▶ O1

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利用體表肌電圖觀察運動執行時下肢肌群活化狀況來做為適合髕骨股骨疼痛症候群患者使用的運動動作建議

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Using the Surface Electromyography to Observe the Activation of Lower Limb Muscles During Exercise in Order to Select the Appropriate Exercise as a Suggestion for Patients With Patellofemoral Pain Syndrome

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背景與目的：臨床治療髕骨股骨疼痛症候群方向以臀肌結合膝伸直肌的運動訓練為主，目的為改善髕骨偏移與膝蓋動態外翻。本研究希望透過表面肌電圖，觀察不同運動中臀大、臀中、股內側及闊筋膜張肌之活化強度，藉以找出最適合髕骨股骨疼痛症候群患者的訓練動作。**方法：**本研究使用便利取樣，透過表面肌電圖，觀察受試者在執行 6 種運動動作（棒式加髖伸直、側棒式加蚌殼、單腳蹲、登階、單腳硬舉、臀推加髖外轉）時肌肉之等長最大自主收縮強度比 例 (percentage of maximal voluntary isometric contraction, %MVIC)，與臀肌 – 闊筋膜張肌收縮比例指標 (gluteal-to-tensor-fascia-latae index [GTA] = $[\%MVIC_{臀大肌}]^2 + [\%MVIC_{臀中肌}]^2) / 2 \times [\%MVIC_{闊筋膜張肌}]$)。**結果：**總共收納 17 位健康受試者（11 男 6 女），平均年齡為 21.35 ± 0.99 歲，平均 BMI 為 22.45 ± 2.80 kg/m^2。以重複量數變異數分析 6 個動作中 4 條肌肉的活化情形，僅發現股內側肌活化在 6 個動作中有顯著差異 ($F = 13.258$, $p < 0.001$)，臀大、臀中及闊筋膜張肌則無顯著差異。GTA 在 6 個動作中無顯著差異 ($F = 1.794$, $p = 0.194$)，以側棒式加蚌殼最高 (1222.05 ± 751.87)、棒式加髖伸直居次 (970.93 ± 375.01)。**結論：**若以 GTA 為判定標準，較佳的訓練動作建議為側棒式加蚌殼與棒式加髖伸直，但仍須進一步研究確認。**臨床意義：**本研究結果可提供臨床針對髕骨股骨疼痛症候群患者，考量運動時間與特定肌群運動設計時之參考。■

▶ O2

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比較久站工作族群間有無足跟疼痛之肌肉骨骼表徵及下肢動作控制差異

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Comparisons of Musculoskeletal Characteristics and Lower Extremity Motor Control Ability Between Prolonged Standing Workers With and Without Plantar Heel Pain

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背景與目的：久站工作族群易產生足部肌肉骨骼症狀，而足部常見肌肉骨骼症狀之一為足跟疼痛。然而，目前並無針對久站工作族群中，足跟

疼痛之相關因子做探討的文獻。比較有無足跟疼痛之久站工作族群，其足部姿勢、足踝關節活動度等肌肉骨骼表徵以及下肢動作控制能力與肌肉徵召效能之差異。**方法：**研究納入 64 位久站工作者，分成有、無足跟疼痛組。測試包括足部姿勢、足踝關節活動度（踝關節背屈角度、第一蹠趾關節伸直角度）、下肢動作控制能力及肌肉徵召效能測試（脛後肌、比目魚肌）。**結果：**相較於無足跟疼痛組，有足跟疼痛組的足部姿勢較為旋前 ($p < 0.001$)；第一蹠趾關節伸直角度較小 ($p < 0.001$)；下肢動作控制能力表現皆較差 ($p < 0.001$)；脛後肌及比目魚肌效能皆較差 ($p = 0.041$, $p < 0.001$)。踝關節背屈角度，組間則無顯著差異 ($p = 0.293$)。**結論：**久站工作族群中，有足跟疼痛相較於無足跟疼痛族群，足部姿勢較易偏向旋前足；第一蹠趾關節伸直角度、下肢動作控制能力、脛後肌及比目魚肌之肌肉徵召效能皆表現較差；而踝關節背屈角度則無差異。**臨床意義：**針對久站工作者，在處理足跟疼痛問題時，應將足部姿勢、第一蹠趾關節伸直角度、下肢動作控制能力以及肌肉徵召效能，皆列入評估項目，並可當作介入目標。■

▶ O3

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慢性頸痛患者有較差之肺功能、呼吸肌力量、及橫膈膜活動度與厚度

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Patients With Chronic Neck Pain Have Impairments in Pulmonary Functions, Respiratory Muscle Strength, and Diaphragmatic Functions

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Background and Purpose: Diaphragm is the principal muscle for respiration and contributes to spinal stability. Previous studies have found that patients with low back pain had impaired pulmonary functions and reduced diaphragmatic functions. Neck pain is a raising problem nowadays and needs attention. Many superficial neck muscles are accessory inspiratory muscles. Evidence of fascia and neural connection between cervical spine and diaphragm have been identified. Associations among pulmonary functions, diaphragmatic functions, and neck pain are thus hypothesized. However, to date, only few studies have investigated the pulmonary functions and respiratory strength in patients with neck pain, and their results were controversial. Therefore, the purpose of this study was to compare the pulmonary functions, respiratory muscle strength, and diaphragmatic functions in patients with chronic neck pain (CNP) and healthy adults. **Methods:** A total of 58 participants including 29 patients with CNP (CNP group) and 29 healthy adults (control group) were recruited. Forced vital capacity (FVC) and forced expiratory volume in one second (FEV_1) were measured for pulmonary functions. Respiratory muscle strength was measured as maximal inspiratory volume (MIP) and maximal expiratory volume (MEP). Diaphragmatic mobility and thickness were assessed using the ultrasonography. Independent *t*-tests were conducted using the SPSS version 17.0 with a significant level of 0.05. **Results:** Compared to the control group, the FVC (3.17 ± 0.88 vs. 3.71 ± 0.87 L, $p = 0.023$), FEV_1 (2.56 ± 0.68 vs. 3.07 ± 0.74 L, $p = 0.008$), MIP (66.78 ± 29.73 vs. 96.20 ± 28.39 cmH_2O, $p < 0.001$), and MEP (68.41 ± 36.78 vs. 92.36 ± 24.92 cmH_2O, $p = 0.005$) were significantly reduced in the CNP group. Furthermore, the diaphragmatic mobility (69.45 ± 13.92 vs. 76.89 ± 12.82 mm, $p = 0.039$) and thickness (2.03 ± 0.77 vs. 2.71 ± 1.24 mm, $p = 0.015$) were significantly smaller

for the CNP group than the control group. **Conclusion:** Patients with CNP demonstrated impairments in pulmonary functions, respiratory muscle strength, and diaphragmatic functions. **Clinical Relevance:** Current results provide a possible rationale for respiratory training or diaphragmatic intervention in patients with CNP. ■

▶ O4

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比較動態貼布及非彈性貼布對於足底疼痛者之成效

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Effects of Dynamic Taping Versus Rigid Taping in Adults With Plantar Heel Pain

