▶ O1

DOI:10.6215/FJPT.202212.O01

比較肩外轉肌群離心訓練與肩胛穩定訓練對於棘上肌肌肉肌腱結構之影響

毛冠盛　林燕慧　陳柏村 *

長庚大學物理治療學系暨復健科學研究所

The Comparison of the Effects of External Rotator Eccentric Exercise and Scapular Stabilization Exercise on Musculotendinous Architecture of Supraspinatus

Kuan-Sheng Mao　Yang-Hua Lin　Po-Tsun Chen*

School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: Scapular dyskinesis (ScD) is commonly seen in overhead athletes and disturbing the length-tension relationship of rotator cuff. The effectiveness of intervention exercises for shoulder disorders, i.e., scapular stabilization exercises and external rotator eccentric training, focusing on the muscle control has been reported. The musculotendinous architecture, including the pennation angle (PA) and fiber bundle length (FBL), can reflect the status of muscle length and contraction. However, there was no thorough evidence to examine the cause-and-effect relationship between scapular stability and supraspinatus architecture. Thus, the purpose of this study was to investigate the effects of scapular stabilization and external rotator eccentric exercise on muscle strength and musculotendinous architecture of supraspinatus in volleyball players with ScD. **Methods:** Twenty-two volleyball players were recruited and randomly allocated to two groups for eight-week exercise training: scapular stabilization with supraspinatus eccentric exercise (ECC-SCA) group and isolated scapular stabilization exercise (SCA) group. The evaluations included the PA and FBL of supraspinatus by sonography and the maximal strength of periscapular muscles and rotator cuff. Two-way repeated measures ANOVA was used to compare the differences between the groups and the intervention. **Results:** There were significant interactions between group and intervention in FBL and PA, respectively. The post hoc test showed that the FBL (4.14 ± 0.54 cm vs. 4.60 ± 0.59 cm, p = 0.012) and PA (19.72° ± 3.56° vs. 21.93° ± 4.35°, p = 0.001) in ECC-SCA were significantly increased after intervention, while no significant change was noticed in SCA. The strength of internal rotator (ECC-SCA: 11.9 ± 2.6 kg vs. 13.2 ± 3 kg, p = 0.024; SCA: 12.5 ± 2.6 kg vs. 14.6 ± 2.7 kg, p = 0.005), middle trapezius (ECC-SCA: 21.2 ± 4.4 kg vs. 25.6 ± 5.6kg, p = 0.017; SCA: 21.9 ± 6.7 kg vs. 27.2 ± 5.5 kg, p < 0.001), lower trapezius (ECC-SCA: 19.6 ± 3.9 kg vs. 23.2 ± 4.4 kg, p = 0.016; SCA: 20 ± 5.9 kg vs. 24.6 ± 5.4 kg, p = 0.004) and serratus anterior (ECC-SCA: 31.7 ± 7.7 kg vs. 40.4 ± 9.6 kg, p = 0.003; SCA: 32 ± 6.6 kg vs. 42.6 ± 13.9 kg, p = 0.009) in both groups were significantly increased after intervention, but the external rotator didn't show the significant changes. **Conclusions:** The ECC-SCA can significantly lengthen FBL and increase PA of supraspinatus as well as increase periscapular muscle strength in volleyball players with ScD. **Clinical Relevance:** The ECC-SCA could be recommended for the overhead athletes whose rotator cuff may be shortened and stiff after long-term training and requiring stretching and strengthening. ■

▶ O2

DOI:10.6215/FJPT.202212.O02

棘上肌之肌肉肌腱結構於不同肌肉長度下之變化及與肌力之關係

周彥菱　林燕慧　陳柏村 *

長庚大學物理治療學系暨復健科學研究所

The Musculotendinous Architecture of Supraspinatus: The Effects of Muscle Length and Strength

Yen-Ling Chou Yang-Hua Lin Po-Tsun Chen*

School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: Supraspinatus stiffness is commonly occurred after tendon repairing surgery and becoming a disturbance during rehabilitation. To monitor the length changes during exercise is critical to avoid overstretching and re-tearing the tendon. However, there was no evidence relating to the musculotendinous architecture (MA) changes of supraspinatus after stretching. Hence, this study aimed to compare the changes of MA of supraspinatus between the lengthening and contraction conditions as well as the correlation with muscle strength. **Methods:** Eight healthy participants were recruited for the sonographic evaluation of supraspinatus MA. The MA, including the fiber bundle length (FBL) and pennation angle (PA), were measured at resting posture, 30° abduction, 30° abduction with external weight of 5 lb and stretching status (maximum internal rotation at maximum horizontal abduction with 90° elevation). The supraspinatus strength was measured by full-can test at scaption 90° with elbow extension, and shoulder neutral rotation. The Friedman's test with Wilcoxon signed-rank test as post hoc test were used to compare the MA between difference conditions. The Spearman's rank correlation test was used to analyze the association between MA and supraspinatus strength (full-can). **Results:** The FBL during stretching status (4.49 ± 0.75 cm) was significantly longer than the other conditions, followed by resting posture (4.06 ± 0.59 cm), 30° abduction without (3.47 ± 0.74 cm) and with external weight (3.12 ± 0.81 cm). The largest PA was significantly found during 30° abduction with weight (16.81° ± 1.73°) and followed by 30° abduction without weight (13.30° ± 1.84°), resting posture (10.95° ± 1.22°) and stretching (9.53° ± 1.20°). The significant correlations were noticed between the maximal strength of supraspinatus regarding to the FBL during all conditions (r_s = 0.762 ~ 0.810, p < 0.05) as well as the PA during 30° abduction (r_s = 0.738, p = 0.037). **Conclusion:** Significant changes in MA of supraspinatus were observed during different conditions in healthy subjects. The patients with rotator cuff related disorder should be evaluated for the altered MA in the future. **Clinical Relevance:** The normal value of MA changes across various conditions may be used as a reference for evaluating the musculotendinous dysfunction of supraspinatus. ■

▶ O3

DOI:10.6215/FJPT.202212.O03

非特異性慢性頸部疼痛辦公室族群在上斜方肌之皮質運動興奮性的改變

高閔威 林吟亮*

國立陽明交通大學物理治療暨輔助科技學系

Alterations in Corticomotor Excitability of Upper Trapezius in Office Workers With Non-Specific Chronic Neck Pain

Min-Wei Kao Yin-Liang Lin*

Department of Physical Therapy and Assistive Technology, National Yang Ming Chiao Tung University, Taipei, Taiwan

Background and Purpose: Non-specific chronic neck pain (NCNP) is commonly seen in office workers. Individuals with NCNP demonstrate both impaired neck and scapular neuromuscular control, especially during a computer typing task. Further, corticomotor adaptation of neck muscles, including shifts and alterations of motor cortex representation, were also seen in individuals with NCNP. To our knowledge, no study has explored whether this corticomotor adaptation would also happen over upper trapezius in office workers with NCNP, especially after a computer typing task. The purposes were to compare corticomotor excitability of upper trapezius between office workers with and without NCNP before and after a computer typing task. **Methods:** This was a cross-sectional exploratory study. Nineteen individuals

with NCNP and 19 age- and gender-matched healthy controls have been recruited. Corticomotor parameters of upper trapezius were collected by transcranial magnetic stimulation, including active motor threshold (AMT), motor evoked potential, cortical silent period, and cortical motor map at baseline. These parameters, except cortical motor map, were tested again after the 30-minute computer typing task. Two-way ANOVA was used to compare the corticospinal excitability parameters between groups at baseline and after the computer task. An independent t test was used to determine the difference in the map parameters between groups. The significant level was set at 0.05. **Results:** Compared to the control group, decreased cortical motor map volume (Cohen's $d = 0.87$, $p = 0.011$), more lateral location of the center of gravity ($d = 0.71$, $p = 0.035$) and a fewer number of discrete peaks ($d = 1.27$, $p < 0.001$) was found in the NCNP group. The NCNP group demonstrated a significant increase in corticospinal excitability (decreased AMT) following the computer task ($d = 0.88$, $p = 0.001$). **Conclusions:** Office workers with NCNP show decreased corticomotor excitability and reorganization in cortical motor map of the upper trapezius at baseline, but increased excitability following the computer task. These central changes may be associated with central sensitization or pain-induced protective mechanism. **Clinical Relevance:** Treatment protocols may be designed to reverse this central adaptation. Future work may investigate how the corticomotor excitability changes following treatment and determine whether altered corticomotor excitability is related to chronicity of neck pain. ■

▶ O4

DOI:10.6215/FJPT.202212.O04

肩旋轉肌群疲勞活動對於業餘網球選手肩關節與肩胛骨運動學和發球時序上的影響

詹禹慈 [1,2]　林吟亮 [1,*]

[1] 國立陽明交通大學物理治療暨輔助科技學系

[2] 衛生福利部桃園醫院物理治療科

Serve Kinematics Following an Isokinetic Fatigue Protocol in Recreational Tennis Players

Yu-Tzu Chan[1,2]　Yin-Liang Lin[1,*]

[1] Department of Physical Therapy and Assistive Technology, National Yang Ming Chiao Tung University, Taipei, Taiwan

[2] Department of Physical Therapy, Taoyuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan

Background and Purpose: Fatigue is one of the risk factors contributing to shoulder injury in tennis players. Tennis serve has been reported to be a traumatic skill, especially in the late cocking stage and acceleration phase of a serve. Only one study observed the serve kinematics after lower trapezius was fatigued by electrical stimulation. However, no study has investigated the effects of a fatigue protocol for shoulder rotators on serve kinematics and serve sequence patterns. Thus, we aimed to investigate whether fatigue of shoulder rotators affected serve kinematics in healthy recreational tennis players. **Methods:** This was an exploratory study, and 26 healthy recreational tennis players were included. The subjects performed a fatigue protocol of shoulder internal and external rotation with an isokinetic dynamometer. Torque and median power frequency (MDF) of the shoulder rotators were measured to confirm fatigue. Kinematics of shoulder, scapula, and racket during serves without a ball were recorded by the motion capture system. The paired t-test was used to compare the changes of torque, MDF, serve kinematics and serve sequence pattern before and after fatigue. **Results:** After the fatigue protocol, the rotator torques decreased 35.3–38.78%. Except latissimus dorsi, anterior deltoid, pectoralis major and infraspinatus showed a significant decrease in MDF (Cohen's $d = 0.45–0.99$, $p < 0.05$). Players served with an early shoulder horizontal adduction pattern ($d = 0.49$, $p = 0.029$). In the late cocking stage, shoulder external rotation was decreased ($d = 0.83$, $p < 0.05$) and at the end of acceleration phase, there was a decrease in shoulder elevation, horizontal adduction,

scapula internal rotation and anterior tilt (d = 0.42–0.75, $p < 0.05$). **Conclusions:** The isokinetic fatigue protocol fatigued shoulder rotators and also affected serve kinematics. The early shoulder horizontal adduction may be a strategy to avoid shoulder internal impingement. Moreover, the alternations of scapular kinematics at the end of acceleration phase may be also a compensatory strategy to maintain sufficient subacromial space. **Clinical Relevance:** The results may indicate that players may adopt a compensatory strategy during serve after fatigue. Future studies may need to investigate the changes in kinematics following a long duration of competition or practice. ■

▶ O5

DOI:10.6215/FJPT.202212.O05

以智慧型手機的量角器應用程式測量成人膝關節活動度的信度和效度：系統性回顧

蔡嘉軒　劉文瑜　林燕慧 *

長庚大學物理治療學系暨復健科學研究所

The Reliability and Validity of the Smartphone Protractor Application for Measuring of Range of Knee Joint Motion in Adults: A Systematic Review

Chia-Hsuan Tsai　Wen-Yu Liu　Yang-Hua Lin*

School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan

背景與目的：膝關節病變常造成膝關節活動度受限。關節活動度量測工具因近年來智慧型手機的普遍，因而應用程式開發人員利用手機的內建功能，發展測量關節活動度的應用程式。本篇研究目的為，探討智慧型手機量角器量測應用程式及其應用於膝關節活動角度的信效度。**方法：**以資料庫包括，Embase，PubMed 和 Scopus，進行文獻搜尋，時間為至 2022 年 4 月為止。關鍵字為：smartphone、joint range of motion/ROM、knee。**結果：**本研究共納入 16 篇文獻，相關應用程式類型有手機照相功能為基礎者三種，和四種以手機內建加速度感應器所開發。照相功能類型之應用程式呈現良好的同時效度 (r = 0.90 ~ 0.98)。評估者內信度有良好到傑出的程度 (intraclass correlation coefficient [ICC] = 0.810 ~ 0.996)，評估者間信度為良好到傑出的信度 (ICC = 0.790 ~ 0.994)。其中以 MyProprioception 應用程式有傑出的信度 (ICC = 0.991 ~ 0.992) 及良好的同時效度 (r = 0.98)。加速度計感應器的應用程式呈現中等到傑出的同時效度 (r = 0.950 ~ 0.985, ρ = 0.95 ~ 0.97, CCC = 0.50 ~ 0.99)。評估者內信度有良好到傑出的程度 (ICC = 0.860 ~ 0.991)，評估者間信度則為差到傑出的信度 (ICC = 0.120 ~ 0.994)。其中以 Goniometer-pro 應用程式有傑出的信度 (ICC = 0.91 ~ 0.99) 及良好的同時效度 (r = 0.99)。**結論：**智慧型手機量角器應用程式共有照相功能類型與加速度計感應器之類型。各應用程式類型呈現良好的同時效度，及有中度到傑出的信度。**臨床意義：**本研究結果可提供測量膝關節活動度時，選用智慧型手機內建量角器應用程式之建議。■

▶ O6

DOI:10.6215/FJPT.202212.O06

聽覺與視覺感覺運動機制對於青少年菁英短跑選手運動表現的影響

袁淑文　謝悅齡 *

中國醫藥大學物理治療學系復健科學碩士班

Sensorimotor Mechanisms in Auditory and Visual Systems on Sprint Performance in Elite Adolescent Sprinters

Shiuk-Wen Yen Yueh-Ling Hsieh*

Department of Physical Therapy, Graduate Institute of Rehabilitation Science, China Medical University, Taichung, Taiwan

Background and Purpose: Sensorimotor processing including sensory function and audiomotor processing during the start reaction time has a decisive impact on 100-m sprint performance in the elite sprinter. There are few comprehensive assessments of central neural controls in the sports performance of adolescent sprinters. This study aimed to investigate the sensory and sensorimotor function by auditory and visual evoked potentials (AEPs and VEPs) and the audiomotor reaction time (ART) during a start in elite adolescent sprinters. **Methods:** Twenty-nine adolescent sprinters (13 female, 16 male, 14.59 ± 1.07 years old) were divided into the elite (n = 14) and sub-elite (n = 15) sprinters according to their performance achievement in competitions. Electrophysiological studies including the short-latency, mid-latency, and long-latency AEPs, pattern reversal VEP, and ART of muscles in extremities during a sprint start were recorded in both groups. Peak latencies of each AEP and VEP, as well as the premotor time (PMT) and motor time (MT) of ART, were analyzed. **Results:** The P3 latencies of long-latency AEP in the elite group were shorter compared with those in the sub-elite group ($p < 0.05$, $d = 1.11$). There were no significant differences in peak latencies of short- and mid-latency AEPs between the two groups ($p > 0.05$). There were no significant differences in peak latencies of pattern reversal VEP between the two groups ($p > 0.05$). The PMT in extremity muscles of elite female sprinters was shorter than those of sub-elite sprinters (upper extremity: $p < 0.05$, $d = 1.53$, lower extremity: $p < 0.05$, $d = 2.81$). But there were no significant differences in MT between the two groups ($p > 0.05$). **Conclusion:** There were significant differences found between elite and sub-elite sprinters in sensory and sensorimotor function. The results indicate sensorimotor mechanisms may be possible factors related to sprint performance in the adolescent sprinter. **Clinical Relevance:** Sensorimotor training can be considered as a training strategy to promote adolescent sprint performances. ■

▶ O7 DOI:10.6215/FJPT.202212.O07

初探跑步機步態訓練效果的預測因子：邁向巴金森氏症個人化治療計畫

蔡思魚 林居正 李亞芸*

國立臺灣大學醫學院物理治療學系暨研究所

Identify Predictors for Treadmill Training: A Step Toward Individualized Care for People With Parkinson's Disease

Si-Yu Tsai Jiu-Jenq Lin Ya-Yun Lee*

School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University, Taipei, Taiwan

Background and Purpose: Treadmill training has been demonstrated to be one of the most effective approaches to improve walking ability in people with Parkinson's disease (PD). Nevertheless, the amount of improvement appears to vary greatly among individuals. This observation raises a critical question of what types of patient characteristics may benefit the most from treadmill training. This study aimed to explore potential characteristics of patients with PD who may demonstrate clinically relevant improvement in gait speed after treadmill training. **Methods:** Data from 70 participants with idiopathic PD who completed 12 sessions of treadmill training were included in this study. Using the minimal clinically important difference reported of 0.1 m/s for gait speed, participants were classified into responder or non-responder after treadmill training. Hierarchical logistic regression analysis was used to find significant predictors accounted for the treatment response of treadmill training after age and sex were adjusted. To further provide proper cut-off points for clinical use, additional receiver operating characteristic (ROC) curve analysis was then conducted. **Results:** The results showed that slower baseline gait speed and higher self-efficacy, as measured by the activities-

specific balance confidence (ABC) scale, significantly predicted the treatment response of treadmill training. Further ROC analysis revealed that the cut-off points were 0.92 m/s for gait speed (adjusted OR = 14.06, 95% CI = 3.26–60.51, $p < 0.001$) and 84.5 points for ABC score (adjusted OR = 4.66, 95% CI = 1.25–17.32, $p < 0.05$) **Conclusions:** People with PD with baseline gait speed ≤ 0.92 m/s and ABC score ≥84.5 points have greater potential to achieve clinically relevant improvement of gait speed after treadmill training. **Clinical Relevance:** The findings of this study can help clinicians identify suitable patients for treadmill training and advance personalized care for PD rehabilitation. ■

▶ **O8**

DOI:10.6215/FJPT.202212.O08

超音波治療對產後婦女乳房症狀的立即效果：隨機對照試驗

邵薇 [1] 蔡一如 [1,2,3] 楊政峰 [1,3] 吳孟興 [4]
林冠吟 [1,2,3,*]

[1] 國立成功大學醫學院物理治療學系
[2] 國立成功大學醫學院健康照護科學研究所
[3] 國立成功大學醫學院附設醫院物理治療中心
[4] 國立成功大學醫學院附設醫院婦產部

Immediate Effect of Ultrasound Therapy in Postpartum Women With Breast Symptoms: A Randomized Controlled Trial

Wei Shao[1] Yi-Ju Tsai[1,2,3] Jeng-Feng Yang[1,3]
Meng-Hsing Wu[4] Kuan-Yin Lin[1,2,3,*]

[1] Department of Physical Therapy, College of Medicine, National Cheng Kung University, Tainan, Taiwan
[2] Institute of Allied Health Sciences, College of Medicine, National Cheng Kung University, Tainan, Taiwan
[3] Physical Therapy Center, National Cheng Kung University Hospital, Tainan, Taiwan
[4] Department of Obstetrics and Gynecology, National Cheng Kung University Hospital, Tainan, Taiwan

Background and Purpose: Pathological breast symptoms including redness, swelling, pain, breast lump, general malaise, and breast engorgement may reduce the willingness of mothers to breastfeed and cause early breastfeeding cessation. The ultrasound therapy might be a treatment option to relieve the pathological breast symptoms. However, little evidence supports the effectiveness of ultrasound therapy in postpartum women. Therefore, the purpose of this study was to investigate the immediate effect of ultrasound therapy in postpartum women with breast symptoms. **Methods:** Lactating women, aged 21 to 45 years, with pathological breast symptoms were recruited from a medical center and postnatal care centers from May 2021 to May 2022. Participants were randomly allocated to intervention group or sham group. The intervention included one session of ultrasound therapy (intervention group) or sham ultrasound therapy (sham group) with education and massage. The outcome measures included severity of breast pain and breast lump (numerical rating scale), severity of engorgement (six-point engorgement scale), breast and body temperature (non-contact infrared thermometer) and breast hardness (durometer). Assessments were conducted at baseline and immediately after the intervention. Statistical analysis was performed using Chi-squared test, Mann-Whitney U test and Wilcoxon signed-ranks test. A p-value of < 0.05 indicated a statistical significance. **Results:** Eleven women participated in the study (intervention group: n = 5; sham group: n = 6). No significant differences were found between two groups in most outcome measures before and after the intervention. However, after the intervention, the severity of breast lump significantly improved in intervention group ($p = 0.043$); the breast pain reduced in sham group ($p = 0.045$). **Conclusions:** Both ultrasound therapy and sham ultrasound therapy with massage and education may have positive effects on pathological breast symptoms in postpartum women. However, our preliminary findings showed no significant difference in immediate effect between ultrasound and sham ultrasound therapy. **Clinical Relevance:** Ultrasound therapy with massage and education could be a treatment option to relieve the pathological breast

symptoms. However, studies with a large sample size and longer intervention duration are needed to confirm the effect of ultrasound therapy in this population. ■

▶ O9

DOI:10.6215/FJPT.202212.O09

即時回饋與影片回饋對於降低女性跳躍落地生物力學危險因子之效益：系統性回顧及統合分析

陳禮林　劉文瑜　陳昭榮 *

長庚大學物理治療學系暨復健科學碩士班

The Effect of Real-Time Feedback and Video Feedback for Reducing Jump-Landing Risk Factors in Females: A Systematic Review and Meta-Analysis

Li-Lin Chen　Wen-Yu Liu　Chao-Ying Chen*

School of Physical Therapy and Graduate Institute of Rehabilitation Science, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: Jumping is a common physical activity in daily life; however, aberrant landing alignment will increase the risk of knee injury. Real-time feedback and post-event video feedback interventions are both considered useful to mitigate biomechanical risk factors. It is so far unknow whether the two types of feedback influence the biomechanical performance during landings. Thus, this review aims to assess the effectiveness of using real-time feedback and video feedback for correcting landing movement in females, who carry additional risk of knee injuries. **Methods:** PubMed and Scopus were used to search relevant articles in April 2022. The searching keywords include (a) immediate or real time or video; (b) feedback or biofeedback or postfeedback; and (c) landing. Quality of evidence was assessed using the Methodological Index for Non-Randomized Studies (MINORS) criteria for non-randomized studies and the Physiotherapy Evidence Database (PEDro) scale for randomized controlled studies. A random-effect model was set to analyze the pooled effect size. **Results:** Nine studies were eligible, including five of real-time feedback studies and four of video feedback studies, based on the selection criteria. Analysis of pooled outcomes indicated that real-time feedback had large effect on decreasing hip extension moment during landing from baseline to posttest (SMD = 0.85, 95% CI = 0.01, 1.70, p = 0.05); video feedback had large effect on increasing knee flexion angle (SMD = 1.73, 95% CI [0.24, 3.22], p = 0.02), and increasing hip flexion angle (SMD = 1.20, 95% CI [0.23, 2.16], p = 0.01) during landing from baseline to posttest and large effect on increasing knee flexion angle during landing comparing with control group (SMD = –1.81, 95% CI [–3.62, 0], p = 0.05). **Conclusion:** Both real-time feedback and video feedback intervention may decrease the biomechanical risk of knee injuries during landing in females. However, there is no clear evidence indicating that real-time feedback outperformed video feedback in injury prevention. However, future studies will be needed to confirm our current findings and to compare the effectiveness between the two types of feedback. **Clinical Relevance:** The results can be used to develop training programs to decrease the risk of knee injury during landing in females, especially in athletes. ■

▶ O10

DOI:10.6215/FJPT.202212.O10

比較胸小肌離心運動、肩胛肌群訓練與自我按摩於肩胛運動障礙受試者之胸小肌長度、肩胛肌群肌力與頭頸肩姿勢之成效

林容睿　陳昭榮　陳柏村 *

長庚大學物理治療學系

The Comparison of the Effects of Pectoralis Minor Self-Massage and Eccentric Exercise and Periscapular Muscles Strengthening on Muscle Flexibility, Periscapular Muscles Strength and Neck-Shoulder Posture in Subjects With Scapular Dyskinesis

