

대한물리치료학회 2009년
추계학술대회 초록집

The 21th Annual Meeting of the Korean Society of Physical Therapy



대한물리치료학회
The Korean Society of Physical Therapy

ABSTRACT PROGRAM

THERAPIST SESSION

- PT-1** Analysis of Ultrasonography on Biceps Brachii muscle of Hemiplegic Patient 9
Hyun Jin Kim, Ga-Ae Yang, Su-Hyon Kim, Tae Youl Kim
- PT-2** Change of Maximal Joint Angle according to Gait Surface on Hemiplegia 10
Kyeong-Soon Park, Su-Hyon Kim, Young-Eun Lim, Suk Oh, Ji-ho Choi, Tae-Youl Kim
- PT-3** Characteristics of stepping behavior and dynamic balance control in the elderly 11
Heong-Dong Kim
- PT-4** Evaluation of wound healing effects of percutaneous electrical nerve stimulation in rats · 12
Gwang-Sik Gong, Su-Hyon Kim, Young-Eun Lim, Ji-Hey Lee, Tae-Youl Kim
- PT-5** Evaluation using by digital imaging analysis on wound contraction effect and percutaneous electrical nerve stimulation in excision wound of rats 13
Gwang-Sik Gong, Su-Hyon Kim, Young-Eun Lim, Ji-Hey Lee, Tae-Youl Kim
- PT-6** Heat enhanced transdermal delivery and anti-hyperalgesic effect of ketorolac hydrogel by radiofrequency current 14
Kyeong-Soon Park, Su-Hyon Kim, Young-Eun Lim, Suk Oh, Ji-ho Choi, Tae-Youl Kim
- PT-7** Neural network related movements; a combined study of diffusion tensor tractography and functional MRI 15
Ji-Heon Hong, Chun-Sun Kim, Ji-Won Park, Sung-Ho Jang
- PT-8** Recovery of a Patient with a Cerebellar Peduncle Injury Due to Intracerebral Hemorrhage 16
Ji-Heon Hong, Jin-Ho Choi, Mi-Young Lee, Sung-Ho Jang
- PT-9** Reorganization of motor cortex and fiber tract by motor learning: combined with fMRI and DTI 17
Ji-Won Park, Mee-Young Lee, Ji-Heon Hong, Sung-Ho Jang
- PT-10** The anatomical location of the cortico-ponto-cerebellar tract in human brain 18
Ji-Heon Hong, Sang-Seok Yeo, Chun-Sun Kim, Yong-Hyun Kwon, Sung-Ho Jang
- PT-11** The Change of Sympathetic Nerve Response by Electrical Stimulation 19
Dong-Gual Lee, Sam-Ki Seo, Jeong-Woo Lee
- PT-12** The Comparative Study on Age-associated Gait Analysis in Normal Korean 20
Na-Mi Yoon, Geon Kim, Hee-Jong Yoon, Jae-Young Kang, Dong-Hyun Byeon
- PT-13** The Comparison of Effect of MC Intensity in Pain and ROM in Delayed Onset Muscle Soreness 21
Seun-Deuck Kim, Hye-Mi Park, Hwa-Su Jung
- PT-14** The Effect of Electrical Stimulation for Dysphagia Caused by Cerebral Infarction 22
Hye-Min Kwon, Se-Won Yoon, Jeong-Woo Lee
- PT-15** The effect of surface EMG activity trunk stabilization training using by PNF on the rectus abdominal muscle 23
Nam-yong Lee, Su-Hyon Kim, Tae Youl Kim

Abstract Program

- PT-16** The Effects of Asymmetrical Weight Bearing on Bone Mineral Density in Chronic Hemiplegic Limbs 24
Hwa-Kyung Shin, Han-Sung Choi, Sang-do Lee, Tae-Ho Kim
- PT-17** The Study of Functional Independence and Bone Mineral Density in Athletes With Spinal Cord Injury 25
Jae-kyung Lee, Sung-woo Shin, Dae-yong Noh, Hwa-Kyung Shin

STUDENT SESSION

- SPT-1** A Study on Kinematic Gait Analysis of the Normal Adult 29
Hyun-Ho Choi, Joon-Soo Park, Young-Ho Kim
Supervised by Prof. Hee-Jong Yoon
- SPT-2** An Influence of Swiss Ball Exercises by Patients with Unilateral Paralysis on Equilibrium 30
Byeong-Hwa Lee, Seon-Mi Baek, Mi-Ae Son, Young-Dae Shin, Sung-Yup Ahn Shin-Young Ahn, Hyun-Sook Yang, Sang-Ho Lee, Yu-Mi Lee, Byeong-Ae Jeong Hae-Min Jung
Supervised by Prof. Sang-Wan Han
- SPT-3** Architecture analysis of muscular performance according to the angular velocities of isokinetic exercise at the quadriceps using ultrasound image 31
Jin-Soon Kim, Je-Hun Kim, Yun-Ji Gu, Ha-Ra Gu, Dan-Sun Kim, Ji-Eun Kim Han-Na Kim, Jung-Ran Ma, Jong-Su Park, Jung-Woon Seo, Tae-Bong You
Supervised by Prof. Sang-Wan Han
- SPT-4** Comparison of Footbath and local contrast bath about Physiological factor of young female 32
So-Eun Yang, Yong-Hwa Kim, Eun-Hye Park, Kyung-Hwan Bang, Hye-Ok Song Da-Mi Sim, Na-Young Yoo, Jin Yoon, Bo-Ram Lee, Sung-Min Jung
Supervised by Prof. Sang-Wan Han
- SPT-5** Comparison of trunk muscle strength, coordination and pain after sling and Swiss ball exercise for low back pain patients 33
Hee-Mang Noh, Yang-Gi Ko, Mi-Yeon Kim, Ba-Ni Kim, Se-Young Kim Su-Young Kim, Su-Jin Kim, Yun-Ho Kim, Jin Noh, Bong-Gi Mun
Supervised by Prof. Sang-Wan Han
- SPT-6** Comprehension of effect about Period of Retention on Neuromuscular Inhibition Stretching to DOMS 34
min-joo Kim, hyun-su Kim, min-ji Park, young-jong Lee, byung-sun Lim, bo-ram Jeon, ji-myung Choi
Supervised by Prof. Kyoung-Yoon Kim, Ki-Won Nam
- SPT-7** Descriptive study on Job Satisfaction and its influenced factors for physical therapists in G city 35
sang-uk Kim, hye-won Yun, sa-ra Lee, seung-min Cho, yeon-ju Cha
Supervised by Prof. Tae-Youl Kim
- SPT-8** Effect of Chair Inclination on Sit to Stand Movement in Healthy Adults 36
Su-Jung Yoon, Ji-eun Shin, Mi-Na Kim, Sun-Jung Jang, Young-Eun Cho
Supervised by Prof. Hwa-kyung Shin

ABSTRACT PROGRAM

- SPT-9** Effect of Neuromuscular Electrical Stimulation and Voluntary Isometric Exercise Fatigue and Recover According to Different on-off Time 37
na-ri Kim, soon-mi Bae, yi-na Shin, ju-young Shim, ji-hoon Lee, yoon-jae Jang
Supervised by Prof. Tae-youul Kim
- SPT-10** Effect of Proprioceptive Neuromuscular Facilitation (PNF) exercise on the muscular strength, balance, and range of motion for the elder people over sixty five 38
Dae-Myung Kim, Young-Sik Kang, Yo-Na Kim, Il-Hyun Kim, Seang-Ryung We Eun-Ho Lee, Lu-Li Lee, Ji-Hee Lee, Eun-Jin Jeong, Eun-Jung Jo
Supervised by Prof. Sang-Wan Han
- SPT-11** Effects of PIR Technique & Static Stretching on Increased GCM Muscle Tightness 39
Ju-Hye Kim, Jung-Min Lee, Sun-Bok Kim, Song-Hyun Moon
Supervised by Prof. Ji-Won Park
- SPT-12** Lower limb muscular strength and body performance ability comparison of the exercise in water and on land for 6 weeks 40
Young-Rok Oh, Seung-Chae Baek, Mi-Ran Seo, Young-Im Seo, Kyul Son Su-Yeon Song, Sol Shin, Ja-Eun Shin, Hee-Jin Yu, Hae-Bong Yu, Ran-Hee Lee
Supervised by Prof. Sang-Wan Han
- SPT-13** The Change of Autonomic Nerve Response by The Low-frequency Transcutaneous Electrical Nerve Stimulation 41
Ji-Eun Kang, Se-Young Ko, Ah-Rong Park, Shin-Hye Lee, Eun-Ae Choi, Ga-Young Jung.
Supervised by Prof. Jeong-Woo Lee
- SPT-14** The Change of Body Alignment and Balance of Women in Early Twenties by Weight of Shoulder Bag 42
Young-Ji Kwon, A-Ram Kim, So-Young No, Sun-Young Park, Hye-Sun Lee
Supervised by Prof. Jeong-Woo Lee
- SPT-15** The compare of muscular strength changing in the quadriceps between isotonic and isokinetic exercise 43
Yi-Seul Jung, Sun-Wook Kim, Leem Seo, Seok-Min Lee, Jin-Young Lee, Hye-Ji Lee, Haeng-Hwa Jeon, A-Sun Jung, Da-Un Choi, San Han, Woon-Pyo Hong
Supervised by Prof. Sang-Wan Han
- SPT-16** The Effect of Balance Ability and Ankle Muscle by Balance Training at an Unstable Surface 44
Do-Lee Kim, Na-Ra Park, Bo-Ra Jeong, Yu-Jeong Jeong, Geum-Bi Choi
Supervised by Prof. Yeon-Woo Jung
- SPT-17** The Effect of Biofeedback Application on Standing Balance of Women in Early Twenties .. 45
Da-Wun Na, So-Yeon Park, Seul-Gi Jung, Min-Ji Ju, Min-Jung Han.
Supervised by Prof. Se-Won Yoon
- SPT-18** The Effect of Composition Training of Balance Ability in the Elderly Women 46
Sun-ju Kim, Seung-Hawn Kim, Eun-Ji Seo, Hyun-Suk Seo, Chi-Min Song, June-Yeon An, Su-Ja Yun
Supervised by Prof. Gye-Yeop Kim, Young-Eok Kim
- SPT-19** The Effect of Low-Intensity Ultrasound on Fracture Healing in the Rat 47
bo-ram Kang, su-ji Kim, seung-kwan Yang, hyun-ji Lee, eun-ha Jeon, hwan Jung
Supervised by Prof. Ki-Won Nam, Kyoung-Yoon Kim
- SPT-20** The Effect of Neck Therapeutic Exercise Affects posture and pain in Tension-type headache Patients 48
Jun-Young Choi, Sul-Ki Kim, Si-Nae Bae, In-Muk Lim, Mi-Hee Lim, Mi-Soon Choi Min-Kyu Choi, Eun-Ha Choi, Bit-Na Hwang, Soon-Bae Hwang
Supervised by Prof. Sang-Wan Han