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背景與目的：動態貼布是一種能控制症狀又不影響關節活動度的生物力學貼布，針對足底疼痛者給予動態貼布之成效研究不多，本研究目的為比較非彈性貼布及動態貼布於足底疼痛者之效果。**方法：**本研究為一隨機交叉實驗，納入 42 位足底疼痛者，均接受 3 種貼紮：短版動態貼布貼紮、長版動態貼布貼紮、非彈性貼布貼紮法。評估時間點為貼完後立即效果及 3 天後追蹤效果。測量項目包含疼痛、足壓、足弓高度、脛後肌徵召效率、下肢動作控制測試、足部功能、貼布舒適度及整體改善分數。**結果：**3 種貼紮方法皆可立即降低動作測試時的足底疼痛、降低足底壓力、提高足弓支撐、增加脛後肌徵召效率、改善動作控制能力。3 種貼布之間，並未有顯著差異。在 3 天後之貼紮效果上，3 種貼紮方法在下列效果測量，也都有顯著療效：降低整體疼痛、早晨第一步足底疼痛、提高足弓支撐、降低失能程度以及提升功能，3 種貼布之間效果的差異不明顯。唯一顯著差異為貼紮舒適度，在貼完立即測及 3 天後，短版動態貼布之舒適度都是最高。**結論：**3 種貼紮皆能達到立即療效，長版動態貼布與非彈性貼布可提供較佳穩固性，而動態貼布則舒適度較佳。**臨床意義：**動態貼布或非彈性貼紮治療對足底疼痛具有立即與短期效果。■

▶ O5

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女性成人便祕症狀嚴重度與骨盆底肌功能之相關性

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Correlation Between Severity of Symptoms and Pelvic Floor Muscle Function in Female Adults With Constipation

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Background and Purpose: Constipation is prevalent in female population (17.4%) and may be associated with pelvic floor muscle (PFM) dysfunction. Previous studies demonstrated that stronger PFMs are associated with less symptom severity of pelvic floor disorders (e.g., pelvic organ prolapse). However, little is known about the correlations between PFM function and symptoms severity in women with constipation. The

purpose of this study was to investigate the correlation between severity of symptoms and PFM function in female adults with constipation. **Methods:** Twelve female adults with constipation were recruited from the hospital, clinics, and community from January 2021 to June 2021. The symptom severity of constipation was evaluated using the Patient Assessment of Constipation Symptoms (PAC-SYM), which includes 3 subscales (abdominal, rectal, and stool). The items are scored on a 5-point Likert scale, and the higher scores indicate the greater severity of symptoms. Pelvic floor muscle function, including resting tone, strength of maximal voluntary contraction, straining effort, and endurance of puborectalis and external anal sphincter, was assessed by the manometry and digital rectal examination scored using the International Continence Society scale (absent, weak, moderate, or strong). Spearman's correlation analysis was conducted and a coefficient of < 0.10, 0.10–0.39, 0.40–0.69, 0.70–0.89, > 0.90 indicated negligible, weak, moderate, strong, or very strong correlation, respectively. A significant level of correlation was taken as $p < 0.05$. **Results:** Data of 11 women were included in the final analysis (one was excluded due to incomplete assessment). The score of PAC-SYM abdominal scale was moderately correlated with the maximal voluntary contraction of puborectalis ($r_s = –0.653$, $p = 0.029$) and the straining effort ($r_s = –0.605$, $p = 0.049$). **Conclusion:** The severity of constipation symptoms appears to have moderate correlations with the maximal voluntary contraction of PFM and the straining effort in female adults with constipation; nevertheless, studies with a larger sample size are needed to clarify the relationships between these two factors. **Clinical Relevance:** The results of this study may provide us with both basis for future research and the indication during clinical practice to include assessments of PFM function, with the intent to provide PFM interventions for patients with constipation to improve their symptom severity. ■

▶ O6

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久站工作者的腰椎動作控制能力與下背痛和其身體勞動需求之間的關係

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The Relationships Among Lumbar Movement Control Ability, Low Back Pain and Physical Work Demands in Prolonged Standing Workers

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Background and Purpose: Prolonged standing workers have a high proportion of low back pain (LBP). Their work demands also involve turning a body, pushing or pulling, lifting, and leaning forward. Repetitive faulty compensatory movements have been found associated with developing LBP. Many researchers attribute these movement faults to decreased movement control ability and proposed a series of movement control tests for assessment. The purposes of this study are (1) to compare the movement control ability between prolonged standing workers with and without LBP, and (2) to explore the relationships among LBP problems, physical work demands, and the movement control ability. **Methods:** A total of 72 prolonged standing workers (36 with and 36 without LBP) participated in the first part of the study. In the second part, data from 101 workers (65 with and 36 without LBP) were analyzed. After inquiring about the subjects' basic data, physical work demands, and LBP-related information, a physical therapist performed a set of 16 lumbar movement control tests. **Results:** Our study showed significant differences existed between workers with and without

LBP in the lumbar extension ($p < 0.001$), flexion ($p < 0.001$), and rotation ($p < 0.001$) control tests. There are significant differences among different static standing postures in the scores of the lumbar extension control test ($p = 0.006$), but no significant difference in the scores of the lumbar flexion ($p = 0.621$) and rotation ($p = 0.052$) control tests. Heavy work demand was found associated with the score of the lumbar extension control tests (r = –0.216, $p = 0.030$), the score of the lumbar flexion control tests (r = –0.305, $p = 0.002$), and the score of the lumbar rotation control tests (r = –0.288, $p = 0.003$). **Conclusion:** Prolonged standing workers with LBP demonstrated poorer lumbar movement control ability in all movement directions. Among them, the static standing posture of lumbar lordosis is related to poorer lumbar extension control ability, and the work demands with loading are related to the lumbar extension, flexion, and rotation control ability. **Clinical Relevance:** LBP is a multidimensional phenomenon, our study yields a preliminary understanding of the relationships between LBP, physical work demands, and lumbar movement control ability of the prolonged standing workers. ■

▶ O7

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以先進多尺度熵分析法應用於巴金森氏患者的步態分析

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An Advanced Method for Gait Analysis via Multiscale Entropy of Parkinson's Disease Patients

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Background and Purpose: Parkinson's disease is a common neurodegenerative disease with a significant impact on patients' gait. Although there are several methods for identifying gait impairments, one method-ground reaction force analysis-uses advanced methods such as multiscale entropy (MSE) to identify the impairments. The goal of this study is to predict gait impairments of Parkinson's disease patients and compare them to healthy people. **Methods:** Data from the PhysioNet repository were used in this study, which included 21 patients with Parkinson's disease with Hoehn and Yahr scale stages 2–3 and 5 healthy controls. Measurements are performed by asking the subjects to walk at their usual speed for 2 minutes. Eight sensors were placed inside the shoe insoles on each foot to measure ground reaction forces. The analysis is divided into two parts: the first part (T1) for the first 20 seconds and the second part (T2) for the remainder of the time, i.e., from 21 seconds to 2 minutes. **Results:** When the MSE of T1 was compared between Parkinson's disease and healthy controls, 5 of 8 left foot sensors and 6 of 8 right foot sensors showed a significant difference ($p < 0.05$), with the larger values being for Parkinson's disease. Furthermore, T2 data yielded similar results. Significance differences were found in 7 left foot sensors and 4 right foot sensors. According to findings, gait MSE is larger in patients with gait impairment and may need more time to adjust than in healthy counterparts. However, the interesting part is that Parkinson's disease patients have slower gait speed than healthy controls ($p = 0.003$). **Conclusions:** Although patients with Parkinson's disease seemed to utilize more force while walking, the force did not eventually transform into propulsion force needed in the gait cycle, as evidenced by gait speed results. Using MSE analysis, subtle differences in the quality of ground reaction force can be found and used to predict the possible gait impairments in Parkinson's disease. **Clinical Relevance:** The results provide an alternative quantitative measurement for gait analysis in Parkinson's disease using MSE analysis. ■

