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## Special Lecture - 1

### **To Review the History of International Cooperation since the Establishment of the China Rehabilitation Research Center and to Explore the Prospects of Developing New Cooperative Projects**

Chen Xiao Mei

*China Rehabilitation Research Center*

#### **【Methods】**

With the support of the disabled and China Rehabilitation Research Center, China Rehabilitation Research Center has made great progress and development in medical treatment, scientific research and education for more than 30 years. China Rehabilitation Research Center was established in Japan, the United States, Germany, Hong Kong, China, more than 10 countries and regions of the Government, non-governmental organizations and selfless help. Through collaboration with overseas organizations such as Japan JICA, International University of Health and Welfare ,Japan National Rehabilitation Center, German industrial Injury Rehabilitation Hospital, international spinal cord Injury Society, Hong Kong Polytechnic University and so on, China Rehabilitation Research Center has made great progress in scientific research, education and training, personnel training, etc. To become China's rehabilitation and technical level of advanced representatives. In the process of continuous exploration and development, China's Rehabilitation Research Center has accumulated rich experience in international cooperation.

#### **【Results】**

This paper reviews the international cooperation projects carried out by China Rehabilitation Research Center in the past 30 years, summarizes the experiences and lessons, and puts forward some suggestions for the future international cooperation in the light of the situation of China and rehabilitation. Conclusion: Based on the international cooperation experience of China Rehabilitation Research Center in the 30, in order to promote the development of Chinese rehabilitation and the concept of service for the disabled, based on the existing international cooperation projects, this paper puts forward the idea of multi-level and multi-content international cooperation, thus promoting our country's rehabilitation medical technology, welfare and Operation management mode and other aspects and international advanced level.

## Interprofessional Education in Korea

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### **【Background and Purpose】**

This presentation will examine the definitions and contents of WHO's IPE (Interprofessional Education) and introduce Korean IPE definition and case based on this definition.

### **【Subjects and Method】**

First of all, I will try to learn the characteristics of the Korean IPE system through case presentation by Gwangju Health College in Korea which is pointing WHO IPE system. Second, I would like to introduce the Korean IHE (Integrated Health Education) system which is the same educational system as the WHO IPE, and I would like to investigate the cases of Daegu Health University and Eulji University that utilizes it.

### **【Results】**

The purpose of this presentation is to grasp the process of changing the IPE system presented by WHO according to the characteristics of each country and to apply it, thereby establishing the most suitable IPE system for Korea. In particular, it is trying to grasp the characteristics of IHE being enforced in Korea and replace the IPE and to make a more useful Korean version IPE system.

### **【Conclusion】**

Through preliminary physiotherapists learning the IPE system, we can improve communication skills and information exchange among medical professionals, acquire integrated knowledge, ability to solve problems, and provide higher quality medical services to patients I want.

### **【Acknowledgements】**

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## Current Situation of Educational Relationship between Myanmar and Japan Rehabilitation Teams

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### **【Introduction】**

The persons with disabilities (PWD) are 4.6% of the total population according to the 2014 Myanmar population and housing census. Rehabilitation services, that are medical, social, and vocational rehabilitation services, have been provided for PWD in Myanmar through institutional and community-based rehabilitation by three ministries of the government of Myanmar since the 1950s. The medical rehabilitation services are being provided by the collaborative and coordinated activities of the Myanmar Rehabilitation Team with other national and international organizations. The current plans of the Myanmar Rehabilitation Team includes faculty development, career development, and research culture cultivation. Japan has assisted the Myanmar Rehabilitation Team for implementing the plans of the team, especially in faculty development. The Myanmar Rehabilitation Team has been supported by recruitment of necessary professionals and strengthening of existing professionals of the members of the team. The purpose of this paper is to describe the current situation of educational relationship between Myanmar and Japan Rehabilitation Teams.

### **【Education of the Myanmar Rehabilitation Team】**

The education programs for the pioneers of the Myanmar Rehabilitation Team (doctor of rehabilitation medicine (physiatrist), physiotherapist (PT), occupational therapist (OT), prosthetist and orthotist (PO), rehabilitation nurse, and medical social worker) were started at the same time as “overseas training programs” in 1956. The local education program for PT has been started since 1960, for physiatrists since 1998, and for PO since 2015. Those three professionals for the whole population are being trained and produced by four medical and three allied universities of the Ministry of Health and Sports (MOHS) and the Ministry of Defense. Master’s and doctoral programs for physiatrists, bachelor’s and master’s programs for PT, and bachelor’s program for PO are currently being provided in those seven universities. There are absence of speech therapists (STs), certified rehabilitation nurses, and clinical psychologists, in addition to dearth of OTs and medical social workers on the Myanmar Rehabilitation Team because of lack of educational programs for those professionals in Myanmar.