Rong-Ruei Lin Chao-Ying Chen Po-Tsun Chen*

School of Physical Therapy, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: Previous studies have shown that the tightness of pectoralis minor (Pm) and the imbalanced strength of periscapular muscles (Ps) may associate with the poor posture and scapular dyskinesis (ScD). Strengthening exercise is commonly used to enhance the strength of Ps while the self-massage maneuver was generally recommended for releasing the tightness of Pm. The eccentric exercise can lengthen the shortened muscle but seldom applied on the tightened Pm. Therefore, the aims of this study were to compare the effects of self-massage, eccentric, and Ps strengthening on Pm length and Ps strength as well as the influence on posture changes in college students with ScD. **Methods:** Nineteen collegiate students with ScD were recruited and allocated into three groups, including eccentric exercise for Pm (ECPm), strengthening exercise for Ps (STPs), and self-massage for Pm (SMPm) groups, to receive 4-week intervention. The subjects performed posterior tilting and external rotation of scapula eccentrically with elastic band as ECPm. For STPs, the control exercises for middle and lower trapezius and serratus anterior were executed. The SMPm group used a massage ball to release Pm. The length of Pm, forward shoulder angle and maximal strength of shoulder rotators and Ps were measured before and after interventions. The Wilcoxon signed rank test was used to compare the intervention outcomes in each group. The Kruskal-Wallis test was used to compare the changes after intervention between groups. **Results:** The length of Pm was increased significantly after training with ECPm (15.90 ± 0.69 cm vs. 17.12 ± 0.58 cm, p = 0.018) and STPs (15.62 ± 0.66 cm vs. 16.10 ± 0.67 cm, p = 0.028). The increment of Pm length with ECPm was larger than that with the other interventions. The strength of lower trapezius was increased with ECPm (22.10 ± 12.08 lb vs. 27.17 ± 11 lb, p = 0.028) and with STPs (19.44 ± 9.28 lb vs. 24.10 ± 10.58 lb, p = 0.046). There was no significant change of posture in each group. **Conclusions:** The shortness of Pm and/or the weakness of Ps cause the SD, which should be evaluate comprehensively for an effective intervention. **Clinical Relevance:** The ECPm and STPs may have better effects on Pm length and strength of Ps than the SMPm alone. ■

▶ O11

DOI:10.6215/FJPT.202212.O11

肱骨後傾對於盂肱關節內旋活動度缺損之影響：前導研究

林昱均 林燕慧 陳柏村*

長庚大學物理治療學系暨復健科學研究所

The Humeral Retroversion in Collegiate Students and Its Relationship with Glenohumeral Internal Rotation Deficit: A Pilot Study

Yu-Chun Lin Yang-Hua Lin Po-Tsun Chen*

School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: Glenohumeral internal rotation deficit (GIRD) is known as a risk factor of shoulder injuries, caused by the tightness of capsule and muscle on posterior shoulder and the increased humeral retroversion (HR). However, the evaluation may put more attention on the soft tissue than on the bony changes of humerus. This study aimed to

compare the HR between bilateral shoulders and to examine the relationship between HR and the deficit of internal rotation (IR) in participants with GIRD. **Methods:** Nine collegiate students (5 males and 4 females, mean age 23.0 ± 1.2 years) with GIRD (the difference was of internal rotation between bilateral shoulders was more than 20°) were recruited. After the horizontal alignment of humeral head was monitored by sonography, the HR was measured as the glenohumeral IR in supine with 90° of shoulder abduction and 90° of elbow flexion. The Wilcoxon sign rank tests was used to compare the HR between two shoulders. The Spearman's correlation was used to examine the relationship between IR deficit and HR. **Results:** The IR deficit was occurred on the dominant shoulder in all participants (range of IR, dominant side: 50.0° ± 9.7°, non-dominant side: 74.4° ± 10.1°). The HR on the dominant shoulder (66.0° ± 8.7°) was significantly larger than that on the non-dominant side (58.0° ± 8.1°). A significant correlation was found between the IR deficit and the HR ($\rho = 0.65$, $p < 0.01$). **Conclusions:** The degree of deficit in IR correlates with the HR in participants with GIRD. The HR should be considered before improving the range of internal rotation. **Clinical Relevance:** Both the soft-tissue tightness and HR should be evaluated to realize the respective contributions to IR deficit. ■

▶ **O12**

DOI:10.6215/FJPT.202212.O12

頸部特定性運動與呼吸再訓練對於慢性頸部疼痛的療效

李孟螢* 施怡芬

國立陽明交通大學物理治療暨輔助科技學系

The Effects of Neck Specific Exercise Combined With Breathing Retraining in Patients With Chronic Neck Pain

Meng-Ying Li* Yi-Fen Shih

Department of Physical Therapy and Assistive Technology, National Yang Ming Chiao Tung University, Taipei, Taiwan

背景與目的：頸痛為多面向問題，且慢性頸痛之肌肉骨骼障礙可能發展出患者的呼吸功能障礙。本篇探討頸部特定性運動 (neck specific exercise, NS) 結合呼吸再訓練 (breathing retraining, BR) 對於慢性頸部疼痛患者的療效。**方法：**本篇招募 28 位慢性頸痛患者並隨機分入兩組。NS 組接受 40 分鐘顱頸屈曲訓練；BR 組接受 10 分鐘呼吸再訓練及 30 分鐘顱頸屈曲訓練。比較 6 週介入前、後測量疼痛程度、失能程度、顱頸屈曲測試時頸部表面肌電活性、呼吸肌力、頸椎各方向活動度、胸椎活動度、胸腔擴張活動度、以及呼吸功能障礙之結果。**結果：**6 週後兩組之結果變化，皆有時間效應 ($p < 0.05$)。加入 BR 後，頸部失能程度 (95% CI: BR = [–9.44, –4.56], NS = [–5.30, –2.25])、22 ~ 26 毫米汞柱顱頸屈曲時之頸部表面肌電活性顯著降低 (95% CI: BR = [–10.56 ~ –0.84], NS = [–4.02 ~ 1.59])，頸椎側彎遠離疼痛側之活動度 (95% CI: BR = [4.56, 11.24], NS = [–1.40, 5.70])、胸腔擴張活動度 (95% CI: BR = [0.52 ~ 2.24], NS = [–0.57 ~ 0.90]) 顯著增加，且有組別與時間之交互作用 ($p < 0.05$)。**結論：**無論加入 BR 與否，皆可以改善慢性頸痛患者肌肉骨骼及呼吸功能相關障礙。而在 NS 外加入 BR，在統計及臨床上皆顯著降低頸痛患者之失能程度，並相較單獨 NS，顯著降低頸部前側表淺肌肉之表面肌電活性、增加頸椎側彎遠離疼痛側之活動度及胸腔擴張活動度。**臨床意義：**由本研究結果可知，相較單獨頸部特定性運動，加入呼吸再訓練能顯著降低患者的失能程度，並為慢性頸痛患者帶來更佳之臨床療效。■

▶ O13

DOI:10.6215/FJPT.202212.O13

闊背肌滾筒放鬆對於肩內轉角度缺損棒球投手肌肉張力、肩關節活動度及肌力之效果

方威皓[1] 張曉昀[1,*] 陳柏村[2] 邱俊文[3,4] 林衛宣[3,4]

[1] 國立體育大學運動保健學系暨碩士班
[2] 長庚大學物理治療學系暨復健科學研究所
[3] 國立體育大學競技與教練科學研究所
[4] 國立體育大學球類運動技術學系

Effect of Latissimus Dorsi Foam Roller Release on Shoulder Muscle Tension, Range of Motion, and Muscle Strength for Pitchers With Glenohumeral Internal Rotation Deficit

Wei- Hao Fang[1] Hsiao-Yun Chang[1,*] Po-Tsun Chen[2] Chun-Wen Chiu[3,4] Wei-Hsuan Lin[3,4]

[1] Department of Athletic Training and Health, National Taiwan Sport University, Taoyuan, Taiwan
[2] School of Physical Therapy & Graduate Institute of Rehabilitation Science, Chang Gung University, Taoyuan, Taiwan
[3] Graduate Institute of Athletics and Coaching Science, National Taiwan Sport University, Taoyuan, Taiwan
[4] Department of Sport Training Science-Balls, National Taiwan Sport University, Taoyuan, Taiwan

背景與目的：過去研究證實肩內轉角度缺損，使投手肩部傷害機率提升，目前認為肩後側軟組織緊繃是主因，常見處理模式是睡眠者伸展 (sleeper stretch) 或滾筒放鬆。本研究目的是以滾筒對闊背肌進行自我筋膜放鬆，與睡眠者伸展進行立即性效果比較。**方法：**本研究招募 17 名肩內轉缺損投手，隨機分為闊背肌滾筒組及睡眠者牽拉組。兩組介入時間皆為單次 60 秒、休息 30 秒，重複三次。在介入前後，進行肩關節活動度、肌力、肌張力及投球表現檢測。統計方式使用混合設計重複量數二因子變異數分析。**結果：**睡眠者牽拉後，肩內轉 (24.0%)、外轉 (10.8%)、彎曲 (8.3%)、伸直 (7.7%)、外展 (5.3%) 及水平內收 (5.6%) 活動度顯著增加 ($p < 0.05$)，內轉 (–5.8%)、外轉 (–6.6%) 肌力顯著降低 ($p < 0.05$)，球速顯著下降 (–1.1%, $p < 0.05$)；闊背肌滾筒放鬆後，肩內轉 (30.1%)、外轉 (7.2%)、彎曲 (9.8%)、伸直 (10.8%)、外展 (7.1%) 及水平內收 (7.4%) 活動度顯著增加 ($p < 0.05$)，內轉 (6.6%)、外轉 (16.1%) 及彎曲 (14.6%) 肌力顯著增加 ($p < 0.05$)，球速 (1.4%) 與好球率 (99.2%) 顯著提升 ($p < 0.05$)。**結論：**闊背肌滾筒放鬆與睡眠者伸展對肩內轉角度缺損投手，均可改善肩關節活動度；而對肌力及投球表現，闊背肌滾筒放鬆優於睡眠者伸展，更適合用於賽前熱身及比賽中調整。**臨床意義：**本研究結果可提供棒球投手、教練、及臨床人員在不同時機選擇身體狀態調整方式之建議。■

▶ O14

DOI:10.6215/FJPT.202212.O14

閃頻眼鏡與神經肌肉訓練對前十字韌帶重建術後患者之復健成效——初步結果

林泰汝[1] 許晉榮[2] 謝尚霖[2] 張家銘[1] 李佳惠[1] 林秀真[1,*]

[1] 中國醫藥大學物理治療學系暨復健科學碩士班
[2] 中國醫藥大學附設醫院骨科部

Stroboscopic and Neuromuscular Training in Rehabilitation After Anterior Cruciate Ligament Reconstruction—A Preliminary Result

Tai-Ju Lin[1] Chin-Jung Hsu[2] Shang-Lin Hsieh[2] Chai-Ming Chang[1] Chia-Hui Lee[1] Hsiu-Chen Lin[1,*]

[1] Department of Physical Therapy, Graduate Institute of Rehabilitation Science, China Medical University, Taichung, Taiwan
[2] Department of Orthopaedic Surgery, China Medical University Hospital, Taichung, Taiwan

背景與目的：前十字韌帶損傷是常見的運動傷害，並容易代償性的依賴其他感官系統來維持動作品質。本研究的目的為針對接受重建術後 6 週之患者，比較單純神經肌肉再訓練計畫 (neuromuscular training, NMT) 及搭配視覺阻斷 (neuromuscular stroboscopic training, NST) 等兩種模式之成效。**方法：**患者於接受重建術後 6 週開始依分組 (NMT 與 NST) 給予每週兩次為期 8 週的訓練。並於術前、訓練開始前及完成後進行評估，內容包含關節位置覺、被動關節感覺閾值、單腳站、星狀平衡、等長肌肉力量及膝功能問卷 (knee outcome survey-activities of daily living scale, KOS-ADLS)。**結果：**共計 12 位患者（每組 6 人）完成評估與訓練。初步結果顯示訓練後 NST 相對 NMT 進步更多，被動關節感覺閾值 NST 相對術前進步（–0.19 度），NMT 表現雖然訓練後有進步（–0.23 度），但仍高於術前（+0.26 度）；閉眼單腳站時長 NST 相對術前進步（平地：+8.85 秒；軟墊：+3.80 秒），NMT 表現相對訓練前進步（平地：+10.50 秒），但低於術前（平地：–1.05 秒；軟墊：0.70 秒）；星狀平衡則是 NMT 相對術前進步（+8.78 公分），NST 相對訓練前進步（+10.09 公分），但仍低於術前（–4.01 公分），其餘評估項目兩組趨勢大致相同。**結論：**經訓練後兩組患者多有明顯進步，NST 有略優於純 NMT 的趨勢，但由於樣本較少，未來將持續收案以確定視覺阻斷的效果。**臨床意義：**本研究之結果可提供此類患者重建術後臨床指引參考。■

▶ O15 DOI:10.6215/FJPT.202212.O15

彈力帶暖身對跆拳道運動員旋踢表現的效益

潘姿玲　林重佑　楊文傑 *
弘光科技大學物理治療學系

Effect of Resistance Band Warm-up on Performance of Roundhouse Kick in Taekwondo Athletes

Tzu-Ling Pan　Chung-You Lin　Wen-Chieh Yang*
Department of Physical Therapy, Hungkuang University, Taichung, Taiwan

Background and Purpose: Taekwondo (TKD) is a combat sport emphasizing sophisticated kicking skills. Resistance bands provide a lightweight and handy solution for dynamic resistive warm-up to facilitate muscle potentiation. Therefore, we investigated the effect of resistance band warm-up on the performance of roundhouse kicks in TKD athletes. **Methods:** Sixteen TKD athletes underwent a simulated game test twice within 7 days, after either a resistance band warm-up protocol or an aerobic warm-up protocol. The band warm-up included movements addressing hip extensors, hip flexors, hip abductors, and knee extensors. The aerobic warm-up included an 8-movement whole body Tabata workout set. The simulated game test had three 2-minute rounds, with a 1-minute inter-round break. In each round, participants conducted 16 single roundhouse kicks and 16 double roundhouse kicks according to the displayed instructions. Bilateral hip and knee angles were measured using six inertial measurement units placed over lower thorax, sacrum, bilateral thighs, and bilateral legs. Each kick movement was divided into a chambering phase (from the kicking leg take off to maximum knee flexion) and the attacking phase (from maximum knee flexion to target impact). Wilcoxon signed-rank test was used to investigate the effect of warm-up protocols (band vs. aerobic) on the

maximum angular speed of hip abduction and knee extension. **Results:** Regarding single roundhouse kick, band warm-up significantly increased the maximum speed of hip abduction compared to aerobic warm-up ($372.8 \pm 98.3°s^{-1}$ vs. $314.5 \pm 82.1°s^{-1}$, $p = 0.047$). Regarding double roundhouse kicks, band warm-up showed a trend, despite not significant, to increase the maximum speed of hip abduction in the first kick compared to aerobic warm-up ($293.8 \pm 108.1°s^{-1}$ vs. $247.2 \pm 112.2°s^{-1}$, $p = 0.057$). No significant difference was found in maximum speed of knee extension between the two warm-ups. **Conclusion:** Compared to conventional aerobic warm-up, a warm-up protocol using resistance bands increased the raising speed of the kicking leg. Athletes may thus gain the advantage of performing quick high kicks. **Clinical Relevance:** Resistance bands could be a viable warm-up tool for lower extremities in combat sports involving kicks. ■

▶ O16

DOI:10.6215/FJPT.202212.O16

懸吊系統訓練對於老人的握力及行走功能之影響：系統性回顧

蔡佳君　廖芷妤　蘇瑞媜　陳怡靜 *

仁德醫護管理專科學校復健科

Effects of Suspension Training on Handgrip Strength and Mobility Function in Elders: A Systematic Review

Chia-Chun Tsai　Chih-Yu Liao　Jui-Chi Su
Yi-Ching Chen*

Department of Rehabilitation Science, Jen-Teh Junior College of Medicine, Nursing and Management, Miaoli, Taiwan

背景與目的：臺灣在 2018 年轉為高齡社會，人口老化是重要的醫學和社會經濟議題。運動可以促進健康、逆轉生理障礙及改善功能。懸吊系統訓練 (Suspension Training, ST) 是利用重力和肢體重量作為阻力，藉由調整姿勢和作用平面，適應各種能力的訓練方式。但目前尚無系統性文獻回顧整合 ST 對於老人功能的影響。本篇透過系統性文獻回顧研究的方式，探討 ST 對於老人的握力及行走功能之成效。**方法：**本研究於 2022 年 6 月 25 日在 PubMed 及 PEDro 搜尋已發表之所有研究，關鍵字使用懸吊系統訓練 (Suspension Training) 及年長的 (Older)。所有文獻必須符合：受測者均為老人，必須有 ST 介入並評估握力測試 (handgrip strength, HS)、計時坐站起走測試 (Timed Up and Go test, TUG) 或行走速度 (gait speed, GS) 的改變。**結果：**利用以上方法搜尋到 62 篇文獻，刪除 52 篇與題目不相符之研究後得到 10 篇與本研究主題相符，去除 5 篇重複篇數，最後本研究共納入 5 篇文獻。統整文獻結果顯示 12 週的懸吊系統訓練對於改善老人的 HS、TUG 及 GS 有所助益，可改善老人握力及行走能力。**結論：**經系統性文獻回顧研究可知，ST 可增加老年人的握力及行走能力。**臨床意義：**ST 被證實能有效提升老人的握力及行走能力，可做為醫療及運動訓練專業人員制定相關運動處方的依據。■

▶ O17

DOI:10.6215/FJPT.202212.O17

居家腳踝訓練計畫對於高齡者肌力、平衡與步態能力之成效——初步結果

陳志維　陳佑相　張家銘　林秀真 *

中國醫藥大學物理治療學系復健科學碩士班

Effects of Home-Based Ankle Training Program on the Muscle Strength, Balance and Gait Function in the Elderly—Preliminary Results

Chih-Wei Chen　Yu-Hsiang Chen　Chia-Ming Chang
Hsiu-Chen Lin*

Department of Physical Therapy, Graduate Institute of Rehabilitation Science, China Medical University, Taichung, Taiwan

背景與目的：高齡者的跌倒問題會影響其自主獨立性，過去文獻顯示跌倒之因素包括：下肢無力、年齡、過往受傷經驗等。本研究的目的在於針對高齡者，比較新型腳踝訓練機組 (new ankle machine training group, NAMTG) 及彈力帶訓練組 (elastic band training group, EBTG) 兩種肌力訓練模式對促進肌力、平衡與步態功能之成效，以提供臨床應用。**方法：**本研究為隨機對照研究設計，共有 18 位 65 歲以上高齡者經篩選並獲同意參與，將之隨機分為 NAMTG (n = 9) 與 EBTG (n = 9) 兩組。居家訓練計畫，包含：全身性活動及腳踝肌力訓練 (NAMTG 或 EBTG)，每週兩次共進行 6 週。於訓練計畫前後進行評估，並以統計使用二因子混合設計變異數分析比較兩組間及各組訓練前後之差異。**結果：**統計分析顯示 NAMTG 與 EBTG 兩組間無顯著差異 ($p > 0.05$)，但兩組在訓練後之五次坐站測試（12.24 ± 2.64 vs. 10.81 ± 2.45 秒）、負載速率（4,622.00 ± 971.94 vs. 4831.16 ± 865.70 牛頓／秒）、單腳閉眼測試（4.86 ± 2.69 vs. 6.49 ± 5.07 秒）、動態 Y 字平衡測試（83.53 ± 12.99 vs. 93.89 ± 13.32%）及行走步幅（1.10 ± 0.13 vs. 1.12 ± 0.13 公尺）、踝關節活動度（27.85 ± 3.90 vs. 30.87 ± 6.27 度）等變數相較於訓練前均有明顯進步 ($p < 0.05$)。**結論：**兩組不同模式之腳踝肌力訓練後，可以促進高齡受試者肌力、平衡、步態等能力的進步。**臨床意義：**本研究採行之居家腳踝訓練計畫可作為高齡者促進身體功能及預防跌倒發生之運動訓練建議與參考。■

▶ O18　DOI:10.6215/FJPT.202212.O18

血流限制訓練對健康老年人下肢肌肉力量和身體表現之效果：系統性回顧與統合分析

戴愷立 [1]　劉文瑜 [1]　顏竹伶 [1,2,*]

[1] 長庚大學物理治療學系暨復健科學研究所
[2] 林口長庚紀念醫院神經科學研究中心

Effects of Blood Flow Restriction Training on the Lower Extremity Muscle Strength and Physical Performance in Healthy Older Adults: A Systematic Review and Meta-Analysis

Kai-Li Dai[1]　Wen-Yu Liu[1]　Chu-Ling Yen[1,2,*]

[1] School of Physical Therapy and Graduate Institute of Rehabilitation Science, College of Medicine, Chang Gung University, Taoyuan, Taiwan
[2] Neuroscience Research Center, Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan

Background and Purpose: The low-load resistance training combined with blood flow restriction (LL-BFR) has recently been shown to promote muscle adaptation in diverse populations. However, to date, there is little evidence on whether this training regimen affects muscle strength and physical performance in healthy older adults. The objective of this systematic review and meta-analysis was to quantitatively determine the effects of LL-BFR training on lower extremity muscle strength and physical performance as compared to other training programs in healthy older adults. **Methods:** A PRISMA-compliant systematic review and meta-analysis was performed. The search was conducted through PubMed, Scopus, and Medline databases up to June 14th, 2022. The outcomes were knee flexor and extensor strength and physical performance in the Timed Up-and-Go and 30-second sit-to-stand tests. Intergroup differences were determined by calculating standardized mean difference (SMD) and 95% confidence intervals (CIs). **Results:** A total of 140 articles were screened and 8

studies were included, with a total population of N = 241. The results showed that LL-BFR significantly improved knee flexor (SMD = 1.972, 95% CI: 1.087 to 2.857, $p < 0.0001$) and extensor (SMD = 1.53, 95% CI: 1.033 to 2.027, $p < 0.0001$) strength as well as physical performance in the Timed Up-and-Go (SMD = –2.597, 95% CI: –4.458 to –0.736, $p = 0.006$) and 30-second sit-to-stand (SMD = 1.858, 95% CI: 0.148 to 3.568, $p = 0.033$) tests. **Conclusions:** This study suggests that LL-BFR may be an effective intervention to improve lower extremity muscle strength and physical performance in healthy older adults. As the number of studies and participants is small, further studies of higher quality are needed to demonstrate the effective application of BFR training. **Clinical Relevance:** LL-BFR may be used to improve the lower limb muscle strength and physical performance in healthy elderly people. ■

▶ O19

DOI:10.6215/FJPT.202212.O19

經皮脊髓電刺激對於脊髓損傷患者下肢療效之系統性回顧與統合分析

洪仰澤[1] 劉文瑜[1] 方佳瑩[1] 張雅如[1,2,*]

[1] 長庚大學物理治療學系暨復健科學研究所

[2] 林口長庚紀念醫院神經科學研究中心

Effects of Transcutaneous Spinal Cord Stimulation in Individual with Spinal Cord Injury—A Systematic Review and Meta-Analysis

Yang-Tze Hung[1] Wen-Yu Liu[1] Chia-Ying Fang[1] Ya-Ju Chang[1,2,*]

[1] School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan

[2] Neuroscience Research Center, Chang Gung Memorial Hospital, Linkou, Taoyuan, Taiwan

Background and Purpose: Transcutaneous spinal cord stimulation (tSCS) is a novel intervention which was adapted from epidural spina cord stimulation to restore spinal cord circuitry function after spinal cord injury (SCI). The relevant research evidence of the treatment outcomes had not been systemically analyzed for clinical decision making. The purpose of this study was to systemically analyze the effects of tSCS on spasticity and other clinical outcomes for individuals with SCI using the International Classification of Functioning Disability and Health (ICF) model. **Methods:** Literature search was performed using the database including Pubmed, Scopus, Medline-OvidSP, and Web of science. The quality of the published research was appraised using PEDro scale and Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence. Meta-analysis was performed by Comprehensive Meta-Analysis (version 3). The outcomes were classified using ICF model. The effects were summarized with standardized mean differences (95% confidence intervals) by random effect models. A significant level was set at 0.05. **Results:** Sixteen studies screened from 600 papers were included in this study. From the ICF model, the results showed that most of the existing studies discuss the body function domain. Only limited number of studies reported the effects of tSCS on the activity and participation, or environmental factors domains. In body function domain, tSCS has the effect of preserving motor control function and improving spasticity. Meta-analysis was performed on three studies using the pendulum test to evaluate spasticity. The results showed a significant effect in favor of treatment combined with tSCS in compared to no control treatment ($Z = 2.621$, $p = 0.009$). **Conclusions:** tSCS added to the conventional treatment of SCI could reduce spasticity and promote motor control. However, high-quality studies with long follow-up periods across all domains of the ICF framework are needed. **Clinical Relevance:** The results of this study suggests that tSCS is a promising intervention that can be added to the routine therapy for individuals with SCI. ■

▶ O20

DOI:10.6215/FJPT.202212.O20

早期活動以及胸腔物理治療對於長期呼吸器依賴病人之脫離成功率探討

蔡承欣　王琮賢 *

衛生福利部桃園醫院物理治療科

The Implementation of Early Mobilization and Chest Physiotherapy on Weaning Rate of Prolonged Weaning Patients

Cheng-Shin Tsai　Tsung-Hsien Wang*

Department of Physical Therapy, Taoyuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan.