▶ O8

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機器帶動活動之 PAD 檢測模式初探

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Machine Assisted Movement Paradigm for Post Activation Depression (PAD) Evaluation

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背景與目的：痙攣和僵硬是中樞神經性疾病損傷高肌肉張力常見的兩種症狀，過去的研究顯示活化後抑制 (post activation depression, PAD) 與痙攣出現的機制相關，是脊髓神經網路適應的重要指標。實驗室誘發 PAD 的方式，常受誘發之電刺激強度影響。本研究目的為使用機器帶動活動誘發 PAD 之創新檢測模式，評估與電刺激誘發之 PAD 相關性，檢測對非反射性相關的肌張力影響，以及對痙攣與僵直型高張肌肉的鑑別力前驅。**方法：**受試者為 10 位健康人，3 位有痙攣的完全脊髓損傷患者與 3 位有僵直的帕金森氏病患者，每位受試者先接受 2 Hz 與 5 Hz 的標準 PAD 測試，之後接受快速與慢速機器帶動踝關節活動 (continuous passive motion, CPM) 10 回合，在 CPM 介入前與介入後使用電刺激測試非慣用腳比目魚肌的 H 反射，以及以 Myoton 測試肌肉特性的改變。統計方法使用 Pearson 相關係數表示其線性相關強度，顯著水平為 0.05。**結果：**5 Hz 的標準電刺激測試與快速 CPM 測試產生的 PAD 有顯著的正相關 ($r = 0.763$, $p < 0.0001$)。Myoton 所測量肌肉特性的改變量與標準電刺激測試產生的 PAD 無相關。Bland-Altman plot 顯示 CPM 的檢測模式，可分辨三種受試者肌肉張力。**結論：**快速 CPM 可以誘發 PAD，且與肌肉機械性張力不相關，且初步測試可分辨不同種類的肌肉高張。**臨床意義：**CPM 可以取代傳動電刺激誘發的 PAD 測試法，可成為臨床上較容易導入的檢測模式，未來需要進行更大規模的病患測試。■

▶ O9

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結構式肺復原計畫於有嚴重急性呼吸道症候群長期後遺症患者之成效：個案報告

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The Effects of a Structured Pulmonary Rehabilitation Program for a Severe Acute Respiratory Syndrome Survivor With Long-Term Sequelae: A Case Report

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Background and Purpose: Long-term sequelae of severe acute respiratory syndrome (SARS) such as pulmonary function impairment, reduced exercise capacity, and impaired health status have been reported in the SARS survivors. Evidence showed that post-SARS pulmonary damage and functional decline

recovered within 2 years after viral infection, but could be long lasting for more than a decade. Despite the positive effects of exercise training on cardiorespiratory fitness and muscle performance for those who were recovering from SARS, it remained unclear that whether a structured pulmonary rehabilitation (PR) program would benefit SARS survivors with long-term sequelae. This case report aimed to describe the effects of structured PR on long-term sequelae in a patient with a history of SARS. **Methods:** The patient was an 87-year-old woman with a history of SARS in 2003 complicated with acute respiratory distress syndrome and sequelae of pulmonary fibrosis. She was referred for the outpatient PR in August 2020 due to progressive exertional dyspnea. The patient attended the hospital-based structured PR once per week, which consisted of exercise training, patient education about chest physiotherapy, breathing retraining, and energy-conservation techniques. A home-based exercise plan and exercise log were also provided. **Results:** The patient could tolerate 20 minutes of light-to-moderate intensity aerobic exercise and moderate-intensity resistance exercises with supplemental oxygen during 8 weeks of PR. Maximal leg press strength increased from 41 kg to 51 kg (153.6% of her body weight), but there was no change regarding respiratory muscle strength, handgrip strength, and health-related quality of life. Six-minute walk distance remained unchanged (182 m with the lowest oxygen saturation of 84% at baseline versus 154 m with the lowest oxygen saturation of 89% in week 8 under room air). **Conclusion:** The structured PR improved maximal leg press strength for the post-SARS survivor with long-term sequelae, but had limited effects on functional exercise capacity, upper-limb and respiratory muscle strength, and health-related quality of life for the reported case. **Clinical Relevance:** Structured PR should be more individualized and with cautions when applied to coronavirus disease 2019 (COVID-19) survivors with pulmonary fibrosis and long-term COVID-19 sequelae in the outpatient setting. ■

▶ **O10**

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不同水溫下水中行走對過敏性氣喘大鼠之效用

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Effects of Aquatic Walking at Different Water Temperatures in Rats With Allergic Asthma

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Background and Purpose: Allergic asthma is a common disease combined with allergic condition and chronic airway inflammation. Aquatic exercise, a type of aerobic exercise, is considered to be safer than exercises on land due to lower exertional dyspnea and less possibility to cause exercise-induced asthma. Because few studies focused on aquatic exercise effects on asthma, especially walking in the water, this study was to investigate anti-inflammatory effects of aquatic walking, and compare effects of different water temperatures to investigate whether they would affect the treatment efficacy in rats with allergic asthma, induced by ovalbumin (OVA). **Methods:** Male Sprague-Dawley rats were randomly allocated into five groups: control, asthma, asthma with corticosteroids, asthma with 30-minute 29°C aquatic exercise (AE-29), and AE-36. Body weight and pulmonary function were measured. After the experiment, serum was analyzed for cytokines and immunoglobulin E (IgE), broncho-alveolar lavage fluid was analyzed for cytokines and leukocytes numbers, and lung tissue was analyzed for histopathological changes. **Results:** Preliminary data showed body weight increased in the control and the asthma group, but without significant difference between

groups. A trend of reduction in peak expiratory flow after each challenge (inhalation of OVA aerosol) in the asthma group was seen. Other analysis demonstrated serum IgE level ($p = 0.076$) and histopathological changes ($p = 0.077$) were more in the asthma group compared to the control group, but no difference in serum IL-4 level ($p > 0.05$). **Conclusion:** It showed mimicking allergic asthma in animals produced some medical conditions and provided some information about the underlying pathophysiology. **Clinical Relevance:** The final outcomes of this research may provide asthmatics an alternative choice of exercise, furthermore, it can offer the evidence if water temperature would influence the exercise effects. ■