### **【Educational Relationship between Myanmar and Japan Rehabilitation Teams】**

The first and earliest educational relationship was started by providing scholarship program for two medical doctors to Japan, for a five-year doctorate course in Rehabilitation Medicine around 1994–1995. The second relationship was founded as a project on development of human resources in the field of healthcare in Myanmar from 2008 to 2013. The main purpose of the project was “to improve techniques of rehabilitation specialists and expand opportunities for access to basic medicine for PWDs in Myanmar”. The project provided local training programs and short-term study visits for medical doctors, PTs, and nurses of Myanmar in Japan during the project period. The third relationship was established in 2012 as an academic interaction agreement of International University of Health and Welfare

(IUHW) with three medical universities in Myanmar under the MOHS. The purpose of the agreement is “to strengthen the mutual exchange of faculty members and students between the two countries”. Seven members of the Myanmar Rehabilitation Team were awarded the IUHW scholarship for long-term study in Japan from 2013 to 2017 by recruitment of OT and ST and strengthening of PT. IUHW also provided a short-term training course in 2015. The IUHW Rehabilitation Training Center was founded in Myanmar, and a three-day program of the first and second IUHW rehabilitation seminars were held in 2016 and 2017. The fourth relationship was formed as holding international meetings of the Japanese Society of Physical Therapy Science (SPTS) in Myanmar. The purposes of the international meeting are “to promote physical therapy science by sharing knowledge of academic, clinical, and research activities and to strengthen mutual relationships between the SPTS and international organizations”. The SPTS held the 17<sup>th</sup> and the 23<sup>rd</sup> international meetings in Myanmar in 2015 and 2017.

### **【Conclusion】**

The educational programs for OTs, STs, rehabilitation nurses, medical social workers, and clinical psychologists, are essential for further improvement of service provision of the Myanmar Rehabilitation Team. The supports from the government of Myanmar and international organizations are needed for the establishment of training and production of those professionals for the Myanmar Rehabilitation Team.



## **P-1 Comparisons of Stability Muscle Activities in Different Flexi-bar Exercise Patterns**

Qiuchen Huang, PhD, PT

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### **【Introduction】**

The flexi-bar (FB) is a two-flanks oscillating exercise equipment which produces vibrations and is effective in the proprioceptive feedback and strengthening, as well as the control of local muscle system. In the previous researches, the FB was used to increase the trunk muscle strength. And the trunk muscle was enhanced more obviously by device generates than a single oscillating device. Previous studies involve FB exercises; however, there is very few researches focusing on training effect in different FB exercise postures. The purpose of this study is to compare the electromyography changes of trunk stabilizing muscles by different FB exercise postures.

### **【Subjects and Methods】**

The subjects were 21 young healthy males. All of the subjects were right-handed. The study was approved by the Research Ethics Committee of China Rehabilitation Research Center (IRB no. 2014-26).

In the present study, the subjects were asked to maintain the standing posture. The double-oscillating FB device (Flexi-Sports, Bisley, Stroud, UK) was used in this experiment, which was 1,520 mm in length with the weight of 719g, and the thickness of 9 mm. At the center part, a grip of 17.9 cm was placed so that a user could grip this part and shake the bar for the exercise.

In this experiment, the subjects were asked to place their feet apart at shoulder width. Seven groups of FB exercise postures were used to compare electromyography changes of muscle activation.

1. The rest group (RG); 2. The front group (FG); 3. The subdominant hands group (SG); 4. The handedness group (HG); 5. The upward side group (UG); 6. The downward side group (DG); 7. The backward side group (BG). Each exercise was performed for 15s. The subjects had 10 minutes rest in each set. The order of different groups was randomly selected. Each measurement was conducted three times, and average values were used for the analyses. In the sEMG evaluation, the muscle discharge of upper trapezius (UT), middle trapezius (MT), lower trapezius (LT), latissimus dorsi (LD), and lumbar multifidus (LM) in subdominant hands side was measured by an sEMG system during the mid-5s of the 15s exercise duration, excluding the first and last 5s of data.

### **【Results】**

In the upward side group, the UT, LT and LD could be maximally constricted by FB exercise. In the subdominant hands group, the MT of the same side could be maximally constricted by FB exercise. The lumbar multifidus could be activated by FB exercise which performed the FB in front of body.