ABSTRACT PROGRAM

- SPT-21** The Effect of Stress and Study-attitude on Children's Scoliosis 49
 nam-jae Kim, dong-ho Kim, jeong-seon Song, ji-eun Shin, a-ram Jeong, hey-jin Jeong
 Supervised by Prof. Gye-Yeop Kim, Young-Eok Kim
- SPT-22** The Effect of Taping and Brace to Ankle Stability during Level Walking 50
 Mi-suk Jung, ji-yoon kim, jeung-eun bae, yoon-jung jang
 Supervised by Prof. Heung-dong Kim
- SPT-23** The Effect of Treadmill Exercise and Electroacupuncture on Functional Recovery after
 Crush Injury of the Sciatic Nerve in Rats 51
 ki-han Kim, nam-yeon Kim, da-ae Kim, sung-gyu Yun, mee-ran Choi, eun-kyeong Hwang
 Supervised by Prof. kyoung-Yoon Kim, Ki-Won Nam
- SPT-24** The Effect of Trunk muscle Activation and Lumbar Flexibility from Diaphragmatic
 Breathing exercise on Posture 52
 byung-jin Kim, hyun-su Kim, mi-jung Park, lee-dae Park, so-won Lee, eun-hye Lee
 Supervised by Prof. Kyoung-Yoon Kim, Ki-Won Nam
- SPT-25** The Effect of Velocity on Onset Time of Lower Extremity Muscle during Driving Task 53
 Gil-Hee Sung, Seung-Kyou Kim, Malk-Eum Kim, Ha-Eun Hong, Keon-Woo Jeong
 Supervised by Prof. Hwa-Kyung Shin
- SPT-26** The Effect of Water Exercise on Strength of the Low-limbs depend on the Depth 54
 Moon-Jung Kim, Su-Hyun Kim, A-Reum Kim, Eun-Hye Kim, Sung-Ra Pak.
 Supervised by Prof. Yeon-Woo Jung
- SPT-27** The effects of ESWT and US on muscle power, pain and muscle tension at TrP
 of the scapular inter angle 55
 Seung-Hyub Lee, Seung-Hee Lee, Ho-Seok Lee, Han-Ey Jung, Da-Sol Joo, Min-Hee Choi, Hyun-Ji Choi,
 Eo-Ra Pi, Young-In Hong, Ji-Eun Kim
 Supervised by Prof. Sang-Wan Han
- SPT-28** The Effects of Forearm Muscle Strengthening Exercise on the hand function
 of Parkinson's Disease Patients 56
 Min-Jae Im, So-Yeong Kim, Bo-Ram Park, Jung-Hyeon Park, Hyung-Yeon Park Tae-Yun Yun, Su-Gyeong Wi,
 Gi-Ppeum Lee, A-Reum Lee, Seung-Gi Jeong
 Supervised by Prof. Sang-Wan Han
- SPT-29** The effects of muscle function by backward walking on treadmill grades
 of 7%, 10%, 12% 57
 Yoo-Ri Kim, Kah-Yang Kang, Bit-Na Kim, Sung-Min Kim, Seul-Gi Kim Yong-Woo Kim, Yu-Na Kim,
 Eun-Ji Kim, Young-Chang Park
 Supervised by Prof. Sang-Wan Han
- SPT-30** The Effects of the Hallwick 10 Point Program on Balance Maintenance of Women
 in Early Twenties 58
 Eun-Hae Kang, Yu-Ri KimA, Yu-Ri KimB, Yun-Hee Park, Seul-Bi Lee, In-Hye Cha
 Supervised by Prof. Se-Won Yoon
- SPT-31** The influence of core stability exercise program using Swiss Ball on muscle activity,
 muscle thickness, maximum muscular strength, and pain reduction on the trunk region
 on the participants who has a low back pain 59
 Seon-Yu Kim, Hyu-Na Go, Kyung-Woo Kim, Bo-Ram Kim, Eun-Jeong Kim, Jea-Hyun Kim, Chan-Woo Rho,
 Jin-Joo Mun, Gu-Young Park, Mi-Ra Park,
 Supervised by Prof. Sang-Wan Han
- SPT-32** The Research about the effect on Cardiopulmonary capacity of the Respiratory Exercise
 and Aquarobics in Water 60
 do-hee Park, sang-hyeon Park, seon-woo Lee, jeong-in Lee, song-lee Jeon, chan-suk Jeong, mi-ri Hwang
 Supervised by Prof. Gye-Yeop Kim, Young-Eok Kim

초 록

Therapist Session

PT-1

Analysis of Ultrasonography on Biceps Brachii muscle of Hemiplegic Patient

Hyun Jin Kim¹, Ga-Ae Yang, Su-Hyon Kim¹, Tae Youl Kim²

¹Dept. of Physical Therapy, Graduate School of Dong shin University,

²Dept. of Physical Therapy, Dong shin University

Purpose:

This study aims to comparison of ultrasonography on both sides of biceps brachii muscle of hemiplegic patient.

Methods:

The biceps brachii muscle of fifteen subjects (5 male, 10 female) with stroke were scanned with ultrasonography at the muscle belly at rest at elbow angles of 90 deg. The echogenicity (density, white area index; WAI, anatomic cross-sectional area; ACSA, volume) of ultrasonography was examined.

Results:

In the biceps brachii muscle, there were significant differences of density, WAI, ACSA, and volume between affected side and non-affected side. biceps brachii muscle, echogenicity (density, WAI) of the affected side was higher than non-affected side. biceps brachii muscle, echogenicity (ACSA, volume) of the non-affected side was higher than affected side.

Conclusion:

This study showed that change of skeletal muscle architecture properties occurred biceps brachii muscle of the affected side muscle of hemiplegic patient.

Key Words: Ultrasonography, Hemiplegia, Biceps brachii muscle.

PT-2

Change of Maximal Joint Angle according to Gait Surface on Hemiplegia

Kyeong-Soon Park, Su-Hyon Kim¹, Young-Eun Lim², Suk Oh¹, Ji-ho Choi¹,
Tae-Youl Kim³

Dept. of Physical Therapy, Chungnam National University Hospital,

¹*Dept. of Physical Therapy, Graduate School of Donshin University,*

²*Dept. of Physical Therapy, NamDong Rehabilitation Community Center,*

³*Dept. of Physical Therapy, Dong shin University.*

Purpose:

The objective of this study is to evaluate the changes of ability to crossing obstacles and kinematic characteristics following strokes.

Methods:

Twelve individuals with strokes participated in this study. After the participants were tested by a 3-dimensional motion analysis system (Vicon Mx Motion Analysis System, Oxford Metrics Inc., UK) was used to calculate their gait.

Results:

In the difference of the maximum joint angle at ankle, knee, and hip joints according to the changes of walking supports, there were significant differences at the ankle joint between flat support and slope support, at the knee joint between soft support and slope support, and at the hip joints between flat support and soft support and between flat support and slope support. With different supports, the larger maximum joint angles were illustrated at the ankle joint in flat support, at the knee joint in soft support, and at the hip joints in soft and slope supports.

Conclusion:

As the result of experiment, while walking in a slope, there was a significant difference between maximum joint angles of ankle joint and maximum joint angles of hip joint according to change of walking ground.

Key Words: Maximal Joint Angle, Gait, Hemiplegia

PT-3

Characteristics of stepping behavior and dynamic balance control in the elderly

Heong-Dong Kim

Dept. of Physical Therapy, College of Health Science, Catholic University of Daegu

Purpose:

The purpose of this study was to investigate how young and older adults modulate the center of pressure (COP) trajectory while stepping over an obstacle and onto a curb.

Methods:

Fifteen healthy young adults and fifteen healthy older adults stepped over an obstacle (18 cm in height) and onto a curb (18 cm in height) at a self-paced speed. Performance was assessed by recording changes in the excursion of COP in the anteroposterior (A-P) and mediolateral (M-L) directions, and by measuring the average velocity of the COP using a force platform.

Results:

The A-P and M-L excursion of COP and the average velocity of COP of the elderly were significantly less than those of the young adults ($p < 0.01$). However, the COP variables between the stepping tasks were not significantly different.

Conclusion:

The COP excursion and velocity during obstacle crossing might be appropriate parameters for evaluating the dynamic balance control strategies in the elderly.

Key Words: Aging, Dynamic balance, Falling

PT-4

Evaluation of wound healing effects of percutaneous electrical nerve stimulation in rats

Gwang-Sik Gong, Su-Hyon Kim¹, Young-Eun Lim², Ji-Hey Lee³, Tae-Youl Kim⁴

Dept. of Physical Therapy, Dongshin Oriental Medicine Hospital,

¹*Dept. of Physical Therapy, Graduate School, Dongshin University,*

²*Dept. of Physical Therapy, NamDong Rehabilitation Community Center,*

³*Dept. of Biokinesiology and Physical Therapy, University of SouthernCalifornia,*

⁴*Dept of Physical Therapy, Dongshin University*

Purpose:

The purpose of this study was to assess the morphological effect of percutaneous electrical nerve stimulation(PENS) of various frequencies on wound contracture, using wound rats to which PENS were applied.

Methods:

In order to compare the effects between sham PENS and PENS on wound contraction, one kind of wound; excision wound, were inflicted on 24 rats, and then applied electric stimulus to the rats which were divided into a control group (group I), a sham PENS group (group II), a low frequency (2 Hz) PENS group (group III), and a high-frequency (100 Hz) PENS group (group IV).

Results:

As the result of investigating significance between the control group and the PENS groups, we found that the high pulse rate PENS group showed the significant healing effect, compared to the control and sham PENS group. Also, in case of the effect of PENS with regard to frequencies, a high pulse rate (100 Hz)- PENS was more effective than a low pulse rate (2 Hz)- PENS. In biochemical analysis of granulation tissue, we assessed the density of hydroxyproline, which is one of main indicators of collagen.

Conclusion:

PENS is more effective on wound healing than control group and sham PENS group. But high pulse rate- PENS have more effective than low pulse rate- PENS group to produce collagen. therefore, it is effective for wound healing in clinical field.

Key Words: Electroacupuncture, Wound healing, hydroxyproline.

PT-5

Evaluation using by digital imaging analysis on wound contraction effect and percutaneous electrical nerve stimulation in excision wound of rats

Gwang-Sik Gong, Su-Hyon Kim¹, Young-Eun Lim², Ji-Hey Lee³, Tae-Youl Kim⁴

Dept. of Physical Therapy, Dongshin Oriental Medicine Hospital,

¹*Dept. of Physical Therapy, Graduate School, Dongshin University,*

²*Dept. of Physical Therapy, NamDong Rehabilitation Community Center,*

³*Dept. of Biokinesiology and Physical Therapy, University of SouthernCalifornia,*

⁴*Dept of Physical Therapy, Dongshin University*

Purpose:

The purpose of this study was to assess the morphological effect of percutaneous electrical nerve stimulation(PENS) of various frequencies on wound contracture, using wound rats to which PENS were applied.

Methods:

We analyzed the morphological effect, with measuring the area of excision wound, contraction rate, chromatic red, luminance. Digital camera and image analysis program were used to measure and analyze the wound area which was also used for the contraction rate. Chromatic red and luminance were obtained by calculating red, green, blue (RGB) values of wound area.

Results:

As the result of investigating significance between the control group and the PENS, we found that the high frequency PENS group showed the significant contraction effect, compared to the control and PENS group. Also, in case of the effect of PENS with regard to frequencies, a high frequency (100 Hz) PENS was more effective than a lower frequency (2 Hz) PENS.

Conclusion:

Wound contraction effect evaluated by digital imaging analysis is more quantitative. It was through, high frequency electroacupuncture have more effective than control and lower frequency electroacupuncture group.

Key Words: Digital Imaging Analysis, Wound Contraction, Electroacupuncture.