▶ **O11**

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嚴重特殊傳染性肺炎重症患者解隔離後物理治療介入——個案報告

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Physical Therapy for Patients With Critical COVID-19 in De-Isolation Phase—Case Reports

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背景與目的：嚴重特殊傳染性肺炎 (COVID-19) 在臺灣造成嚴重疫情。重症個案因呼吸衰竭，需使用呼吸器或葉克膜穩定生命徵象，解隔離後轉至普通病房有活動能力受限、呼吸急促等問題。此階段物理治療無標準指引，也無個案運動耐力資料。本文將報告 2 位 COVID-19 感染重症患者解隔離後物理治療介入。**個案報告：**個案一是 69 歲女性，2021 年 5 月 17 日確診，插管使用呼吸器 10 天，之後使用經鼻高流量濕化氧氣治療 (high flow nasal cannula, HFNC) 與非再呼吸型面罩 (non-rebreathing mask)。5 月 31 日解隔離轉普通病房，共接受 6 次物理治療，包括呼吸運動、原地踏步與步行等，6 分鐘行走距離 171 m，血氧飽和度 94%，日常生活不使用氧氣，住院 36 天。個案二是 55 歲女性，因呼吸窘迫及意識惡化在 2021 年 5 月 23 日確診。急診時因插管困難，進行氣管切開使用呼吸器 21 天，之後採 HFNC，6 月 21 日轉普通病房，共接受 9 次物理治療，白天不需氧氣，6 分鐘行走距離 200 m，共住院 46 天。**結論與臨床意義：**重症 COVID-19 個案在解隔離後運動耐力下降。物理治療提供呼吸訓練、漸進式活動與運動處方建議，可增加個案體能，並減少氧氣使用。■

▶ **O12**

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新冠疫情期間心智障礙者遠距物理治療之可行性：前驅研究

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Implementation of Telehealth Physical Therapy for Adults With Intellectual Disability During the COVID-19 Pandemic: A Pilot Study

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背景與目的：由於疫情期間停課，學校普遍採線上課程。文獻指出心智障礙者在遠距教學中會遇到諸多挑戰，包含硬體及軟體操作、溝通等。本研究之目的是探討日間照顧機構心智障礙學員接受遠距物理治療之可行性。**方法：**使用 Line 視訊，由 1 位物理治療師主帶，2 位教保員協同，每次 6 ~ 10 位學員（年紀介於 20 ~ 39 歲，障礙程度為輕至中度）參與。課程設計 50 分鐘，主軸為居家有氧，以家中易取得物品規劃運動主題。本研究參考 The Reach Effectiveness Adoption Implementation Maintenance 架構來評定可行性。「Implementation」以質性描述學員、家長與老師的課後回饋；「Maintenance」以學員出席次數來表示。**結果：**課程共執行 10 場次，達 85 人次。62% 全程參與，38% 參與時間不定，原因包括網路不穩離線 (40%)、學員記錯時間 (18%)、家長無繼續支持 (12%) 等。全部學員使用手機上課，上課時需指導自拍角度供確認全身動作並提醒麥克風開啟。學員及家長回饋能視訊持續運動，感覺很好。老師則提到在示範時，需放慢速度、分解指導及調整鏡頭拍攝重點動作；為凝聚專注力和參與度，會點名讓學員個別表現。然而，受限於鏡頭角度，課程設計以站立活動為主。**結論：**給予支持與課程調整，心智障礙學員亦能透過遠距教學獲得服務。**臨床意義：**因著疫情，提供給心智障礙者的物理治療服務方式也能與時俱進。■

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COVID-19 疫情期間早療家長對於遠距教學之看法

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Parents' Views on Telehealth for Early Intervention During the COVID-19 Pandemic

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背景與目的：Maria Ahead-baby Project (MAP) 是以增能家長為核心的早療服務模式，透過專業團隊支持，讓家長在自然情境下，運用日常作息活動，提供特殊需求兒童練習機會。因全國實施三級警戒，某中部早療單位將 MAP 模式中 1 週 6 小時的實體課程改成 1 週 2 次，每次 30 分鐘遠距教學。遠距教學包括 Line 文字諮詢、語音通話、視訊教學。教學模式則以跨專業團隊支持主要服務提供者 (primary service provider) 整合資訊及提供相關策略。教學內容包含衛教資訊、主動關心、針對家長分享的照片或影片給予專業回饋等。本研究主要目的是瞭解家長對於遠距教學的早療服務模式之看法。**方法：**以自編式問卷邀請 16 位家長填答。問卷包括家長心情歷程、線上諮詢優缺點與服務需求等 13 題問答題。**結果：**多數家長焦慮孩子的發展因停課而退步，少數家長 (19%) 表示不用趕課而鬆了一口氣。全部家長都肯定遠距教學的效益，家長表示老師能從影

片中觀察細節，發掘孩子的優勢表現，提出的問題亦能經由主責老師收到團隊的策略建議，感到很安心。然而，無法實際示範是普遍認為線上教學的缺點。**結論：**疫情期間遠距教學是持續提供早療服務的一種方式。**臨床意義：**以家庭為中心的服務模式是支持家長參與早期療育，協助家長成為孩子在自然環境中密集及永續療育的關鍵支持者。■

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以虛擬實境運動訓練對認知功能障礙老年人其認知與身體功能之效果：統合分析

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The Effect of a Virtual Reality Based Exercise on Cognitive and Physical Function in Older Adults With Cognitive Impairment: A Systematic Review and Meta-Analysis

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Background and Purpose: Emerging evidence has shown that exercise and physical activity might have positive effects on cognitive and physical function for older adults with cognitive impairment or dementia. However, older adults rarely doing exercise regularly. To enhance motivation, the use of virtual reality (VR) has been applied recently. This study explores the cognitive and physical effects of combining VR exercise as an exercise program for older adults with cognitive impairment. **Methods:** In this study, a systematic review and meta-analysis were conducted to summarize the effect of using VR exercise among older adults with cognitive impairment. Medline, PubMed, Scopus, Web of Science, CINAHL, and Embase were systematically searched from 1966 until March 2021. Studies that used VR exercise and met inclusion criteria were included. Quality of studies were assessed with the Physiotherapy Evidence Database Scale (PEDro). **Results:** Fourteen studies had been included in the analysis, there was a significant benefit of VR exercise for global cognition (Hedge's g = 0.79, [95% CI = 0.42, 1.16]) and learning and memory (Hedge's g = 0.40, [95% CI = 0.20, 0.61]); however, for motor function, muscle strength, physical activity, and walking ability were not significant. **Conclusion:** VR exercise significantly improved global cognition and learning and memory in elders with cognitive impairment. VR exercise with specific exercise types might be effective to improve a cognitive impaired patient's cognition and physical function. **Clinical Relevance:** The result of this study can be applied in the clinical and community situations to improve cognitive and specific physical function for elders with cognitive impairment by VR exercise with fun and better motivation. ■

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認知 – 動作雙重任務訓練對於跌倒風險老人的雙重任務及單一任務情境步態表現之影響：系統性回顧及統合分析