### **【Discussion】**

The results of this study show that there are higher levels of UT, MT and LT activation in exercise when the grip of FB was placed over the crown of the head. And the FB was medio-lateral oscillation up and down. Also, there are higher levels of LD and LM activation in exercise when the grip of FB was placed in the front of manubrium sterni. The FB was medio-lateral oscillation back and forwards. Therefore, for the treatment of different muscles, the stability of shoulder or trunk should be performed according to FB exercise patterns.

## **P-2 The Modulation of Motor Control by Imitating Non-Biological Motions: A Study About Motor Resonance**

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*2) Department of Rehabilitation, Ishikawa Hospital*

### **【Background and Purpose】**

Sensorimotor experience modulates motor resonance, such as motor interference, which occurs when observing others' movements; however, it is unclear how motor resonance is modulated by intentionally imitating others' movements. This study examined the effects of imitation experience on subsequent motor resonance.

### **【Subjects】**

Twenty-seven healthy undergraduate students (16 men, 11 women, mean age =  $19.8 \pm 1.6$  years) from Kobegakuin University (Kobe, Japan) participated in the study. All participants were randomly assigned to the imitation group ( $n = 13$ , seven men, six women, mean age =  $18.5 \pm 0.5$  years) or the non-imitation group ( $n = 14$ , nine men, five women, mean age =  $21.1 \pm 1.3$  years).

### **【Methods】**

All participants performed horizontal arm movements while observing non-biological, incongruent (vertical) movements of a visual stimulus (triangle object) in pre- and post-test procedures. Thirteen participants in the imitation group imitated vertical movements (non-biological motion) of the triangle object between pre- and post-test procedures and fourteen participants in the non-imitation group observed that.

### **【Results】**

Variance in the executed movements was measured as an index of motor resonance. Although there was no significant difference in the non-imitation group, there was significantly smaller variance for post-test compared to pre-test in the imitation group ( $p = 0.018$ ).

### **【Conclusion】**

Motor resonance was inhibited by intentionally imitating non-biological motions. Imitating movements different from one's own motor property might inhibit subsequent motor resonance. This finding might be applied to selectively using motor resonance as a form of rehabilitation.

### **P-3 Grip Strength and Body Mass Index are Associated with Hyperglycemia in Middle-aged and Elderly Community-dwelling People**

Ryoma Asahi<sup>1)</sup>, Tomoko Ikeda<sup>1)</sup>, Tomohiko Kamo<sup>1)</sup>, Masato Azami<sup>1)</sup>, Hirofumi Ogihara<sup>1)</sup>, Hiroaki Fujita<sup>2)</sup>

*1) Japan University of Health Sciences, 2) Saitama Medical University*

#### **【Background and Purpose】**

The main aim of this study was to examine the association between hyperglycemia and physical performance/activity.

#### **【Subjects】**

For this study, we enrolled 181 participants (81 men, 100 women) aged 50 years or older who were not certified as in need of care. All participants provided informed consent, and the study was approved by the local ethics committees of the Faculty of Health and Medical Care of Japan University of Health Sciences (No.2906-2).

#### **【Method】**

Body composition parameters, such as height, body weight, and body mass index (BMI), and physical performance parameters, involving gait speed, one-leg standing time, 30-s chair standing, and grip strength, were recorded. Physical activity was scored by the number of steps that value averaged (steps/day) for one week. Participants were interviewed to determine age, sex, Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain score, and International Physical Activity Questionnaire (IPAQ) responses. The participants were classified based on whether they demonstrated hyperglycemia of HbA1C  $\leq 6.0$  (hyperglycemia group, HG) or non-hyperglycemia (non-hyperglycemia group, NHG). Differences in values of the parameters between the two groups were tested for significance using the t-test and Mann–Whitney test. Furthermore, we performed multiple logistic regression analysis to determine associations between the HG and NHG after adjusting for all variables.

#### **【Results】**

Among 181 participants, 41 (19 men, 22 women) were classified into the HG and 140 were classified into the NHG. The grip strength of the individuals in the HG was significantly lower than that of the individuals in the NHG, and the BMI of the individuals in the HG was significantly higher than that of the individuals in the NHG ( $p < 0.05$  and  $p < 0.05$ , respectively). Furthermore, HG was significantly associated with grip strength (odds ratio: 0.877, confidence interval: 0.796–0.967) and BMI (odds ratio: 1.189, confidence interval: 1.029–1.374).