PT-6

Heat enhanced transdermal delivery and anti-hyperalgesic effect of ketorolac hydrogel by radiofrequency current

Kyeong-Soon Park, Su-Hyon Kim¹, Young-Eun Lim², Suk Oh¹, Ji-ho Choi¹,
Tae-Youl Kim⁴

Dept. of Physical Therapy, Chungnam National University Hospital,

¹*Dept. of Physical Therapy, Graduate School of Donshin University,*

²*Dept. of Physical Therapy, NamDong Rehabilitation Community Center,*

³*Dept. of Physical Therapy, Dong shin University.*

Purpose:

This research was undertaken to examine parameters of radiofrequency current (RFC) using ketorolac tromethamine (KT) and the efficacy of transdermal delivery according to the physicochemistry characteristics on the drug.

Methods:

The experiments were mainly allocated to two parts; in vitro and in vivo. In vitro, experiments were performed to evaluate permeability of KT in order to apply different frequency (0.5 MHz, 1 MHz) and intensity (50 W/cm², 100 W/cm², 150 W/cm²) in RFC. In vivo, experiments were performed complete Freund's adjuvant (CFA) inflammatory rat model. We measured anti-hyperalgesia after applying KT hydrogel to rats.

Results:

In the results of in vitro, there was positive increasing permeability with different RFC frequency and intensity consequently time changes. In the results of in vivo, there were significant differences in edema, mechanical pain threshold, and thermal pain threshold in CFA-inflammatory model.

Conclusion:

Based on the above results, transdermal drug delivery by heat showed deep heating effect on increasing tissue temperature using by high frequency and high intensity on RFC. It could be considered that KT hydrogel would provide transdermal drug delivery effect in order to observe anti-hyperalgesic effect.

Key Words: Heat enhanced transdermal Drug Delivery, Radiofrequency Current, Ketorolac Tromethamine, anti-Hyperalgesic

PT-7

Neural network related movements; a combined study of diffusion tensor tractography and functional MRI

Ji-Heon Hong, Chun-Sun Kim¹, Ji-Won Park², Sung-Ho Jang

Dept. of Physical Medicine and Rehabilitation, College of Medicine, Yeungnam University; ¹Dept. of Physical Therapy, College of Rehabilitation Science, Daegu University; ²Dept. of Physical Therapy, College of Health Science, Catholic University of Daegu

Purpose:

One of the most intriguing issues of the neuroscience is to elucidate of the neural network for the human movements. We attempted to elucidate neural network concerned with hand movements using DTT analyzed with the results of fMRI activation.

Methods:

19 right handed normal volunteers were recruited. Both fMRI and DTI were acquired using a sensitivity-encoding head coil at 1.5T. Probabilistic mapping was performed using the fMRI activation resulting from a hand motor task as region of interest. Out of the 5000 samples generated from each seed voxel, the results for each contact were visualized threshold at a minimum of 25 streamlines and a maximum of 5000 streamlines through each voxel for analysis.

Results:

The neural network was interconnected with M1, SMA, PMC, and S1, which executed motor output, and was ascertained that SPL, IPL, supramarginal gyrus, angular gyrus, pars opercularis, middle temporal gyrus, VP and VL of the thalamus, posterior one-third of putamen and cerebellum hemisphere were directly connected motor execution area.

Conclusion:

This is the first study to demonstrate the neural network of movements, including cortico-cortical and cortico-subcortical connectivity, in human using probabilistic tractography techniques of DTI. This work was supported by the Korea Research Foundation Grant funded by the Korean Government (KRF-2008-314-E00173).

Key Words: Diffusion tensor imaging, Neural network

PT-8

Recovery of a Patient with a Cerebellar Peduncle Injury Due to Intracerebral Hemorrhage

Ji-Heon Hong, Jin-Ho Choi¹, Mi-Young Lee¹, Sung-Ho Jang

Dept. of Physical Medicine and Rehabilitation, College of Medicine, Yeungnam University; ¹Dept. of Physical Therapy, College of Health and Therapy, Daegu Haany University

Purpose:

The cerebellum is a vital structure, which contributes to motor control and cognition. We report on a patient with cerebellar peduncles injuries due to intracerebral hematoma in the cerebellum that showed functional recovery over a period of three months.

Methods:

A 72-year-old female patient and nine age- and sex-matched control subjects were recruited. DTIs were acquired using a sensitivity-encoding head coil at 1.5 T. Three cerebellar peduncles, namely, the superior cerebellar peduncle (SCP), the middle cerebellar peduncle (MCP), and the inferior cerebellar peduncle (ICP) were evaluated using DTI-Studio software.

Results:

This patient could not even sit at 3-weeks post-onset, but was able to walk independently and perform most daily activities at 4-months post-onset. In 3-week diffusion tensor tractography (DTT) images, all six cerebellar peduncles were compressed by the hematoma. The posterior portions of all three left cerebellar peduncles were shortened, and in particular, the left MCP was interrupted in its mid-portion. In 4-month DTT images, all compressed cerebellar peduncles were restored.

Conclusion:

It appears that the functional recovery of this patient was due primarily to decompression of compressed cerebellar peduncles, and not to the recovery of injured cerebellar peduncles. "This work was supported by the Korea Research Foundation Grant funded by the Korean Government (KRF-2008-314-E00173).

Key Words: Diffusion tensor imaging, Stroke, Cerebellar peduncle

PT-9

Reorganization of motor cortex and fiber tract by motor learning: combined with fMRI and DTI

Ji-Won Park, Mee-Young Lee¹, Ji-Heon Hong², Sung-Ho Jang²

Dept. of Physical Therapy, College of Health Science, Catholic University of Daegu;

¹Dept. of Physical Therapy, College of Health and Therapy, Daegu Hanny University;

²Dept. of Physical Medicine and Rehabilitation, College of Medicine, Yeungnam University

Purpose:

This study was to delineate the change of cerebral motor network at the level of cerebral cortex and motor tract after motor learning using functional MRI (fMRI) and diffusion tensor imaging (DTI).

Methods:

The participants were 20 healthy subjects, which were divided by training (n=10) and control (n=10) group. The task for the training and fMRI was the Serial Reaction Time Task (SRTT) which was designed by Superlab program. All subjects were scanned on fMRI and DTI before the experiment and processed follow-up scan after 2 weeks. The training group participated in the training program of motor learning with SRTT composed of 24 digits pattern.

Results:

In the behavioral results the training group showed significant changes in the increase of response number and the reduction of response time than those of the control group. The fMRI results in initial scan of both group activated at the left primary sensorimotor area, bilateral premotor area, posterior parietal cortex, and supplementary motor area (SMA). The training group showed the reduction of brain activation in all areas except the SMA showed in initial fMRI, but not change in control group. There was significant difference in the left inferior frontal area in the FA map of the training group in DTI analysis and more increase of corticospinal tract in analysis by fMRI activation combined with DTI in some subjects of training group.

Conclusion:

These results suggest that the short-term motor learning is related to the change of motor and memory network at the level of cerebral cortex and white matter. "This work was supported by the Korea Research Foundation Grant funded by the Korean Government (MOEHRD, Basic Research Promotion Fund) (KRF-2007-313-E00395)."

Key Words: Functional MRI, Diffusion tensor imaging, Serial reaction time task

PT-10

The anatomical location of the cortico-ponto-cerebellar tract in human brain

Ji-Heon Hong, Sang-Seok Yeo¹, Chun-Sun Kim¹, Yong-Hyun Kwon²,
Sung-Ho Jang

Dept. of Physical Medicine and Rehabilitation, College of Medicine, Yeungnam University; ¹Dept. of Physical Therapy, College of Rehabilitation Science, Daegu University; ² Dept. of Physical Therapy, Yeungnam College of Science and Technology

Purpose:

Little is known about the detailed anatomy of the corticopontocerebellar tract (CPCT) in the human brain. We attempted to investigate the anatomical pathway of CPCT in the human brain, using diffusion tensor tractography (DTT) analyzed with functional MRI (fMRI) results.

Methods:

We investigated the anatomical pathway of the CPCT in 14 human subjects, using diffusion tensor tractography analyzed with functional MRI (fMRI) results from hand grasp-release movements. Three-dimensional reconstructions of CPCTs were obtained by choosing the fibers passing through both the seed region of interest (the activated cluster including the precentral knob in the contralateral cerebral hemisphere) and the target region of interest (the activated cluster including the ipsilateral cerebellar hemisphere).

Results:

The CPCT, which originated from the cerebral cortex, descended to the pontine nucleus through the corona radiata, the posterior limb of the internal capsule, and the cerebral peduncle. After crossing the pons through the transverse pontine fibers, the CPCT entered the cerebellum via the middle cerebral peduncle. However, some variation was detected in the midbrain (middle cerebral peduncle and/or medial lemniscus) and pons (ventral and/or dorsal transverse pontine fibers).

Conclusion:

These results will be informative to research on motor control in the human brain. "This work was supported by the Korea Research Foundation Grant funded by the Korean Government (KRF-2008-314-E00173).

Key Words: Neuroanatomy, Diffusion tensor imaging, motor control

PT-11

The Change of Sympathetic Nerve Response by Electrical Stimulation

Dong-Gual Lee, Sam-Ki Seo¹, Jeong-Woo Lee²

Dept. of Physical Therapy, Chungnam University Hospital; ¹Dept. of Physical Therapy, Chunnam Techno College, ²Dept. of Physical Therapy, Kwangju Women's University

Purpose:

The purpose of this study was to examine the change of sympathetic nerve response by low frequency-high intensity electrical stimulation.

Methods:

Fourteen healthy subjects (women) received low frequency-high intensity electrical stimulation to one forearm. The subjects assigned to two groups; a ipsilateral stimulation group (n=7) and a contralateral stimulation group (n=7). The electrode attachment was arranged on the forearm of the dominant arm and the electricity stimulus time was set as 15 minutes. Measuring items were the skin conduction velocity, the blood flow, and the pulse rate, which were measured total 3 times (pre, post, and post 10 min.).

Results:

The skin conduction velocity showed a significant difference according to the change of the time regardless of ipsilateral or contralateral stimulation side, but there was no significant difference according to time in the blood flow, and the change of the pulse frequency regardless of stimulus side.

Conclusion:

This results demonstrate that the low frequency-high intensity electrical stimulation can increase selectively only with the skin conduction velocity, which may be helpful for the activation of the sudomotor function regardless of ipsilateral or contralateral stimulation side.

Key Words: Electrical stimulation, Sympathetic nerve response, Skin conduction velocity

PT-12

The Comparative Study on Age-associated Gait Analysis in Normal Korean

Na-Mi Yoon, Geon Kim¹, Hee-Jong Yoon¹, Jae-Young Kang², Dong-Hyun Byeon³

Dept. of Physical Therapy, Mokpo Science University; ¹Dept. of Physical Therapy, Mokpo Science University; ²Chonnam Jung-ang General Hospital; ³Mokpo Jung-ang General Hospital

Purpose:

This study was performed to set up the basic reference data of the temporo-spatial parameters for normal Korean according to the aging process.

Methods:

The basic gait parameters were extracted from 90 adults, 45 men and 45 women, 11 to 79 years of age using Vicon MX motion analysis system. According to the age, the normal subjects were divided into three groups as follows: Group I; children group (11.95±0.29 years), Group II; young adults group (23.90±3.67 years) and Group III; older adults group (71.40±4.08 years).

Results:

There were significantly differences between the groups according to the age in the temporo-spatial parameters such as cadence, double support, walking speed, step time, stride length and time of foot off. There were no significantly differences among groups in the temporo-spatial parameters such as single support and opposite foot contact.

Conclusion:

These results of this study can be usefull utilized as basic reference data of three dimensional gait analysis in normal Korean according to the age, and to benefit evaluations and the treatment of patients with pathologic gaits.