Background and Purpose: Prolonged weaning is defined as failure of 3 times spontaneous breath trial (SBT) and requiring more than 7 days weaning from mechanical ventilation after first SBT. Possible reasons could be attributed to intensive care unit acquired weakness (ICU-AW) and poor lung hygiene. To solve these two problems and increase the weaning rate, early mobilization (EM) and chest physiotherapy (CPT) are considered as possible strategy to attain the goal. According to previous articles, lack of control group and small sample size made it difficult to confirm the true effect of EM and CPT on prolonged weaning patients. Thus, the aims of this articles are discussing the influence of EM with CPT on weaning rate and other hospitalization outcomes with larger sample sizes and control group. **Methods:** The study retrospectively reviewed the medical record from the medical team. Patients before 2019/01/01 who didn't receive physiotherapy are regarded as control group. Patients after 2019/01/01 are assigned to the experiment group. Total 153 patients (experiment: 84, control: 69) were recruited from the respiratory care center (RCC). **Results:** All the baseline data was equal except age (experiment: 65.13 ± 17.88, control: 75.50 ± 14.88, $p < 0.01$) and Glasgow Coma Scale total score (experiment: 7.07 ± 3.67, control: 8.46 ± 4.47, $p = 0.011$). Experiment group revealed significant higher weaning success rate with the odds ratio 2.10 ($p = 0.043$, 95% CI: 1.02–4.35). After subgroup analysis, the age difference of neurosurgery (NS) group was larger between two group (experiment: 55.12 ± 19.92, control: 67.30 ± 20.01, $p = 0.063$). The experiment group without NS also revealed better weaning success rate with odd ratio 2.12 ($p = 0.049$, 95% CI: 1.01–5.11). **Conclusions:** Patients who have ever received EM and CPT showed high weaning sucess rate. It can be attributed to better lung hygiene and attenuate the influence of ICU-AW. Furthermore, the mortality rate in RCC didn't reveal significant difference. It can be inferred that EM and CPT are safe for prolong weaning patient without significant side effect. After the subgroup analysis, the result showed that EM and CPT are more feasible for prolonged weaning patients without severe neurological problem. ■

▶ O21

DOI:10.6215/FJPT.202212.O21

遠距復健對慢性心衰竭患者的可行性及成效探討

劉晏彤 [1]　陳喬男 [1,*]　黃偉銘 [2]　吳晏慈 [1]

[1] 國立陽明交通大學生物醫學工程學院物理治療暨輔助科技所

[2] 臺北榮民總醫院內科部心臟內科

The Feasibility and Effects of Tele-Rehabilitation on Patients With Chronic Heart Failure

Yen-Tung Liu[1]　Chiao-Nan Chen[1,*]
Wei-Ming Huang[2]　Yen-Tze Wu[1]

[1] School and Graduate Institute of Physical Therapy and Assistive Technology, College of Biomedical Science and Engineering, National Yang Ming Chiao Tung University, Taipei, Taiwan
[2] Division of Cardiology, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

背景與目的：慢性心衰患者對到醫院執行的心臟

復健有較低的依從性一直是備受關注的問題，尤其在新冠疫情流行期間。遠距復健是專業人員透過網路或即時視訊監督患者運動的一種新型治療方式。本研究目的是探討遠距復健於慢性心衰患者之可行性及對運動能力與生活品質的成效。**方法：**目前有 7 位符合美國紐約心臟協會分級 I-II 的慢性心衰患者（平均年齡 50.3 ± 3.7 歲，男性佔 86%）參與本研究。所有參與者會在 12 週沒有介入之前後進行第 1 和第 2 次評估，接著在 12 週訓練後進行第 3 次評估。評估內容包括運動能力（最大運動測試、6 分鐘行走測試）、生活品質（明尼蘇達心臟衰竭生活品質問卷）及介入接受度（接受度問卷）。運動介入為依據最大運動測試結果，透過線上即時視訊進行為期 12 週、1 週 3 次、每次 40 分鐘、強度 70% 心率儲備量之有氧運動訓練。以 Wilcoxon signed-rank test 檢定介入成效，顯著水準訂在 $\alpha = 0.05$。**結果：**所有參與者皆完成 3 次評估，訓練參與率 83 ~ 100%，參與者對介入之接受度與滿意度皆高，無任何不良事件。介入增加參與者的尖峰攝氧量和 6 分鐘行走距離 ($p < 0.05$)，但不改變其生活品質 ($p = 0.138$)。**結論：**遠距復健於慢性心衰患者是可行的，且有助於增加患者之運動能力。**臨床意義：**提供慢性心衰患者運動介入之其他選擇。■

▶ **O22**

DOI:10.6215/FJPT.202212.O22

運動治療合併低能量雷射對周邊動脈疾病合併糖尿病足之治療效果

陳上真 [1,2]　鄭宇容 [2,*]

[1] 衛生福利部豐原醫院復健科物理治療

[2] 中國醫藥大學物理治療學系暨復健科學碩士班

Therapeutic Effects of Exercise Combined Low-Level Laser Therapy on Patients With Peripheral Artery Occlusive Disease Plus Diabetic Foot: A Pilot Study on the Feasibility and Therapeutic Effects

Shang-Zhen Chen[1,2]　Yu-Jung Cheng[2,*]

[1] Division of Physical Therapy, Department of Physical Medicine and Rehabilitation, Ministry of Health and Welfare Feng Yuan Hospital, Taichung, Taiwan

[2] Department of Physical Therapy, Graduate Institute of Rehabilitation Science, China Medical University, Taichung, Taiwan

Background and Purpose: Low-Level Laser Therapy (LLLT) is beneficial as an adjunct to conventional therapy in the treatment of diabetic foot ulcers (DFU). There is still no evidence of the effects of LLLT on patients with DFU plus peripheral artery occlusive disease (PAOD). Exercises have been used in patients with diabetes mellitus or PAOD with maintaining functional status and walking ability. The purpose of this study was to investigate the feasibility and therapeutic effects of exercise combined with LLLT in this group of patients. **Methods:** Ten patients with diabetic foot ulcers plus PAOD were recruited and stratified randomized into two groups. The subjects were allocated to either LLLT plus exercise (LLLT group) or exercise only (control group). The interventions were 2 to 5 times per week and continued for 4 weeks. The outcome measures were wound size and classification, sensory assessment, pain intensity, skin temperature, quality of life (Short Form-36, SF-36), and the 6-minute walking test. **Results:** The wound size was reduced significantly ($p = 0.0085$) in the LLLT group when compared with the original wound size but not in the control group. The bodily pain in SF-36 was improved significantly ($p = 0.0397$) when comparing the LLLT group and control group. Although not significantly, the improvement of 6-minute walking distance was 34.4 m in the LLLT group and 18 m in the control group respectively. All

sensory was improved in the originally impaired feet of the unaffected legs but not in the legs with ulcers. There were no differences in the finding of other measurements between the 2 groups. **Conclusions:** LLLT might enhance wound healing and reduce pain in patients with DFU plus PAOD. Exercises were able to maintain bodily function and walking ability. Because the sample size is small, further research is needed to confirm the therapeutic effects. **Clinical Relevance:** The results of this study can be applied to intervention strategies in patients with DFU plus PAOD. ■

▶ O23

DOI:10.6215/FJPT.202212.O23

體外震波療法對膝關節骨性關節炎患者疼痛和身體活動表現之效果：系統性回顧與統合分析

武皇秋香[1] 陳治中[1,2,*] 劉文瑜[1] 賴郁臻[1]
蔡佳玲[3]

[1] 長庚大學醫學院物理治療學系暨復健科學研究所
[2] 桃園長庚紀念醫院復健科
[3] 長庚大學醫學院護理學系

The Effects of Extracorporeal Shockwave Therapy on Pain and Physical Performance in Particiapants With Knee Osteoarthritis: A Systematic Review and Meta-Analysis

Vu Hoang Thu Huong[1] Chih-Chung Chen[1,2,*]
Wen-Yu Liu[1] Yu-Jhen Lai[1] Jia-Ling Tsai[3]

[1] School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan
[2] Department of Physical Medicine and Rehabilitation, Chang Gung Memorial Hospitals, Taoyuan, Taiwan
[3] School of Nursing, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: The effects of extracorporeal shockwave therapy (ESWT) in the particaptnts with knee osteoarthritis (KOA) were unclear on physical performance although its effects on pain had been investiagted. This study aims to explore the effects of ESWT on pain relief and physical performance on KOA. **Methods:** The studies with the randomized controlled design to investigate the effects of ESWT on KOA were systematically searched using inclusion and exclusion criteria through seven electronic databases including PubMed etc. between 1990 and Dec 2021. To summarize those data, visual analog scale (VAS) or pain scores were determined for measure of pain intensity. Range of knee motion, or the scores of physical activities including Lequesne index (LI), Knee Injury and Osteoarthritis Outcome Score (KOOS), and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were determined for measure of physical performances. The effect of post-treatment period was defined as a score difference between sham/placebo and ESWT group in one week after the end of ESWT period. The effect of following period was defined as the aforementioned difference in 1 to 5 months after post-treatment period. Data analysis was performed using RevMan 5.4.1 software. A significant level was set at $p < 0.01$. **Results:** Seven studies (n = 438) reoprting the ESWT effects on mild-to-moderate severity (Grades I to III Kellgren-Lawrence) of KOA were qualified for meta-analysis. Comapred to sham or placebo, the ESWT group had a signifiacnt decrease of VAS rest score (–0.90[–1.67 ~ –0.12] as mean difference [95% confidence interval]) and pain score WOMAC (–2.49[–3.76 ~ –1.22]), and a significant improvement of physical performance with a decrease of the scores of WOMAC activities (–8.18[–12.39 ~ –3.97]), LI (–3.47[–5.26 ~ –1.68]), and KOOS (–5.87[–10.00 ~ –1.73]) in the post-treatment period. There were also a significant decrease of WOMAC pain score (–2.83[–3.53 ~ –2.12]) and a significant decrease of the scores of WOMAC activities (–9.47[–11.28 ~ –7.65]) and LI (–4.12[–5.89 ~ –2.34]) in the following period. **Conclusions:** The ESWT was effective in relieving pains and improving physical activities in the participants with mild-to-moderate KOA at post-treatment or following period. **Clinical Relevance:** There are the effects of ESWT on pain relief and the improvement of physical performance in the population with KOA. ■

▶ O24

DOI:10.6215/FJPT.202212.O24

非手術介入幫助十字韌帶再斷裂青年重回運動表現的個案報告

陳柏禎 *

佛教慈濟醫療財團法人台北慈濟醫院復健科

Return to Performance With Nonoperative Approach After Graft Rupture of Anterior Cruciate Ligament in a Young Athlete

Bo-Jhen Chen*

Department of Rehabilitation Medicine, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei City, Taiwan

Background and Purpose: Athletes often seek a timely return to sport after undergoing musculoskeletal injuries. Although anterior cruciate ligament (ACL) reconstruction is associated with a high rate of return to sport (RTS), decreased performance or subsequent injuries are prevalent in the athlete population. Numerous studies have reported clinical outcomes of revision ACL reconstruction. However, whether nonoperative treatment achieves successful outcomes after graft rupture has not been studied. This paper describes a case of volleyball player who successfully returned to the previous competitive level with nonoperative management after retearing the ACL. **Methods:** A 20-year old undergraduate male experienced a full-thickness midsubstance ACL tear and tear of lateral meniscus after landing injury in a volleyball game. The athlete immediately received ACL reconstruction with hamstring allograft. With structured rehabilitation, the patient returned to national collegiate tournament by 8 months of surgery. However, another injury to the ipsilateral knee occurred 15 months postoperatively. Secondary imaging revealed total rupture of the graft. Despite apparent instability and quadriceps atrophy, the patient chose nonoperative intervention. The physical therapy regimen focused on muscle strengthening, neuromuscular control, and reaction time. The patient also actively engaged in the off-season team training. Before return to competition, a cluster of clinical measures was administered to examine the physical performance. Psychological factors associated with sport were evaluated with the ACL–Return to Sport after Injury (ACL-RSI) scale. **Results:** By 7 month post the second injury, the athlete achieved > 90% symmetry in all the functional performance tests, and scoring 117 out of 120 on the ACL-RSI scale. With good physical and psychological readiness, the patient returned to competition at prior level. **Conclusions:** This is the first report of nonoperative approach to guide a young athlete returning to the preinjury level of sport after retearing the ACL. Young athletes need to be both physically and mentally healthy to participate in competitive sport activities. The patient successfully returned to play with good clinical outcomes. **Clinical Relevance:** Younger players tend to RTS to pursue elite performance. Shared decision-making is essential to guide young athletes wishing to RTS early after a musculoskeletal injury. ■

▶ O25

DOI:10.6215/FJPT.202212.O25

肩部疼痛攀岩者之肩胛運動學及肌肉活化分析

曾郁祺　林吟亮 *

國立陽明交通大學物理治療暨輔助科技學系

Scapular Kinematics and Muscle Activation in Sport Climbers With Shoulder Pain

Yu-Qi Zeng　Yin-Liang Lin*

Department of Physical Therapy and Assistive Technology, College of Biomedical Science and Engineering, National Yang Ming Chiao Tung University, Taipei, Taiwan

Background and Purpose: Sport climbing has recently become a highly popular sport. Shoulder injury counts for about 20 percent of all sport climbing

injuries, and is the third most common problem. Sport climbing consists of multiple movement elements. Pull up with small holds is a basic movement in sport climbing, and activates many shoulder muscles, including trapezius, serratus anterior, latissimus dorsi. Studies related to sport climbing have focused on observing differences between sport climbers and non-climbers. However, no study has investigated whether climbers with shoulder injuries demonstrate different shoulder kinematics and muscle activation during tasks related to sport climbing. Therefore, the purpose of this study was to investigate the shoulder kinematics and muscle activation during arm elevation and pull-up with gym-bar and small holds in sport climbers with shoulder pain. **Methods:** Fifteen sport climbers with shoulder pain and 15 healthy control subjects matched with gender, age, and dominant hand were recruited in this study. Shoulder kinematics and muscle activation were collected during arm elevation in the scapular plane, and pull-up with a gym-bar and 20 mm-depth fingerboard. An electromagnetic tracking system was used to measure both sides of scapulothoracic and humerothoracic kinematics during single arm elevation. Surface electromyography (EMG) was used to record muscle activation of upper trapezius, lower trapezius, serratus anterior and latissimus dorsi. Two-way mixed ANOVA was used to test differences between groups in kinematics and EMG at different phases of tasks. The significant level was set at 0.05. **Results:** Subjects with shoulder pain demonstrated more serratus anterior muscle activation at 120° of arm elevation and lowering in the scapular plane, as compared to the controls (d = 1.04 & 0.75; p = 0.002 & 0.049). However, there was no difference between groups in EMG during pull-up with gym-bar and with small holds and also no difference in scapular kinematics between groups. **Conclusions:** Increases in serratus anterior activity during scaption may be a compensatory strategy associated with shoulder pain in sport climbers. Future work may directly investigate shoulder kinematics during climbing. **Clinical Relevance:** The sport climbers with shoulder pain may need to activate more activity of serratus anterior to maintain normal scapular kinematics. ■

▶ O26 DOI:10.6215/FJPT.202212.O26

角色扮演對物理治療實習生在同理心的影響

陳柏禎 *

佛教慈濟醫療財團法人台北慈濟醫院復健科

Physical Therapy Students' Attitude Toward Role Playing on Empathy

Bo-Jhen Chen*

Department of Rehabilitation Medicine, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei City, Taiwan

Background and Purpose: Presenting empathy has positive effects on patient outcomes and satisfaction in healthcare. However, students often reported limited skills of communication or showing empathy during clinical encounters. The study aims to investigate the influences of role-play on empathy in physical therapy interns. **Methods:** Thirteen physical therapy students participated a role-play activity in the first week of clinical placement in a teaching hospital. The students acted as patients with varied disabilities by wearing age suits and assistive devices. The participants then played in turn as therapists to assist their peers to don the accessories. The Chinese version of Jefferson Scale of Empathy-Health Profession Student (JSE-HPS) was anonymously completed before and immediately after the interactive activity. Wilcoxon signed rank test was performed for statistical analysis. An open-ended question about the reflection toward the program was also collected. **Results:** A total of 13 (100%) students completed the training and returned the questionnaire. The median scores of the total JSE-HPS non-significantly increased from 109 to 118 (p = 0.086), with the three subscales increased from 64 to 69 (p = 0.248) in perspective taking, from 39 to 43 (p = 0.157) in compassionate care, and from 8 to 10 (p = 0.344) in standing in the patient's shoes, respectively. In the qualitative responses, students experienced increased awareness of empathy in patient care (n = 3, 23%)

and acknowledged special needs in individuals with visual/motor disabilities (n = 8, 61%). **Conclusions:** Role-playing could increase the awareness of special needs in patients and the empathy in physical therapy students before approaching real patients. One session of experiential learning did not significantly reflect change of empathy on a single standardized measure. **Clinical Relevance:** Capacity of empathy is essential in physical therapy education and professional development. Combining quantitative and qualitative evaluation may help to explore the attitude of therapist-patient relationship through stimulated learning. ■

▶ O27

DOI:10.6215/FJPT.202212.O27

對於胸小肌緊繃之特定治療在肩痛及胸小肌緊繃患者之療效

李怡甄　林吟亮 *

國立陽明交通大學物理治療暨輔助科技研究所

The Effects of the Manual Therapy and Scapular Orientation Exercise for Individuals With Pectoralis Minor Tightness and Shoulder Pain

Yi-Zhen Li　Yin-Liang Lin*

Department of Physical Therapy and Assistive Technology, National Yang Ming Chiao Tung University, Taipei, Taiwan

Background and Purpose: Scapular kinematics during motion is a critical component of normal shoulder function. Short pectoralis minor (PM) may prevent scapula from tilting posterior and rotating externally during shoulder motion, which may result in injuries and pain. The manual therapy, including soft tissue mobilization and proprioceptive neuromuscular facilitation (PNF) stretch, could specifically increase the flexibility of PM, and scapular orientation exercises could improve scapular kinematics. The purpose of this study was to determine the effects of this specific treatment approach (manual therapy and scapular orientation exercise) on length of PM, scapular kinematics, shoulder pain and shoulder function in subjects with shoulder pain. **Methods:** Thirty-three patients with shoulder pain and short/tight PM were recruited and randomized into either a PM treatment group (n = 17) or a control group (n = 16). Both groups received 12 sessions of treatment in 4–6 weeks, with 30–40 minutes per session. The control group received general shoulder strengthening exercise, while the intervention group had additional manual therapy for PM and scapular orientation exercise. Outcomes included measures of PM length, scapular kinematics, shoulder pain, and shoulder disability. The scapular kinematics was measured with an electromagnetic tracking device. Independent *t* test was used to test the differences in changes of PM length, pain and disability between groups. Three-way mixed ANOVA was used to determine the differences in scapular kinematics between groups. **Results:** The experimental group demonstrated a significant increase in PM length (Cohen's $d = 1.17$, $p = 0.011$). Both groups demonstrated a significant increase in posterior tilting at 90° and 120° of arm elevation and 90° and 120° of arm lowering ($d = 0.43$–0.46, $p = 0.015$–0.021). Although improvement of pain and function in both groups exceeded minimal clinical important differences, no significant difference was found between groups. **Conclusion:** In the individuals with shoulder pain and short/tight PM, although the specific treatment protocol for PM increased the length of PM, this protocol was not more effective to improve scapular kinematics, shoulder pain and function than the general exercise. **Clinical Relevance:** The shoulder pain may result from multiple factors, so multifaceted treatment may be more effective for treating shoulder pain than the treatment targeting one structure. ■

▶ O28

DOI:10.6215/FJPT.202212.O028

執行物理治療業務之訴訟分析

陳柏禎 *
佛教慈濟醫療財團法人台北慈濟醫院復健科

Analysis of Lawsuits in Physical Therapy Practice

Bo-Jhen Chen*
Department of Rehabilitation Medicine, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei City, Taiwan

Background and Purpose: Healthcare providers are obligated to comply with the ethics of conduct and government's laws and regulations. Malpractice would result in penalty or lawsuit alleging. As the scope and workplace of physical therapy practice expands rapidly in recent years, all practitioners shall be aware of associated litigations. The paper aims to throughout examine the documented lawsuits in our country. **Methods:** The search was performed on the Law and Regulations Retrieving System of Judicial Yuan in Taiwan from inception to May 15, 2022. Keywords used were "physical therapy", "physical therapy technician", and "physical therapists act" in Chinese characters. Trials involved qualified therapists or unqualified litigants violating the civil, criminal, and administrative laws were all collected if eligible. The content of judgment and procedural history in all courts were summarized. **Results:** A total of 542 cases were initially identified. After abstract and full-text reviews, 38 independent judgments included one ongoing appeal were analyzed. Of which, medical negligence involved physical therapists or physicians accounted for 16 (42.1%) cases, with 9 (23.7%) harms committed by unqualified litigants. For compensate for the injury on physical therapists, 9 cases were sued for civil law and 5 for criminal law, respectively. There were 6 (15.8%) labor disputes about payment. And 5 (13.1%) cases were administrative procedures related to registration or reimbursements. In addition, sexual harassment in 2 (5.2%) cases was noticed. **Conclusions:** Medico-legal issues were the commonest causes therapists encountered. Other legal claims could also be demanded if not being aware of. The defendant may meet fine or even imprisonment once found guilty. **Clinical Relevance:** Physical therapist shall respect their liability and be law-abiding during practice. The legal duty applies for both employers and employees to ensure quality and safety of practice. ■

▶ P1 DOI:10.6215/FJPT.202212.P01

物理治療對患有便祕的成人之可行性

蔡依芳 [1] 陳柏全 [2] 林冠吟 [1,3,*]
[1] 國立成功大學醫學院物理治療學系
[2] 國立成功大學醫學院附設醫院外科部大腸直腸外科
[3] 國立成功大學醫學院健康照護科學研究所

Feasibility of Physical Therapy Intervention for Adults With Constipation

Yi-Fang Tsai[1] Po-Chuan Chen[2] Kuan-Yin Lin[1,3,*]
[1] Department of Physical Therapy, College of Medicine, National Cheng Kung University, Tainan, Taiwan
[2] Division of Colorectal Surgery, Department of Surgery, National Cheng Kung University Hospital, College of Medicine, National Cheng Kung University, Tainan, Taiwan
[3] Institute of Allied Health Sciences, College of Medicine, National Cheng Kung University, Tainan, Taiwan