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Effects of Cognitive–Motor Dual-Task Training on Dual-Task and Single-Task Gait Performance in Older Adults With Risk of Fall: A Systematic Review and Meta-Analysis

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背景與目的：目前已知老人執行認知動作之雙重任務可能有跌倒風險，改善雙重任務行走表現的訓練或許有助於減少跌倒老人發生跌倒的機會。本篇的目的是比較認知 – 動作雙重任務訓練與控制組對於跌倒風險老人的雙重任務及單一任務情境步態表現之影響，以提供臨床應用和研究參考。**方法：**搜索資料庫 Google Scholar、PubMed、PEDro 和 Cochrane 文獻至 2021 年 6 月，關鍵字：dual-task training/ combined motor and cognitive training/ combined physical and cognitive training；older adults/ elderly/ older adults with balance impairment；gait performance 或 walking performance，並使用 Review Manager 5.4.1 版進行統合分析。**結果：**共納入 7 篇英文文獻進行統合分析。相較於控制組，認知 – 動作雙重任務訓練介入後，顯著改善雙重任務步速 (standard mean difference [SMD]: 0.27 m/s, Z = 2.22，95% CI: [0.03, 0.51], p = 0.03)，而單一任務步速的改變量僅有趨勢改善 (SMD: 0.20 m/s, Z = 1.65，95% CI: [–0.04, 0.44], p = 0.10)。相較於控制組，認知 – 動作雙重任務訓練介入後，顯著改善單一任務步頻 (SMD: 0.41 m/s, Z = 2.46，95% CI: [0.41, 0.74], p = 0.01)，而雙重任務步頻的改變量僅有趨勢改善 (SMD: 0.30 step/min, Z = 1.85，95% CI: [–0.02, 0.62], p = 0.06)。**結論：**認知結合動作的雙重任務訓練在跌倒風險老人的雙重任務步行速度及單一任務步頻，明顯優於控制組。**臨床意義：**認知 – 動作雙重任務訓練對於單一與雙重任務情境下步行功能具有潛在的優勢，可作為改善有跌倒風險年長者治療參數之參考。■

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不同功能里程碑的急性中風患者於特定 PASS 項目的表現差異：對急性中風復健之建議

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Acute Stroke Survivors at Different Functional Milestones Performed Differently on Specific PASS Items: Implications for Acute Stroke Rehabilitation

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背景與目的：幫助中風患者恢復獨立坐、站、行走的功能是物理治療的重要目標之一。中風病患姿勢控制量表 (Postural Assessment Scale for Stroke, PASS) 的總分與中風後功能和行走能力有良好的同時效度及預測效度，是否有特定的項目能區辨不同功能層級（坐、站、行走），仍未被探討過。本研究的目的為檢驗不同層級的急性中風患者在 12 個 PASS 項目的表現呈現顯著差異者。**方法：**納入入住神經內外科病房年滿 20 歲

的急性中風單側偏癱患者 119 位，依臨床訓練目標分成 6 個功能里程碑（臥床組、扶持坐、獨立坐、扶持下站立、獨立站協助行走、獨立行走），皆完成 PASS 評估。PASS 項目在相鄰兩組間差異以 Mann-Whitney U test 及效果量 ($r = \frac{z}{\sqrt{n}}$) 檢驗。**結果：**臥床組：表現最好的是「翻到患側」。以下各組與前一組呈顯著差異且有較大效果量的項目分別是：扶持坐組：「翻到患側」(r = 0.76)。獨立坐組：「躺 → 坐」(r = 0.41)。扶持下站立組：「站 ↔ 坐」(r = 0.47, 0.49)。獨立站協助行走組：「彎腰撿筆」(r = 0.49)、「坐 → 站」(r = 0.48)、「站在健側」(r = 0.47)。獨立行走組：「站在患側／健側」(r = 0.52, 0.53)。**結論：**相鄰兩組間表現明顯不同且具中 ~ 大效果量的 PASS 項目，代表該相鄰兩組間的能力差異，若能提升這些項目的表現，或有助功能里程碑的恢復。**臨床意義：**本研究結果可提供急性中風復健臨床應用和研究的參考。■

▶ **O17**

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水療運動對於亞急性和慢性中風病人在動態平衡的影響：系統性回顧

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The Effect of Therapeutic Aquatic Exercise on Dynamic Balance in Stroke Patients During the Subacute and Chronic Stage: A Systematic Review

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Background and Purpose: The majority of stroke survivors existed many limitations in their motor control ability after acute treatment. When they faced with severe motor control, it is difficult for them to achieve active motor learning, resulting in the inability to improve balance and movement, and still need assistance. Therapeutic Aquatic Exercise (AE) training has been chosen to promote active learning through water properties. However, it remains unclear whether AE could improve dynamic balance at the following stages of stroke. Therefore, this study aimed to analyze and summarize the effects of AE on dynamic balance at sub-acute and chronic stages of stroke. **Methods:** Search strategies were used the Public Medicine (PubMed), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, and the Physiotherapy Evidence Database (PEDro) through the searched through April 2021. Studies with randomized control trials (RCTs) and non-RCTs were included in this study, while studies without a control group were excluded. The subjects of this study were stroke patients included sub-acute and chronic. The PEDro scale was used to the assessed quality of each study. **Results:** Nineteen articles met the criteria and were included in the systematic review. All of the studies involved in this review have the PEDro score ranges 4–8 (from Fair to Good quality). Eighteen out of 19 articles of the previous studies reported the significant effects of therapeutic AE on the Berg balance scale, timed up and go tests, and functional reach tests. This study showed that therapeutic AE significantly improved all of the variables on dynamic balance after intervention at both periods sub-acute and chronic. **Conclusion:** The therapeutic AE training can bridge the bottleneck of motor control training. The mechanism of therapeutic

AE training may use water properties, such as buoyancy, hydrostatic pressure, viscous force, and thermodynamic to provide motor, proprioceptive and sensory feedback thus influencing the postural control and balance system and to encourage and force the patients to active participation and to assist movement independently. **Clinical Relevance:** The results of the systematic review encourage physical therapy to use therapeutic AE at subacute and chronic stage of stroke. ■

▶ O18

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短期肩胛控制訓練對於肩夾擠症候群運動員之中樞控制的影響

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The Effects of the Short-Term Scapula-Focused Training on Corticospinal System in Overhead Athletes With Shoulder Impingement Syndrome