Key Words: Normal gait, Temporo-spatial parameters, Three dimensional gait analysis

PT-13

The Comparison of Effect of MC Intensity in Pain and ROM in Delayed Onset Muscle Soreness

Seun-Deuck Kim, Hye-Mi Park¹, Hwa-Su Jung²

Dept. of Physical therapy, Yuseong Wellness Hospital; ¹Dept. of Physical therapy, Rehabilitation Medicine, St. Carollo Hospital; ²Dept. of Physical therapy, Graduate School, Seonam University

Purpose:

The purpose of this study was to investigate the effects of microcurrent(MC) electrical stimulation on each intensity(100 μA , 200 μA , 500 μA - 30 pps frequency was same) on delayed onset muscle soreness(DOMS).

Methods:

Twenty-four healthy males and females subjects were participated in this study. Subjects were randomly divided into three groups of eight for 3 different treatment protocols(100 μA , 200 μA , 500 μA - experimental groups). All subjects performed eccentric exercise of elbow flexor(biceps brachii) until exhausted. The measured items of elbow flexor muscle strength were Nicholas Manual Muscle Tester(NMMT). The measured items of elbow joint range of motion(ROM) were Goniometer. The measured items of elbow flexor muscle pain were visual analogue scale(VAS). Treatment were applied at 30 minute exercise after and again at 24 hours and at 48 hours and at 72 hours after. Measurements were taken after treatment.

Results:

Eccentric exercise casused DOMS, DOMS response to eccentric exercise were reduces by microcurrent therapy. DOMS was significant decreased at 100 μA , 200 μA , 500 μA . Muscle strength was significant difference at all intensity. Elbow flexion ROM was significant difference at all intensity and VAS score was significant difference at 100 μA and 500 μA but insignificant difference at 200 μA .

Conclusion:

These results indicate that microcurrent therapy is had effect on recovery from exercise induced muscle damage. In our's suggestion, microcurrent therapy is particularly more appropriate therapeutic modality.

Key Words: Delayed onset muscle soreness(DOMS), Microcurrent electrical neuromuscular stimulation(MENS), Eccentric exercise.

PT-14

The Effect of Electrical Stimulation for Dysphagia Caused by Cerebral Infarction

Hye-Min Kwon, Se-Won Yoon¹, Jeong-Woo Lee¹

Dept. of Physical Therapy, Chungnam University Hospital; ¹Dept. of Physical Therapy, Kwangju Women's University

Purpose:

The purpose of this study was to analysis the effect of electrical stimulation for dysphagia caused by cerebral infarction.

Methods:

We recruited nineteen adults after cerebral infarction(14 male, 5 female; mean age, 69y) for our study. Electrical stimulation was used for participants with electrical stimulator connected to two pair of electrodes positioned on the neck for one hour a day and 5 times a week for 4 weeks. Maximum tolerated stimulation levels were applied at rest while participants held their mouth closed. Videofluoroscopic recordings, physical examination of swallowing, and swallow function score were used to evaluate swallowing state of participants. All evaluate items were evaluated before and after treatment.

Results:

There was no significance difference of swallowing stage. The swallow function score significantly increased from 1.8 to 5.3($p<0.001$). Also, cough reflex($p<0.001$), laryngeal excursion($p<0.01$) were significantly reduced compared to before electrical stimulation.

Conclusion:

Therefore, electrical stimulation for dysphasia is proved effective as it activates the function of swallowing muscle.

Key Words: Dysphagia, Swallow function score, Electrical stimulation

PT-15

The effect of surface EMG activity trunk stabilization training using by PNF on the rectus abdominal muscle

Nam-yong Lee, Su-Hyon Kim¹, Tae Youl Kim²

Dept. of Physical Therapy, Top Orthopedic Hospital, Dept. of Physical Therapy, Graduate School of Dong shin University¹; Dept. of Physical Therapy, Dong shin University¹

Purpose:

The purpose of this study was to study the effect of rectus abdominal muscle contraction by proprioceptive neuromuscular facilitation trunk stabilization training using extremity simultaneous pattern (PNF trunk stabilization training) and traditional trunk stabilization training methods.

Methods:

A group of 24 adults male and female, healthy, with no previous medical history no disability in neuromuscular system and musculoskeletal system was chosen as subjects, and was divided into a control group, a PNF trunk stabilization training group and a traditional trunk stabilization training group. Experiments were performed on the last two groups, 3 times a week for 6 weeks, totaling 18 times. Using a surface electromyography in left and right rectus abdominal were measured.

Results:

The following results were obtained; As for surface electromyography measurement and the changes in root mean square at the time of trunk flexion, in the left rectus abdominal, PNF trunk stabilization training group showed significant difference from the control group, while in the right rectus abdominal, traditional trunk stabilization training group showed significant difference.

Conclusion:

To sum up the results, both trunk stabilization training groups showed improvement in the motor unit action potential activity, but the difference between two trunk stabilization training groups was not significant. Therefore, while trunk stabilization training significantly improved rectus abdominal muscle contraction, but the difference attributable to training methods was found to be insignificant.

Key Words: proprioceptive neuromuscular facilitation (PNF), rectus abdominal muscle.

PT-16

The Effects of Asymmetrical Weight Bearing on Bone Mineral Density in Chronic Hemiplegic Limbs

Hwa-Kyung Shin, Han-Sung Choi, Sang-do Lee, Tae-Ho Kim¹

Dept. of Physical Therapy, Catholic University;

¹*Dept. of Physical Therapy, Daegu Health College*

Purpose:

The purpose of this study is to exam whether asymmetrical weight bearing between the paretic and non-paretic sides was associated with an accelerated bone loss following strokes.

Methods:

Sixteen hemiplegic patients with strokes (mean age=58.43±7.92 years) were evaluated. The measurements of bone mineral density (BMD) were evaluated with the quantitative ultrasound system on the calcaneus region of the paretic and non-paretic side. Plantar pressure was measured using the Mat-Scan system.

Results:

The paretic side showed significantly smaller values in the T-score of BMD, and peak value of plantar pressure, which included forefoot, midfoot, and hindfoot, than the non-paretic side ($p<.05$). There was a positive correlation between plantar pressure difference on the midfoot and BMD difference between the paretic and non-paretic sides. The present study showed that BMD loss depended on the amount of body weight born on the paretic leg.

Conclusion:

Therefore, we found that the bone loss may decrease the symmetrical weight bearing on the paretic leg. We suggest that measurement of asymmetrical weight bearing during gait using the Mat-Scan plays a role of variable predictor of BMD loss after stroke.

Key Words: Bone mineral density; Stroke; Weight bearing.

PT-17

The Study of Functional Independence and Bone Mineral Density in Athletes With Spinal Cord Injury

Jae-kyung Lee, Sung-woo Shin, Dae-yong Noh, Hwa-Kyung Shin

Daegu Sports Association for the Disabled

MADI comfortable orthopedic hospital

Daegu university clinic

Dept. of Physical Therapy, Catholic University

Purpose:

The purpose of this study is to compare functional independence and bone mineral density(BMD) between athletes with spinal cord injury(SCI) and non-athletes with SCI.

Methods:

Twenty subjects with SCI (athletes=10, non-athletes=10) were recruited. The measurements of bone mineral density (BMD) were evaluated with the quantitative ultrasound system on the calcaneus region of foot. Motor function is measured with the Korean version of Spinal Cord Independence Measure (SCIM). Independence T-test was used to analyse the relationship between bone mineral density(BMD) and motor function in individuals with spinal cord injury(SCI). Pearson correlation was used to find the relationship of BMD loss and functional independence after SCI.

Results:

The athletes showed significantly larger values than non-athletes in the T-score of BMD, and SCIM($p<.05$). Also, the present study showed that BMD loss depended on functional independence after SCI.

Conclusion:

We found that the athletes with SCI who have experienced intensive exercise induced more functional motor recovery, comparing the non-athletes. Furthermore Improvement of functional independence caused less bone loss of athletes with SCI.

Key Words: Bone mineral density; Spinal cord injury; spinal cord independence measurement.

초록수록

Student Session

SPT-1

A Study on Kinematic Gait Analysis of the Normal Adult

Hyun-Ho Choi, Joon-Soo Park, Young-Ho Kim

Supervised by Prof. Hee-Jong Yoon

Dept. of Physical Therapy, Mokpo Science University

Purpose:

The aim of this study is to present the basic reference data of specific gait parameters for Korean normal adult.

Methods:

The basic gait parameters were extracted from 80 adults, 40 men and 40 women, 18 to 33 years of age using Vicon MX motion analysis system. Segment kinematics were analyzed at the pelvis, hip, knee and ankle.

Results:

Motion patterns are typically associated with a specific phase of the gait cycle. The temporo-spatial gait parameters of Korean normal adult such as cadence, double support, walking speed, stride length, opposite foot contact and foot off similar to other western reference data. The kinematic parameters of Korean normal adult at the pelvis, hip, knee and ankle joint also similar to other western reference data.

Conclusion:

This study demonstrates that objective gait analysis can be used to document gait patterns used by normal healthy adult. The results of this study can be usefull utilized as basic reference data for Korean normal adult, and to evaluate abnormal gait performances.

Key Words: Gait analysis, Normal adult, Temporo-spatial gait parameters, Kinematic parameters

SPT-2

An Influence of Swiss Ball Exercises by Patients with Unilateral Paralysis on Equilibrium

Byeong-Hwa Lee, Seon-Mi Baek, Mi-Ae Son, Young-Dae Shin, Sung-Yup Ahn
Shin-Young Ahn, Hyun-Sook Yang, Sang-Ho Lee, Yu-Mi Lee, Byeong-Ae Jeong
Hae-Min Jung

Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The objective of this study is to examine the effects of Swiss ball exercise on patients suffering from hemiplegia which resulted from a stroke. Hemiplegic patients subsequent to a stroke manifest a reduction in maintaining balance, protective and stabilization reflex, and restricted daily activities due to asymmetric body posture. Swiss ball exercise is beneficial for patient in terms of balance, however, there is a lack of research regarding this issue.

Methods:

Fourteen human subjects were randomly selected amongst stroke patient at least 65 years-old to perform Swiss ball exercise 3 times per for 6 weeks, in which the duration was 60 minutes. Measurements were taken for Functional Independent Movement (FIM) according to walking and movement, Up & Down, Functional Reach Test (FRT), and Biodex according to stability balance. Measurements were performed prior to commencement of this study, 3 weeks after and 6 six weeks after commencement obtained data was processed using SPSS 12.0 with the one-way ANOVA and paired t-test functions. statistical significance was wet at $p < 0.05$.

Results:

There was no significant statistical difference for FIM walking and movement, FRT and instatic balance according to front/rear stabilty and internal/external stability of Biodex. However, the difference between the overall stability of Up & Down and Biodex was statistically significant.

Conclusion:

Swiss ball exercise is effective in improving balance in hemiplegic patients.

Key Words: Hemiplegia, swiss ball, balance, FIM, FRT, Up&Down, Biodex, PNF

SPT-3

Architecture analysis of muscular performance according to the angular velocities of isokinetic exercise at the quadriceps using ultrasound image

Jin-Soon Kim, Je-Hun Kim, Yun-Ji Gu, Ha-Ra Gu, Dan-Sun Kim, Ji-Eun Kim
Han-Na Kim, Jung-Ran Ma, Jong-Su Park, Jung-Woon Seo, Tae-Bong You
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The purpose of this study is to suggest features of muscular architecture by using ultrasound images and the muscle performance according to the angular velocities of isokinetic exercise at the quadriceps.