Background and Purpose: Constipation is a multifactorial, symptom-based digestive complaint, which can impact one's health-related quality of life (HRQOL). For some patients, medications alone are not effective in relieving constipation symptoms, and physical therapy intervention might play a role to facilitate stool passage. Therefore, our study aimed to investigate the feasibility of a multimodal physical therapy intervention consisting of physical exercise, pelvic floor muscle training, and education on lifestyle modifications on symptom severity and HRQOL in adults with constipation. **Methods:** This pilot randomized controlled trial recruited adults with functional constipation from a medical center, clinics, community, and social media from January 2021 to June 2022. Participants were randomly allocated to

intervention group (IG) who received an eight-week multimodal physical therapy intervention or control group (CG) who received only one session of education after baseline assessment. The primary outcomes were feasibility measurements, including referral, consent, attendance, withdrawals, adverse events, and treatment satisfaction. The secondary outcomes were symptom severity and HRQOL. Assessments were performed at baseline and after the eight-week program. Feasibility outcomes were evaluated using descriptive statistics. Wilcoxon signed rank test and Mann-Whitney U test were used for intragroup and intergroup comparisons. The p-value of < 0.05 indicated statistically significant. **Results:** Twenty-seven participants (age: 36.96 ± 14.13 years; 89% female) were recruited (IG n = 14, CG n = 13). The referral rate from the medical center was 5.0%. The consent rate was 54.5%. Attendance rate to multimodal intervention was 97.7%. The total withdrawal rate was 14.8%. No adverse events were reported, and the treatment satisfaction was 'moderately satisfied' for both IG (100%) and CG (83.3%). No significant intergroup differences were observed at baseline and post-intervention. After eight-week intervention, the symptom severity ($p = 0.003$) and HRQOL ($p = 0.013$) significantly improved in IG. For CG, only the abdominal subscale of symptom severity questionnaire ($p = 0.010$) showed a significant change. **Conclusion:** An eight-week multimodal physical therapy intervention program may be feasible and potentially effective in improving symptom severity and HRQOL in adults with constipation. **Clinical Relevance:** Our findings may inform healthcare professionals of the feasibility of physical therapy intervention, which can be considered as a treatment option for constipation in adults. ■

▶ **P2**

DOI:10.6215/FJPT.202212.P02

疲乏對跆拳道運動員二連踢表現的影響

張譽馨　張耀宗　陳繪亘　楊文傑 *

弘光科技大學物理治療學系

Effect of Fatigue on Performance of Double Roundhouse Kicks in Taekwondo Athletes

Yu-Xin Zhang　Yao-Zong Chang　Huei-Syuan Chen　Wen-Chieh Yang*

Department of Physical Therapy, Hungkuang University, Taichung, Taiwan

Background and Purpose: In Taekwondo (TKD), roundhouse kick is the most used skill. Double kicks increase the chance of scoring despite high demand for strength and power. Fatigue during competition is likely to affect the performance of double kicks. Therefore, this study aims to investigate the effect of fatigue on the performance of double roundhouse kicks in TKD athletes. **Methods:** Sixteen TKD athletes underwent a simulated game test, which included three 2-minute rounds, with a 1-minute inter-round break. In each round, participants were asked to conduct 32 roundhouse kicks (16 single and 16 double) according to the displayed instructions. Bilateral hip and knee angles were measured using 6 inertial measurement units placed over lower thorax, sacrum, bilateral thighs, and bilateral legs. In double kicks, each kick was divided into a chambering phase (from the kicking leg take off to maximum knee flexion) and the attacking phase (from maximum knee flexion to target impact). ANOVA with repeated measures was used to investigate the effect of fatigue (round 1, 2, and 3) on the duration of phases. **Results:** Regarding chambering phase, duration in the first kick in round 3 (0.37 ± 0.14 s) was significantly longer than that in round 1 (0.31 ± 0.12 s) and round 2 (0.33 ± 0.11 s); duration in the second kick showed no significant difference in round 1 (0.26 ± 0.17 s), round 2 (0.29 ± 0.19 s), and round 3 (0.30 ± 0.21 s). Regarding attacking phase, duration in the first kick showed no significant difference in round 1 (0.06 ± 0.02 s), round 2 (0.07 ± 0.02 s), and round 3 (0.06 ± 0.03 s); duration in the second kick showed no significant difference in round 1 (0.11 ± 0.05 s), round 2 (0.13 ± 0.06 s), and round 3 (0.12 ± 0.06 s) neither. **Conclusion:** In double kicks, the first chambering phase featuring a quick raise of the kicking leg, was

substantially slowed down in the last round. This might result from the fatigue of hip muscles. **Clinical Relevance:** Prolonged chambering phase makes the kicking less efficient and vulnerable to the opponent's counterattack. ■

▶ **P3**

DOI:10.6215/FJPT.202212.P03

以品質控管手法介入以提升單位物理治療師對非預期性急救事件之應變能力：以南臺灣某準醫學中心為例

吳至翔[1,*]　蕭雅方[2]　許家禎[1]　吳姵錡[1]

[1] 義大醫療財團法人義大醫院復健科

[2] 義大醫療財團法人義大癌治療醫院復健科

Enhance the Unexpected-Emergency-Events Adapt Ability of In-Unit Physical Therapists by Quality Control Approach: An Example From a Southern Taiwan Would-Be Medical Center

Zhi-Xiang Wu[1,*]　Ya-Fang Hsiao[2]　Chia-Jen Hsu[1]
Pei-Chi Wu[1]

[1] Department of Rehabilitation, E-DA Hospital, Kaohsiung, Taiwan

[2] Department of Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan

背景：自本院 2020 年參與醫策會急性心肌梗塞疾病照護品質認證計畫，物理治療組基於提升病人生活品質、降低再次復發率之目標，亦成為該計畫的共同照護團隊。然而由於疾病特性，病人在復健訓練過程中的不良反應風險較高，本院急救稽核小組因此將本單位列為不定期抽查實際演練之重點對象。然而在同年的不定期演練中發現本單位雖有兩位治療師擁有 ACLS 資格，但整體對於非預期急救事件之應變能力仍不足，急救稽核小組給予之檢討事項包括：評估生命徵象不確實、呼救時不該離開病人、現場沒人專任指揮人員 (leader)、甦醒球組裝操作不熟悉、CPR 壓胸給氧配合不佳、在急診小組無幫助的情況下無人執行給藥及電擊任務等等。**目的與方法：**為改善上述之狀況，同仁與急診專家組成改善小組，採用魚骨圖 (Ishikawa Diagram) 進行要因分析，共同討論並確立問題，根據分析可將原因分為認知不足、設備、人力、權限四項大要因，依據各項要因制定對策。**結果：**本院急救稽核小組再次於 2021 年在物理治療室舉行不定期抽查實際演練，此次稽核結果比較去年翻然改進，特別在急救的各個面向都有順利啟動，大大提升病人的生存率。**結論：**此次根據魚骨圖制定改善策略並付諸行動，有效提升單位治療師對非預期性急救事件之應變能力。■

▶ **P4**

DOI:10.6215/FJPT.202212.P04

心臟衰竭患者執行生理監督居家運動之成效探討：系統性回顧與統合分析

林宜靜[1]　王淳厚[1]　吳盈瑾[1]　莊雅蘭[1]　陳鈺奇[1,2,*]

[1] 中山醫學大學物理治療學系

[2] 中山醫學大學附設醫院物理治療室

Exploring the Effect of Exercise With Home-Based Physiological Monitoring for Patients With Heart Failure: A Systematic Review and Meta-Analysis

Yi-Ching Lin[1]　Chun-Hou Wang[1]　Ying-Chin Wu[1]
Ya-Lan Chuang[1]　Yueh-Chi Chen[1,2,*]

[1] Department of Physical Therapy, Chung Shan Medical University, Taichung, Taiwan

[2] Physical Therapy Room, Chung Shan Medical University, Taichung, Taiwan

背景與目的：在心臟衰竭疾病管理 (heart failure disease management) 團隊中，物理治療師藉由傳統式常規復健促進心臟衰竭患者的生活品質。近年來因科技的發達，藉由合併生理監督方式進行居家運動已日漸普及。與傳統式常規復健相較，因提高運動依從性所以可能可以增加治療成效。本篇研究藉由統合分析，比較心臟衰竭患者執行生理監督居家運動與傳統式常規復健的成效。**方法：**本篇以 heart failure、wearable device、wearable electronic device、mobile application、smart watch、smart ring、remote monitoring、Short Form-36 (SF-36)、Minnesota Living With Heart Failure Questionnaire (MLHFQ)、six minute walking test (6MWT)、hospitalization、mortality 作為關鍵字，搜尋至 2022 年 4 月。**結果：**經由全文檢視後刪除 1932 篇，最後有 12 篇文獻納入統合分析，結果顯示 6MWT (MD = 12.83, 95% CI = 8.60 ~ 17.06, $p < 0.00001$)、SF-36 (MD = 3.36, 95% CI = 1.81 ~ 4.90, $p < 0.0001$) 和 MLHFQ (MD = –10.5, 95% CI = –18.95 ~ –2.04, $p = 0.01$) 皆有達統計上顯著差異；但 2 年內 hospitalization (MD = 0.99, 95% CI = 0.86 ~ 1.14, $p = 0.92$) 和 mortality (MD = 0.88, 95% CI = 0.72 ~ 1.07, $p = 0.19$) 未達統計上顯著差異。**結論：**結果顯示心臟衰竭患者進行生理監督居家運動，相較於傳統常規復健對增加運動心肺耐力和生活品質，具有統計上顯著之差異；但對於死亡率和再住院率則無顯著之差異。**臨床意義：**經由本研究發現，未來因應疫情與偏遠地區人口利用科技化的生理監督居家運動進行復健可能具有參考價值。■

▶ P5

DOI:10.6215/FJPT.202212.P05

高強度間歇運動配合嘴咽喉運動對於輕中度睡眠呼吸中止症之個案研究

黎欣慈　詹怡婷　蔡承欣 *

衛生福利部桃園醫院物理治療科

The Effect of High Intensity Interval Training Plus Myotherapy on Mild to Moderate Obstructive Sleep Apnea—A case study

Hsin-Tzu Li　Yi-Ting Chan　Cheng-Shin Tsai*

Department of Physical Therapy, Taoyuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan.

背景與目的：目前對於睡眠呼吸中止症的治療方式，以連續正壓呼吸輔助器 (continuous positive airway pressure, CPAP) 或手術治療為主。對於不能耐受 CPAP 或不接受手術治療方式的患者，運動治療和肌功能療法 (myofunctional therapy) 已經被證實為改善睡眠呼吸中止症症狀的一種選擇，其原理透過運動降低體脂肪以及嘴咽喉運動增加舌頭及呼吸道肌張力。**方法：**實驗對象為由耳鼻喉科醫師診斷為睡眠呼吸中止症之 64 歲男性患者，進行一週兩次，共八週的治療。個案會於家中執行肌功能療法總共十種舌頭、口咽、呼吸等運動，而運動治療會以高強度間歇訓練及阻力訓練的方式執行，並於心肺治療室執行，高強度間歇訓練將參考個案最大心跳的 80 ~ 90% 為強度，並以緩和介入比 3:1，4 分鐘一循環，共四循環為劑量；阻力訓練則以 70% 1RM (one-repetition maximum) 為強度，並做 8 ~ 10 下，共三組為劑量。**結果：**這項研究的結果顯示，透過運動治療加肌功能療法對睡眠呼吸中止症能改善 (apnea-hypopnea index, AHI) 從 16.6 降至

11.0 次／小時、缺氧指數 (oxygen desaturation index, ODI) 由 17.2 降至 10.4、Epworth 嗜睡量表分數從 7 降至 4、柏林問卷——睡眠呼吸中止症自我檢測量表由 6 降至 4、BMI 從 27.3 降至 26.8 kg/m^2、腰圍從 91.6 公分降至 90.0 公分、脖圍從 39.5 下降至 36.5 公分、體脂從 27.1% 降至 26.9%。**結論：**本實驗治療處置在各參數均有好的效果，可以視為改善輕中度睡眠呼吸中止症之臨床決策。■

▶ **P6**

DOI:10.6215/FJPT.202212.P06

呼吸訓練對新型冠狀病毒患者之呼吸困難之影響：系統性回顧

林珮珊　陳伃媜　張愷妍　彭子容　蔡瑋明
蔡孟書*

仁德醫護管理專科學校復健科

The Effects of Breathing Exercise on the Dyspnea of Covid-19 Patients: A Systematic Review

Pei-Shan Lin　Yu-Chen Chen　Kai-Yan Chang
Zi-Rong Peng　Wei-Ming Tsai　Meng-Shu Tsai*

Department of Rehabilitation Science, Jen-Teh Junior College of Medicine, Nursing and Management, Miaoli, Taiwan

背景與目的：新型冠狀病毒 (COVID-19) 在 2019 年造成全世界大流行，罹患 COVID-19 臨床表徵包含發燒、乾咳、倦怠、呼吸困難、呼吸急促及肺部的損傷。呼吸運動 (breathing exercises) 可以有效改善呼吸模式、減少呼吸功、改善疲勞程度與呼吸困難等，並提升心肺與身體功能。然而目前沒有呼吸運動對 COVID-19 患者呼吸困難之系統性回顧。**方法：**本研究由 PubMed、物理治療實證資料庫 (Physiotherapy Evidence Database, PEDro) 及華藝電子資料庫搜尋至 2022 年 5 月分前發表之所有隨機控制研究。關鍵字包括：新型冠狀病毒 (COVID-19)、呼吸運動 (breathing exercises)、呼吸困難 (dyspnea) 或呼吸急促 (short of breathing)。收錄之文章須符合：受測者為 COVID-19 且 PCR 檢驗陽性患者，以呼吸運動作為治療方式，並使用呼吸困難評估治療效果。**結果：**搜尋到 2 篇符合條件的研究 (PEDro 評分 6/6 分)，兩篇研究可能來自同一個研究團隊，並且都有使用伯格 (Borg scale, BS) 與多維呼吸困難 (multidimensional dyspnoea-12, MD12) 量表評估呼吸困難。第一篇是為期 7 天的呼吸運動治療證實呼吸運動治療可以降低 COVID-19 病人呼吸困難指數 (BS 與 MD12)。另一篇則是 14 天呼吸運動介入，也可以降低 COVID-19 病人呼吸困難指數 (BS 與 MD12)。**結論：**在有限的證據裡顯示 7 ~ 14 天呼吸運動訓練對 COVID-19 患者的呼吸困難程度有顯著改善。**臨床意義：**短期呼吸運動訓練可以改善呼吸困難因此可以提升病患生活品質，希望可提供臨床對於 COVID-19 治療參考。■

▶ **P7**

DOI:10.6215/FJPT.202212.P07

嚴重特殊傳染性肺炎重症患者之門診心肺功能訓練成效——個案報告

蕭淑芳*

臺灣大學醫學院附設醫院復健部物理治療科

Cardiopulmonary Functional Training for Outpatients With Severe COVID-19—Case Report

Shu-Fang Hsiao*

Division of Physical Therapy, Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, Taipei, Taiwan

背景與目的：嚴重特殊傳染性肺炎 (COVID-19) 在台灣造成嚴重疫情。患者持續有運動耐受力下

降、失眠、疲勞等後遺症。患者之運動表現、訓練成效與訓練指引未知。本文將報告二位重症門診患者在接受心肺功能訓練物理治療介入相關參數與運動表現。個案報告：訓練強度設定為儲備心率的 40 ~ 80%，自覺用力係數 11 ~ 13，血氧飽和度大於 88%。個案一是 55 歲女性極重症患者，住院 46 天。共接受 35 次門診物理治療，6 分鐘行走距離由 499 m 增為 537 m（預測值 104%）；運動測試中最大負荷量由 69 瓦特 (4.8METs) 增為 106 瓦特 (6.2METs)，運動中血氧飽和度最低為 90%。肺功能正常，但一氧化碳擴散能力 (diffusion capacity of carbon monoxide, DLCO) 為 76.8%。個案二是 46 歲男性重症患者，住院 14 天。共接受 25 次門診物理治療，6 分鐘行走距離由 549 m 增為 578 m（預測值 99%）；運動測試中最大負荷量由 116 瓦特 (6.4METs) 增為 125 瓦特 (6.7METs)。肺功能正常，但 DLCO 為 70%。結論與**臨床意義：**COVID-19 重症門診患者在痊癒後的體能、一氧化碳擴散能力有不同程度的改變。物理治療師可監測個案運動反應，提供安全的心肺功能訓練處方，可增加患者運動耐受力，回歸正常生活。■

▶ P8

DOI:10.6215/FJPT.202212.P08

上肢阻力運動訓練對於慢性阻塞性肺部疾病患者之平衡表現的影響

蔡依蓉[1,*] 趙容儀[2] 廖健芬[2] 陳靜玉[1] 李和昇[3]

[1] 義大醫療財團法人義大醫院醫學研究部

[2] 慈惠醫護管理專科學校物理治療科

[3] 義大醫療財團法人義大醫院內科部胸腔醫學科

Effects of Upper Limb Resistance Exercise Training on Balance Control in Patients With Chronic Obstructive Pulmonary Disease

Yi-Jung Tsai[1,*] Jung-I Chao[2] Chien-Fen Liao[2] Jing-Yu Chen[1] Ho-Sheng Lee[3]

[1] Department of Medical Research, E-Da Hospital, Kaohsiung, Taiwan

[2] Department of Physical Therapy, Tzu Hui Institute of Technology, Pingtung, Taiwan

[3] Division of Respiratory Medicine, Department of Internal Medicine, E-Da Hospital, Kaohsiung, Taiwan

Background and Purpose: Chronic obstructive pulmonary disease (COPD) is an irreversible chronic lung disease. The impairments of muscle strength, functional performance or balance control are often found. Though the resistance training of upper limbs has been suggested in COPD patients to improve the chest function, the effects on balance control need more evidence. **Methods:** Fourteen patients (age: 69.5 ± 12.3 years, BMI: 22.2 ± 3.3 kg/m^2, FEV_1 = 55.8 ± 19.0%) diagnosed with COPD were recruited. The strength of shoulder external rotator, shoulder flexor, elbow flexor and knee extensor were measured by handheld dynamometer before balance test. The static balance was conducted pre- and post- a six-minute walking test (6-MWT) by a pressure platform (FDM-S, zebris Medical GmbH, Isny im Allgäu, Germany). The resistance training of biceps, pectoralis major, and trapezius by the Thera-band was taught by the physical therapist to improve the chest function. Patients need to perform the home exercise 30 repetitions for each muscle per day and 5 days/week in sitting position. The second evaluation was conducted after 3 months. The displacements of center of pressure (COP) were calculated to represent the ability of balance control. **Results:** No significant improvements in muscle strength ($p > 0.05$) after training. Patients walked an average of 403.0 ± 139.0 m and 416.9 ± 123.0 m during the 6-MWT at the initial and follow-up, respectively ($p > 0.05$). Comparisons of standing balance pre- and post- 6-MWT, the trends of increased 95% confidence ellipse area of COP, path length, major axis of ellipse area were found at both evaluations. Comparisons of initial and follow-up found that the 95% confidence ellipse area of COP was smaller ($p = 0.04$) after 3-month training while the path length, velocity, and major axis of ellipse area only had

the trends of decrease ($p > 0.05$). Conclusions: The patients with COPD showed the improvements in static standing balance after training, though the muscle strength did not increase significantly. The evaluation of chest function could be conducted to clarify the evidence of training effects in the future. **Clinical Relevance:** The training protocol can be applied on the rehabilitation program in COPD patients especially in those with insufficient balance control or falling history. ■

▶ P9

DOI:10.6215/FJPT.202212.P09

靜脈雷射在冠心症族群對最大攝氧量的效果：初探研究

黎桂珍 * 蔣尚霖

國防醫學中心三軍總醫院復健部物理治療科

Effect of Intravascular Laser Irradiation of Blood on Maximal Oxygen Consumption in Patients With Acute Coronary Syndrome: A Pilot Study

Kuei-Chen Lee* Shang-Lin Chiang

Department of Physical Medicine and Rehabilitation, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan

Background and Purpose: Intravascular laser irradiation of blood (ILIB), which can increase microcirculation and improve oxygen supply, was developed to treat cardiovascular diseases. Peak oxygen consumption (VO_2 max) is important for functional performance in patients with acute coronary syndrome (ACS). The aim of this study was to investigate the effect of ILIB intervention on VO_2 max in patients with ACS. **Methods:** Two patients with ACS status post percutaneous intervention (PCI) were included. They received a 632.8-nm ILIB (continuous wave laser, 3.0 J/cm^2 progressed to 3.5 J/cm^2) for 1 hour/day for 10 days. Before and after the ILIB treatment, they performed the symptom-limited exercise test with cycling, and their VO_2 max was measured. **Results:** The two participants were 36- and 57-year-old male patients who had had an ACS attack and PCI intervention within 3 months before the study. The younger patient showed improvement in VO_2 max after the ILIB treatment from 16.3 ml/(kg·min) to 17.3 ml/(kg·min), and the other patient, from 18.5 ml/(kg·min) to 19.4 ml/(kg·min). However, the improvements in VO_2 max were not significantly higher than the values before the treatment ($p = 0.18$). The non-significance of the results may be attributed to the small sample size and short treatment duration. Conclusions: ILIB treatment seems beneficial for the improvement of VO_2 max in the patients with ACS post PCI intervention. The following parameters are recommended: wavelength of 632.8 nm, irradiation dose of 3.0 to 3.5 J/cm^2, and > 10 treatment sessions. **Clinical Relevance:** According to our results, ILIB could be a supplementary treatment for patients with ACS. ■

▶ P10

DOI:10.6215/FJPT.202212.P10

臨床技能測驗 (OSCE) 對物理治療領域的應用成效及新冠肺炎衝擊下的未來展望

劉宏章 廖佩筠 吳韋緯 *

三軍總醫院復健醫學部

The Application Effect of OSCE in Physical Therapy and Future Prospects Under Impact of COVID-19

Hung-Chang Liu Pei-Yun Liao Wei-Wei Wu*

Department of Physical Medicine and Rehabilitation, Tri-Service General Hospital, Taipei, Taiwan

背景與目的：考試院物理治療師考試目前是依據筆試評核，而考選部已將臨床技能測

驗 (objective structured clinical examination, OSCE) 納入醫師執照考試。此次將本院物理治療實習學生 OSCE 的成績進行分析，與筆試分數比較，評估是否具關聯性。且新冠肺炎的不可預測性，執行時須兼防疫。**方法：**依據物理治療骨科、神經、心肺、小兒設置 OSCE 考站，測驗項目為單項技能操作、病史詢問或醫病溝通衛教。為了兼顧防疫，考場人員皆須戴口罩並備酒精消毒。測驗流程包括向考生說明、各站考官與標準化病人確認教案、考生考題導讀及考試、填寫回饋問卷、考官回饋。測驗結束後會對學生、考官、標準化病人滿意度問卷調查。最後並將學生的 OSCE 與筆試分數比較。**結果：**共 10 位考生 OSCE 評核，通過率 100%。整體滿意度 95.05%。單向技能操作平均成績高於病史詢問與醫病溝通衛教。而 OSCE 與筆試分數比較上，有部分相關性，卻非完全正相關。**結論：**物理治療實習學生在實習的過程已取得臨床技能，注重技能操作，易忽略病史詢問與醫病溝通衛教，且 OSCE 成績與筆試分數非完全正相關。**臨床意義：**筆試雖然可看出專業知識是否足夠，OSCE 卻可呈現物理治療師面對病人的臨床表現，此結果也許可進一步闡明 OSCE 在國家考試扮演的重要性。執行 OSCE 時，也須注重防疫以因應新冠肺炎的衝擊。■

▶ P11 DOI:10.6215/FJPT.202212.P11

蛋白質補充增加耐力訓練的適應性：系統性回顧及統合分析

曾子恬*

臺北市立萬芳醫院復健醫學部物理治療組

Protein Supplementation Increases Adaptations to Endurance Training: A Systematic Review and Meta-Analysis

Tzu-Tian Tseng*

Department of Physical Medicine and Rehabilitation, Wang Fang Hospital, Taipei Medical University, Taipei, Taiwan

背景與目的：目前針對蛋白質補充影響耐力訓練適應性的研究，其結果仍沒有定論。**方法：**在 PubMed、Embase、Web of Science、CINAHL 資料庫搜尋耐力訓練期間補充蛋白質，且有評估有氧能力、身體組成和運動表現的隨機對照試驗。關鍵字為：amino acid、protein、aerobic/endurance exercise；文獻收集至 2020 年 3 月止。對所納入的試驗進行統合分析，評估蛋白質補充對耐力訓練的整體效果；再將其中僅進行耐力訓練的試驗做次級分析，評估蛋白質補充的附加效果。**結果：**本篇一共收集了 19 個試驗，總計 1,162 名參與者進行分析。相較於控制組，蛋白質補充組透過尖峰攝氧量及尖峰工作負荷評估，顯示在提升有氧能力上有更多進步 (standardized mean difference [SMD] = 0.36, 95% confidence interval [CI]: 0.05 to 0.67), and VO2peak (mean difference [MD] = 0.89 mL·kg−1·min−1, 95% CI: 0.07 to 1.70)，且有更多的肌肉質量 (lean mass) 增加 (MD = 0.32 kg, 95% CI: 0.07 to 0.58)，以及在計時型運動表現 (time trial performance) 上有更大的提升 (MD = −29.1s, 95% CI: −55.3 to −3.0)。經由次級分析顯示：耐力訓練可提升尖峰攝氧量 (MD = 3.67 mL·kg−1·min−1, 95% CI: 2.32 to 5.03)，然而加入了蛋白質補充，尖峰攝氧量可額外增加 26.4% (MD = 0.97 mL·kg−1·min−1, 95% CI: −0.03 to 1.97)。**結論：**在臨床及健康族群，長期耐力訓練過程中補充蛋白質，

可進一步提高有氧能力，刺激肌肉質量增加，並能改善計時型的運動表現。**臨床意義：**本篇研究結果提供了蛋白質補充應用在耐力訓練的正向證據。■

▶ P12

DOI:10.6215/FJPT.202212.P12

探討患者從事復健行為之動機與阻礙——以南投縣某地區醫院為例

李佩恩 *

臺中榮民總醫院埔里分院

A Study on Motivations and Constraints of Engaging Rehabilitation for the Patient in a Regional Hospital in Nantou

Pei-En Li*

Puli Branch, Taichung Veterans General Hospital, Nantou, Taiwan.