#### **【Conclusion】**

This study suggested that maintaining muscle strength, such as grip strength, and optimizing BMI may be able to prevent hyperglycemia in middle-aged and elderly community-dwelling people.

#### **P-4 Comparison of Gait Symmetry between Stroke Patients and Young Adults Using Cross-correlation of Lower Limb Joint Angle Data**

Hirofumi Ogihara<sup>1)</sup>, Tomohiko Kamo<sup>1)</sup>, Ryoma Asahi<sup>1)</sup>, Masato Azami<sup>1)</sup>, Takaaki Sato<sup>2)</sup>, Yoichi Maruyama<sup>2)</sup>

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##### **【Background and Purpose】**

Symmetry is an important gait characteristic that is often studied in stroke patients. Gait symmetry has been demonstrated by measurement of differences in spatiotemporal parameters of overall gait characteristics such as swing and stance times. However, lower limb joint angle asymmetry has not been quantified in stroke patients. This study compared gait symmetry in stroke patients with that in young adults during walking using cross-correlation of lower limb joint angle data.

##### **【Subjects】**

Twenty-five stroke patients and 13 young adults were recruited.

##### **【Methods】**

All participants performed two trials of 10-m walking at a self-selected speed. Lower limb joint angle data were recorded using RehaGait<sup>□</sup>. The normalized cross-correlation ( $CC_{norm}$ ) values for the affected and unaffected lower limb joint angle data were calculated and analyzed with Matlab software. The stroke patients and young adults were compared using the Mann-Whitney U test for the values of  $CC_{norm}$ .

##### **【Results】**

The mean age of the 25 stroke patients was  $62.2 \pm 11.8$  years. The mean age of the 13 young adults was  $27.9 \pm 3.0$  years. There were significant differences between stroke patients and young adults in hip  $CC_{norm}$  and knee  $CC_{norm}$  ( $p < 0.001$  and  $p < 0.01$ , respectively). There was no significant difference in ankle  $CC_{norm}$  ( $p = 0.11$ ).

##### **【Conclusion】**

The results showed that  $CC_{norm}$  values in stroke patients were lower than those in young adults, consistent with prior studies. Therefore, cross-correlation between affected and unaffected lower limb joint angle data may be useful in assessment of gait symmetry.

## **P-5 Prevalence of Malnutrition-Sarcopenia Syndrome in Nursing Home Residents**

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### **【Background and Purpose】**

Malnutrition-Sarcopenia Syndrome (MSS) is the clinical presentation of both malnutrition and accelerated age-associated loss of lean body mass, strength, and/or physical performance. Malnutrition and sarcopenia are each independently associated with negative health consequences that impact older adults across health care settings. The aim of this study was to assess the prevalence of MSS and its association with functional and daily activities in nursing home residents.

### **【Subjects】**

A total of 250 institutionalized elderly ( $86.5 \pm 7.6$  years) were recruited at three nursing homes.

### **【Methods】**

The Asian Working Group on Sarcopenia (AWGS) criteria was adopted. Accordingly, sarcopenia was diagnosed in cases with documented low muscle mass and either low muscle strength (grip strength) or low physical performance (short physical performance battery [SPPB]). We also assessed the participants' nutritional status (MNA-SF), mental state (MMSE), and daily activities (Barthel Index [BI]).

### **【Results】**

MSS was diagnosed in 48 participants (19.2%). Sarcopenia (sarcopenia and non-malnutrition) was diagnosed in 65 participants (26.0%). Malnutrition (non-sarcopenia and malnutrition) was diagnosed in 59 participants (23.6%). Lower values for BI ( $20.3 \pm 24.1$  vs  $51.0 \pm 26.6$ ,  $p < 0.01$ ), more severe cognitive impairment ( $6.5 \pm 7.6$  vs  $15.4 \pm 8.9$ ,  $p < 0.01$ ), and lower SPPB ( $0.3 \pm 1.0$  vs  $2.2 \pm 3.2$ ,  $p < 0.01$ ) were observed for MSS than for sarcopenia. BI, MMSE, and SPPB were not significantly different between sarcopenia and robust ( $51.0 \pm 26.6$  vs.  $54.8 \pm 25.6$ ,  $15.4 \pm 8.9$  vs.  $16.2 \pm 9.0$ , and  $2.2 \pm 3.2$  vs.  $2.5 \pm 3.0$ , respectively).

### **【Conclusions】**

The prevalence of MSS was high in nursing home frail elderly people. MSS was lower than sarcopenia in activities of daily living, functional status and cognitive status. Therefore, adequate nutrition and physical programs for the nursing home frail elderly are necessary.

