikhani Roya, Olyaei Gholam Reza, Hadian Mohammad Reza, Talebian Moghadam Saeed and Shadmehr Azadeh
Tehran University of Medical Science, Iran

Aim: The aim of this work was to investigate the cervical position sense and Electromyography (EMG) responses of cervical muscles during head reposition movements in students with and without an upper trapezius muscle trigger point.

Method: The evaluations were performed with the patient seated comfortably in a chair with both feet flat on the digital balance, hips and knees flexed at 90°, buttocks positioned against the back of the chair and treated shoulder unclothed. Volunteers were asked to sit on a chair in an upright position with relaxed arms positioned at the sides of their body. The head was kept in the same position as the trunk and the vertebral column. During the test, the subjects were asked to look forward with no cervical and trunk rotation, extension or flexion. Such was the position of the subjects. Different receptors convey each somato sensory information which includes pain, temperature, and tactile sensations as well as conscious proprioception. The position sense test measures the accuracy of position replication and can be conducted actively (active position sense) or passively (passive position sense) in both open and closed kinetic chain positions. Furthermore, it was suggested that the position sense decreased even if the shortening muscle during the position sense measurement involved muscle fatigue. It ensures that the increase in Joint Position Sense (JPS) was really as a result of fatigue. In the absence of fatigue, there could be further improvement or no change in Joint Position Sense (JPS).

Result: The results of the present study showed that the fatigue of Trigger Points (TrPs) significantly improved the Range of Motion (ROM) of the thoracolumbar spine, PPT, and Visual Analogue Scale (VAS) when compared to compression at non-trigger point.

Conclusion: In general, the results of the included studies give an equivocal answer to the question of whether the Joint Position Sense Error (JPSE) is higher in people with cervical spine lesions caused by trauma and/or non-traumatic neck complaints than in controls.

Mehdikhani.physicaltherapy@gmail.com