Methods:

Twenty one healthy male students participated in this study. After dividing groups into 60°/sec (n = 7), 180°/sec (n = 7) and 300°/sec (n = 7). Each group performed isokinetic exercises for 6 weeks. Each group was measured for muscle performance using Biodex System 4. Quadriceps were measured for fascicle length, muscle thickness and pennation angle using SONOACE 6000C.

Results:

There was a statistically significant difference for 60°/sec groups in muscle performance, fascicle length, muscle thickness and pennation angle. There was a statistically significant difference for 180°/sec group in pennation angle in vastus lateralis.

Conclusion:

This research which demonstrates architectural change in quadriceps is closely related to isokinetic exercises according to low, middle, high velocity exercises.

Key Words: ultrasound image, fascicle length, muscle thickness, pennation angle

SPT-4**Comparison of Footbath and local contrast bath about Physiological factor of young female**

So-Eun Yang, Yong-Hwa Kim, Eun-Hye Park, Kyung-Hwan Bang, Hye-Ok Song
Da-Mi Sim, Na-Young Yoo, Jin Yoon, Bo-Ram Lee, Sung-Min Jung
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

This study explores the effects of footbath method on body physiological changes, carried out during a 4 week footbath program.

Methods:

For the experiment, 21 healthy young females currently enrolled in Gwangju Health College University were selected and randomly divided into 3 groups with 7 females per group: footbath group, local contrast group and control group. Participants exercised 3 times a week for 28 minutes and 30 seconds per exercise.

Results:

The changes in ankle brachial index, pulse wave velocity, blood pressure, peripheral blood flow, body fat rate, heart rate, tympanic temperature and menstruation pain of footbath group, local contrast group and control group in accordance with the footbath method didn't appear to have a statistical significance ($p > 0.05$).

Conclusion:

Footbath and local contrast bath have no effect on enhancing biological function of vascular system or circulation system.

Key Words: Pulse wave velocity, Peripheral blood flow, Body fat rate, Tympanic temperature, Menstruation pain

SPT-5

Comparison of trunk muscle strength, coordination and pain after sling and Swiss ball exercise for low back pain patients

Hee-Mang Noh, Yang-Gi Ko, Mi-Yeon Kim, Ba-Ni Kim, Se-Young Kim
Su-Young Kim, Su-Jin Kim, Yun-Ho Kim, Jin Noh, Bong-Gi Mun
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The purpose of this study was to compare the difference of effect in trunk coordination, muscle strength, and pain between subjects performing sling and Swiss ball exercises.

Methods:

The study divided the subjects into sling group, Swiss ball group and control group. Eight subjects were selected at random for each group. The exercise program was executed three times per week for six weeks.

Results:

Sling group, Swiss ball group and control groups were analyzed for pain using VAS and for muscle strength and coordination using PEGASUS. Sling group showed a statistically significant difference in coordination and pain, but muscle strength had only a slight difference. Although there was a slight difference in muscle strength, coordination and pain for Swiss ball group, it was not statistically significant. Also, control group did not benefit in muscle strength, coordination and pain.

Conclusion:

In conclusion, coordination, muscle strength and pain benefited after six weeks of sling and Swiss balls exercise treatment, however sling group was more effective at reducing pain and improving coordination.

Key Words: sling exercise, swissball exercise, trunk coordination, trunk muscle strength, low back pain

SPT-6

Comprehension of effect about Period of Retention on Neuromuscular Inhibition Stretching to DOMS

min-joo Kim, hyun-su Kim, min-ji Park, young-jong Lee,
 byung-sun Lim, bo-ram Jeon, ji-myung Choi
 Supervised by Prof. Kyoung-Yoon Kim, Ki-Won Nam
Dept. of Physical Therapy, Dongshin University

Purpose:

The purpose of this study was to compared on the period of retention according to stretch technique in delayed onset muscle soreness(DOMS).

Methods:

8 healthy people with no history of upper arm physical injury and no experience in resistance training were recruited. Experimental groups divided into 3 groups; group I(n=6, control group), group II (n=6, hold-relax stretch technique), group III(n=6, hold-relax with agonist contraction stretch technique). Measurements were taken at 11 assessment times; post-exercise at 24 hour, treatment, post-treatment at 2, 4, 6, 8, 10 hours and post-exercise at 1, 2, 3, 4 days. Stretch technique effect was measured by visual analogue scale, ROM(flexion, extension), pain threshold meter.

Results:

The result were as follow : The change which followed at time VAS, flexion ROM, extension ROM, pain threshold meter all DOMS induction 24 hours before excepting, showed the significant difference. The change which followed at date VAS excepted a 1 day, flexion ROM and the extension ROM excepted as 1, 5 days, pain threshold meter excepted as 1, 4, 5 days showed the signification difference

Conclusion:

The results of this study that stretch technique group II, III were significantly effective than control group. Especially, group III was showed that most effective response than group II.

Key Words: DOMS, hold-relax, hold-relax with agonist contraction, period of retention

SPT-7

Descriptive study on Job Satisfaction and its influenced factors for physical therapists in G city

sang-uk Kim, hye-won Yun, sa-ra Lee, seoung-min Cho, yeon-ju Cha
Supervised by Prof. Tae-Youl Kim

Dept. of physical therapy, Dongshin University

Purpose:

The purpose of this study was to investigate selected factors, which result in job satisfaction or dissatisfaction of physical therapists in G city.

Methods:

A job satisfaction questionnaire developed by Slavitt als was used for this study. It contains 29 statements and utilizes a Likert type scale of 5. Participants were asked select response which were congruent with their perceptions of the item. It was decided to conduct the study in G city. A sample of 180 therapists were selected to participate in this study. The 29 items of job satisfaction were divided into 5 areas and the mean scores and % of agreement were compared.

Results:

Average score of job satisfaction was 2.75. Average scores of each factors which influenced job satisfaction was 2.88 from work enviroment, 2.73 from autonomy, 3.4 from human relations, 2.29 from salaries, 2.44 from musculoskeletal disease.

Conclusion:

The specific job related factor that resulted in job satisfaction was the human relations and those that resulted in job dissatisfaction were autonomy and work enviroment and salares, musculoskeletal disease.

Key Words: Physical therapists, Job satisfaction

SPT-8**Effect of Chair Inclination
on Sit to Stand Movement in Healthy Adults**

Su-Jung Yoon, Ji-eun Shin, Mi-Na Kim, Sun-Jung Jang, Young-Eun Cho
Supervised by Prof. Hwa-kyung Shin

Dept. of Physical Therapy, College of Catholic University of Daegu

Purpose:

The ability to rise from a chair is important for the activities of daily living. Several factors have been found to influence a person's sit-to-stand movement. In this study, the effect of the inclination of the chair on the act of rising from it was studied via EMG.

Methods:

Twelve healthy subjects repeated the sit-to-stand movement on three chairs: an anterior-inclined chair(AIC), a standard-inclined chair(SIC), and a posterior-inclined chair(PIC). The total sit-to-stand time, seat-off time, and onset time of the tibialis anterior and rectus femoris were measured via EMG.

Results:

The total sit-to-stand time at the AIC was significantly faster than that at the SIC($p<0.05$), and the total sit-to-stand time at the PIC was significantly slower than that at the SIC($p<0.05$). The seat-off time at the AIC was significantly faster than that at the SIC($p<0.05$), and the seat-off time at the PIC was significantly slower than that at the SIC($p<0.05$). The onset time at the AIC was significantly faster than that at the SIC($p<0.05$), and the onset time at the PIC was significantly slower than that at the SIC($p<0.05$).

Conclusion:

Rising from an anterior-inclined chair has the highest efficiency, and a posterior- inclined chair decreases the efficiency of rising form a chair. These findings suggest that both comfort and function must be considered in the chair selection for certain groups.

Key Words: Chair Inclination, EMG, Onset Time

SPT-9

Effect of Neuromuscular Electrical Stimulation and Voluntary Isometric Exercise Fatigue and Recover According to Different on-off Time

na-ri Kim, soon-mi Bae, yi-na Shin, ju-young Shim, ji-hoon Lee, yoon-jae Jang
Supervised by Prof. Tae-young Kim

Dept. of physical Therapy, Dongshin University

Purpose:

The purpose of this study was to find out most effective way to reduce fatigue and to recover between voluntary isometric exercise to NMES according to different on-off time.

Methods:

we selected students with no injury on upper extremity. And they were randomly divided into 4 groups; We applied voluntary isometric exercise with on-off time 1 : 3 to experimental group I(n=8), voluntary isometric exercise with on-off time 1 : 5 to the experimental group II(n=8), NMES with on-off time 1 : 3 to the experimental group III(n=8) and NMES with on-off time 1 : 5 to the experimental group IV(n=8). We applied these method until MVIC decrease by 50%. We used Dynamometer for measuring MVIC, surface EMG for muscle activity, NMES for muscle contracture.

Results:

The results were as follow : RMS(root mean square) change was significant difference among time($p<.001$). Fatigue change was significant difference among time($p<.05$). Frequency had significant effect on 4 groups($p<.0.5$).

Conclusion:

In conclusion NMES, on-off time 1 : 5 had least fatigue and voluntary isometric exercise, on-off time 1 : 3 made best recovery.

Key Words: voluntary isometric exercise, NMES, on-off time, fatigue, recovery

SPT-10

Effect of Proprioceptive Neuromuscular Facilitation (PNF) exercise on the muscular strength, balance, and range of motion for the elder people over sixty five

Dae-Myung Kim, Young-Sik Kang, Yo-Na Kim, Il-Hyun Kim, Seang-Ryung We
Eun-Ho Lee, Lu-Li Lee, Ji-Hee Lee, Eun-Jin Jeong, Eun-Jung Jo
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The purpose of this study was to investigate, how PNF exercise affects muscular strength, balance, and range of motion for people at least sixty five years old.

Methods:

Nine people 65years older voluntarily participated in this study. Participants warmed up and perform main exercises two times a week for eight weeks. Measurement required to complete this study are as follows: Micro FET to measure muscle strength, One leg standing test, Timed UP & GO test, and Functional reach test to measure balance, Joint Angle Meter to measure range of motion.

Results:

There was no significant difference in muscular strength, balance, and range of motion.

Conclusion:

The conclusion of the eight weeks PNF exercise program was ineffective on improving participants' muscular strength, balance, and range of motion.

Key Words: PNF, range of motion, muscle power, balance, elder peoples

SPT-11

Effects of PIR Technique & Static Stretching on Increased GCM Muscle Tightness

Ju-Hye Kim, Jung-Min Lee, Sun-Bok Kim, Song-Hyun Moon
Supervised by Prof. Ji-Won Park

Dept. of Physical Therapy, College of Health Science, Catholic University of Daegu

Purpose:

The purpose was to determine the effects of a gastrocnemius stretching program (Post-Isometric technique & Static Stretching) on stance time and ground reaction force and medio-lateral stability during the stance phase of gait.

Methods:

28 women participated in this study (mean age = 21 years; SD = 0.8 years), with less than 8° of passive ankle dorsiflexion range of motion. Participants separated three groups (PIR group, static stretching group and control group). The PIR group & Static stretching group received each gastrocnemius stretching program. The control group received no intervention. Stance time and ground reaction force and medio-lateral stability during the stance phase of gait were measured before and after the intervention. The force plate was used to measure the stance time and ground reaction force and medio-lateral stability. To analyze the data, we used Repeat measure ANOVA.