## **P-6 Community Based Rehabilitation Project (2016-2017) In Taunggyi and Bago Townships in Myanmar**

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### **【Introduction】**

The Republic of the Union of Myanmar is one of the countries with ongoing Community Based Rehabilitation (CBR) program since 1982. CBR project had been implemented in 32 Townships out of 400 Townships in Myanmar. According to the 2014 Myanmar census, (2311250) people (4.6%) of total population have at least one type of disability. National Rehabilitation Hospital (NRH) is the main organization for implementing CBR program in Myanmar.

### **【Purposes】**

1. To develop community based rehabilitation service as integral part of the comprehensive Primary Health Care Delivery System. 2. To increase awareness of CBR concept amongst community members (including health personals) that properly trained persons with disability can contribute towards development of community.

### **【Method】**

CBR project (2016-2017) was implemented in Taunggyi township, Shan State (South) and Bago township, Bago Region (East). At first, pre-discussion had been done with the Director, Department of Public Health, Township Medical officers and then, advocacy meeting was held at project areas. Next, training of Middle level rehabilitation workers for CBR project was done in NRH. After that, training of basic health staff (BHS) and volunteer health workers (VHWs) was held in the project areas using translated Myanmar version of “WHO training manuals” containing 28 Booklets. They had to participate in practical field trip and data collection in the training with supervision of Physiatrist or Chief Physiotherapist from project townships. Monthly post-training assessment has been done by the project manager (or) the assistant project manager for 5 times in Taunggyi and 4 times in Bago.

### **【Result】**

According to the Monthly data collection, which was reported by VHWs and BHSs at the project area, in Taunggyi CBR, among the 141077, out of total population 382534, persons with disability (PWDs) are 1983(1.4%), Male 961(0.7%), and Female 972(0.7%). In Bago CBR, among the 132542, out of total population 4050659, PWDs are 726(0.55%), Male 286(0.22%) and Female 440(0.35%). According to age groups, PWDs under 15 years are 268(0.19%), between 15-60 years are 1029 (0.7%), above 60 years are 636 (0.45%). Among all, the percentage of moving difficulty was the highest which was 1541 people (1.1%) in Taunggyi and 700 (0.53%) in Bago. In Taunggyi CBR, we had found the people with hearing difficulty in the Phamon village in Taunggyi.

### **【Conclusion】**

In Taunggyi CBR, the percentage of both male and female were equal but in Bago, the percentage of female PWDs was greater than the male. According to the age groups by combining two project areas, the percentage PWDs of the age between 15-60 years was the largest, followed by the age group of above 60 years and below 15 years. People with hearing difficulty had been reported to WHO and WHO has a plan to supply hearing aids for those persons. For supporting assistive devices, assistive devices for difficult mobility like wheelchairs, canes, axillary crutches and quadripods have been supplied to PWDs in CBR project.

**P-7 A Retrospective Study of Gender, Affected Side, Causes and Phases of Recovery Ratio of People with Stroke in PMR Ward at YGH**

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**【Background and Purpose】**

Stroke is one of the leading causes of disability in Myanmar. Although the development of stroke center has improved the system to deliver care promptly, minority of patients with stroke in acute phase receive thrombolytic therapy. Thus, many of stroke survivors remain with residual functional deficits and it causes tremendous burden not only the patient and family but also the society and country. The purpose of this study was to analyze gender, affected side, causes and phases of recovery ratio of patients with stroke in Physical Medicine and Rehabilitation (PMR) ward at Yangon General Hospital (YGH).

**【Subjects】**

Eighty seven patients with stroke in PMR ward from January 2017 to January 2018.

**【Methods】**

The ratio of gender, affected side, causes and phases of recovery of stroke survivors was calculated by collecting the admission data of stroke patients in PMR ward. The recovery phases were divided into three phases (acute= $\leq$ 2 weeks from onset, sub-acute= $\leq$ six months, and chronic $>$ six months).

**【Results】**

Among of all these stroke survivors, 54% were male and the others female. Those of 53% were affected their right sides and 47% were the left. 75% of them were ischaemic stroke and the rest were haemorrhagic stroke. The percentages of acute, sub-acute and chronic phases were 20%, 60% and 20% respectively.