背景與目的：復健病患參與復健的積極與否，將可能影響復健成效以及能否持續復健的重要關鍵。基此，本研究以自我決定理論 (self-determination theory, SDT) 和阻礙理論 (leisure constraints) 為研究架構，並探討從事復健行為之動機與阻礙的相關性。**方法：**運用 SDT 的內在動機、認同調節、內射調節、外在調節與無動機型態以及阻礙理論的個人內在、人際間的與結構性的阻礙建立本研究架構，以南投縣某地區醫院 15 歲以上之復健病患為研究母體，採「立意抽樣」方式進行問卷調查。**結果：**本研究有效問卷共 203 份，回收率 94.4%。骨科疾患共占 89.1%；神經疾患 10.9%。不同疾病類別對於參與復健的動機和阻礙並沒有顯著差異。自覺健康狀況很不好者和經濟狀況困難者，參與復健的內在動機低，而個人內在阻礙高。典型相關分析的結果顯示，復健動機與阻礙之典型相關係數為 0.69 ($F = 11.07$, $p < 0.001$)，復健動機的內在動機、認同調節、內射調節與個人內在、人際間、結構性的阻礙皆呈負相關。**結論：**若要促進病患積極參與復健，除了醫療團隊對病患的支持與鼓勵外，並積極推動家屬陪伴病患參與復健，增加復健的意願。以及透過個案間的交流分享，讓病患瞭解復健的助益及效果。**臨床意義：**本研究結果可提供臨床單位、患者及家屬參考之建議，以期做為日後制定推廣策略之參考。■

▶ P13

DOI:10.6215/FJPT.202212.P13

發展數位學習平台使用調查工具：以物理治療領域之學習者及建構者為對象

侯玉真 [1,2]　陳貞吟 [2,3]　陳凱華 [1]　董淳武 [4]
許志明 [5]　林燕慧 [2,3,*]

[1] 嘉義長庚紀念醫院復健科
[2] 長庚大學物理治療學系暨復健科學研究所
[3] 林口長庚紀念醫院復健科
[4] 嘉義長庚紀念醫院腎臟科
[5] 嘉義長庚紀念醫院教學部

Developing Survey Tools for Using Digital Learning Platforms: From the Perspective of Learners and Builders in Physical Therapy Professionals

Yu-Jen Hou[1,2]　Chen-Yin Chen[2,3]　Kai-Hua Chen[1]
Chun-Wu Tung[4]　Chih-Ming Hsu[5]　Yang-Hua Lin[2,3,*]

[1] Department of Physical Medicine and Rehabilitation, Chiayi Chang Gung Memorial Hospital, Chiayi, Taiwan
[2] School of Physical Therapy and Graduate Institute of Rehabilitation Science, College of Medicine, Chang Gung University, Taoyuan, Taiwan
[3] Department of Physical Medicine and Rehabilitation, Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan
[4] Department of Nephrology, Chiayi Chang Gung Memorial Hospital, Chiayi, Taiwan
[5] Medical Education Department, Chiayi Chang Gung Memorial Hospital, Chiayi, Taiwan

背景與目的：線上學習因不受時空與環境的限制，有利於學習的溝通、多元及效率。除了節省成本外，並促進學習品質及效益。為瞭解並反映學習平台架構者及學習者對於使用學習平台的接受度、滿意度、學習認知、動機與態度等因素的狀況表現，因而欲發展國內物理治療領域之學習者及建構者在使用數位學習平台的調查工具。**方法：**研究進行效度分析，包括測試表面效度 (face validity) 與專家效度。兩份調查的表面效度由臨床治療師、實習學生及教學主管各一名，判斷是否可測量到相關結構理念。此外邀請五位專家審視內容效度，並計算其項目層級之內容效度指數 (item-level content validity index, I-CVI)。**結果：**經由一位臨床物理治療師回顧文獻草擬出問卷調查物理治療相關架構者平台之使用狀況，及實習學生使用學習平台的情形。透過表面效度的進行，提出調查工具的相關建議及項目修改。調查問卷經第一輪專家效度審查後的建議及修訂，第二版本網路學習平台評估問卷之 I-CVI 為 0.85 ~ 1.00，與網路學習平台調查問卷 I-CVI 為 0.80 ~ 1.00，呈現可接受閾值範圍，訂為最終版本。結論 : 發展數位學習平台使用調查工具，經驗證具表面效度與內容效度，且容易施測。**臨床意義：**於未來可提供平台發展的需求，及學習平台的建構、操作使用之改善與參考。■

▶ P14 DOI:10.6215/FJPT.202212.P14

修正學習興趣量表以應用於高齡輔具設計思考課程：專家效度

張欽智　蔡瑋明　蔡孟書 *

仁德醫護管理專科學校復健科

Modifying Learning Interests Questionnaire for the Course of Design Thinking in Elderly Assistive Devices: The Content Validity

Chin-Chih Chang　Wei-Ming Tsai　Meng-Shu Tsai*

Department of Rehabilitation Science, Jen-Teh Junior College of Medicine, Nursing and Management, Miaoli, Taiwan

背景與目的：復健科為培育學生具有多元思考與問題解決能力開設有「高齡輔具設計思考」跨領域專業選修課程。為探討學生對課程學習之興趣，我們編修學習興趣量表並測量其專家效度。**方法：**依據王佳琪與宋世祥老師所編列的「學生學習興趣量表」進行編修，量表包含個人興趣及情境興趣兩大向度，5 個分量表及 19 個題目。我們邀請三位專家依據內容相關性與量表文字清晰性分別進行審議，採用李克特量表 (Likert scale) 4 分量尺，內容與文字完全同意（必須保留，無須修改）評定 4 分、大致同意（建議保留但需稍加修改）評定 3 分；不同意評定 2 分（可以保留但需大力修改）、非常不同意（建議刪除）評定 1 分，將 3 分以上題數除以專家數，為每題題目內容效度指標 (Item-level Content Validity Index, ICVI) 值，3 分以上題數百分比作為量表水平內容效度（Scale-level CVI, SCVI）。**結果：**三位專家在內容相關性與量表文字清晰性均完全同意或大致同意，19 題之 ICVI 均達到 1.0，SCVI 也為 1.0，針對專家建議再詢問相關語文專家並與授課老師討論，完成第二版學習興趣量表。**結論：**本研究採用之「學生學習興趣量表」具有高的專家內容效度，可以應用於評估課程之學習興趣。**臨床意義：**預計將本量表用於「高齡輔具設計思考」跨領域專業選修課程評估學生之學習興趣。■

▶ P15

DOI:10.6215/FJPT.202212.P15

實證執業模式應用於物理治療實習教育：以肩峰夾擠症候群個案為例

李建和[1]　盧昱如[1,2]　康伯綸[2]　黃維彬[2]　羅政安[1,*]

[1] 奇美醫療財團法人柳營奇美醫院復健科

[2] 弘光科技大學物理治療系

Evidence Based Practice Model for Training Clinical Practice of Physical Therapy: A Case Report of Shoulder Impingement Syndrome

Jen-ho Lee[1]　Yu-Ru Lu[1,2]　Bo-Lun Kang[2]
Wei-Pin Huang[2]　Zheng-An Luo[1,*]

[1] Department of Rehabilitation, Chi Mei Medical Center, Liouying, Tainan, Taiwan

[2] Department of Physical Therapy, Hungkuang University, Taichung, Taiwan

背景與目的：臨床上如何選擇有效的介入方式並確實執行，對於物理治療實習學生是艱鉅的挑戰。臨床實證模式以考慮個案需求下，綜合最佳文獻證據，應用良好技能，達到最佳照護品質。本篇將以一位肩峰夾擠症候群的個案為例，探討如何應用實證模式在物理治療實習教學，做為未來實習教育之參考。**方法：**52 歲右側肩峰夾擠症候群女性，肩關節活動角度受限，以致穿衣時不便。由一名業師引導一位學生設立臨床問題進行文獻搜尋後，經由指導再實際運用於個案，並以介入前後之動作功能表現為成效評估。**結果：**評估發現個案肩胛胸廓關節活動受限，搜尋相關介入文獻，選定以肩胛胸廓關節鬆動及牽拉治療作為此個案之介入方法。患側上肢經兩次的介入後，手揹後背時中指距肩胛下角之最短垂直距離由 23.5 公分改善至 8.5 公分，且肩胛骨後縮不足及過度前翻現象與穿衣功能有明顯改善。過程中學員認為透過臨床實證介入模式，配合教師的經驗指導，比起傳統的教學模式能有更佳學習效果。**結論：**藉由實證執業模式，針對個案臨床問題搜尋適當介入方式，再經臨床業師經驗指導下，確實可改善個案動作功能。**臨床意義：**適當運用實證模式及融合實務經驗，在臨床介入的療效與專業學能的教學成效上，皆有較好的成效。■

▶ P16

DOI:10.6215/FJPT.202212.P16

創新跨領域團隊合作照護教育訓練 (IPE) 教案之成效

賴佐君[*]

彰化基督教醫院復健醫學部物理治療組

Effects of Innovative Lesson Plan for Interprofessional Education

Tso-Chun-Lai[*]

Division of Physical Therapy, Department of Physical Medicine and Rehabilitation, Changhua Christian Hospital, Changhua, Taiwan

背景與目的：透過跨領域跨團隊的教育 (interprofessional education, IPE)，培養具備合作與團隊照護能力的醫療專業人員，促成跨領域團隊合作照護的實踐 (interprofessional practice, IPP)；而全人照護的學習，心態上要有治療「全人」而非治「病」的概念，要有對病人的關懷與負責任的態度。健康照護矩陣 (healthcare matrix)，為 6 × 6 評估矩陣，檢視醫療過程是否實踐了美國畢業後醫學教育評鑑委員會 (Accreditation Council for Graduate Medical Education, ACGME) 六大核心能力與達成六項醫療品質的要求，是學習全人照護的好工具。**方法：**針對二年期新進人員設計 IPE，將健康照護矩陣導入跨領域照護團隊運作。步驟一：挑選合適教案為藍圖；步驟二：邀請各職類組成團隊；步驟三：各職類填寫健康照護矩陣表單；步驟四：產出專業間（內）合作的核心能力；步驟五：

利用 KAS (knowledge, attitude, skill) 思考模板設計特定情境的教案。**結果：**共產出 8 件教案，舉辦訓練課程每次約 40 人次。課後以 ICCAS (Interprofessional Collaborative Competency Attainment Scale) 量表測試在跨領域合作能力的素養狀況：前測、後測、三個月後再測的平均分數為 3.118、4.340、3.880。**結論：**健康照護矩陣的導入使各專業領域人員對瞭解並執行自我專業有更高的期許，在人際溝通的技巧也有提升。**臨床意義：**創新教案除了認識自己，亦可透過專業間的討論，檢視自己的不足，提升領域間的專業素養；而全面性評量病人所接受的照護，可提供最適切的醫療品質及持續性的照護。■

▶ P17

DOI:10.6215/FJPT.202212.P17

乳癌術後病患執行第一階段復健之效果——以義大癌治療醫院為例

林宜萱　李秀娥*　侯傑議　蕭雅方　黃純德

義大醫療財團法人義大癌治療醫院復健科

Effects of Stage 1 Rehabilitation for Patients With Breast Cancer-Example of E-DA Cancer Hospital

I-Hsuan Lin　Hsiu-O Li*　Chieh-Yi Hou
Ya-Fang Hsiao　Chun-De Huang

Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan

背景與目的：乳癌術後病患會因害怕拉開開刀傷口或引流管而傾向不動手臂，但長期下來會造成肩膀活動度不足與日常生活的障礙。本篇研究目的為探討乳癌術後急性期內執行復健對上肢功能性活動與肩關節角度之影響。**方法：**本研究在 2021 年收案了 16 位乳癌術後病患，在術後第 3 天對其進行前測，內容包含簡短版上肢功能受損程度問卷 (Chinese Quick DASH) 與肩關節屈曲及外展角度測量，並在術後的 8 ~ 20 天進行後測。本研究參考國內外文獻並針對乳癌術後病患設計了「第一階段復健運動」，其內容包含多項的肩膀運動。物理治療師會教導病患如何做「第一階段復健運動」，並鼓勵患者每日都要執行。**結果：**16 位病患前測肩關節屈曲角度平均為 76.88 ± 20.45 度，後測角度為 151.56 ± 30.60 度，一共增加 74.69 度；而肩關節外展角度在前測平均 71.19 ± 21.50 度，後測為 136.52 ± 31.70 度，一共增加 63.38 度。上肢功能受損程度問卷前測平均分數 50.69 ± 8.50 分，後測為 28.88 ± 14.50 分，改善了 21.81 分。**結論：**乳癌病患在術後急性期內進行「第一階段復健運動」並在術後的 8 ~ 20 天後測時顯示肩關節屈曲、外展角度有所增加、上肢功能性活動改善。**臨床意義：**執行「第一階段復健運動」的病患增加了肩關節屈曲、外展角度，關節角度的增加或許也間接改善了上肢功能受損程度問卷分數，這可能暗示著病患能更快回歸日常生活。■

▶ P18

DOI:10.6215/FJPT.202212.P18

探討影響乳癌術後出現腋網症候群之相關因子——初探研究

林宜萱　李秀娥*　侯傑議　蕭雅方　黃純德

義大醫療財團法人義大癌治療醫院復健科

The Related Factors Induce Axillary Web Syndrome Among Patients With Breast Cancer Post Surgery—A Preliminary Study

I-Hsuan Lin　Hsiu-O Li*　Chieh-Yi Hou
Ya-Fang Hsiao　Chun-De Huang

Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan

背景與目的：腋網症候群好發於乳癌術後 1 ~ 8 週，其中又以合併執行改良式乳癌切除術與腋下淋巴廓清術的病患有較高的發生率。有腋網症候群的病患會出現肩膀活動度變差的問題，並影響了日常生活活動。本研究欲探討合併執行改良式乳癌切除術與腋下淋巴廓清術的病患易發生腋網症候群之因子。**方法：**本研究於 2022 年 1 ~ 6 月收案 11 位執行改良式乳癌切除術與腋下淋巴廓清術之病患，其中 5 位有腋網症候群（AWS 組），另 6 位無腋網症候群（NAWS 組），使用 Mann Whitney U 檢定比較兩組病患的身體質量指數 (BMI)、引流管滯留天數、胸部腋下淋巴結廓清數、疼痛程度 (VAS)。**結果：**(1) AWS 組的引流管滯留天數為 12.80 ± 5.70 天，相較 NAWS 組 10.17 ± 3.40 天， 多 2.63 天 (p = 0.79)。(2) AWS 組胸部腋下淋巴結廓清數為 16.20 ± 10.80 顆，相較 NAWS 組 9.33 ± 7.40 顆，多 6.87 顆 (p = 0.32)。(3) AWS 組的 BMI 為 23.47 ± 3.49，相較 NAWS 組 23.80 ± 4.01，少 0.33 (p = 0.99)。(4) AWS 組的 VAS 為 4.20 ± 1.78， 相較 NAWS 組 3.80 ± 0.75，多 0.40 (p = 0.93)。**結論：**BMI、引流管滯留天數、胸部腋下淋巴結廓清數、VAS 於兩組無明顯統計學上差異，經探討可能因素為 (1) 本研究探討的四個因子並非能反映導致腋網症候群的出現。(2) 此次收案人數不足致無法比較出差異。**臨床意義：**腋網症候群的出現會限制病患的肩膀活動度與日常生活，需了解其出現的相關因子可以作為醫療人員解釋術後併發症的參考。■

▶ P19

DOI:10.6215/FJPT.202212.P19

口腔癌術後張口困難之物理治療介入模式：範疇界定回顧

羅政安　李建和　廖怡雯　許沛瑾 *

奇美醫療財團法人柳營奇美醫院復健科

The Approach of Physical Therapy for Trismus in Post-Operation of Oral Cancer: A Scoping Review

Zheng-An Luo　Jen-Ho Lee　Yi-Wen Liao
Pei-Jin Hsu*

Department of Rehabilitation, Chi Mei Medical Center, Liouying, Tainan, Taiwan

Background and Purpose: Patients of oral cancer usually underwent the wide excision of tumor side combined with neck dissection. They also might need to receive a period of radiotherapy after surgery. After intervention, most patients may have trismus or swallowing dysfunction. These are associated with dysfunction of muscles around sub-mandible and result in poor quality of life (QOL), such as feeding, specking, and grooming. This study aimed to investigate how the exercise and physical therapy can improve these dysfunctions. **Methods:** A search of studies within 10 years by PudMed was conducted in July 2022.The following keywords were used: trismus, mylohyoid muscle, digastric muscle, hyoid bone, mandible, and oral cancer. The outcomes were measured by mouth opening and QOL. The intervention involves exercise programs without certain devices used, such as Thera-bite. **Results:** Total six studies were found. Three of the studies were included: two RCTs and one pilot study. The other three studies were excluded due to their intervention of using certain devices. In the included studies, the duration of intervention lasted for 5 to 12 weeks and the outcomes were measured by mouth opening, and some by QOL. But, there are no significant benefits on the trismus in the oral cancer patients. Exploring the interventions in these studies, the jaw active range of motion exercise, muscle stretch or massage were included, however, few treatments were applied for reducing the tissue tension around sub-mental area or building the control ability of sub-mental muscle group, which we think are highly related to the ability of mouth opening according to our clinical experience. Conclusions: No significant improvements on trismus and QOL were

found by exercise and physical therapy in current literature, however, we noticed that the treatments on muscle function around sub-mental area was limited, which may also be important for improving trismus. **Clinical Relevance:** Our study explored the existing treatments for trismus in oral cancer patients. Current evidence does not favor to the exercise and physical therapy, but we would like to raise the attention of the muscles function around sub-mental area for treating the patients with trismus. ■

▶ P20

DOI:10.6215/FJPT.202212.P20

物理治療室跌倒累積事件及其相關因子之探討——以義大癌治療醫院為例

侯傑議 [1,3]　蕭雅方 [1]　吳姵錡 [2,3,*]

[1] 義大醫療財團法人義大癌治療醫院復健科
[2] 義大醫療財團法人義大醫院復健科
[3] 義守大學物理治療學系

Cumulative Events and Related Factors of Falls Among Patients in Physical Therapy Room—An Example of E-Da Cancer Hospital

Chieh-Yi Hou[1,3]　Ya-Fang Hsiao[1]　Pei-Chi Wu[2,3,*]

[1] Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan
[2] Department of Physical Medicine and Rehabilitation, E-DA Hospital, Kaohsiung, Taiwan
[3] Department of Physical Therapy, I-Shou University, Kaohsiung, Taiwan

背景與目的：臺灣病人安全通報系統 2021 年第 3 季報表顯示以跌倒事件最多 (29.0%)，復健科是容易發生跌倒事件的單位之一，尤其物理治療師提供行走、坐站平衡、上下樓梯等重心轉換訓練。病人跌倒事件發生於復健活動時值得探究，接受物理治療之病人若跌倒會造成復健成效退步、生活品質變差、增加額外醫療費用及加速社會負擔，甚至引發醫療糾紛事件。故本研究目的在調查本院物理治療室累積之跌倒事件，分析其相關因子，以利制定防範對策。**方法：**調查自 2020 年 1 月至 2022 年 6 月期間，本院公共病安管理系統中通報之跌倒事件並分析通報內容之相關因子。**結果：**總共累積 20 件跌倒事件，診斷為中風者占 65%，跌倒病人嚴重度是清醒的、以輕度及無傷害占 95%，評估為高風險跌倒者而跌倒占 85%，活動能力需協助者占 65%，發生於跑步機腳踏車訓練下占 40%，年齡層 19 ~ 30 歲區間僅 5%，最近一年是否曾經跌倒以及復健時是否有陪伴者則沒有差異。**結論：**跌倒事件病人以中風屬性居多，尤其操作跑步機當行走訓練工具時更須留意病人步態的異常表現，根據本研究調查，跌倒病人一年內跌倒與否與陪伴者與否其跌倒的風險一致，故治療室中跌倒之預防必須特別防範。**臨床意義：**預防跌倒與營造病人安全環境是物理治療師責無旁貸的職責。■

▶ P21

DOI:10.6215/FJPT.202212.P21

探究乳癌復健病人之醫病共同決策程度

吳姵錡 [1,2]　王雲充 [1]　侯傑議 [2,3,*]　侯文萱 [4]

[1] 義大醫療財團法人義大醫院復健科
[2] 義守大學物理治療學系
[3] 義大醫療財團法人義大癌治療醫院復健科
[4] 臺北醫學大學醫學系復健學科

Investigation of the Current Level of Shared Decision Making in Patients With Breast Cancer Undergoing Rehabilitation

Pei-Chi Wu[1,2]　Yun-Chung Wang[1]　Chieh-Yi Hou[2,3,*]
Wen-Hsuan Hou[4]

[1] Department of Physical Medicine and Rehabilitation, E-DA Hospital, Kaohsiung, Taiwan
[2] Department of Physical Therapy, I-Shou University, Kaohsiung, Taiwan
[3] Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan
[4] Department of Physical Medicine and Rehabilitation, College of Medicine, Taipei Medical University College, Taipei, Taiwan

