

The HF to total power (TP) represents the vagal control of heart rate, and the ratio of LF to HF (L/H) is considered to relate to the sympathetic modulations. *Results:* Before the intervention, there were no significant differences in the parameters of ANA among groups. After the intervention, the music therapy group significantly decreased TP. The squat exercise group significantly decreased L/H. Furthermore, when compared these groups, the combination therapy group exhibited a greater gain, significantly increased HF and decreased TP and L/H. *Implications:* Music therapy and combination therapy might improve autonomic nervous activity with specific effect on parasympathetic and sympathetic activity. We should clarify the effects of the combination therapy on the ANA in the subjects with heart failure in further studies.

PO-1258

OBSERVED CHANGES OF BRAIN FUNCTIONAL MAGNETIC RESONANCE IMAGING IN ISCHEMIC STROKE PATIENTS AFTER COMPUTER-BASED UPPER LIMB EXERCISES

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Object: To investigate the effects of computer-assisted technology intervention on cortical reorganization and associated motor recovery. *Methods:* From Nov. 2007 to May.2008, 12 healthy people and 10 stroke patients were chosen to receive computer-assisted exercise for 45 min, 5 times a week for 6 weeks. fMRI with 1.5T scanner was performed at the time of the subjects attempting sequential wrist flexion-extension at pre-treatment and post-treatment. Otherwise, standardized upper limb functional test straining contents included for stroke patients. *Results:* 1. Computer-assisted therapy showed improvements in motor function of affected hand of patients ($p < 0.01$). 2. For the hands of healthy subjects and the unaffected hand of patients, contralateral primary sensorimotor cortex (SMC) and ipsilateral cerebellum were activated before training, after six weeks training the activated areas were increased in contralateral SMC, ipsilateral cerebellum and part of the limbic system. 3. For paretic wrist movement, the brain maps showed scattered and weak activity in the contralateral SMC, main activities were found in the ipsilateral SMC and SMA. After training, activated regions were mainly found in hibateral SMC, SMA and contralateral parietal lobule, the intensity of contralateral SMC is increased and surpassed that of ipsilateral SMC. *Conclusion:* 1. Computer-assisted training can improve the ability of the affected upper limb motor for stroke patients. 2. The activated volume and intensity of the ROIs in patients and abnormal people are enhanced after training. 3. The changes of fMRI accompany with the change of upper limb function.

PO-1259

THE VALUE OF FUNCTIONAL FEEDBACK THERAPY IN LOWER LIMB PROSTHESIS ASSEMBLY

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Objective: The purpose was to explore the value of functional feedback therapy in lower extremity prosthetics assembly. *Method:* 20 patients with unilateral amputee were randomly divided into two groups. Conventional group were trained only by the verbal guid-

ance method, and feedback group added the SmartStep feedback training method. Gait data was collected and analyzed before and after the walking training in the 1st day, after the training in the 5th day and the 10th day. The gait temporal and spatial parameters were measured by using electronic gait mat, and the weight bearing (WB) capacity on hindfoot and forefoot were evaluated by the SmartStep system. *Results:* Compared with pre-training, the stride length, single supporting time, forefoot WB of prosthetic gait in the feedback group shown significant difference ($p < 0.01$) after training in the 5th day and 10th day. And statistical difference ($p < 0.05$) was found after five days' training in the conventional group, until the 10th day, the difference reveal significant ($p < 0.01$). There was no difference before training between the two groups. But the use of SmartStep functional feedback training, significantly ($p < 0.01$) improved the patients' single supporting time, forefoot WB of gait over the effected limb in the feedback group as compare to the conventional group. *Implications:* Functional feedback therapy can increase the load-bearing capacity of the prosthetic as soon as possible, improve the gait and shorten the training cycle.

PO-1260

TREADMILL TRAINING AFFECTS CELL APOPTOSIS AND EXPRESSION OF NR2B PROTEIN IN ISCHEMIC CORTEX AFTER PERMANENT CEREBRAL ISCHEMIA IN RATS

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Objective: Cerebral ischemia resulting from permanent occlusion of cerebral arteries causes neurological impairments. In the present study, the effects of treadmill training on cell apoptosis and expression of NR2B Protein in following permanent ischemia were investigated. *Methods:* Rats were randomly divided into three groups: the sham operation group, the contrl group, the training group. Treadmill training started 24h after permanent middle cerebral artery occlusion. Motor performance measured by the rota-rod test. Cell apoptosis using labeling (TUNEL) assay and NR2B protein expression using immunochemical staining (SP method) in the ischemic cortex were examined. *Results:* Two weeks after surgery, we performed rota-rod tests. Compared with the sham operation group on the rota-rod test, the animals had significantly worse performance ($p < 0.01$) in the contrl group. Compared with the control group on the rota-rod test, the animals had significantly worse performance ($p < 0.05$) in the training group. NR2B protein was significantly reduced in the ischemic cortex of rats with treadmill training than that in rats without a treadmill training ($p < 0.05$). There was a few apoptosis cells in the sham operation group. The number of apoptosis cells were significantly decreased in the ischemic cortex of rats in the training group than that in the cortol group ($p < 0.05$). *Conclusions:* This study suggests that after permanent brain ischemia, treadmill training improves motor performance and supresses cell apoptosis and expression of NR2B Protein in ischemic cortex after permanent cerebral ischemia