**【Conclusion】**

The percentage of gender ratio in both male and female were equally admitted to PMR ward. Likewise, the ratio of the left and right affected side was also approximately the same. However, almost all of the stroke survivors were suffered from the ischaemic type. Thus, health care professional should give education to the public about the risk factors that cause the ischaemic type of stroke. Most of the stroke survivors were admitted to PMR ward in sub-acute phase with the duration of more than three months after onset and very few percentages were in the acute phase. Early rehabilitation management could reduce further secondary complications as the result of primary impairments of stroke and improves functional outcomes. Therefore, patients with stroke should be educated to aware about the rehabilitative training that must be started since acute phase after stroke onset and also encouraged to admit PMR ward to receive the systematic and effective rehabilitative treatment.

## **P-8 Impact of 3-week Whole-body Strength Training on Muscle Mass and Respiratory Function**

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**【Background and Purpose】** Few longitudinal studies have been conducted on the effect of whole-body strength training on muscle mass and respiratory function in healthy young subjects. In respiratory related muscles, expiratory muscles were trunk muscles representing rectus abdominals. Whole-body strength training, including trunk muscles, has been suggested to improve respiratory function. The purpose of this study was to assess the impact of three weeks of strength training on muscle mass and respiratory function.

**【Subjects】** Nine healthy volunteers (men : 3, women : 6, age  $20 \pm 1$  years, height  $162.1 \pm 10.9$  cm, mass  $54.7 \pm 11.8$  kg, body mass index  $20.6 \pm 2.8$  kg/m<sup>2</sup>, mean  $\pm$  standard deviation) participated in this study.

**【Methods】** The participants were recruited from a university. Exclusion criteria were any muscle skeletal disease of the spine, rib, shoulder, hip, or knee in the past 6 months. All volunteers signed an informed consent form that was approved by the institutional review board from the corresponding author's University (Approval No. 17-Io-124). Subjects performed nine types of whole-body muscle strength training twice a week, for at least three weeks. Planks, front crunches, hip lifts focused on large areas of the trunk, squats, leg curls, calf raises, and toe raises focused on lower extremities and pushups and reverse dips focused on the upper extremities. Subjects' muscle mass was measured using Inbody (Inbody 520). Body function was measured before starting the training (baseline) and after three weeks of training. Data collected were grip strength (GS), calf circumference (CC), finger floor distance (FFD), maximum phonation time (MPT), vital capacity (VC), forced vital capacity (FVC), forced expiratory volume 1.0 (FEV1.0), maximal voluntary ventilation (MVV), maximal expiratory pressure (PE<sub>max</sub>), maximal inspiratory pressure (PI<sub>max</sub>), and tongue pressure (TP). The paired t-test was used to compare data collected at baseline to data collected after three weeks of training. The level of significance was set to 5%.

**【Results】** Training significantly impacted the skeletal muscle mass of the right ( $2.11 \pm 0.78$  vs.  $2.17 \pm 0.78$  kg,  $p < 0.05$ ) and left ( $2.04 \pm 0.77$  vs.  $2.12 \pm 0.78$  kg,  $p < 0.05$ ) arm, MPT ( $28.1 \pm 9.0$  vs.  $25.7 \pm 7.5$  sec,  $p < 0.05$ ), MVV ( $118.1 \pm 43.7$  vs.  $129.5 \pm 44.3$  L/min,  $p < 0.05$ ) and PE<sub>max</sub> ( $8.2 \pm 2.4$  vs.  $8.8 \pm 2.6$  kPa,  $p < 0.05$ ). No significant difference was found in whole skeletal muscle mass ( $23.9 \pm 6.3$  vs.  $24.2 \pm 6.4$  kg), trunk muscle mass ( $18.7 \pm 4.8$  vs.  $18.5 \pm 5.5$  kg), skeletal muscle mass of the right ( $6.71 \pm 1.83$  vs.  $6.72 \pm 1.85$  kg) and left ( $6.72 \pm 1.81$  vs.  $6.72 \pm 1.86$  kg) leg, GS ( $30.4 \pm 9.3$  vs.  $31.2 \pm 8.7$  kg), CC ( $35.4 \pm 2.5$  vs.  $35.5 \pm 2.6$  cm), FFD ( $9.1 \pm 10.7$  vs.  $9.3 \pm 10.0$  cm), VC ( $3.58 \pm 0.97$  vs.  $3.51 \pm 0.96$  L), FVC ( $3.47 \pm 0.89$  vs.  $3.51 \pm 0.94$  L), FEV1.0 ( $3.10 \pm 0.82$  vs.  $3.15 \pm 0.73$  L), PI<sub>max</sub> ( $6.9 \pm 2.8$  vs.  $7.3 \pm 2.0$  kPa), or TP ( $48.1 \pm 7.1$  vs.  $48.5 \pm 9.0$  kPa).