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Background and Purpose: Subacromial impingement syndrome (SIS) is a common shoulder disorder in overhead athletes. Central nervous system may be reorganized in patients with SIS, including increased in corticospinal excitability and decreased corticospinal inhibition. These central changes are believed to be related to chronicity of symptoms and lack of treatment effects. For patients with SIS, exercises to strengthen scapular muscles and improve scapular control has been recommended. To our knowledge, no study has addressed how the corticospinal system changes following these scapula-focused exercises in patients with SIS. The purpose of the study was to investigate the effects of the short-term scapula-focused training on corticospinal system and shoulder pain and function in overhead athletes with SIS. **Methods:** Twenty-four participants with SIS and scapular dyskinesis have been recruited and randomized to receive 15 sessions of either scapula-focused training or general shoulder strengthening exercise. Outcomes included shoulder pain, shoulder function, and corticospinal measurements, which were measured at baseline and following 15 sessions of training. Corticospinal excitability and inhibition of lower trapezius were measured by transcranial magnetic stimulation, including active motor threshold (AMT), motor evoked potentials at 130% of AMT, and cortical silent period at 140% of AMT. Shoulder pain was measured with numeric rating scale (NRS) and shoulder function was assessed by Disability of Arm, Shoulder and Hand (DASH) questionnaire, including sections of disability/symptom and high-performance sport/music. Changes from baseline to post-training were compared between groups by independent *t* test. **Results:** There was a trend of increasing excitability (decrease in AMT) in the scapula-focused group, compared to the changes the general exercise group ($p = 0.058$). Significant reduction in pain during exercise was also found in the scapula-focused group ($p = 0.025$). No difference in changes in DASH between scapula-focused and general exercise groups was found ($p > 0.05$). **Conclusion:** These findings suggest that compared to the general exercise, scapula-focused training not only could significantly reduce pain but may increase the corticospinal excitability of the scapular muscle. **Clinical Relevance:** Scapula-focused training may be a better choice to treat overhead athletes with SIS and scapular dyskinesis. ■

▶ O19

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慢性踝關節不穩篩檢工具信效度之系統性回顧：坎伯蘭腳踝不穩定工具與功能性腳踝不穩定辨識

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A Systematic Review of the Reliability and Validity of the Tools for Screening Chronic Ankle Instability: The Cumberland Ankle Instability Tool Versus the Identification of Functional Ankle Instability

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背景與目的：反覆性腳踝扭傷常見於運動傷害，並發展成慢性腳踝不穩定，影響日常生活及運動表現，所以及早篩檢成為重要的議題。目前國際足踝協會建議 Identification of functional ankle instability (IdFAI) 及 Cumberland ankle instability tool (CAIT) 為適用於篩檢慢性腳踝不穩定的工具。本研究之目的為，以系統性文獻回顧比較 CAIT 與 IdFAI 這兩份工具之信度及效度。**方法：**以資料庫 PubMed、Cochrane Library、SUMSearch、PEDro 及 Google Scholar 進行檢索，截至 2021 年 4 月為止。所採用之關鍵字為：Chronic ankle instability、Identification of functional ankle instability/Cumberland ankle instability、Reliability/Validity/Sensitivity/Specificity/Cut-off point。文獻品質評析之工具為牛津醫學實證評析工具診斷表及牛津醫學實證等級 2011 版。**結果：**共 22 篇文獻符合條件，聚斂效度 CAIT 及 IdFAI 與 SF-36 的身體功能面向為低度至中度相關，但與心智健康面向無關。與 LEFS、FAAM 為中度到高度相關，與 NRS 及 VAS 及 Karlsson 分數達高度相關。再測信度在 CAIT 及 IdFAI 皆介於良好至傑出。內部一致性兩者皆介於中度到高度相關 (Cronbach's α = 0.766–0.978)。切點分數 IdFAI 為 ≥ 11 分，而 CAIT 介於 11.5 至 27.5 分，敏感性及特異性皆 ≥ 0.8。**結論：**本項系統性文獻回顧以實證等級四的程度，顯示 CAIT 及 IdFAI 作為慢性腳踝不穩定之篩檢工具皆具優良的信效度，再測信度皆為良好至傑出。聚斂效度則達到中度至高度相關，其敏感性及特異性皆 ≥ 0.8。**臨床意義：**本研究結果可提供臨床實務及研究上，應用於慢性踝關節不穩之問題，做為臨床篩選判別之參考。■

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上班族圓肩姿勢之危險因子研究：系統性回顧與統合分析

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The Risk Factors for Rounded Shoulder Posture in Office Workers: A Systematic Review and Meta-Analysis

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Background and Purpose: Although individual, occupational and psychological factors for the rounded shoulder posture (RSP) have been considered as the common exposures among office workers, it is still debated which is the most exposure in leading the RSP. This study aimed to summarize the previous prospective cohort studies related to the risk factors for RSP and to report the strong correlations of those exposures. **Methods:** Studies that prospectively collected the risk factors for RSP in office workers with cohort study design and followed-up for a year or more were identified by searching Google Scholar, PubMed, and Scopus. Two reviewers (RR and IP) independently assessed eligibility and extracted data for all included studies and three reviewers (RR, IP and TC) applied the Newcastle-Ottawa Scale to assess the quality of the final articles. The risk ratio (RR) was pooled in a meta-analysis and the heterogeneity was examined by applying a meta regression for all studies. **Results:** Of 8 included studies, 2 studies were low risk of bias and others were in moderate rank. Four articles reported biological exposures, 3 showed psychological factors, and 5 reported occupational factors. For overall exposures, the highest correlation with the prevalence of RSP was psychological predictors (RR: 1.14; 95% CI: 0.98–1.33), especially for job dissatisfaction (RR: 1.30; 95% CI: 0.96–1.75) and mental health aspects (RR: 1.29; 95% CI: 0.85–1.96). It was followed by occupational factors with RR: 1.13; 95% CI: 1.03–1.25. The duration on using computers or mouse > 4 hours/day was the highest occupational factor (RR: 1.25; 95% CI: 1.08–1.44). Biological exposures also were reported to have a significant correlation with the incidence of RSP (RR: 1.03; 95% CI: 1.01–1.06) and gender was the highest biological predictor. **Conclusions:** Several significant risk factors for RSP were identifiable among office workers with different RR. Future research needs to focus on whether it is clinically feasible for healthcare professionals to identify office workers at the greatest risk of three different exposures. **Clinical Relevance:** The present study provides strong evidence for the risk factors for RSP in office workers. ■

▶ **O21**

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不同貼紮方法對於髕股骨症候群患者疼痛的影響——系統性回顧

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The Effect of Different Taping on Pain in Subjects With Patellofemoral Pain Syndrome—A Systematic Review

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背景與目的：髕股骨疼痛症候群 (patellofemoral pain syndrome, PFPS) 是一種常見的膝關節疾病，常用的治療方式有運動訓練以及使用貼紮來緩解疼痛，但因為目前較少有以貼紮為主題做系統性回顧，因此此篇目的在於分類出各種貼紮方式與種類對於 PFPS 的影響為何。**方法：**搜索 PubMed 資料庫之文獻至 2021 年 7 月為止，關鍵字為 patellofemoral pain syndrome、taping，納入的研究是隨機對照或臨床試驗，並使用