背景與目的：乳癌為女性癌症發生率之第一位，隨著存活率提升，乳癌病人需處理的後遺症與對應的治療計畫漸趨多元。醫療人員與病人進行共同決策 (shared decision making, SDM)，可針對病人需求提供個別化的治療，提升病人醫療照護品質與成效。然而國內臨床上共同決策模式於乳癌復健病人之應用鮮少。故本研究目的為探究乳癌復健病人之醫病共同決策程度。**方法：**以前瞻式追蹤設計，招募乳房外科會診復健科之乳癌住院病人及其治療師填寫醫病共同決策之調查相關問卷，研究者亦依據錄音檔評分醫病共同決策程度。回診時，研究者請病人填寫追蹤問卷，主要結果評估為決策自我效能量表 (Decision Self-Efficacy Scale, DSES)，次要結果評估有四個面向 (1) 決策參與（含決策角色偏好）；(2) 醫病溝通；(3) 決策衝突與後悔；(4) 健康狀況。以單因子變異數分析不同年齡、教育程度、婚姻狀況、職業、親友決策參與、有無家族乳癌病史、臨床分期在決策自我效能是否有顯著差異。**結果：**收案共 55 位，不同年齡 ($p = 0.001$) 與教育程度 ($p < 0.001$) 在決策自我效能有顯著差異；不同年齡 ($p = 0.02$) 與教育程度 ($p = 0.01$) 在決策角色偏好有顯著差異。**結論：**教育程度愈高者，醫病共同決策參與程度愈高。**臨床意義：**可作共同決策之參考依據，提升乳癌病人的決策自我效能，實踐以病人為中心之醫療照護，改善其生活品質。■

▶ P22 DOI:10.6215/FJPT.202212.P22

下背痛病人之醫病共享決策因子之探討

吳姵錡 [1,2] 吳至翔 [1] 侯傑議 [2,3,*] 侯文萱 [4]

[1] 義大醫療財團法人義大醫院復健科
[2] 義守大學物理治療學系
[3] 義大醫療財團法人義大癌治療醫院復健科
[4] 臺北醫學大學醫學系復健學科

Investigation of the Decision Factors of Shared Decision Making in Patients With Low Back Pain Undergoing Rehabilitation

Pei-Chi Wu[1,2] Zhi-Xiang Wu[1] Chieh-Yi Hou[2,3,*] Wen-Hsuan Hou[4]

[1] Department of Physical Medicine and Rehabilitation, E-DA Hospital, Kaohsiung, Taiwan
[2] Department of Physical Therapy, I-Shou University, Kaohsiung, Taiwan
[3] Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan
[4] Department of Physical Medicine and Rehabilitation, College of Medicine, Taipei Medical University College , Taipei, Taiwan

背景與目的：文獻指出下背痛病人希望能夠得到更全面的治療相關資訊、更個人化的照護且有更多的醫病溝通，學者 Sepuchan 和 Mulley 亦將醫病共享決策過程分成三個面向：決策決定因子、決策過程與決策結果。近年衛福部持續推動醫病共享決策，其重要性不言可喻。本研究目的為探討醫病共享決策在下背痛族群決策因子。**方法：**採隨機對照試驗，以年滿 20 歲至復健科看診且有下背痛問題面臨治療選項決策的病人為收案對象，並將病人隨機分配為介入組與控制組，結果評估為決策決定因子之相關量表。以單因子共變數分析及皮爾森卡方檢定分析醫病共享決策介入後介入組與控制組兩組間組內之成效差異。**結果：**共 130 名參與本研究，決策參與期待量表介

入組分數為 88.3 (SD = 10.2)，控制組分數為 81 (SD = 18.9)，介入組病人之自我決策自信程度較佳，且達顯著差異 (MD/χ^2 = 7.1, 95% CI: 1.7 to 12.5)；病人版共享決策問卷 (SDM-Q-9)，介入組分數為 87.5 (SD = 12.3)，控制組分數為 81.8 (SD = 19.5)，介入組病人，從和醫師做共享決策中得到的感知程度較佳，但未達顯著差異 (MD/χ^2 = 5.6, 95% CI: –11.4 to 0.2)。**結論：**醫病共享決策介入後，病人對自我決策自信程度較佳。**臨床意義：**研究醫病共享決策的溝通模式，病人能夠選擇出最符合自己期望的治療方式，進而提升下背痛病人之醫療照護品質。■

▶ P23

DOI:10.6215/FJPT.202212.P23

利用跨領域團隊會議提升物理治療實習學生團隊合作能力

薛孟怡[1]　張智如[1,*]　楊政峯[2]

[1] 成功大學醫學院附設醫院物理治療中心
[2] 成功大學醫學院物理治療學系暨研究所

Participation in Inter-Professional Education Meeting Enhance Teamwork Ability of PT Students

Meng-I Hsueh[1]　Chih-Ju Chang[1,*]　Jeng-Feng Yang[2]

[1] Physical Therapy Center, National Cheng Kung University Hospital, Tainan, Taiwan
[2] Department of Physical Therapy, College of Medicine, National Cheng Kung University, Tainan, Taiwan

背景與目的：全人醫療服務是當前所有醫療團隊所追求的，因此本中心積極參與各科跨領域團隊照護會議，藉此培養臨床治療師與其他職類溝通與交流的能力。本篇主要目的在於探討實習學生參與會議後，跨團隊合作能力之提升及課程滿意度。**方法：**108 ~ 110 學年度至本中心實習之學生，於第 1 週接受跨領域團隊合作能力學前評估，實習 6 週間參與至少 1 次跨領域團隊會議，於會議後撰寫心得及填寫課程滿意度問卷，並在第 6 週接受學後評估。學前、學後評估內容包含臨床醫學知識、與團隊溝通、醫療記載、專業互動、承擔責任、團隊合作照護、醫療品質改善及有效率的醫療照護等 8 項。評估及課程滿意度問卷分數範圍皆為 0 ~ 5 分。**結果：**本中心共收 21 名學生，參與會議平均 2.1 ± 0.7 次。統計結果學前評估整體平均分數為 2.80 ± 0.66 分，學後評估平均分數為 3.55 ± 0.70 分，學後能力相較學前提升 26.8%，達統計上顯著進步 ($p < 0.05$)。課程滿意度調查結果，量性回饋平均分數為 4.73 ± 0.50 分，非常滿意及滿意占 97.5%；質性回饋中，學生則表示能學習其他專業知識，收獲良多。**結論：**參加跨領域團隊會議後，實習學生跨領域團隊合作能力提升並達統計上顯著差異。**臨床意義：**學生參加跨領域會議後，提升與其他專業的溝通合作能力，使病患能獲得更全面的醫療照護。■

▶ P24

DOI:10.6215/FJPT.202212.P24

新冠疫情對物理治療服務的衝擊與改變——以北部某醫學中心為例

王仁強[1]　陳貞吟[1,2,3,*]

[1] 林口長庚紀念醫院復健科物理治療組
[2] 長庚大學物理治療系暨復健科學研究所
[3] 長庚醫院醫學教育研究中心

Impact of the COVID-19 Pandemic on Physical Therapy Services in Taiwan: A Medical Center Experience

Jen-Chiang Wang[1]　Chen-Yin Chen[1,2,3,*]

[1] Department of Rehabilitation, Linkou Chang Gung Memorial Hospital, Tao-Yuan, Taiwan
[2] School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, Chang Gung University, Tao-Yuan, Taiwan
[3] Chang Gung Medical Education Research Center, Tao-Yuan, Taiwan

背景與目的：從 2020 年 1 月臺灣出現新冠病毒首例確診個案後，對台灣各產業都產生莫大的衝擊與影響。本文欲探討新冠疫情對北部某醫學中心物理治療服務的衝擊與變化。**方法：**收集與比較新冠疫情發生前與疫情期間北部某醫學中心物理治療的服務量，分別統計與比較門診、住院（一般病房）與加護病房個案的服務量變化。**結果：**2020 年物理治療整體服務量較疫情前衰退 26%，2021 年衰退 33%。在門診個案的服務量方面，2020 年較疫情前下降 40%，2021 年下降 60%。住院個案（一般病房）服務量疫情前後並沒有變化，而加護病房的服務量 2021 年較疫情發生前上升了 21%。**結論：**新冠疫情除了影響社會經濟的發展，民眾的就醫行為也產生改變，疫情發生後部分長期門診個案自行減少了重覆就醫的行為，2021 年 5 月三級警戒要求各界暫停非必要及非急迫性之醫療含復健治療，以維持醫療量能，更造成物理治療門診個案服務總量的大幅下降。但疫情加重了醫學中心的醫療團隊對物理治療的認識和信賴，因此更加速提升醫學中心物理治療對住院急性與重症個案的服務量能，造成了服務類型的轉變。■

▶ **P25** DOI:10.6215/FJPT.202212.P25

物理治療介入對於缺血性中風合併乳癌個案功能恢復之效益：個案報告

林俊錡　曾千芳　林宜仙 *
臺北市立萬芳醫院復健醫學部物理治療組

Effects of Physical Therapy Intervention on Functional Recovery for Patient With Ischemic Stroke Combined Breast Cancer: A Case Report

An-Chi Lin　Chen-Feng Tseng　I-Hsien Lin*
Department of Physical Medicine and Rehabilitation, Wang Fang Hospital, Taipei Medical University, Taipei, Taiwan

背景與目的:依據衛生福利部 109 年度十大死因，癌症排名首位，腦血管疾病第四位。癌症是造成中風的高危險群，發生比例約 15%，出血與栓塞機率相等。本研究目的探討物理治療介入對於缺血性中風合併乳癌個案功能恢復之效益。**方法：**個案 70 歲女性，2020 年 7 月確診乳癌，2021 年 3 月接受乳房部分切除。2020 年 10 月因右側後大腦動脈缺血性中風，造成左側肢體無力及左側偏盲。2021 年 8 月二次中風，引發左側肢體無力，8 月 26 日開始物理治療介入，目標設定需輕度協助下行走。理學檢查布朗斯壯分期左上肢第三期、左下肢第四期；坐姿平衡差、躺到坐需中度協助；功能性行走量表為 0 無法行走。物理治療計畫每次 50 分鐘，1 週 5 次，共 5 週，中風合併乳癌治療計畫包含上下肢肌力、耐力、平衡、功能性活動及行走訓練。**結果：**經過 5 週物理治療介入，左側肢體布朗斯壯分期進步至第五期；上肢肌力進步至 4 分；坐姿平衡進步至良好、躺到坐進步至獨立，功能性行走量表進步至 2。**結論：**對於缺血性中風合併乳癌個案，物理治療介入可以改善平衡、肌力、功能性活動及行走的能力。**臨床意義：**缺血性中風合併乳癌的個案，因疾病造成動作受損、肌耐力不足、日常生活受限，物理治療介入可以有效改善日常生活功能表現。■

▶ P26

DOI:10.6215/FJPT.202212.P26

原發性高醛固酮症引起腦中風患者急性後期照護介入之物理治療臨床效果——個案報告

林佳慶　李旺澈　謝文逸　陳郁婷 *

中國醫藥大學北港附設醫院復健科

The Effects of Physical Therapy on Post-Acute Care Intervention in Stroke Patient With Primary Hyperaldosteronism—Case Report

Chia-Ching Lin　Wang-Che Li　Wun-Yi Shie
Yu-Ting Chen*

Department of Rehabilitation, China Medical University Beigang Hospital, Yunlin, Taiwan

背景與目的：原發性高醛固酮症 (primary aldosteronism)，來自於腎上腺皮質分泌過多的醛固酮，盛行率大約占所有高血壓病人的 5 ~ 13%，是目前最常見的次發性高血壓。本研究目的為探討一位因單側腎上腺腫瘤合併低血鉀引起中風的患者，在接受高強度物理治療訓練 (post-acute care, PAC) 的過程及成效。**方法：**個案 51 歲女性於住院一週後接受 PAC 計畫，並開始執行高強度物理治療訓練，為期 3 週，每天 2 次，每次 60 分鐘的高強度物理治療訓練，運動內容含下肢肌耐力訓練 30 分鐘、平衡及運動治療 30 分鐘。但因持續無力且低血鉀問題一直無改善，懷疑有高醛固酮問題，安排身體電腦斷層檢查，發現右腎上腺皮質有腫瘤。**結論：**原發性高醛固酮症是一種已知造成高血壓的原因，典型的表徵包含高血壓及低血鉀，但是正常血鉀的患者比低血鉀的患者來的多。本研究進行 3 週高強度物理治療訓練後，在巴氏量表、伯格氏平衡量表、5 公尺行走測試與 6 分鐘行走測試都出現了顯著性的進步。**臨床意義：**若有遇到高血壓合併低血鉀、頑固性高血壓，除了要注意血壓控制外，也需注意是否有高醛固酮問題，以免中風的情形。腦中風患者黃金期內短期間接受高強度物理治療訓練後確實能有效改善日常生活活動功能、平衡能力、行走速度與心肺適能。■

▶ P27

DOI:10.6215/FJPT.202212.P27

探討急性腦中風病人住院期間接受物理治療之時機、出席頻率與治療強度

王雲充　吳至翔 *

義大醫療財團法人義大醫院物理治療組

Timing, Frequency, and Intensity of Physical Therapy Intervention During Hospitalization in Patients With Acute Stroke

Yun-Chung Wang　Zhi-Xiang Wu*

Department of Physical Therapy , E-DA University Medical Center of E-DA Medical Foundation, Kaohsiung, Taiwan

背景與目的：各國文獻指出治療強度與出席頻率對於腦中風病人未來的失能程度與死亡率呈現出「劑量—反應」關係；然而在臨床實務往往無法達到臨床指引建議的強度。故本研究欲瞭解急性腦中風病人住院期間物理治療之時機、出席頻率與治療強度之情形並初步探討之。**方法：**本研究採取病歷回顧法，使用電子病歷資料庫系統查詢 2022 年 1 ~ 3 月間出院之病人，排除病況不穩無法積極進行下床活動之病人。統計每位病人於住院期間接受物理治療之次數、出席頻率、出院時修正版雷式量表 (Modified Ranklin Scale, MRS) 與初次治療時機；並與住院天數及出院 MRS 進行相關檢定及平均數檢定。**結果：**住院 3 天內進行物理治療占 47.1%；出席頻率為 88%，平

均每次接受物理治療時間為 44 分鐘。出席頻率與住院天數呈現顯著低度正相關 (r = 0.294, p = 0.002)，住院 4 ~ 6 天內進行物理治療介入有顯著較低的 MRS 分數 (2.83 ± 1.18)；中重度失能相較輕度失能有顯著較高的出席率。**結論：**高出席率與較高的住院天數及較高的出院 MRS 顯著正相關。整體出席頻率與時間強度皆略高於以往的文獻報告（Gittins et al. 2022；出席頻率 40%，治療強度 13.8 分）。**臨床意義：**以臺灣健保復健給付制度以時間限制之設計精神下，欲達到臨床指引建議的時間強度，本研究建議可以 MRS 區分病人能力前提下探討如何增加治療出席率及增加早期介入為較佳策略。■

▶ P28

DOI:10.6215/FJPT.202212.P28

夏柯—馬利—杜斯氏症共併腦中風之物理治療：個案報告

蘇莉芬　莊玟欣　陳秀芳　張婷方　林宜仙 *

臺北市立萬芳醫院復健醫學部物理治療組

Physical Therapy for Charcot-Marie-Tooth Disease With Co-Morbid Stroke: A Case Report

Lin-Fen Su　We-Hsin Chuang　Hsiu-Fang Chen
Ting-Fang Chang　I-Hsien Lin*

Department of Physical Medicine and Rehabilitation, Wang Fang Hospital, Taipei Medical University, Taipei, Taiwan

背景與目的：夏柯—馬利—杜斯氏症 (Charcot Marie Tooth disease, CMT) 為遺傳性運動感覺神經病變，是最常見的遺傳性周邊神經病變，發生率約為 0.010 ~ 0.028%。因周邊神經功能缺損，導致肌耐力、柔軟度、平衡以及日常生活活動能力逐漸下降甚至喪失。腦中風是造成全球人口死亡與失能的主要原因，為國人十大死因排名第四位。研究目的探討物理治療介入對於 CMT 共併腦中風個案之效益。**方法：**67 歲女性，2000 年基因檢測確認罹患 CMT，2011 年 9 月發生第一次左大腦動脈缺血性中風，2021 年 9 月發生第二次左大腦動脈缺血性中風之後轉至本院，於 12 月 14 日開始物理治療介入，目標為恢復至之前日常生活功能。理學檢查布朗斯壯分期右上肢第三期、下肢第四期，右下肢肌力 3 分；坐姿動態平衡不佳；巴氏量表 60 分日常生活能力為嚴重依賴。物理治療計畫每次 50 分鐘，1 週 5 次，共 4 週，對於 CMT 共併腦中風治療計畫包含：肌耐力、平衡、功能性活動及行走訓練。**結果：**經過 4 週物理治療介入，右下肢肌力進步至 4 分、坐姿平衡進步至良好與巴氏量表進步至 70 分中度依賴。**結論：**對於 CMT 共併腦中風個案，物理治療計畫介入可以改善平衡、肌力及日常生活能力。**臨床意義：**CMT 共併腦中風的個案，因疾病造成平衡、肌耐力及日常生活活動受影響，物理治療可改善日常生活功能。■

▶ P29

DOI:10.6215/FJPT.202212.P29

探討影響急性後期中風病人照護功能性活動恢復之因素——以義大癌治療醫院為例

蕭雅方　黃純德 *

義大醫療財團法人義大癌治療醫院復健科

Factors Affecting the Recovery of Functional Activities in Post-Acute Care of Cerebrovascular Diseases—Example of E-DA Cancer Hospital

Ya-Fang Hsiao Chun-De Huang*
Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan

背景與目的：先前文獻指出中風病人參與急性後期照護計畫，經由高強度的復健計畫後，在功能性活動有明顯進步，但影響病人恢復功能性活動不僅只有治療強度，故本研究欲探討腦血管疾病急性後期照護 (post-acute care - cerebrovascular diseases, PAC-CVD) 病人在各影響因子之間的巴氏量表之進步率。**方法：**本研究採取病歷回顧法，查詢 2021 年 6 ~ 12 月間住院病人之系統資料庫，分析每位病人之性別、年齡、住院週數、中風類型、照顧者種類及營養狀態之巴氏量表前後測分數進步率。**結果：**本研究共收案 32 人，結果顯示性別、年齡、中風類型、照顧者種類及營養狀態對於巴氏量表無顯著差異 ($p > 0.05$)，但住院週數有顯著差異 ($p < 0.05$)。不過在各項組別中，其女性、≤ 65 歲、出血性中風、照顧者為家屬及營養及格的類別都相較於另一組的進步程度高。**結論：**經由分析 PAC-CVD 病人的影響因子，只有住院天數類別中有顯著差異，但以巴氏量表分數進步程度中發現，在性別、年齡、中風類型、照顧者種類及營養狀態之進步率在某特定族群有一定程度的提升。**臨床意義：**針對 PAC-CVD 病人治療不僅於物理治療之介入，亦可加入其他專業共同照護，提升病人的功能性活動恢復，同時針對分數進步率較低者再進行分析，找出提升個案功能性活動恢復之方法。■

▶ P30 DOI:10.6215/FJPT.202212.P30

物理治療對於結核性脊椎炎術後個案功能恢復之效益：個案報告

曹丹齡* 曾子恬
臺北市立萬芳醫院復健醫學部物理治療組

Effects of Physical Therapy Intervention on Functional Recovery for Patient With Tuberculous Spondylitis After Surgery: A Case Report

Tan-Ling Tsao* Tzu-Tian Tseng
Department of Physical Medicine and Rehabilitation, Wang Fang Hospital, Taipei Medical University, Taipei, Taiwan

背景與目的：結核性脊椎炎造成非創傷性脊髓失能，常發生於胸椎，抗結核藥物是主要的治療方式，外科手術為輔助療法，其預後會受感染嚴重度及是否接受適當介入影響。本研究目的是探討物理治療對於結核性脊椎炎術後功能恢復之效益。**方法：**64 歲男性，2020 年 6 月 20 日因無法行走就醫，經核磁共振發現胸椎二三節間椎間盤炎和硬膜外腫塊，診斷為結核性脊椎炎，接受椎板切除手術後，7 月 1 日物理治療介入。理學檢查依美國脊髓損傷學會為胸椎第四節等級 C；中度協助翻身、轉位，大量協助躺到坐；坐姿平衡尚可、站姿平衡差；無法行走；中度協助用助行器坐到站至多 3 次；修正式巴氏量表 (Modified Barthel Index, MBI) 18 分。物理治療計畫為每次 50 分鐘，一週五次，治療內容為肌耐力、平衡、行走及功能訓練。**結果：**經三週物理治療介入，病人能力改善如下：提醒下翻身，輕度協助轉位，中度協助躺到坐；坐姿平衡進步至良好；中度協助用助行器平地行走 2 公尺；監督下用助行器坐到站 10 次；MBI 進步至 29 分。**結論：**對於結核性脊椎炎術後個案，物理治療介入可有效改善肌耐力、平衡、行走及功能。**臨床意義：**結核性脊椎炎之脊髓損傷，造成日常生活依賴他人協助，物理治療介入可以有效的恢復功能，提供臨床物理治療參考資訊。■

▶ **P31**

DOI:10.6215/FJPT.202212.P31

探討腦中風失能狀況改善程度之預測因子——急性後期計畫個案之初步分析

杜建廣　白宜珊　李宥蓉　葉增邑　吳政哲　羅惠郁*

衛生福利部桃園醫院新屋分院復健科

Analysis of Predictors for Physical Disability Improvement in Stroke Patients—A Pilot Study of Post-Acute Care Plan

Chien-Kuang Tu　I-Shan Pai　Yu-Jung Li　Tseng-I Yeh　Cheng-Che Wu　Huei-Yu Lo*

Department of Rehabilitation, Xinwu Branch, Taoyuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan

背景與目的：腦中風急性後期計畫 (Post-Acute Care-Cardiovascular Disease Program, PAC-CVD) 為針對發病一個月內腦中風住院患者，進行高強度之復健計畫，以減少失能並增進功能。本研究探討 PAC-CVD 個案初評表現是否能預測失能改善程度。**方法：**納入 81 位接受 PAC-CVD 之個案，敘述性統計分析基本資料，Spearman's rank 分析年齡、性別、中風類型及六項常規臨床量表初評結果等變項，與修正後雷氏量表 (Modified Rankin Scale, mRS) 改善量（後測減去前測分數之絕對值，ΔmRS）之相關性。透過線性逐步迴歸分析找出預測因子，應變項為 ΔmRS；自變項為與應變項具顯著相關者。另用接受者操作特徵曲線 (receiver operating characteristic curve) 圖以曲線下面積 (area under the curve, AUC) 判斷預測因子鑑別失能改善程度之準確度，找出最佳預測切點。**結果：**個案平均年齡為 62 (±14)，以缺血型腦中風男性為主，mRS 初評以 4 分居多，PAC-CVD 執行日數 58 (±23)。分析發現伯格氏平衡量表 (Berg Balance Scale, BBS) (r = 0.51, p < 0.001) 及巴氏量表 (Barthal Index, BI) (r = 0.38, p = 0.001)，與 ΔmRS 具顯著相關，納入迴歸模型，結果篩出 BBS (β = 0.430, p < 0.001)，解釋力為 18.5%；BBS 之 AUC 為 0.802；以 BBS 預測 mRS 改善與否，切點落在 4.5。**結論：**PAC-CVD 個案初始平衡能力越佳，失能改善程度越大（解釋力 18.5%）。BBS 初評結果若大於／等於 5 分者，接受計畫後其失能程度較低於 5 分者更可獲得改善。**臨床意義：**本案提供預測 PAC-CVD 預後及擬定治療方向之參考。■

▶ **P32**

DOI:10.6215/FJPT.202212.P32

頸椎神經根病變伴隨肌肉萎縮患者接受視覺反饋訓練系統介入之成效——個案報告

杜建廣　蔡侑倢　葉禹良　黃怡婷　羅惠郁　游宜臻*

衛生福利部桃園醫院新屋分院復健科

Effectiveness of Visual Feedback Movement Training System for Patient With Cervical Radiculopathy Complicated Muscle Atrophy—A Case Report

Chien-Kuang Tu　Yu-Chieh Tsai　Yu-Liang Yeh　Yi-Ting Huang　Huei-Yu Lo　Yi-Chen Yu*

Department of Rehabilitation, Xinwu Branch, Taoyuan General Hospital, Ministry of Health and Welfare