**【Conclusion】** These data suggest that three weeks of whole-body strength training impacts the muscle mass of the arms and respiratory function, including MIP.



**P-9 The Influence of the Difference of the Support Surface and the Vision Existence on the Balance Competence during Squat Exercise.**

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**【Background and Purpose】**

The aim of this study was to look into the changes of normal adult's balance competence when squat exercise in the condition of vision blocked or non-vision blocked on the stable or the unstable surfaces. Also, this study intended to assess balance competence more objectively and in a more diversified ways by using Biorescue.

**【Subjects and Method】**

This study randomly assigned male 27, female 29 all the subjects to 4 groups; vision blocked or non-vision blocked on the stable surface or the unstable surface. Subjects were given 3 sets of squat exercises per day, 3 times a week for 3 weeks. At the start and the end of the exercise for 3 weeks, subjects measured balance competence using Biorescue to assess the improvements of before and after.

**【Results】**

All the groups showed the differences in the balance competence on the Biorescue before and after the exercise. Among these groups, a group of vision blocked on the stable surface showed the highest improvements. And also, it showed significant differences compared to other groups ( $P>0.05$ ).

Vision blocked on the stable surface and non-vision blocked on the unstable surface group showed significant differences in the left, right, forward and total areas ( $P<0.05$ ).

Vision blocked on the unstable surface group showed significant difference from the forward area to the non-vision blocked on the stable surface group and the non-vision blocked on the stable surface group, there was a significant difference in Vision blocked on the stable surface group from the total area ( $P>0.05$ ).

**【Conclusion】**

The average difference between groups showed that the squat group with vision blocked on the stable surface showed the highest improvement rate of balance ability.

It is thought that it is possible not only for the young age but also for the elderly to exercise from the stability. It can be utilized for rehabilitation of the aged and preparation of healthier life.

**【Acknowledgements】**

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**P-10 A Study on Understanding of Dementia through Life Pattern Experience of Dementia**

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**【Background and Purpose】**

This study was conducted to identify the effect of Dementia Simulation Program on understanding of dementia among undergraduate students. A CoTras was applied to 38 undergraduate students who visited Seongnam Senior Experience Complex.

**【Subjects and Method】**

In this study, we used the Dementia Simulation Program for research called as CoTras (a Korean Computer-based cognitive training system). To evaluate all participants, two standardized evaluation instruments (awareness and attitude toward dementia) were used before and after the planned computer based cognitive rehabilitation sessions. Subsequently, our results were as follows. Cotras statistically changed the attitude ( $p=0.000$ ) toward dementia after simulation intervention.

**【Results】**

It was found that the Computer-based cognitive rehabilitation with CoTras program could be helpful for undergraduate students to change their attitude toward dementia. However, there are limits to students in understanding the theoretical knowledge on dementia that are learned in the classroom. This suggests that it will help us understand the dementia indirectly through experience and training. In particular, it is expected to promote the understanding of dementia in memory and calculations test.

**【Conclusion】**

Further studies are required to verify the effect of CoTras program on various groups. They are expected to be helpful for understanding dementia by age group.

**【Acknowledgements】**

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**P-11 A Study on the Effects of Exercise Program in Middle-aged Women in Shoulder Impingement Syndrome**

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**【Background and Purpose】**

The purpose of this study was to confirm of the effects of exercise program in middle-aged women in Shoulder impingement syndrome.

**【Subjects and Method】**

In the study designed ‘true experimental design’, 45 subjects were recruited and randomly divided into 3groups which have 15 subjects each : Scapulothoracic exercise program group with Thoracic mobilizing program(SPwTP), Scapulothoracic exercise program(SP) and Thoracic mobilizing program(TP) group.

All subjects were assessed for pain, mobility and disability of shoulder, angle of thoracic by Shoulder Simple Test (SST), Shoulder Pain and Disability Index (SPADI), Shoulder mobility reaching pattern (SMRP) and Thoracic Kyphosis Measurement (TKM) using Baseline Bubble Inclinator before the intervention and three weeks after the intervention. The intervention including warm-up and finishing exercise was carried out twice a week for about 50 minutes for 6 weeks. Repeated one-way ANOVA were used.

**【Results】**

The SST scores showed that the functional level among the groups increased in the order of TP, SP and SPwTP group. The SPADI score showed no significant difference between the SP and TP groups, indicating that the SPwTP group's pain decreased compared to the two groups, SPwTP showed a decrease in dysfunction relative to both groups.