PEDro 與 Oxford 評分系統進行評估。**結果：**搜尋的結果有 30 篇，排除重複、跟貼紮無關或是找不到全文的論文，最終以剩下的 25 篇做評分。根據 PEDro scale：6 篇 poor、11 篇 fair、8 篇 good；Oxford level of evidence：4 篇 level 3b、21 篇 level 4。分析 PEDro 評分 good 的 8 篇論文，2 篇顯示貼紮對於減緩疼痛有顯著影響；1 篇顯示包含貼紮在內的物理治療，能緩解疼痛；兩篇顯示不同貼紮方式的成效有所不同；另外 3 篇是用肌電圖 (electromyography examination) 去探討肌肉活性，其中兩篇結果顯示貼紮對於肌肉活性有顯著差異，另一篇則無。**結論：**此篇系統性回顧支持利用白貼或是肌內效對於減緩疼痛是沒有差別的，而不同的貼紮方式相比沒有貼紮皆對 PFPS 產生減緩疼痛的效果，貼紮對於肌肉活性的影響在這幾篇論文無法找出共同之處，可能要做進一步的研究才能得知。**臨床意義：**本研究結果可提供 PFPS 患者在活動時可用不同種類與方式的貼紮減緩 PFPS 所造成的疼痛。■

▶ O22 DOI:10.6215/FJPT.202112.O22

超音波治療對激痛點或肌筋膜疼痛症候群的治療效果——系統性回顧與統合分析

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Effectiveness of Ultrasound Therapy on Trigger Points or Myofascial Pain Syndrome: A Systematic Review and Meta-Analysis

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Background and Purpose: Ultrasound (US) therapy has been reported as a common electrophysical agent for the management of musculoskeletal disorders. The purpose of this study was to investigate the effect of multiple sessions US on trigger points or myofascial pain syndrome. **Methods:** Three databases (PubMed, ScienceDirect, and Google Scholar) were searched and articles were included if met the following criteria: (1) subjects were randomly assigned to one of the treatment groups; (2) subjects with identified trigger points or myofascial pain syndrome; (3) the intervention group received multiple sessions US alone or US combined with other treatment which was the same as the control group; (4) the control group received no treatment, sham treatment, or other treatment which was part of the intervention group; (5) outcome measures contained pain intensity (at rest, at movement, or under pressure stimulation) or pressure pain threshold (PPT) of trigger points. The immediate effect means the therapeutic effect measured immediately after the end of treatments. The lasting effect means the therapeutic effect measured some time (1 day–6 months) after the end of treatments. **Results:** A total of 6 studies were included and analyzed. The immediate effect of multiple sessions US was significant improvement of both pain intensity (standardized mean difference [SMD] = –1.32, $p < 0.00001$) and PPT (SMD = 1.45, $p = 0.0004$) compared with the control group. The lasting effect of multiple sessions US was significant improvement of both pain intensity (SMD = –0.90, $p < 0.0001$) and PPT (SMD = 0.62, $p = 0.04$) compared with the control group. **Conclusion:** This meta-analysis indicated that there were both immediate and lasting effects of multiple sessions US on significantly decreasing pain intensity and significantly increasing PPT. **Clinical Relevance:** This meta-analysis suggests that multiple sessions US can decrease pain intensity and sensitivity of trigger points or myofascial pain syndrome. ■

▶ O23

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探討冰凍肩患者其肩部中樞興奮性及生物力學特性之改變

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Alterations in Central Excitability and Biomechanical Characteristics of Shoulder Complex in Patients With Frozen Shoulder

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Background and Purpose: Frozen shoulder (FS) is a common musculoskeletal condition. Researchers identified abnormalities in shoulder muscle performance in people with FS, such as muscle guarding, muscle stiffness, and alterations in muscle activation. Evidence has indicated that the central nervous system is also reorganized in patients with chronic musculoskeletal pain, which may contribute to altered neuromuscular control. Nevertheless, no study has investigated whether the central excitability changes with FS. The purposes of the study were to investigate the changes in shoulder kinematics, central excitability, muscle activation, and muscle tone in patients with FS. **Methods:** Thirteen participates with FS and 13 healthy controls were recruited. The outcomes included measurement of corticospinal excitability (active motor threshold, motor evoked potential, cortical silent period, short-interval intracortical inhibition, and short-interval intracortical facilitation), shoulder kinematics, muscle tone, and muscle activation of the upper trapezius (UT), infraspinatus (Isp), and pectoralis major (PM). **Results:** The FS group had a higher active motor threshold (77.09 ± 10.53 vs. 68.00 ± 15.56, $p = 0.041$), longer cortical silent period (124.42 ± 17.06 vs. 77.02 ± 29.72, $p = 0.008$), less short-interval intracortical facilitation (106.08 ± 24.25 vs. 88.26 ± 11.46, $p = 0.021$) of the UT, a tendency of lower activation of the UT (22.64 ± 8.08 vs. 31.70 ± 10.95, $p = 0.072$) and higher activation of the PM (8.00 ± 3.76 vs. 4.70 ± 1.75, $p = 0.014$), less range of humeral elevation ($p = 0.001$–0.029), scapular upward rotation (37.36 ± 15.74 vs. 55.60 ± 11.78, $p = 0.005$), and internal rotation (11.85 ± 6.90 vs. 18.70 ± 8.92, $p = 0.043$) during the functional tasks, and lower elasticity of the Isp (1.29 ± 0.18 vs. 1.17 ± 0.26, $p = 0.046$) than the healthy group. There were no differences in the findings of the other tests between the two groups. **Conclusions:** There were differences in the corticospinal excitability of the UT between patients with and without FS, along with abnormal muscle activation and shoulder kinematics during functional activities. These findings indicated that the neuromuscular control of the shoulder might be impaired and influence the motor performance in the patients with FS. **Clinical Relevance:** Clinicians could pay more attention to both central and peripheral neuromuscular control of the shoulder complex while evaluating and treating patients with FS. ■

▶ O24

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游泳選手與網球選手的肩關節活動度及閉鎖鍊上肢穩定測試比較

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Comparison of the Shoulder Range of Motion and Closed Kinetic Chain Upper Extremities Stability Test Between Swimmers and Tennis Players

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背景與目的：肩關節活動度缺損已被證實是過肩運動選手發生肩關節損傷的高風險因子，而閉鎖鍊上肢穩定測試則是可檢測出肩關節疼痛或功能缺失的穩定性測試，本研究之目的是透過肩關節活動度測試及閉鎖鍊上肢穩定檢測比較網球選手與游泳選手肩關節的差異。**方法：**徵召 14 名網球及 21 名游泳選手（年齡 20 ~ 29 歲）。所有受試者使用 GyKo 慣性測量工具進行肩內轉、外轉、及水平內收的關節活動度測試，並計算肩關節旋轉全角度，再接受閉鎖鍊上肢穩定檢測。**結果：**游泳選手在慣用邊的肩內轉 (p = 0.01) 與旋轉全角度 (p = 0.006) 及非慣用邊的肩內轉 (p = 0.045)、外轉 (p = 0.048)、旋轉全角度 (p = 0.014) 都顯著優於網球選手；在閉鎖鍊上肢穩定測試中游泳選手也有較好表現 (p = 0.016)，但在肩關節活動度與閉鎖鍊上肢穩定測試的相關性檢定中，並未有顯著關聯性。**結論：**研究結果中可得知游泳選手的肩關節穩定性和活動度都較網球選手佳。**臨床意義：**透過肩關節角度及閉鎖鍊上肢穩定測試可瞭解過肩運動項目選手的肩關節狀況。■

▶ P1 DOI:10.6215/FJPT.202112.P01

紅繩懸吊系統運動對日間照顧中心長者體適能之影響

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Effects of Redcord Suspension Exercise on Senior Fitness Among Older Adults in a Day Care Center