Results:

The static stretching group had greater stance time at post-test than the control group ($p=0.00$). Ground reaction force & medio-lateral stability also increased than the control group ($p=0.00$). The Post-isometric relaxation group had significantly greater stance time at post-test than the control group ($p=0.00$). Ground reaction force & medio-lateral stability also increased than the control group ($p=0.00$).

Conclusion:

PIR technique for increased gastrocnemius tightness is efficiently increased Stance time and ground reaction force and medio-lateral stability during the stance phase of gait.

Key Words: Gastrocnemius; Post-Isometric Relaxation; Static Stretching.

SPT-12

Lower limb muscular strength and body performance ability comparison of the exercise in water and on land for 6 weeks

Young-Rok Oh, Seung-Chae Baek, Mi-Ran Seo, Young-Im Seo, Kyul Son
Su-Yeon Song, Sol Shin, Ja-Eun Shin, Hee-Jin Yu, Hae-Bong Yu, Ran-Hee Lee
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

Lower limb muscular strength and body performance ability comparison of the exercise in water and on land for 6 weeks.

Methods:

The subjects of this study consisted of 21 healthy male students from Gwangju Health College University, The subjects were divided into water-exercise group, land-exercise group, and ADL (activity daily) group of which each group consisted of 7 subjects, Muscular strength, endurance, muscle power, and agility of the subjects were measured.

Results:

The Water-exercise group showed a statistically significant increase in power and the land-exercise group showed a statistically significant increase in power, muscular strength, and functional performance ability. Unlike previous studies that had been conducted with persons with diseases, this study was conducted with normal healthy volunteers.

Conclusion:

Therefore, the result of this study on water-exercise would be useful to healthy persons rather than the persons with diseases.

Key Words: water exercise, land exercise, Lower limb muscular strength, body performance ability

SPT-13

The Change of Autonomic Nerve Response by The Low-frequency Transcutaneous Electrical Nerve Stimulation

Ji-Eun Kang, Se-Young Ko, Ah-Rong Park, Shin-Hye Lee,
Eun-Ae Choi, Ga-Young Jung.
Supervised by Prof. Jeong-Woo Lee

Dept. of Physical Therapy, College of Kwang-Ju Women's University

Purpose:

The purpose of this study was to examine the change of autonomic nerve response by the low-frequency transcutaneous electrical nerve stimulation(TENS).

Methods:

Twenty four participants were recruited in order to provide statistical analysis with 80% power and effect size=0.25 at $\alpha=0.05$. Groups were divided into the 1st group (low intensity) and the second group (high intensity). The electrode attachment was arranged on the forearm of the dominant arm and the electricity stimulus time was set as 15 minutes. Measuring items were the skin conduction velocity, the skin temperature, the blood flow, and the pulse frequency, which were measured total 4 times.

Results:

The skin conduction velocity showed a significant difference according to the change of the time regardless of stimulus intensity, but there was no significant difference according to time in the skin temperature, the blood flow, and the change of the pulse frequency regardless of stimulus intensity.

Conclusion:

This results demonstrate that low frequency transcutaneous electrical nerve stimulation(TENS) can increase selectively only with the skin conduction velocity, which may be helpful for the activation of the sudomotor function regardless of intensity.

Key Words: Transcutaneous electrical nerve stimulation, Autonomic nerve response, Skin conduction velocity, Skin temperature, Blood flow, Pulse frequency

SPT-14

The Change of Body Alignment and Balance of Women in Early Twenties by Weight of Shoulder Bag

Young-Ji Kwon, A-Ram Kim, So-Young No, Sun-Young Park, Hye-Sun Lee
Supervised by Prof. Jeong-Woo Lee

Dept. of Physical Therapy, College of Kwang-Ju Women's University

Purpose:

The purpose of this study was to investigate the change of body alignment and balance of women in early twenties by weight of shoulder bag.

Methods:

Thirty participants were recruited in order to provide statistical analysis with 80% power and effect size=0.25 at $\alpha=0.05$. All subjects were repeated measurement according to three conditions. Three conditions applied according to weight of bag; before carry bag, After carry bag of 2kg weight, After carry bag of 4kg weight. The body alignment was measured using a global posture system and the body balance was measured using a balance system.

Results:

There was a significant difference between before carry bag and after carry bag of 2kg weight, before carry bag and after carry bag of 4kg weight in the spine angle, distance from center of gravity to right acromion and left earlobe, and weight distribution index. There was only a significant difference between before carry bag and after carry bag of 2kg weight in the trunk angle and distance from center of gravity to left acromion. There was a significant difference among three conditions in the stability index.

Conclusion:

This results demonstrate that it influences in the body alignment to carry bag by weight more than 2kg, but do not influence in the body balance.

Key Words: Shoulder bag, Body alignment, Body balance

SPT-15

The compare of muscular strength changing in the quadriceps between isotonic and isokinetic exercise

Yi-Seul Jung, Sun-Wook Kim, Leem Seo, Seok-Min Lee, Jin-Young Lee, Hye-Ji Lee, Haeng-Hwa Jeon, A-Sun Jung, Da-Un Choi, San Han, Woon-Pyo Hong

Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The purpose of this study is to investigate which exercise method is efficient according to muscle strength, muscle power, muscle endurance and functional ability in regards to isotonic exercise and isokinetic exercise in close kinetic chain.

Methods:

For this purpose, 16 healthy subjects were divided into 2 groups (8 isotonic exercise group and 8 isokinetic exercise group). The isotonic group using leg press were trained for two sets of five repetitions at 70~80% and 50~60% of 1RM, two sets of 20 repetitions at 30~40% of 1RM. The rest period of exercise and set was 60 seconds. The isokinetic group exercises two sets, five repetition at 60 and 180 degree/sec and exercises two sets, 20 repetitions at 300 degree/sec. The rest period of exercise and set was 60 seconds. Biodex System 4 was used for measuring muscle strength, muscle power, muscle endurance of quadriceps and hopping test was operated for functional ability.

Results:

The muscle strength between groups showed no significant difference ($F=1.264$, $P<0.280$). The muscle power between groups showed no significant difference ($F=0.902$, $P<0.358$). The muscle endurance between groups showed no significant difference ($F=0.025$, $P<0.878$). The functional ability between groups showed no significant difference ($F=0.106$, $P<0.772$).

Conclusion:

When comparing muscle strength change of quadriceps according to isotonic exercise and isokinetic exercise in close kinetic chain, the isotonic exercise program is more desirable.

Key Words: Quadriceps, Close Kinetic Chain, Isokinetic, Isotonic

SPT-16

The Effect of Balance Ability and Ankle Muscle by Balance Training at an Unstable Surface

Do-Lee Kim, Na-Ra Park, Bo-Ra Jeong, Yu-Jeong Jeong, Geum-Bi Choi
Supervised by Prof. Yeon-Woo Jung

Dept. of Physical Therapy, College of Kwang-Ju Women's University

Purpose:

The purpose of the study was to investigate affects in the balanced ability and ankle joint muscle which follows in Balance pad and Trampoline training period that is balanced training in unstable plate, the report a clinical directing about instability and balanced ability improvement of the ankle joint.

Methods:

The ninth of subjects practice balance training program that put balance pad and trampoline to use in three times a week for thirty minutes, six a period. The resting time balance pad between trampoline balance training program set up in two minutes. The TETRAX was used to measure balance ability, EMG was used to measure muscle activity, 3 weeks, 6 weeks, respectively.

Results:

When ankle muscle to a variation of muscle activity in training period, the Right gastrocnemius muscle on stable plate and on unstable plate of difference the significance level was assumed($p < 0.05$), the Left gastrocnemius muscle on unstable plate of difference the significance level was assumed($p < 0.05$), variation of balance ability when open eyes on stable plate, Plate B and stability score of difference the significance level was assumed($p < 0.05$).

Conclusion:

As a result, the balance training in an unstable surface three weeks after muscle activity and improving balance capacity, but did not show a statistically significant difference, if long-term research into the balance will improve balance capacity and muscle activity.

Key Words: Balance, Trampoline, Ankle muscle

SPT-17

The Effect of Biofeedback Application on Standing Balance of Women in Early Twenties.

Da-Wun Na, So-Yeon Park, Seul-Gi Jung, Min-Ji Ju, Min-Jung Han.
Supervised by Prof. Se-Won Yoon

Dept. of Physical Therapy, College of Kwang-Ju Women's University

Purpose:

This study aims to investigate whether the application of biofeedback is helpful to standing balance, and examine to that it could be applied as one of effective therapy for balance recovery.

Methods:

The 10 of women in early twenties in university students volunteered to participate in the study. They were trained by using the Tetrax program that composed 9 tasks produced by 30 minute for 3 times per week in 6 weeks. All subject who have disturbance of vestibular system by galvanic vestibular stimulator (GVS) during measuring measured stability score and weight distribution index (WDI) by Tetrax following open or close eyes for 3 times in 3 week interval.

Results:

There was no significant difference of WDI and stability score on stable stance. A statistically significant difference($p>0.05$) was found WDI and stability score at eyes open on unstable stance. But, there was no difference at eye close.

Conclusion:

This study showed that the application of biofeedback is helpful to standing balance in women in early twenties while vestibular disturbance in condition of eyes close and open, stable stance and unstable stance. The results showed that improved to balance ability in eyes open on stable stance, although the application of biofeedback affects the balance change for the posture control, and can expect that improve balance ability.

Key Words: Balance, Biofeedback, Galvanic vestibular stimulation

SPT-18**The Effect of Composition Training of Balance Ability in the Elderly Women**

Sun-ju Kim, Seung-Hawn Kim, Eun-Ji Seo, Hyun-Suk Seo,
Chi-Min Song, June-Yeon An, Su-Ja Yun
Supervised by Prof. Gye-Yeop Kim, Young-Eok Kim
Dept. of Physical Therapy, Dongshin University

Purpose:

The purpose of this study was to compare the effect of balance ability in the elderly by the composition training.

Methods:

Sixteen elderly women aged 65 to 80 years participated in this study participants were divided into control group(n=8) and exercise group(n=8). In exercise group of participants received composition training for 1 hour in 3 times a week for 4 weeks but control group does not anything. And 2 weeks later increased of exercise intensity by advanced time and times of set. Composition training included isometric resistance exercise, plyometric exercise isotonic exercise, and equilibrium exercise. All subjects were assessmented clinical test of balance

One-legged stance test and time up go test. Control group and exercise group subjects were before and at the end of the trial. These collected data were analyzed by using paired t-test.

Results:

The result of this study showed that exercise group had significantly change than control group in all test.

Conclusion:

The result of this study revealed that composition training has the affirmative influence on balance ability in the elderly women.

Key Words: composition training, elderly women, balance ability

SPT-19

The Effect of Low-Intensity Ultrasound on Fracture Healing in the Rat

bo-ram Kang, su-ji Kim, seung-kwan Yang, hyun-ji Lee, eun-ha Jeon, hwan Jung
Supervised by Prof. Ki-Won Nam, Kyoung-Yoon Kim

Dept. of Physical Therapy, Dongshin University

Purpose:

The purpose of this study was to investigate the effects of low intensity pulsed ultrasound and low intensity continuous ultrasound in penetrating fracture rats.

Methods:

In this study, 27 rats were randomly divided into 3 groups; group I (control group, n=9), group II (experimental group I, n=9) and group III (experimental group II, n=9). Group II received low intensity pulsed ultrasound applied to 1 : 4 duty cycle and group III was treated with low intensity continuous ultrasound. The ultrasound intensity was 50 mW/cm² and treatment time was 10 minutes for every session in both groups. In each rat, one femur served as a control and the other was subjected to ultrasound treatment 5 times per week for 3 weeks. At the end of the experimental period, there was significant difference in bone repair between group I and group II, III.