PO-1261

QIGONG EXERCISE COULD REDUCE UPPER LIMB LYMPHEDEMA AND IMPROVE BLOOD FLOW IN BREAST CANCER SURVIVORS

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Objective: To investigate the effects of Qigong exercise on upper limb lymphedema, arterial resistance and blood flow velocity in postmastectomy breast cancer survivors. **Method:** Eleven breast cancer survivors with Qigong experience (mean age: 58.3±10.1 years) were assigned to the experimental group and 12 breast cancer survivors without Qigong experience (mean age: 53.8±4.2 years) were assigned to the control group. After baseline measurements were taken, the experimental group performed 18 Forms Tai Chi Qigong exercise for approximately 6 min while the control group rested for similar duration in a sitting position. Both groups were then re-assessed. All participants were measured on their upper limb circumference, peripheral arterial resistance and blood flow velocities of the affected-upper-limb. **Results:** The between-group differences were not significant for all outcome measures at baseline ($p>0.05$). The circumferences of the affected upper arm, elbow, forearm and wrist decreased after Qigong exercise ($p<0.05$). However, no significant difference was found in the circumference measures between the two groups post-test ($p>0.0125$). In terms of vascular outcomes, the resistance index decreased and the maximum systolic arterial blood flow velocity (SV) and minimum diastolic arterial blood flow velocity (DV) increased significantly after Qigong exercise ($p<0.05$). The between-group difference was close to significant for SV ($p=0.018$) and was significant for DV ($p<0.001$) post-test. **Impact on rehabilitation:** Qigong exercise could reduce conventional cancer therapy side effects such as upper limb lymphedema and poor circulatory status in breast cancer survivors. However, such effects may be temporary, and repeated practice of the Qigong form may be necessary.

PO-1262

CLINICAL ANALYSIS OF TREATING CERVICAL VERTIGO WITH LOW FREQUENCY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION

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Objective: To explore the curative effect of using Transcranial Magnetic Stimulation (TMS) to treat cervical vertigo. **Methods:** 120 cases of Cervical Vertigo were randomly divided into 2 groups: treatment group and control group. Treatment group was treated with TMS and millimeter wave (MMW), and control group was treated with MMW. Marks for pre-therapy and post-therapy of two groups were recorded separately, and the curative effect and side effect were also observed and recorded. This method was designed to discuss the diagnosis of this disease and application of non-operative treatment. **Results:** The differences between pre-therapy and post-therapy marks of two groups were both statistically significant ($p<0.05$). The difference of post-therapy marks between two groups was also statistically significant ($p<0.05$). **Conclusion:** The combination of TMS and MMW can improve the curative effect of vertebral artery type of cervical spondylosis (CSA).

PO-1263

CLINICAL STUDIES OF ACUPUNCTURE COMBINED REHABILITATION IN PATIENTS WITH STROKE

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Objective: This study investigated the efficacy of Acupuncture combined with rehabilitation in Patients with Stroke. **Methods:** Three hundred stroke patients were enrolled in the program. Acupuncture combined with rehabilitation group ($n=75$) received scalp acupuncture and rehabilitation training at the same time. Scalp acupuncture group ($n=75$) received scalp acupuncture. Rehabilita-

tion group ($n=75$) received rehabilitation training. Control group ($n=75$) received. acupuncture needles 0.3×30 mm. Improvements in the motor functions were scored by the Fugl-Meyer score, neurological function score. The ability of daily life (ADL) test was performed before and after treatment. **Results:** After 12 weeks, the scores of Fugl-Meyer, neurological function score and daily living activity in the Acupuncture combined with rehabilitation group were superior to Scalp acupuncture group, rehabilitation group and control group ($p<0.05$). The total effective rate in the Acupuncture combined with rehabilitation group can reach 94.67%. **Conclusions:** This study clearly demonstrates that Acupuncture combined with rehabilitation pari-passu is a useful adjunctive therapy in reducing Neural function defect in patients with stroke.

PO-1264

ELECTRICAL ACTIVITY OF VASTUS MEDIALIS MUSCLE IN DIFFERENT POSITION OF LEG

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Objective: To compare electrical activities of vastus medialis muscle in different position of leg. **Methods:** Thirty subjects aged 20 to 50 years were participated in this study. Electrical activity of vastus medialis muscle was recorded by surface electromyography during isometric contraction in both open-kinetic and closed-kinetic chain exercise in three different leg positions: (a) neutral, (b) adducted hip and (c) external rotated hip. Average root mean square (RMS) of three consecutive muscle contractions for each leg position was calculated. **Results:** For the open-kinetic chain exercise, average RMS (SD) during muscle contraction in a, b, and c position were 104.06 (44.05), 118.68 (53.55), and 113.16 (53.48) uV, respectively. Muscle electrical activity in adducted hip position was higher than the other two positions, but not significant difference. For closed-kinetic chain exercise, average RMS (SD) in position a, b, c were as follows 132.87 (50.40), 147.37 (50.91), and 144.71 (51.36) uV. Muscle electrical activities in adducted hip and external rotated hip were not difference but both were more than in neutral position ($p<0.05$). **Implication/Impact in rehabilitation:** Positioning leg in adducted hip or external rotated hip in closed-kinetic isometric contraction activates vastus medialis muscle more than in neutral position. For open-kinetic isometric contraction, different leg position is not significant affected the vastus medialis muscle activity.

PO-1265

HUMANOID ROBOT NAO'S INTERACTING WITH CHILDREN WITH AUTISM SPECTRUM DISORDERS

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Objectives: The objective of this study is to investigate how children with ASDs interact with a humanoid robot NAO (Aldebaran - Robotics) and improve their social skills. **Methods:** Six children with ASDs age 4-8 from special education unit at Small World School in Tianjin, China, were selected to participate in as many trials as possible during a period of two months, with an average of twenty trials each. The trials were designed to progressively move from simple exposure to the robot to more complex opportunities for interaction. **Results:** Based on the video materials documenting the interactions, a quantitative and qualitative analysis was conducted. NAO's human-like appearance, its capability to speak, dance and play music, coupled with the simplicity of the human robot inter-