背景與目的：頸神經根病變 (cervical radiculopathy) 每年發生率為 83.2/100,000，常見於 50 ~ 54 歲男性。除神經壓末造成的感覺異常外，亦可能出現肌無力、肌萎縮，進而影響日常生活品質。本研究報告一名頸神經根病變患者接受視覺反饋訓練

系統後的改善成效。**方法：**一名 C5、6 頸神經根病變患者伴隨肌肉萎縮之 65 歲男性個案，經臨床肌電圖檢測檢查後發現左側三角肌及棘下肌有去神經化及肌肉萎縮狀況。常規治療無法進步。本研究使用 MediTutor® 視覺反饋訓練系統，進行 12 週的肩水平內收—外展及屈曲—伸展（各 10 分鐘）的視覺反饋訓練並進行肩關節主動動作角度及目標角度達成度（以遊戲得分表示）評量。**結果：**在 12 週訓練中共執行 35 次訓練。肩關節主動關節活動角度前後變化（前／後角度）分別為：水平內收—外展分別為 42/56 度、屈曲—伸展為 42/60 度。目標角度達成度方面，水平內收—外展訓練前／後是 949/993 分，屈曲—伸展訓練前／後是 43/52 分。**結論：**個案在進行 12 週視覺反饋訓練後，提升頸椎神經根病變伴隨肌肉萎縮者之肩部主動關節活動，推測肩關節水平內收—外展／屈曲—伸展之肌力提升有關。**臨床意義：**視覺反饋訓練對頸椎神經根病變伴隨肌萎患者之運動成效參考。■

▶ P33

DOI:10.6215/FJPT.202212.P33

物理治療對第一型涎酸酵素缺乏症候群患者功能恢復之療效：個案報告

黃俊喬 [1]　潘冠碩 [2,*]

[1] 國立臺灣大學醫學院物理治療學系暨研究所

[2] 國立臺灣大學醫學院附設醫院復健部物理治療技術科

The Effects of Physical Therapy on Functional Recovery for the Patient with Sialidosis, Type I: A Case Report

Chon Kio Wong[1]　Guan-Shuo Pan[2,*]

[1] School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University, Taipei, Taiwan

[2] Division of Physical Therapy, Department of Physical Medicine and Rehabilitation, National Taiwan University Hospital, Taipei, Taiwan

背景與目的：第一型涎酸酵素缺乏症是罕見的體染色體隱性遺傳疾病。會導致肌痙攣、共濟失調、癲癇等退行性症狀，每年發生率為五百萬人之一。本篇目的是物理治療對此患者功能恢復之療效。**方法：**用個案處理模式與國際功能、失能和健康分類做評估及介入。將結果參考過去文獻設計個案的協調、平衡及行走的目標和計畫。本個案是發病 13 年的 23 歲女性，多次癲癇發作，全身共濟失調，現以電動輪椅代步。理學檢查四肢肌力為 5 分；共濟失調障礙評估量表為 21/40。動態坐姿平衡為尚可；靜／動態站姿平衡分別為好／差，但中度搖晃。可用輪式助行器走 10 公尺，速度 0.06 公尺／秒。因個案全身性共濟失調而無法維持日常生活。參考實證以協調及任務導向訓練做治療。治療計畫為每次 40 分鐘、每週 2 次、共 4 週。**結果：**4 週治療後，動態坐姿平衡進步到好，靜／動態站姿平衡分別進步到正常／尚可；行走功能在監督下用輪式助行器進步到 100 公尺，速度進步到 0.33 公尺／秒，共濟失調障礙評估量表進步至 24 ／ 40。**結論：**協調及任務導向訓練後，個案的坐姿、站姿平衡及行走功能出現明顯進步。**臨床意義：**此罕病由於全身動作控制較差，但藉此個案得知物理治療可有效改善協調、平衡與行走功能，讓個案能維持日常生活。■

▶ P34

DOI:10.6215/FJPT.202212.P34

運用德菲法探討物理治療師臨床治療管理問題：以急性腦中風住院病人為例

王雲充[1] 黃純政[1,*] 蕭雅方[2]

[1] 義大醫療財團法人義大醫院物理治療組

[2] 義大醫療財團法人義大癌治療醫院復健科

Using the Delphi Method to Discuss the Clinical Treatment Management of Physical Therapists: Take Hospitalized Patients With Acute Stroke as an Example

Yun-Chung Wang[1] Chun-Cheng Huang[1,*]
Ya-Fang Hsiao[2]

[1] Department of Physical Therapy, E-DA University Medical Center of E-DA Medical Foundation, Kaohsiung, Taiwan

[2] Department of Physical Medicine and Rehabilitation, E-DA Cancer Hospital, Kaohsiung, Taiwan

背景與目的：早期離床活動為急性中風病人恢復功能之主要治療策略，然而急性中風病人早期的醫療與照護狀況較多，導致治療師在療效管理上往往面臨較大壓力，又加上臺灣健保復健給付仍為以時間為門檻之論量計酬，往往導致在臨床上物理治療師對於個別病人治療時間管理與個別化治療目標達成的兩難。故本研究嘗試統整治療師之共識以利未來能發展出能兼顧兩者之治療模式。**方法：**本研究採取德菲法 (Delphi method)，對象為年資 10 年以上之資深神經物理治療師。第一階段：以開放式問卷填寫問題；第二階段：彙整問題並評分。第三階段：聚焦問題與共識。**結果：**共 10 位資深物理治療師參與，最優先之三項問題為：(1) 照護者及病人無法配合轉位訓練，(2) 相同治療時間不適合不同病人需求，(3) 一對多治療管理不便。**結論：**下床輪椅轉位的訓練仍然是在住院期間最困擾治療師的問題，其原因並非單純病人問題，還牽涉到照護者能力或配合度；此外治療目標及項目的完成度似乎相較治療時間的限制更有意義；由於治療師必須隨時監測病人的生命徵象及治療反應，故不應同時安排太多病人。**臨床意義：**治療師應先思考讓病人與照顧者順利轉位的有效策略；應發展標準化臨床訓練以利醫療資源與療效管理。■

▶ P35 DOI:10.6215/FJPT.202212.P35

神經動力學手法與伸展運動對於腿後肌柔軟度之療效：系統性回顧與統合分析

莊雅蘭[1,2] 林宜靜[2] 王淳厚[2] 吳盈瑾[2] 蔡永裕[1,2]
葉純妤[2,*]

[1] 澄清醫院中港分院復健治療中心

[2] 中山醫學大學醫學科技學院物理治療學系

The Effects of Neurodynamic Technique Versus Stretching on Hamstrings Flexibility: A Systematic Review and Meta-Analysis

Ya-Lan Chuang[1,2] Yi-Ching Lin[2] Chun-Hou Wang[2]
Ying-Chin Wu[2] Yung-Yun Tsai[1,2] Chun-Yu Yeh[2,*]

[1] Department of Physical Medicine and Rehabilitation, Cheng Ching Hospital Chung Kang Branch, Taichung, Taiwan

[2] Department of Physical Therapy, College of Medical Science and Technology, Chung Shan Medical University, Taichung, Taiwan

背景與目的：理想的腿後肌群柔軟度可提升健康民眾正常功能活動的表現能力。腿後肌群柔軟度的任何變化都可能導致關節受力不平衡，進而造成傷害，例如：下背痛、足底筋膜炎、肌肉拉傷或是髕骨股骨症候群。目前對於柔軟度的改善，除了傳統靜態與動態伸展外，神經動力學也是手法之一，然而對於神經動力學手法產生的成效，是否比傳統的伸展更好，目前仍未定論。藉由系統回顧和統合分析來統整神經動力學與伸展運動對腿後肌群柔軟度的立即與累積效果，統計結果可提供較佳的建議來改善柔軟度，並提供臨床

參考。**方法：**搜索相關資料庫之文獻至 2022 年 4 月為止，關鍵字為：Hamstring/Not low back pain；Neurodynamic technique/Nerve gliding；Static stretch/Dynamic stretch；Flexibility/Knee extension angle/Straight leg raise，並使用 Review Manager 5.4 版軟體進行統合分析。**結果：**總共 7 篇英文文獻符合條件進行統計分析。神經動力學手法於膝伸直測試角度之立即療效 (MD = –4, 95% CI = –6.28 ~ –1.72, p = 0.0006) 與直膝抬腿測試角度之立即 (MD = 3.87, 95% CI = 1.22 ~ 6.52, p = 0.004) 與累積療效 (MD = 2.92, 95% CI = 0.49 ~ 5.36, p = 0.02) 均達到顯著的改善，且統計結果顯示神經動力學手法較伸展運動佳。**結論：**腿後肌群柔軟度在神經動力學手法介入後，在立即與累積療效上較伸展運動有改善柔軟度的趨勢。神經動力學可有效改善腿後肌群柔軟度並且比伸展運動佳。**臨床意義：**本研究結果可提供臨床對於腿後肌群緊繃治療策略之參考。■

▶ P36

DOI:10.6215/FJPT.202212.P36

觀察身體活動量對健康年輕人圓肩與頭部前傾姿勢的影響

林永霖　白大緯　林昱辰　阮光庭　宋明鴻　康富傑*

輔英科技大學物理治療系

To Observe the Influence of Physical Activity on Round Shoulder Posture and Forward Head Posture in Healthy Young Adults

Yong-Lin Lin　Da-Wei Bai　Yu-Chen Lin　Guang-Ting Ruan　Ming-Hong Song　Fu-Jie Kang*

Department of Physical Therapy, Fooyin University, Kaohsiung, Taiwan

Background and Purpose: Several studies proposed that healthy young adults with low physical activity level showed poor musculoskeletal health. Besides, studies also indicated that sedentary adults tended to have faulty posture such as round shoulder posture and forward head posture. However, there are few studies of investigating the influence between physical activity level, forward head posture, and round shoulder posture. Therefore, our study focus on the influence of physical activity on round shoulder posture and forward head posture in healthy young adults. **Methods:** 20 healthy young adults (21.28 ± 0.71 years) with high physical activity level (≥ 3000 MET/week) and 20 healthy ones (21.18 ± 1.22 years) with low physical activity level (< 3000 MET/week) were recruited in this study. To measure their physical activity level, both groups underwent the International Physical Activity Questionnaire (IPAQ). The scapular index (SI) would calculate to access the round shoulder posture. Besides, the craniovertebral angles (CVA) would calculate to access the forward head posture. The independent t-test was used to examine for differences in SI and CVA between the 2 groups. **Results:** There was significant difference in SI for the two groups (p = 0.023). Moreover, the low physical activity group (SI = 66.75 ± 5.97) showed lower SI than the high physical activity group (SI = 70.72 ± 3.43). However, there was no significant difference in CVA between the two groups (p = 0.345). Conclusions: Following this study, health young adults with low physical activity level could negatively affect shoulder posture but couldn't affect the head posture. **Clinical Relevance:** For health considerations, a regular check to round shoulder posture in low physical activity level subjects is necessary. ■

▶ P37

DOI:10.6215/FJPT.202212.P37

以生物力學架構思考反向式肩關節置換物理治療介入模式：文獻回顧

王品沅　李婕寧　郭禹莛　葉容慈　陳秀碧
黃文虹 *
高雄長庚紀念醫院復健科物理治療組

A Physical Therapy Interventional Model for Patients After Reverse Total Shoulder Arthroplasty in a Biomechanical Framework: A Literature Review

Ping-Yuan Wang　Jie-Ning Li　Yu-Ting Guo
Jung-Tzu Yeh　Hsiu-Pi Chen　Wen-Hung Huang*
Department of Physical Therapy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

背景與目的：反向式肩關節置換術 (reverse total shoulder arthroplasty, rTSA) 提供肩關節穩定、減緩疼痛及增加生活功能。rTSA 與一般肩關節結構相反，改變肩關節生物力學。本篇透過資料蒐集，探討生物力學改變對物理治療計劃的影響，提供 rTSA 術後介入參考。**方法：**搜索 PubMed 資料庫文獻至 2021 年 10 月，關鍵字：reverse shoulder arthroplasty、rehabilitation、reverse shoulder arthroplasty rehabilitation 及 biomechanics。**結果：**共納入 13 篇符合條件之文獻。首先，rTSA 後盂肱關節 (glenohumeral joint, GH) 旋轉中心向內移動至球型盂植體 (glenosphere)，使三角肌 (deltoid muscle, Dm) 力臂變長、提高動作效率與 GH 穩定度。接著，rTSA 肱骨頭向下移動使 Dm 長度及張力增加，提升動作效益。再者，rTSA 肩胛肱骨節律 (scapulo-humeral rhythm, SHR) 由 1:2 (scapula : GH) 變為 1:1.3，使肩胛動作對肩關節上抬貢獻更多。最後，肌電圖顯示 rTSA 患者上斜方肌 (upper trapezius, UT) 在各方向動作成為主要活化肌，且在肩關節屈曲時最明顯活化；闊背肌 (latissimus dorsi, LD) 協助肩關節內轉；三角肌後束 (posterior Dm) 協助肩關節外轉。因此，rTSA 患者的 Dm 成為上抬動作的主要肌群。而 SHR 改變，讓肩胛周圍肌群 (peri-scapular muscle, P-SM) 對肩關節上抬更為重要，且 UT 有較明顯活化。而 LD 及 posterior Dm 在肩關節內外轉有顯著貢獻。**結論：**依據文獻回顧結果，建議可以針對 Dm（前中後束）、P-SM（肩胛上轉肌群、穩定肌群）及 LD 訓練。**臨床意義：**rTSA、SHR 及肌肉活化狀態與一般肩關節有明顯差異。術後介入應著重 P-SM、Dm 及 LD 的訓練。■

▶ P38

DOI:10.6215/FJPT.202212.P38

棒球選手在單一賽季前後之尺側副韌帶厚度變化：系統性回顧與統合分析

林昱均　周彥菱　劉文瑜　陳柏村 *
長庚大學物理治療學系暨復健科學研究所

The Changes of Ulnar Collateral Ligament Thickness After a Season in the Baseball Players: A Systematic Review and Meta-Analysis

Yu-Chun Lin　Yen-Ling Chou　Wen-Yu Liu
Po-Tsun Chen*
School of Physical Therapy and Graduate Institute of Rehabilitation Sciences, College of Medicine, Chang Gung University, Taoyuan, Taiwan

Background and Purpose: Medial elbow pain is a common injury in the baseball players, which may be caused by the increased valgus stress on the elbow. The amount of external rotation of shoulder and flexion of elbow during late-cocking phase is considered to determine the valgus stress. The repetitive stress may contribute to the morphological alterations of ulnar collateral ligament (UCL) after series of practice. This review aims to investigate the changes in the UCL thickness in baseball players after a season. **Methods:** Search was performed by using PubMed, Medline and Scopus based on the keywords of Baseball players,

Pitchers, Ulnar collateral ligament, Elbow medial collateral ligament, Season, Ultrasound, Dynamic ultrasound, and Sonography and the published date until April 2022. The Critical Appraisal Skills Programme (CASP) checklist was used to assess the quality of studies. Meta-analysis was performed by using Review Manager software (version 5.4). The effects were summarized with standardized mean differences (95% confidence intervals) by random effect models. A significant level was set at 0.05. **Results:** Four studies were recruited, including a total of 52 subjects (22 high school pitchers and 30 collegiate pitchers). Those studies reported that UCL thickness was significantly increased after a season. However, the meta-analysis did not show the significance in total effect size for UCL thickness (p = 0.09; –1.59 [95% CI = –3.44, 0.26]) with high heterogeneity (p = < 0.00001; I^2 = 93%). The study quality ranged from 9 to 11 by CASP scale. Conclusions: The current results are unable to show the significance, which may be due to the pitchers from different levels with varied tendon thickness and the insufficient studies addressed this issue. The biomechanical factors which impose stress on UCL during throwing should be identified to prevent the further injures. **Clinical Relevance:** Adequate recovery strategy should be administrated to reduce the stress on UCL and to restore the adaptive changes. ■

▶ **P39**

DOI:10.6215/FJPT.202212.P39

肌貼對肩旋轉肌袖肌腱炎之疼痛影響：系統性回顧

林珮珊　廖翊伶　葛沂臻　蔡佳穎　郭祖祥 *

仁德醫護管理專科學校復健科

The Effects of Kinesio Tape on Pain Control in Patients With Rotator Cuff Tendinitis: A Systematic Review

Pei-Shan Lin　Yi-ling Liao　Yi-Chen Ko
Jia-Ying Tsai　Tsu-Hsiang Kuo*

Department of Rehabilitation Science, Jen-Teh Junior College of Medicine, Nursing and Management, Miaoli, Taiwan

背景與目的：肩旋轉肌袖肌腱炎 (rotator cuff tendinopathy, RCT) 可能包含了棘上肌、棘下肌、小圓肌與肩胛下肌四條肌肉的共同傷害。肌貼 (Kinesio tape, KT) 有四種生理作用：促進或抑制肌肉收縮、增加血液／淋巴循環、止痛及矯正關節排列。**方法：**本研究由 PubMed、物理治療實證資料庫量表 (Physiotherapy Evidence Database, PEDro) 及華藝電子資料庫進行收尋，關鍵字包括：rotator cuff tendinitis、kinesio taping/kinesiotape/kt 及 pain scale。收錄之文章須符合：受測者患有 RCT，且使用 KT 治療，並評估 Visual Analog Scale (VAS) 疼痛量表的降低程度。**結果：**共收錄 2 篇文獻作為探討，第一篇為體外震波治療 (extracorporeal shock wave therapy, ESWT) + KT 組與 ESWT 組的比較，發現 ESWT + KT 在 VAS 上的改善顯著大於 ESWT (p = 0.0001)。與 ESWT 組相比，ESWT + KT 組於短期間內有顯著改善患者的疼痛 (p < 0.05)，在中長期的實驗亦得到相似結果，可知 KT 可以加成 ESWT 降低 RCT 造成疼痛之效果；另一篇則是 KT 組與安慰劑組的比較，同樣以 VAS 量表作評估。結果顯示 KT 與安慰劑組皆可降低 RCT 疼痛程度，兩組比較無統計差異，且 KT 的貼紮方式與位置並不影響疼痛改善的效果。**結論：**研究顯示 KT 是治療 RCT 的方法之一，且可協同震波治療等來降低疼痛，但在單獨使用 KT 時降低疼痛的成效有待更多的研究證實。**臨床意義：**研究實證 KT 能改善 RCT 的疼痛程度，若配合 ESWT 可能延長或提升治療效果。■

▶ P40

DOI:10.6215/FJPT.202212.P40

臨床情境訓練對於畢業後兩年期物理治療師之學習成果分析

邱政凱* 陳柏宏 洪詠淳

彰化基督教醫院物理治療組

Analysis of the Outcomes of Clinical Scenario Training for Post-Graduate Year Training in Physical Therapy

Cheng-Kai Chiu* Po-Hung Chen Yung-Chun Hung

Department of Physical Therapy, Changhua Christian Hospital, Changhua, Taiwan

背景與目的：目前於畢業後兩年期物理治療師之訓練計畫中，常以讀書會、專題報告和個案討論會之方式訓練新進學員，但是常發現學員無法將所學有效應用於臨床並訂定治療策略。因此為增進學員之臨床銜接能力，於訓練計畫中加入臨床情境之模擬討論，並探討其學習成果，以提供學習計畫之修正建議。**方法：**本篇研究收案八名學員，訓練時程半年，其中四名接受一般訓練計畫，另外四名學員接受增加臨床情境模擬之訓練，並以五分制之學習成效及滿意度問卷，探討學習成果。**結果：**增加臨床情境模擬之訓練後，學員在學習成效與滿意度問卷之總分皆有提升。由於樣本數小 (n = 8)，所以採用無母數統計之曼恩—惠尼 U 檢定 (Mann-Whitney U test)，在顯著水準 0.05 下，於教學互動之項目的總分從 11 分進步到 25 分，p 值為 0.032 (< 0.05)；以及教學課程是否符合學員預期目標之項目，總分從 12 分進步到 24 分、p 值 0.040 (< 0.05)，皆達統計上顯著差異，但在臨床溝通協調之項目總分是退步的，於提升自我學習動機以及增進同儕互助等項目總分為持平。**結論：**將臨床情境之模擬討論納入訓練計畫中，對於學習成果有正向之增益趨勢，並應針對訓練計畫中不足之項目，調整未來之教學方式。**臨床意義：**畢業後兩年期物理治療師之訓練計畫應規劃多面向之課程方式，跳脫傳統教學模式，增進學員各個面向之臨床銜接能力。■

▶ P41

DOI:10.6215/FJPT.202212.P41

大專棒球野手功能性動作檢測之特徵

邱俊文[1,2] 張曉昀[3,*] 郭勇志[4]

[1] 國立體育大學競技與教練科學研究所

[2] 國立體育大學球類運動技術學系

[3] 國立體育大學運動保健學系

[4] 國立臺灣體育運動大學體育室

The Characteristic of Functional Movement Screening for Collegiate Baseball Fielders

Chun-Wen Chiu[1,2] Hsiao-Yun Chang[3,*]
Yung-Chih Kuo[4]

[1] Graduate Institute of Athletics and Coaching Science, National Taiwan Sport University, Taoyuan, Taiwan
[2] Department of Sport Training Science-Balls, National Taiwan Sport University, Taoyuan, Taiwan
[3] Department of Athletic Training and Health, National Taiwan Sport University, Taoyuan, Taiwan
[4] Physical Education Office, National Taiwan University of Sport, Taichung, Taiwan

背景與目的：棒球打擊動作是旋轉性且單側化運動，易造成單邊肌肉的發展，進而影響功能性動作的不對稱。功能性動作篩檢 (functional movement screening, FMS) 可用以瞭解選手的動作偏差及失能、並預防進一步發展成傷害的動作失能模式。本研究目的是比較大專棒球野手 FMS 特徵。**方法：**24 位大學甲一級棒球野手參與實驗（內野手 11 位、捕手 4 位、外野手 9 位），使用 FMS 設備及一位通過 FMS 篩檢認證課程治療師進行檢測，篩檢共包含七項動作：深蹲、跨欄、直線弓步蹲、肩膀活動度、主動直膝抬腿、

軀幹穩定伏地挺身、及旋轉穩定，篩檢動作均根據執行 FMS 動作品質來評分，每個項目為 0 ~ 3 分。以卡方分析大專棒球野手守備位置與功能性動作型態之評分結果。**結果：**所有選手總分平均為 13.5 ± 1.8 分，在七個項目內野手、外野手及捕手在評分分數上的人數分布均無顯著差異 ($p > 0.05$)。深蹲、跨欄、直線弓步蹲、主動直膝抬腿、及旋轉穩定以 2 分人數最多（分別占 66.7%、75.0%、54.2%、70.8%、45.8%），肩膀活動度以 1 分人數最多 (70.8%)，軀幹穩定伏地挺身以 3 分人數最多 (54.2%)。**結論：**FMS 篩檢在野手守備位置雖無明顯差異，但其中肩部柔軟度分數較低，可能因長期投擲與守備關係，應加強野手的上肢柔軟度。**臨床意義：**FMS 篩檢可瞭解大專野手之身體功能性動作型態。■

▶ P42

DOI:10.6215/FJPT.202212.P42

腓腸肌牽拉對快走時髖關節動作的影響

黃純政[1]　黃純德[2]　吳錫昆[3]　羅世忠[4]　游家源[5,*]

[1] 義大醫院復健科
[2] 義大癌治療醫院復健科
[3] 弘光科技大學物理治療系
[4] 中山醫學大學職能治療學系
[5] 義守大學物理治療學系

The Effect of Gastrocnemius Stretch on Hip Joint Movement During Fast Walking

Chun-Cheng Huang[1]　Chun-De Huang[2]
Shyi-Kuen Wu[3]　Shu-Zon Lou[4]　Jia-Yuan You[5,*]

[1] Division of Rehabilitative Medicine, E-DA Hospital, Kaohsiung, Taiwan
[2] Division of Rehabilitative Medicine, E-DA Cancer Hospital, Kaohsiung, Taiwan
[3] Department of Physical Therapy, HungKuang University, Taichung, Taiwan
[4] Department of Occupational Therapy, Chung Shan Medical University, Taichung, Taiwan
[5] Department of Physical Therapy, I-Shou University, Kaohsiung, Taiwan