Results:

The results obtained are as followings :

1. Group II and group III achieve more callus formation than group I at the 7th day, 14th day and 21th day.
2. Between group II and group III, group II achieves more callus formation than group III at the 7th day, 14th day and 21th day after low intensity ultrasound treatment.

Conclusion:

These data suggest that in Sprague-Dawley rats, low intensity ultrasound facilitates fracture repair. Especially, low intensity pulsed ultrasound is more effective in bone repair than low intensity continuous ultrasound.

Key Words: low-intensity pulsed/continuous ultrasound, penetrating fracture, bone repair

SPT-20

The Effect of Neck Therapeutic Exercise Affects posture and pain in Tension-type headache Patients

Jun-Young Choi, Sul-Ki Kim, Si-Nae Bae, In-Muk Lim, Mi-Hee Lim, Mi-Soon Choi
Min-Kyu Choi, Eun-Ha Choi, Bit-Na Hwang, Soon-Bae Hwang
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The purpose of this study was to examine alleviation of Tension-type Headache (TTH) after receiving cervical therapeutic exercise.

Methods:

Forty two adult men and women in their twenties were divided into two groups: patient group (25) and control group (17). Patient group performed four therapeutic exercises, 3 times per week for 6 weeks. We measured pretest cranio vertebral angle (CVA) and cranial rotation angle (CRA) for patient and control group. We measured posttest CVA and CRA for patient group only.

Results:

CVA showed a statistically significant increase in sitting position and standing position. CRA showed a statistically significant decrease in standing position. There was no statistically significant difference in CRA in sitting position.

Conclusion:

Frequency and strength of TTH showed a statistically significant decrease after receiving therapeutic exercise, but duration time of TTH was not different. Therefore, we can expect to have an effect on patients with TTH.

Key Words: TTH, CVA, CRA, NHP

SPT-21

The Effect of Stress and Study-attitude on Children's Scoliosis

nam-jae Kim, dong-ho Kim, jeong-seon Song,
 ji-eun Shin, a-ram Jeong, hey-jin Jeong
 Supervised by Prof. Gye-Yeop Kim, Young-Eok Kim
Dept. of Physical Therapy, Dongshin University

Purpose:

The purpose of this survey was to make people realize that the importance of right posture and the relation between scoliosis and stress or study-attitude using a questionnaire in a detached way.

Methods:

We divided 2 groups out of 300 childrens(experimental group I; 20 normal group, experimental group II; 20 scoliosis group).

We measured a scoliosis-test by a scoliometer, X-ray. And then for measurement of a stress and study-attitude test using a questionnaire.

Results:

As a result of the study, it tended to have more stress in the group with scoliosis on the importance of right posture and the relation between scoliosis and stress or study-attitude compared to the other group($p < .05$). The value of posture during study of scoliosis group tended to be higher than the other group($p < .05$).

Conclusion:

Therefore there was significant difference. Scoliosis effectuated stress and study attitude. We hope that this result would help diagnose children-scoliosis in a early stage and prevent any problem from it.

Key Words: scoliosis, stress, study-attitude

SPT-22

The Effect of Taping and Brace to Ankle Stability during Level Walking

Mi-suk Jung, ji-yoon kim, jeung-eun bae, yoon-jung jang
Supervised by Prof. Heung-dong Kim

Dept. of Physical Therapy, College of health science, Catholic University of Daegu

Purpose:

Abnormal posture or with high-heeled shoes may cause high risk of ankle sprain during level walking and these events have a strong relationship with ankle instability.

This study measured a Center of pressure (Cop) to examine the effect of taping and brace to ankle stability by the use of force plate.

Methods:

10 subjects who have no past history of ankle instability performed level walking 3 times with barefoot, two types of bracing, taping.

We focused on COP examination related to balance.

Results:

Analysis of variance revealed that there was no significant difference among the COP: Excursion along Y-axis measurements of the ankle made at barefoot ($m=20.37$, $SD=2.135$, $p>0.05$), neoprene ($m=21.26$, $SD=1.878$, $P>0.05$), strap ($m=20.36$, $SD=1.847$, $P>0.05$) and taping ($m=21.05$, $SD=2.035$, $P>0.05$), and there was no significant difference among the COP: max velocity measurement of the ankle made at barefoot ($m=1048.5$, $SD=157.448$, $p>0.05$), neoprene ($m=1014.05$, $SD=129.315$, $p>0.05$), strap ($m=1080.98$, $SD=161.061$, $P>0.05$) and taping ($M=1037.73$, $SD=139.28$, $p>0.05$).

Conclusion:

One of the limitations of this result is the size of subject group. It seems that the number of subject is so small that the statistics are not significant. Previous study focused on the patients, Otherwise subjects of this study have no past history on ankle. We may think that their proprioception doesn't need more information from brace or taping.

Key Words: Ankle stability, Taping, Brace, Center of pressure (COP)

SPT-23

The Effect of Treadmill Exercise and Electroacupuncture on Functional Recovery after Crush Injury of the Sciatic Nerve in Rats

ki-han Kim, nam-yeon Kim, da-ae Kim,
 sung-gyu Yun, mee-ran Choi, eun-kyeong Hwang
 Supervised by Prof. kyoung-Yoon Kim, Ki-Won Nam

Dept. of Physical therapy, Dongshin University

Purpose:

The purpose of this study was to analyze and investigate effects of treadmill exercise and electroacupuncture on functional recovery and the effect of treatment was evaluated by histological methods.

Methods:

Each group was randomly divided into 3 groups; group I(control group), group II(treadmill exercise group), group III(electroacupuncture group).

Results:

The results of this study were as following. In sciatic functional index, group II and group III were increased remarkably at the 14th days of the sciatic nerve injury compared to group I($p<.001$). Differences among groups on relative motor function and sensory function score are as followings. Motor function; group II and group III were increased remarkably at the 21th days of the sciatic nerve injury compared to group I($p<.01$). Sensory function; group I was increased after 7th days of the sciatic nerve injury($p<.05$). group III was remarkably different at the 21th days of the sciatic nerve injury compared to group II($p<.01$).

Conclusion:

The above results suggested that treadmill and electroacupuncture performed during reinnervation may assist on the recovery of sciatic nerve function after sciatic nerve injury.

Key Words: sciatic nerve injury, treadmill exercise, electroacupuncture, functional recovery

SPT-24

The Effect of Trunk muscle Activation and Lumbar Flexibility from Diaphragmatic Breathing exercise on Posture

byung-jin Kim, hyun-su Kim, mi-jung Park,
lee-dae Park, so-won Lee, eun-hye Lee
Supervised by Prof. Kyoung-Yoon Kim, Ki-Won Nam
Dept. of Physical Therapy, Dongshin University

Purpose:

The purpose of this study was to investigate the effects of diaphragmatic breathing exercise according to position on activation of trunk muscle and lumbar flexibility.

Methods:

For this study, 16 healthy people were randomly divided into four groups; group I (n=4, control group), group II (n=4, standing position), group III (n=4, sitting position), group IV (n=4, supine position). Diaphragmatic breathing exercise was performed to total 5 sets a day during 5 days with method, which 10 times on 1 set and rest time 10 minutes after each set ends.

Results:

The results of surface EMG activities that quadratus lumborum, external oblique in the standing position in the statistically significant difference in experimental group which performed diaphragmatic breathing exercise rather than group I ($p < .05$). The results of lumbar flexibility were that standing position and sitting position indicated the statistically significant difference in experimental group which performed diaphragmatic breathing exercise rather than group I ($p < .05$).

Conclusion:

Diaphragmatic breathing exercise which resulted in activation of trunk muscles can be effective for managing the normal healthy people with back pain and should be utilized as the new therapeutic intervention.

Key Words: diaphragmatic breathing exercise, position, trunk muscle activity, flexibility

SPT-25

The Effect of Velocity on Onset Time of Lower Extremity Muscle during Driving Task

Gil-Hee Sung, Seung-Kyou Kim, Malk-Eum Kim, Ha-Eun Hong, Keon-Woo Jeong
Supervised by Prof. Hwa-Kyung Shin

Dept. of Physical Therapy, College of Health Science, Catholic University of Daegu

Purpose:

Driving is essential to maintain independent living status in the modern world. Many patients want to know when they can drive again, but it is only possible if they have the ability to control lower extremity muscles. In this study, we tried to compare the effects of velocity on onset time of lower extremity muscles during driving task.

Methods:

12 Participants(6 male, 6 female) were recruited in this study. Electromyography(EMG) was used to test the onset time of lower extremity muscles; tibialis anterior, soleus, rectus femoris. we used a two way ANOVA for statistical analysis.

Results:

Scaling with velocity, there was significant variance in the brake response time ($p<0.05$) and lower extremity muscles onset time($p<0.05$). Further, when comparing the lower extremity muscles, there was significant difference onset time($p<0.05$). The order of muscle recruitment was tibialis anterior, rectus femoris, soleus in maximal velocity, but that was rectus femoris, tibialis anterior, soleus in submaximal velocity.

Conclusion:

Based on these results, it is concluded that there is a general difference in brake response time, muscles onset time, and muscles recruitment order. We suggested that the subject needs more future study and detailed research such as evaluation of visio-motor coordination and fine motor dexterity.

Key Words: Brake response time; Driving; Electromyography; Onset time.

SPT-26

The Effect of Water Exercise on Strength of the Low-limbs depend on the Depth

Moon-Jung Kim, Su-Hyun Kim, A-Reum Kim, Eun-Hye Kim, Sung-Ra Pak.
Supervised by Prof. Yeon-Woo Jung

Dept. of Physical Therapy, College of Kwang-Ju women's University

Purpose:

The purpose of this study was to examine the effect of water exercise on the strength of the low-limbs depend on depth.

Methods:

Ten female subjects without neuromuscular disease were attended in the study. All subjects were divided into two groups at randomly. One is 0.7m group and another 1.4m group. They did the water exercising program for 40 minute per day, 3 days per week, for 6 weeks. We measured pennation angle and density of low-limbs using ultrasonography. All measurement of each group was performed at pre-training, 6 weeks post-training.

Results:

When it compared the pennation angle as before and after water exercising on each group, there was significantly changed ($p < 0.05$) in; rectus femoris of right and rectus femoris, tibialis anterior and gastrocnemius of left at 0.7m group; tibialis anterior and gastrocnemius of right and rectus femoris of left at 1.4m group. However, there was no significant difference in muscular strength increase between two groups by water depth ($p > 0.05$). As well as, density was significantly changed before and after water exercise on each group ($p < 0.05$); in rectus femoris and gastrocnemius of right and rectus femoris, tibialis anterior and gastrocnemius at 0.7m group; All rectus femoris, tibialis anterior and gastrocnemius at 1.4m group. But, there wasn't significant difference of muscular strength increasing between two groups depend on the depth ($p > 0.05$).

Conclusion:

This result shown that the muscular strength of low-limbs was changed within each group. But, there wasn't changes depend on the depth.

Key Words: Water exercise, Depth, Muscle strength, Pennation angle, Density

SPT-27**The effects of ESWT and US on muscle power, pain and muscle tension at TrP of the scapular inter angle**

Seung-Hyub Lee, Seung-Hee Lee, Ho-Seok Lee, Han-Ey Jung, Da-Sol Joo
 Min-Hee Choi, Hyun-Ji Choi, Eo-Ra Pi, Young-In Hong, Ji-Eun Kim
 Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

This study aims to investigate into the change in muscle power, pain and muscle tension upon application of ESWT and US at TrP of the Scapular inter angle.