The values of SMRP were not significantly different between the SP and TP groups before and after intervention but SPwTP significantly increased.

TKM showed a decrease over time in the order of SP, TP, and SPwTP. However, SPwTP decreased significantly compared to the other two groups.

**【Conclusion】**

SP and TP were effective in improving pain and dysfunction in patients with Shoulder impingement syndrome.

But, SPwTP was found to be more effective.

**【Acknowledgements】**

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### **【Background and Purpose】**

Improvement in living standards and westernization of dietary habits increase the incidence of coronary artery diseases such as hypertension, arteriosclerosis and hyperlipidemia, as well as an increased incidence of stroke associated with these diseases. The risk factors for stroke are largely biomedical and lifestyle factors. Lifestyle factors are formed by the habit of the individual, so it is a factor that can be sufficiently modified according to the individual effort. The purpose of this study is to investigate the difference in lifestyle pattern between ischemic stroke patients and healthy adults.

### **【Subjects and Methods】**

This study was conducted on ischemic stroke patients and healthy adults to investigate their past and current lifestyle patterns and to analyze the relationships between these factors. Study participants were selected through a random sampling method from adults who visit to N rehabilitation hospital and Seongnam Senior Experience Complex. The questionnaire consisted of the general characteristics of the subjects and the items necessary for lifestyle pattern research, and questionnaires were interviewed through the Seongnam Senior Experience Complex visitors. The subjects were 14 adults (Stroke 7 and Healthy 7). Survey items were firstly physical activity items, such as physical activity and exercise time, sitting and walking time during the day. The second is the inactivity items, which investigates drinking and smoking experiences within the past year.

### **【Results】**

By analysis of lifestyle pattern items with groups, physical activity(yes 29%, no 71%) and flexibility exercise(yes 86%, no 14%) and smoking(yes 50%, no 50%) and drinking(yes 7%, no 93%) is almost same value each group. But there was a significant difference between each groups in sports and leisure activities (yes 50%, no 50%), sitting time (yes 86%, no 14%), walking time (yes 86%, no 14%).

As a result of comparing the lifestyle of ischemic stroke patients and healthy adults, there was a difference in activity time, drinking and smoking

### **【Conclusion】**

Human lifestyles can have both good and bad effects on the human body system. Especially, it is very important to identify diseases caused by the bad influence of lifestyle. Therefore, our study investigated sports and leisure activities in past life habits of ischemic stroke patients, and it can be assumed that there is a correlation.

### **【Acknowledgements】**

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**P-13 Report on the Results of Survey of Trends of Participants in Medical English Conversation Study Sessions**

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**【Background and Purpose】**

At the Terakoya study group sponsored by Tochigi prefectural physical therapy association community activation special committee, we held a medical English conversation study sessions three times a year from 2017, and finished this year's study sessions. A study group on medical English conversation for physiotherapists has been conducted by the Okinawa physical therapy association since 2015, but almost no other prefectural do it. In the 3 study session, we conducted a questionnaire survey on participant satisfaction. Therefore, this time we report the results of the satisfaction degree of the study participants.

**【Subjects】**

Among the participants of the medical English conversation study sessions in 2017, 65 people were agreed to the questionnaire survey.

This research was conducted with the approval of the International University of Health and Welfare ethics review committee (approval number: 17-Io-123).

**【Methods】**

We distributed questionnaire paper after study session. Questionnaires are configured of 7 questions which are 1) the years of experience as a Physical therapist, 2) satisfaction level of lecture content, 3) difficulty level of lecture content, 4) Interest in contents of the lecture content, 5) hope for next participation, 6) reason for replying to5), 7) hope for next content of the lecture.

**【Results】**

More than half of the participants were physiotherapists less than 3 years of experience. I believe this also affects that it can be acquire credits for new employee education programs.

The results of the questionnaire of the three study sessions that have been carried out up, more than 90% are "very satisfactory" and "satisfied" accounted for and it was 100% for 2nd and 3rd. The answer result on the difficulty level of the lecture was the most difficult for the second time.

**【Conclusion】**

Among the 3 times, the second time satisfaction degree and difficulty level were the highest. What I can think of as this reason for this is that I invited some foreigner at a study meeting and practiced medical interview. However that time the satisfaction level was the highest. From this result, I believe that dialogue with foreigners resulted in improved satisfaction. I would like to make efforts so that I can continue to have a satisfactory study meeting in the future.

By participating in this study group, I would like to expect that the number of physiotherapists who will be able to speak English without having fear of foreigners will increase.