背景與目的：過去研究發現腓腸肌緊縮會影響患者的步態並造成下肢關節肌肉傷害。本研究目的在探討靜態牽拉對腓腸肌緊縮患者在快走時髖關節動作的影響。**方法：**腓腸肌緊縮患者分成牽拉和未牽拉組，腓腸肌柔軟度為 0 ~ 10 度。控制組為正常柔軟度。受試者共 12 人，每組皆為 2 男 2 女。牽拉組進行 20 分鐘靜態牽拉。以動作分析系統量測並取得關節角度和力矩。腓腸肌緊縮程度以關節角度輸入數學模式估算。以 one-way ANOVA 比較三組在快走的腓腸肌最緊時的緊縮程度、髖關節角度和力矩的差異。以 LSD 法 (least significance difference) 進行事後比較。**結果：**快走時的腓腸肌最大緊縮程度有顯著差異 ($p = 0.003$)，未牽拉組 (100 ± 0.3%) 顯著較控制組 (98.3 ± 0.2%) 和牽拉組 (99.1 ± 0.4%) 大（p 分別為 0.001 和 0.048）。在腓腸肌最緊時，三組的髖關節彎曲角度有顯著差異 ($p = 0.008$)。牽拉組（4.2 ± 2.0 度）和未牽拉組（1.0 ± 4.7 度）明顯較控制組（–5.7 ± 2.0 度）大（p 分別為 0.003 和 0.022）。三組的髖關節力矩有顯著差異 ($p = 0.023$)。未牽拉組 (0.44 ± 0.07 Nm/kg) 明顯較控制組 (0.25 ± 0.10 Nm/kg) 和牽拉組 (0.23 ± 0.12 Nm/kg) 大（p 分別為 0.020 和 0.012）。**結論：**本研究發現靜態牽拉能降低腓腸肌緊縮程度。但牽拉組的髖關節角度仍和正常控制組不同。**臨床意義：**快走時，靜態牽拉可改善患者腓腸肌緊縮程度和髖關節力矩表現，但髖關節彎曲角度較大，顯示單只有靜態牽拉不足以改善在快走時在髖關節的異常動作。■

▶ P43 DOI:10.6215/FJPT.202212.P43

111 年全國大專校院運動會醫護站使用及急性運動傷害調查

張曉昀[1] 張耘齊[2,*]

[1] 國立體育大學運動保健學系
[2] 輔仁大學體育學系

A Survey on the Use of Medical Stations and Acute Sports Injuries on the National University and College Athletic Games 2022

Hsiao-Yun Chang[1] Yun-Chi Chang[2,*]

[1] Department of Athletic Training and Health, National Taiwan Sport University, Taoyuan, Taiwan
[2] Department of Physical Education, Fu Jen Catholic University, New Taipei City, Taiwan

背景與目的：全國大專校院運動會為大專運動員重要比賽，運動員為了爭取成績常發生急性傷害，本研究目的探討大型賽會運動員發生急性傷害比率及使用醫護站頻率，以做為大型賽會醫療及運動傷害管理應用。**方法：**研究對象為 111 年全國大專校院運動會選手，共 23 項運動（總人數 8,468 人），資料收集以運動會官方網站健康管理系統為主（賽事期間 111/4/7 ~ 5/11），收集內容包括運動項目、性別、到醫護站方式、初判受傷原因、受傷部位、處理措施及後續處理離開方式，所有傷害診斷以現場醫師及護理師為主，將賽事期間選手受傷資料收集後以描述性統計分析。**結果：**受傷共 498 人次（男性 248 人／女性 250 人），總傷害率為 5.88%，受傷人次以羽球（295 人次）最多，到站方式以自行步入最多 (90.76%)，初判受傷原因以肌肉痠痛最多（總傷害率 34.14%），受傷部位以膝部最多（總傷害率 13.65%），處理措施以冰敷最多（190 人次）、後續處理離開方式以自行步出最多（427 人次，占總傷害率 85.74%），救護車後送醫院 19 人次，以骨折／脫臼診斷為主，項目以技擊性項目為最多。**結論：**由此次賽會資料可知總傷害比率為 5.88%，受傷項目以羽球最多，重大傷害送醫以技擊性項目為主。**臨床意義：**本研究結果提供大型賽會醫護人力安排調度及急性傷害處置與送醫之建議。■

▶ P44 DOI:10.6215/FJPT.202212.P44

因壞死性筋膜炎接受髖關節離斷截肢術後急性至亞急性期物理治療成效：個案報告

陳得瑞[1] 吳敏真[1,*] 曾姝婷[2]

[1] 衛生福利部桃園醫院物理治療科
[2] 衛生福利部桃園醫院護理科

The Effect of Acute and Subacute Phase Physical Therapy of a Hip Disarticulation Amputee With Necrotizing Fasciitis: A Case Report

Derek Chen[1] Min-Chen Wu[1,*] Shu-Ting Tseng[2]

[1] Department of Physical Therapy, Tao-Yuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan
[2] Department of Nursing, Tao-Yuan General Hospital, Ministry of Health and Welfare, Taoyuan, Taiwan

背景與目的：髖關節離斷截肢移除患者股骨頭以下肢體，僅保留骨盆髖臼，對身體活動功能與生活品質恢復極具挑戰。**方法：**55 歲糖尿病男性病患，左下肢壞死性筋膜炎合併腔室症候群，合併敗血性休克與肌肉壞死，行髖關節離斷術控制感染擴散，術後因敗血症與肺炎導致呼吸器依賴。物理治療於術後第五天待生命徵象穩定（心跳小於 120 bpm，平均動脈壓大於 65 且呼吸速率小於 40 bpm）後介入，術後第五至第八日使用呼吸器期間給予胸腔物理治療、上肢肌力訓練

及床邊坐姿訓練，以避免臥床與肺部併發症。脫離呼吸器後加強右下肢肌力、耐力與站姿平衡訓練，以提高日常生活功能。傷口癒合穩定後著重殘肢去敏與疤痕組織軟化與患側承重訓練，及雙腳平均載重、重心轉移、動態步態等義肢訓練。個案自急性病房開始接受物理治療介入 12 週及亞急性病房 6 週後出院。**結果：**本個案轉出急性病房時可獨立下床以輪椅活動或助行器輔助短距離單腳跳躍式行走，出院時助行器輔助以義肢獨立行走100公尺及扶手輔助上下一層樓梯。**結論：**髖關節離斷截肢雖可有效控制感染擴散，然而完全移除股骨後義肢使用困難、幻肢疼痛、身體殘缺意象對患者是極大的挑戰。透過物理治療從急性至亞急性期的照護，隨患者能力與心理狀態調整治療策略，給予生活品質上最大的提升。**臨床意義：**髖關節離斷截肢極為罕見，此個案由術後急性床邊治療至亞急性義肢訓練之經驗，可作為未來類似個案治療上之參考。■

▶ P45

DOI:10.6215/FJPT.202212.P45

物理治療介入對於臂叢神經損傷患者經神經轉位術後功能恢復之成效探討：個案報告

黃元貞 * 陳俊佑

戴德森醫療財團法人嘉義基督教醫院復健治療科物理治療組

The Effect of Physical Therapy in a Patient With Brachial Plexus Injury after Nerve Transfer: A Case Report

Yuan-Chen Huang* Jiun-You Chen

Group of Physical Therapy, Department of Rehabilitation, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi, Taiwan

背景與目的：臂叢神經損傷 (brachial plexus injury, BPI) 是嚴重的上肢神經傷害，其主因以牽引性拉傷為大宗，易導致運動及感覺功能異常。近年來，外科手術以神經轉位術為趨勢。神經轉位術經研究證實，能縮短住院天數、更少活動限制及加快術後恢復時間。本篇個案報告目的為探討臂叢神經損傷患者接受神經轉位術後物理治療介入之功能恢復成效。**方法：**個案為 25 歲男性，2021 年 4 月因車禍造成右側肱骨骨折合併臂叢神經損傷，接受肱骨內固定手術，術後因右上肢失能，2021 年 7 月接受神經轉位術，2021 年 8 月接受物理治療。理學檢查包括右上肢肌力、握力；功能性問卷使用上肢功能受損程度問卷（Disability of Arm, Shoulder and Hand, DASH）。物理治療每週 3 次，每次治療時間為 30 分鐘，為期 4 個月。物理治療計畫為右上肢動作誘發、肌力訓練及上肢功能性訓練。**結果：**為期四個月物理治療前後對比，右上肢肩屈肌、肩外展肌及肘屈曲肌肌力由 3 分進步到 5 分；肘伸直肌及腕屈曲肌肌力由 2 分進步到 5 分；腕伸直肌及手指伸直肌肌力由 0 分進步到 3 分；右側握力進步至 24 公斤；DASH 失能分數從 86 分降低至 19 分。**結論：**個案經物理治療介入後，改善右上肢肌力、握力及降低上肢失能程度。**臨床意義：**臂叢神經損傷患者多為年輕族群，經神經轉位術後接受物理治療介入可回復上肢功能並返回工作職場。■

▶ P46

DOI:10.6215/FJPT.202212.P46

探討正常人骨盆鐘壓力中心面積和骨盆運動品質的關係

黃純政 [1] 林惠婷 [2,*]

[1] 義大醫療財團法人義大醫院復健科

[2] 義守大學物理治療學系

Exploring the Relationship Between the Area Enclosed by the Pelvic Clock Center of Pressure and the Quality of Pelvic Clock Motion in Normal Subjects

Chun-Cheng Huang[1] Hui-Ting Lin[2,*]

[1] Department of Rehabilitation, E-Da Hospital, Kaohsiung, Taiwan
[2] Department of Physical Therapy, I-Shou University, Kaohsiung, Taiwan

背景與目的：骨盆鐘運動 (pelvic clock motion) 可作為治療和評估尿失禁、產後或姿勢性下背痛的手段。傳統評量動作表現過於主觀，所以輔以新興科技量化骨盆動作參數來客觀評量。本研究目的為發展量化的骨盆動作品質參數來評量骨盆動作品質。**方法：**招募 34 位近三個月內無下背痛的受試者，在基線 (baseline) 與其 2 週後各進行一次數據收錄。受試者於屈膝正躺下執行骨盆鐘並使用 Wii Fit 平衡板擷取壓力中心 (center of pressure, COP) 變化。利用自行發展之骨盆評估量表（跑考）來評估受試者骨盆鐘動作。使用斯皮爾曼等級相關係數 (Spearman's rho correlation coefficients) 分析跑考和 COP 數據的相關性。**結果：**無下背痛受試者的 COP 軌跡更趨近於橢圓形 (r = 0.765)。跑考總分扣除骨盆動作方向分數及起始姿勢分數與動作品質相關數據（受試者理想圓形無填滿之面積比例、理想橢圓無填滿之面積比例跟骨盆鐘平均速率）分別呈中度負相關 (r = –0.413, r = –0.401, r = –0.434; p < 0.001)，其中當受試者 COP 軌跡越趨近正圓時，可能會有較佳得分。骨盆鐘平均速率與動作品質相關數據（受試者理想圓形無填滿之面積比例、理想橢圓無填滿之面積比例）間分別呈中度正相關 (r = 0.613; r = 0.441, p < 0.001)。**結論：**由斯皮爾曼等級相關係數的相關性結果可以預測當受試者骨盆鐘越趨近於正圓且平均動作速率越慢時，骨盆鐘動作品質可能越佳。**臨床意義：**本研究結果可提供骨盆鐘高動作品質之建議。■

▶ P47 DOI:10.6215/FJPT.202212.P47

跳躍訓練對於前十字韌帶置換患者的臨床療效：系統性回顧

陳子涵[1] 張恆誌[2,*]

[1] 安馨嘉義內科診所物理治療部
[2] 亞洲大學物理治療學系

Clinical Efficacy of Jump Training in Patients With Anterior Cruciate Ligament Replacement: A Systematic Review

Zi-Hen Chen[1] Heng-Chih Chang[2,*]

[1] Department of Physiotherapy, An Hsin Chia-Yi Clinic, Chiayi, Taiwan
[2] Department of Physical Therapy, Asia University, Taichung, Taiwan

背景與目的：前十字韌帶 (anterior cruciate ligament, ACL) 撕裂是跳躍及旋轉運動中常見的損傷。研究顯示 ACL 重建術後，膝屈肌與伸肌的共同收縮會增加，使得髕股關節產生更大的壓迫。而在膝關節置換術後的研究發現，跳躍訓練可改善肌肉緩衝能力和減少膝屈肌與伸肌共同收縮作用。然而針對 ACL 重建術後，跳躍訓練之效益仍缺乏統整性的研究結果。本研究目的在於探討使用跳躍訓練於 ACL 重建患者的臨床效益。**方法：**搜索 PubMed 與 PEDro 資料庫從西元 2016 ~ 2022 年 5 月之英文文獻，關鍵字為 ACL reconstruction、jump 和 plyometric training。 總共搜尋到 232 篇文獻，排除重複與不相關文獻後，最終納入 4 篇文獻進行探討。主要分析文獻中控制組與訓練組在動態平衡 (Y balance test,

Y-BAL)、下肢功能力 (Limb Symmetry Index, LSI)、疼痛減緩 (pain relief, PR)、個人信心 (Return to Sport Index, RSI) 及關節軟骨退化指標 (uCTX-II) 等參數的差異。利用 SPSS 22.0 軟體中獨立 *t* 檢定分析控制組與訓練組在各參數上的差異。**結果：**4 篇文獻在 PEDro 量表得分分別為 7、6、8、9，平均為 7.5 分。主要結果發現接受跳躍訓練的患者在 Y-BAL ($p < 0.0001$)、LSI ($p < 0.001$)、PR ($p < 0.05$) 及 RSI ($p < 0.01$) 等參數上均較控制組有顯著改善。然而在 uCTX-II 參數則無顯著差異。**結論：**術後慢性期透過跳躍訓練可改善 ACL 重建術後膝關節之功能並有助於增進個案重回運動場的信心。**臨床意義：**本研究結果可提供臨床 ACL 重建術後治療之建議。■

▶ P48

DOI:10.6215/FJPT.202212.P48

肌內效貼布對於膝退化性關節炎疼痛緩解之效果：系統性文獻回顧

張倉銘　謝宗勳 *

長庚大學醫學院物理治療學系

Effects of Kinesio Tape on Pain Relief in Patients With Knee Osteoarthritis: A Systematic Review

Tsang-Ming Chang　Tsung-Hsun Hsieh*

School of Physical Therapy, College of Medicine, Chang Gung University, Taoyuan, Taiwan

背景與目的：膝退化性關節炎是在日常活動造成膝蓋疼痛的主要因素之一，過去研究顯示肌內效貼布 (Kinesio tape) 能增強肌肉的收縮能力、促進循環以及緩解疼痛之效應。本研究目的為利用系統性回顧方法，探討肌內效貼布是否對於膝退化性關節炎患者有減緩疼痛之效果。**方法：**本系統性文獻回顧搜索 PubMed 和 PEDro 資料庫之相關文獻，關鍵字包含膝退化性關節炎、肌內效貼布與疼痛。**結果：**在排除非隨機對照試驗以及結合其他介入治療之文獻後，共 8 篇相關文獻納入本系統性文獻回顧，所有文獻之介入組皆僅使用肌內效貼布，控制組包含未貼紮或安慰劑貼紮組。統整文獻結果顯示：相較未貼紮組及安慰劑貼紮組，5 篇指出肌內效貼布介入當下，具顯著減緩疼痛之效果，2 篇文獻分別於介入 1 天及 3 天後進行評估，亦可顯著減緩疼痛，1 篇文獻則顯示在肌內效貼布介入 12 天後，對於疼痛改善並無顯著差異。**結論：**綜觀文獻回顧結果，推測立即或短期之肌內效貼布介入對於膝退化性關節炎較具有減緩疼痛之效益，但長期介入效益仍需進一步探討。**臨床意義：**對於膝退化性關節炎所造成之疼痛，可納入肌內效貼布作為臨床治療策略之參考，但對於其長期減緩膝退化性關節炎疼痛之效益，未來仍需更進一步驗證。■

▶ P49

DOI:10.6215/FJPT.202212.P49

運動員前十字韌帶重建術後回歸職場的復健成效：系統性回顧

謝雨彤 [1,2]　張幸初 [1,3,4]　黃婉筠 [1,5,*]

[1] 高雄榮民總醫院復健醫學部
[2] 高雄醫學大學物理治療學系
[3] 國防醫學院醫學系復健醫學科
[4] 三軍總醫院復健醫學部
[5] 成功大學健康照護所

Rehabilitation for Athletes to Return to Sports After ACL Reconstruction: A Systematic Review

Yu-Tung Hsieh[1,2]　Shin-Tsu Chang[1,3,4]
Wan-Yun Huang[1,5,*]

[1] Department of Physical Medicine and Rehabilitation, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

[2] Department of Physical Therapy, Kaohsiung Medical University, Kaohsiung, Taiwan
[3] Department of Physical Medicine and Rehabilitation, School of Medicine, National Defense Medical Center, Taipei, Taiwan
[4] Department of Physical Medicine and Rehabilitation, Tri-service General Hospital, Taipei, Taiwan
[5] Institute of Allied Health Sciences, College of Medicine, National Cheng Kung University, Tainan, Taiwan

背景與目的：探討十年內運動員前十字韌帶重建手術 (anterior cruciate ligament reconstruction, ACLR) 後執行復健項目、回歸運動場時間與效果及影響再次受傷的因素，提供臨床應用。**方法：** 利用 PubMed、PEDro、MEDLINE、Airiti-library 等資料庫搜尋，搜尋期間 2011 ~ 2022 年 2 月。關鍵字為：Athlete、ACL reconstruction、rehabilitation、return to sport 及 RCT，進行系統性回顧。**結果：**本研究共納入 12 篇研究，總結後發現：在 ACLR 後二度受傷發生率及步態方面，執行肌力、敏捷度、增強式預防訓練 (strengthening, agility, plyometric, and prevention, SAPP) 合併干擾訓練與單純 SAPP 並無顯著差異。在 ACLR 後重返體育活動評估方面，執行功能性和肌力訓練有明顯成效，且可以利用等速膝關節屈曲／伸展和雙腳跳躍測試作為指標。在術後功能恢復和前十字韌帶二度受傷的風險評估方面，本體感覺合併姿勢控制訓練、跳躍訓練能明顯有助益，且執行增加膝外展力矩的訓練可增加膝關節穩定性。另外，在支撐體重下執行重複次數跳躍訓練時，較能降低 ACLR 初期關節水腫的風險。**結論：**ACLR 術後的復健計畫相當多元且創新，具有實證意義，運動訓練多半以預防二度傷害及促進運動員提早重返運動場為前提。**臨床意義：**本結果可提供臨床治療師對於運動員 ACLR 後復健訓練之參考建議及實證醫學意義。■

▶ **P50** DOI:10.6215/FJPT.202212.P50

穩定或不穩定負重下執行仰臥推舉時的肌肉活性：系統性回顧與統合分析

黃紹洋　黃子軒　陳行深　林吟亮　黃崇舜 *
國立陽明交通大學物理治療暨輔助科技學系

Muscle Activities in Bench Press With or Without Unstable Loads: A Systematic Review and Meta-Analysis

Shao-Yang Huang　Tzu-Hsuan Huang
Hsing-Shen Chen　Yin-Liang Lin
Tsun-Shun Huang*
Department of Physical Therapy and Assistive Technology, National Yang Ming Chiao Tung University, Taipei, Taiwan

Background and Purpose: The bench press has long been a popular upper-body resistance training exercise. Training with unstable loads (UL) was a recently developed method by using a flexible barbell with loads suspended by elastic bands, which prescribed with a lower percentage of one-repetition maximum (1RM) than the traditional setting with a standard barbell and stable loads (SL). It is assumed that the use of UL can enhance the recruitment of stabilizing muscles and maintain the amount of muscle activation in the primary movers. However, there was no consistent conclusion from previous research. The purpose of our study was to compare the muscle activities of upper body muscles while lifting SL and UL during bench pressing. **Methods:** The searched databases included PubMed, Web of Science, Cochrane, and Ovid MEDLINE for relevant journal articles from 2002 until April 2022. The quality of eligible studies was evaluated by using before-after (pre-post) studies with no control group from National Heart, Lung, and Blood Institute (NHLBI). Meta-analysis was conducted using Review Manager Version 5.4.1 software (Cochrane, Copenhagen,

Denmark). **Results:** Five studies were included in the meta-analysis and systematic review. The results of the meta-analysis showed that the muscle activity of the biceps brachii increased under bench pressing with UL compared to SL ($p < 0.05$, 95% CI = [0.03,79.45], $I^2 = 94\%$). No differences were found in the pectoralis major, triceps brachii, anterior deltoid, middle deltoid, posterior deltoid, latissimus dorsi, and upper trapezius between two load conditions. **Conclusions:** There is a significant increase in the muscle activity of the biceps brachii during bench pressing with UL, while there are no significant differences in the other muscles between two load conditions. **Clinical Relevance:** Compared with bench pressing with SL, bench pressing with UL provides an alternative training method by programming a lower overall load lifted while maintaining the amount of muscle activation in primary movers and stabilizing muscles. Our findings allow in-season athletes and people in the rehabilitation stage to perform bench press with less stress to the joint. ■

▶ P51

DOI:10.6215/FJPT.202212.P51

斜頸兒童接受物理治療的成效與粗大動作發展的追蹤

蘇莉斐[1,*] 廖淑芬[2] 郭禧萱[1]

[1] 彰化基督教醫院復健醫學部物理治療組

[2] 彰化基督教醫院復健醫學部

The Effect and Gross Motor Development Tracking of Physical Therapy in Torticollis Children

Li-Fei Su[1,*] Su-Fen Liao[2] Hsi-Hsuan Kuo[1]

[1] Division of Physical Therapy, Department of Physical Medicine and Rehabilitation, Changhua Cristian Hospital, Changhua, Taiwan

[2] Department of Physical Medicine and Rehabilitation, Changhua Cristian Hospital, Changhua, Taiwan

背景與目的：先天性肌肉性斜頸是指嬰幼兒因一側胸鎖乳突肌短縮，造成頸部傾向同側、臉部轉向對側的現象。先前研究指出先天性肌肉性斜頸個案可能會合併早期動作遲緩，因此本研究希望能了解物理治療對於先天性肌肉性斜頸的療效，及追蹤個案是否有動作發展遲緩的情形。**方法：**從 2020 年 1 月到 2022 年 6 月經醫師診斷為肌肉性斜頸且年齡小於 6 個月、頸部轉動或側彎角度受限、在本院接受物理治療且完成療程的個案。治療後在第一週、第六週、第十二週及治療結束時記錄頸部被動性關節運動及阿爾伯塔嬰幼兒動作評估量表 (Alberta Infant Motor Scale, AIMS)，治療前及每 3 個月進行超音波檢查，記錄胸鎖乳突肌厚度及兩側厚度比值。**結果：**總收案人數 30 人，最終完成評估收案 17 人，第一次評估平均年紀 63.94 ± 29.35 天，平均治療次數 32.24 ± 17.18 次、治療期間 177.12 ± 73.53 天。治療後頭轉至患側的角度從 51.76 ± 21.06° 增加到 79.71 ± 12.56°、頸部側彎至健側的角度從 30.29 ± 12.05° 增加到 53.82 ± 11.53°。開始治療時 10 位個案為發展遲緩，2 位為疑似發展遲緩。結束治療時 2 位個案為發展遲緩，1 位為疑似發展遲緩。接受治療後患側胸鎖乳突肌肌肉厚度從 9.48 ± 3.27 mm 減少為 8.22 ± 2.34 mm，兩側胸鎖乳突肌肌肉厚度比從 1.93 ± 0.62 降為 1.38 ± 0.62。**結論：**先天性肌肉性斜頸在接受物理治療後可減輕症狀，亦可發現早期動作發展遲緩。**臨床意義：**本研究結果可提供先天性肌肉性斜頸接受物理治療效果之參考。■