Methods:

In total of 24 human subjects that experience pain upon stimulation at the scapular inter angle were recruited. They were divided into three groups: control, ESWT and US group. Each group was subjected to appropriate stimulation three times per week for four weeks except the control group which had no restrictions in lifestyle. The ESWT group was subjected to Extracorporeal Shock Wave Therapy with a 2 cm² head, 20 times at speed of application of 60 pulses/min and depth of intrusion of 25 mm Whereas the US group was subject to Ultra sound therapy with 1cm² head, 1 MHz in frequency, 1.5 W/cm² of strength with five minutes of continuous application. Measurements were performed immediately prior to and at the end of the experiment.

Results:

There was no statistical significance in the change in muscle tension and muscle power as well as the difference between both groups before and after the experiment. VAS and VRS, all of which indicates changes in pain level, had statistically significant differences between them in pretest posttest comparisons. However ESWT was superior to US in terms of decreasing muscle tension and pain while increasing muscle power.

Conclusion:

This study has made it evident that ESWT is far more reasonable to apply to TrP.

Key Words: Ultra sound, Extracorporeal Shock Wave Therapy, Trigger Point, Micro Fet₂, VAS

SPT-28

The Effects of Forearm Muscle Strengthening Exercise on the hand function of Parkinson's Disease Patients

Min-Jae Im, So-Yeong Kim, Bo-Ram Park, Jung-Hyeon Park, Hyung-Yeon Park
Tae-Yun Yun, Su-Gyeong Wi, Gi-Ppeum Lee, A-Reum Lee, Seung-Gi Jeong
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

This research was conducted to examine the effects of forearm muscle strengthening exercise on the hand function of Parkinson's disease patients.

Methods:

The forearm muscle exercise program was conducted on nine Parkinson patients for six weeks, and measurements were taken before the program was conducted, 3 weeks, and 6 weeks the results were analysed using SPSS for One-way ANOVA in regards to cognitive function, coordination, dexterity, and strength.

Results:

No statistically significant differences were found in cognitive function, coordination, and dexterity through forearm muscle strengthening exercise but statistically significant differences were found in elbow joints and carpal joints, flexion, and extension strength.

Conclusion:

The forearm muscle strengthening exercise had effects only on strength. So in order to have the exercise influence the cognitive function and hand function as well, the whole body systemic and diverse functional exercise programs should be additionally developed.

Key Words: Parkinson's disease, forearm muscle strengthening exercise, coordination, MMSE, dexterity

SPT-29

The effects of muscle function by backward walking on treadmill grades of 7%, 10%, 12%

Yoo-Ri Kim, Kah-Yang Kang, Bit-Na Kim, Sung-Min Kim, Seul-Gi Kim

Yong-Woo Kim, Yu-Na Kim, Eun-Ji Kim, Young-Chang Park

Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

The purpose of this study was to determine the effect of exercising on a treadmill by walking backwards at treadmill grades of 7%, 10%, and 12% on knee extensor and flexor muscle strength, muscle power, and muscle endurance.

Methods:

Twenty-four people in their twenties were divided into 3 groups. Group 1 performed treadmill exercises by walking backwards at a grade of 7%. Group 2 performed treadmill exercises by walking backwards at a grade of 10%. Group 3 performed treadmill exercises by walking backwards at a grade of 12%. The subjects walked for 20 minutes at a rate of 2.5~3.5 km/hour, 3 times per week, for 6 weeks. Measurements were taken prior to starting the exercise program, at the 3 weeks period, and after completing the program at the 6 weeks period using Biodex. Comparisons were made using MANOVA on SPSS 10.1.

Results:

There was a statistically significant difference in muscle strength for Group 1. There were no statistically significant differences in Group 2. There were statistically significant differences in muscle strength and muscle endurance for Group 3.

Conclusion:

Significant effects can occur as gradient level increase for low speed, backwards-walking treadmill exercises. However, in order to promote the development of knee joint muscle functions backward walking treadmill exercises at high speeds are anticipated to be beneficial in daily life.

Key Words: backward walking, treadmill grade, muscle function, speed

SPT-30

The Effects of the Halliwick 10 Point Program on Balance Maintenance of Women in Early Twenties

Eun-Hae Kang, Yu-Ri KimA, Yu-Ri KimB, Yun-Hee Park, Seul-Bi Lee,
In-Hye Cha

Supervised by Prof. Se-Won Yoon

Dept. of Physical Therapy, College of Kwang-Ju Women's University

Purpose:

This study is to examine the effects of a Halliwick program on improving balance ability and fall prevention.

Methods:

Healthy twenties-females randomly assigned to a Halliwick program training as aquatic group (n=9, age=22.55±1.33 years). The aquatic group trained a Halliwick program (3 times/week, 30min/day) for 6 weeks. Balance and fall prevention were assessed by stability, Weight Distribution Index(WDI) and plate according to stance position of Hard Plate Open Eyes(HOE), Hard Plate Close Eyes(HCE), Soft Plate Open Eyes(SOE) and Soft Plate Close Eyes(SCE) before the training on 3 and 6 weeks after training. The data was analyzed with the SPSS Win 12.0 using repeated measure ANOVA.

Results:

After the exercise program, the results of this study were as follows :

There was no significant difference of WDI score on POE and PCE. A statistically significant difference was found WDI and stability score at SCE and PCE($P>0.05$). And there was significant differences of eye open on SOE and POE, SCE and PCE by Toe pad respectively($P>0.05$). There was significant differences of SOE and POE by Heel pad($p<0.05$).

Conclusion:

From these results, it concluded that the Halliwick 10 point program can be in effects improving balance ability and fall prevention.

Key Words: Halliwick rotation program, Balance, Stability, WDI.

SPT-31

The influence of core stability exercise program using Swiss Ball on muscle activity, muscle thickness, maximum muscular strength, and pain reduction on the trunk region on the participants who has a low back pain

Seon-Yu Kim, Hyu-Na Go, Kyung-Woo Kim, Bo-Ram Kim, Eun-Jeong Kim, Jea-Hyun Kim, Chan-Woo Rho, Jin-Joo Mun, Gu-Young Park, Mi-Ra Park,
Supervised by Prof. Sang-Wan Han

Dept. of Physical Therapy, College of Gwangju Health, Gwangju Health University

Purpose:

To examine the influence of core stability exercise program using Swiss Ball on muscle activity, muscle thickness, maximum muscular strength, and pain reduction on the trunk region for 6 weeks on participants with lower back pain.

Methods:

Twenty one males in their early twenties were divided into three groups. Group 1 performed isometric exercises, Group 2 performed isotonic exercises, and Group 3 performed combined exercises using Swiss Ball. Data was analyzed using paired-T test and ANOVA on SPSS 10.0.

Results:

There was a statistically significant difference in pretest and posttest using Swiss Ball for every exercise group. Secondly, there was a statistically significant difference in pre and post muscle thickness and pain reduction of combined isometric and isotonic exercises.

Conclusion:

We found that isometric exercises were helpful to improve muscle activity, muscle thickness, pain reduction, and maximum muscular strength in core stability exercise program using Swiss Ball.

Key Words: muscle activity, ultrasonography, lumbar back pain, maximum muscular strength, isometric exercises

SPT-32

The Research about the effect on Cardiopulmonary capacity of the Respiratory Exercise and Aquarobics in Water

do-hee Park, sang-hyeon Park, seon-woo Lee, jeong-in Lee,
song-lee Jeon, chan-suk Jeong, mi-ri Hwang

Supervised by Prof. Gye-Yeop Kim, Young-Eok Kim

Dept. of Physical Therapy, Dongshin University

Purpose:

The purpose of this study was to compare the effects between respiratory exercise and aquarobics in water on the cardiopulmonary capacity.

Methods:

Twenty four members were randomly divided into three groups; experiment group I(n=8), experiment group II(n=8) and experiment group III(n=8). experiment group II and experiment group III were performed 3 times a week for 4 weeks. The study was measured 3 times before the exercise, right after the exercise and one week after the exercise. For data analysis, repeated measures ANOVA was used.

Results:

The results were as follows; First, there were statistically significant differences($p<.05$) in both experiment group II and experiment group III in maximum oxygen intake, lung capacity, RBC, Hb and frequency of functional test. Second, at Hct and time of functional test, there were no statistically significant differences of time and group in interaction. But in individual examination about major effect, there were significant differences among time($p<.001$) and groups($p<.05$). Third, in effects lasting until a week after exercise, experiment group II seemed greater than experiment group III.

Conclusion:

In conclusion we can figure that respiratory exercise is more influential than aquarobics in improving cardiopulmonary capacity.

Key Words: respiratory exercise, aquarobics, cardiopulmonary capacity



임원 명단

직 위	성 명	소속기관
명예회장	배성수	대구대학교 물리치료학과
고 문	박래준	대구대학교 물리치료학과
회 장	김태열	동신대학교 물리치료학과
부회장	이현옥	부산가톨릭대학교 물리치료학과
부회장	윤범철	고려대학교 물리치료학과
부회장	김순희	용인대학교 물리치료학과
부회장	박지원	대구가톨릭대학교 물리치료학과
이사장	권용현	영남이공대학 물리치료과
총무이사	최진호	대구한의대학교 물리치료학과
기획이사	김중휘	강병원 물리치료센터
학술이사	채운원	광주보건대학 물리치료과
재무이사	이미영	대구한의대학교 물리치료학과
국제이사	송병호	단국대학교 대학원 물리치료학과
홍보이사	이창렬	영동대학교 물리치료학과
정보이사	정동훈	나사렛대학교 재활공학과
교육이사	박승규	대불대학교 물리치료학과
관리이사	장종성	대구대학교 대학원
대외협력이사	황태연	전남과학대학 물리치료과
무임소이사	고유민	Medi-MAX
무임소이사	박돈목	극동대학 물리치료과
무임소이사	박장성	서남대학교 물리치료학과
무임소이사	송준찬	경북전문대학 물리치료과
무임소이사	신형수	경운대학교 물리치료학과
무임소이사	이현기	경북대학교병원 물리치료실
무임소이사	안창식	을지대학교 물리치료학과
무임소이사	임창훈	강릉영동대학 물리치료과
감 사	남기석	영남이공대학 물리치료과
감 사	윤세원	광주여자대학교 물리치료학과
자문위원	김명훈	광주보건대학 물리치료과
자문위원	이재형	원광보건대학 물리치료과

대한물리치료학회 2009년 추계학술대회 초록집

인쇄일 2009년 11월 10일
발행일 2009년 11월 13일

발행인 김태열
편집인 박지원
발행처 대한물리치료학회
전라남도 나주시 대호동 252번지
동신대학교 보건복지대학 물리치료학과

전 화 061-330-3392
전자우편 koreanpt@gmail.com
홈페이지 www.kpt.or.kr

인쇄처 (주)이퍼블릭
서울시 양천구 목1동 923-11 범문빌딩
T. 02-2653-5131
F. 02-2653-2454
www.medicalplus.co.kr

The 21th Annual Meeting of the Korean Society of Physical Therapy

Publisher Tae-Youl Kim
Editor-in-Chief Ji-Won Park
Published Bimonthly by the Korean Society of Physical Therapy

Department of Physical Therapy
College of Health and Welfare, Dongshin University
252, Daeho-dong, Naju-si, Jeollanam-do, Korea, 520-714
Tel. 82-61-330-3392
e-mail koreanpt@gmail.com
website www.kpt.or.kr