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背景與目的：日間照顧是長照 2.0 重點政策。紅繩懸吊系統能幫助提升長者平衡、肌力和柔軟度並達到預防及延緩失能目標。本研究探討紅繩團體運動對日照長者功能性體適能之效益。**方法：**類實驗設計，立意取樣北部某日照中心長者 (N = 18)。實驗組接受為期 24 週、每週 2 次、每次 60 分鐘紅繩課程 (n = 9)；控制組接受日照常規活動 (n = 9)。紅繩課程由具國際認證的物理治療師執行。研究期間 2020 年 1 月至 7 月。以 Wilcoxon rank sum test 檢定體適能和失能等級改變量之組間差異。**結果：**兩組樣本於基期的人口學變項、失能等級、體適能指標皆無差異。實驗組在接受紅繩課程後，體適能測驗變化量包含 30 秒坐站 (2.33 ± 1.00 vs. –0.11 ± 0.60, p < 0.001)、坐姿體前彎 (9.56 ± 5.10 vs.

–2.11 ± 2.98, $p < 0.001$)、手臂彎舉 (1.88 ± 1.36 vs. –0.44 ± 0.72, $p = 0.002$)、抓背測驗 (14.33 ± 9.44 vs. –0.44 ± 0.73, $p = 0.001$)、起身繞行 (–3.73 ± 4.03 vs. 0.65 ± 0.80, $p = 0.001$) 及原地抬膝 (12.00 ± 8.21 vs. 2.11 ± 3.14, $p = 0.001$)，與控制組相較，皆達統計顯著改善。失能等級改善雖未達顯著差異，實驗組有 3 位長者獲得改善 (33.33%)，控制組則無。**結論：**紅繩團體運動可有效增強日照長者各項功能性體適能指標，亦可能有助於改善失能等級。未來可進一步探討個案特性，及其他類型運動介入成效的異同性。**臨床意義：**以紅繩懸吊系統為基礎發展的團體運動課程可改善長者身體功能，本研究提供物理治療紅繩運動介入日照活動方案規劃之實證依據。■

▶ **P2**

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腰大肌與多裂肌和功能表現受年齡及退化性腰椎滑脫伴隨脊椎狹窄影響

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The Area of Psoas Major and Multifidus and the Functional Performance Influenced by Age and Degenerative Spondylolisthesis and Stenosis

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Background and Purpose: Lumbar degenerative spondylolisthesis and stenosis (LDSS) is a common degenerative spinal disorder with instability and compensatory spur formation. Psoas major (PM) and multifidus (MF) of the lumbar spine enhance spinal stability. There is a limited study about the size of paraspinal muscles and the functional performance in patients with LDSS. The aim of the research is to investigate the factors, such as age and LDSS disease, which influence the area of PM, MF, and functional performance. **Methods:** The participants were recruited with or without LDSS. Cross sectional T1-weighted MRI images were used to measure the muscle cross sectional area (CSA) of the PM and MF. The area of fat infiltration was excluded by setting the threshold of the possible fat area to obtain the value of CSA of PM without fat (CSAp-) and MF without fat (CSAm-). The Oswestry back disability index, Time-up-and-go test (TUG), and time needed for five repetitions of sit-to-stand test (5STS) were also measured. Then, the linear regression model was used for the CSAp- and CSAm-, TUG, and 5STS using gender, age, and disease, etc. as independent factors. **Results:** 34 patients (age = 65.9 ± 7.3) with LDSS and 19 without LDSS (age = 38.4 ± 16.5) recruited. The CSAm- was 730.41 ± 184.07 mm^2, the CSAp- was 729.94 ± 286.85 mm^2, TUG was 9.8 ± 3.3 seconds, and 5STS was 10.9 ± 4.3 seconds in patients with LDSS. With LDSS disease and decreased age demonstrated significantly increased in CSAp-. **Conclusions:** With the age increased, the muscle mass of PM is decreased. Patients with LDSS increased in muscle mass of PM. The muscle mass of PM, yet not Multifidus, is sensitive to age and degenerative spinal disease. Further study could investigate PM in relation to functional performance in the aged and patient population. **Clinical Relevance:** Our results provide evidence of the age and degenerative effect on the muscle mass of PM, which stress the important role of PM in aging and degenerative process. ■

▶ P3

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高中菁英羽球選手疲勞後垂直跳躍之加速度變化

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Acceleration Changes During Vertical Jumping After Fatigue in Elite Young Badminton Players

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Background and Purpose: Badminton is one of the most grueling sports requiring both high aerobic and anaerobic capacity of the athletes. Vertical jump is the basic task of the lower extremity when performing advanced overhead stroking. It is known that elite badminton players in Taiwan present superior hitting skills but often with poorer endurance during the games and thus influence their performance. However, how fatigue would influence the vertical jump is limited. Thus, the purpose of the study was to investigate the changes of the body acceleration during vertical jumping after fatigue in elite high-school badminton players. **Methods:** A total of 26 elite badminton players from a senior high school were recruited. An inertial measurement unit (Xsens MTw Awinda) was secured at the level of L4–L5 to measure the acceleration of the whole body. Participants were required to perform 3 vertical jumps as high as possible before and after the fatigue protocol including a series of footwork, agility, and jumping tasks. Fatigue was defined if the finishing time of each series of protocol was 1.5 times longer than the first series. Mean (root mean square), peak, and rate of changes of the vertical acceleration were calculated for both squatting and jumping subphases. In addition, the jumping height was recorded and averaged. Paired *t*-tests or Wilcoxon signed rank tests were conducted. **Results:** The jumping height was significantly decreased after fatigue (51.74 ± 10.07 vs. 47.72 ± 10.07 cm, $p = 0.001$). During the squatting subphase, the mean, peak, and rate of changes of the downward acceleration were significantly increased ($p = 0.002$, $p = 0.037$, and $p = 0.016$, respectively) after fatigue. Although during the jumping subphase, no significant difference was found after fatigue. **Conclusion:** Decrease in jumping height after fatigue might be contributed from the larger and faster body acceleration in the downward direction during the squatting subphase implying poorer eccentric control or insufficient energy storage of the lower extremity might occur. **Clinical Relevance:** Current findings provide more information regarding the influence of fatigue on jumping mechanisms and indicate eccentric training of the lower extremity might be important for elite young badminton players. ■

▶ P4

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利用 PDCA 模式改善物理治療病人運動衛教的成效

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Improving Effectiveness of Exercise Education for Patients Receiving Physical Therapy by Plan-Do-Check-Act (PDCA) Approach

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背景與目的：運動衛教常用於物理治療給予骨骼肌肉有問題的病人回家運動方式，有鑑於物理治療中心病人病況不一，所需之衛教運動內容繁多，口述及紙本衛教內容易導致記憶不夠，造成衛教的成效不足。故藉由 Plan-Do-Check-Action 的模式，將口述或紙本衛教改成拍攝影片的方式，來改善病人記憶力不足而導致運動執行錯誤或遵從性不佳進而改善病人滿意度，並希望改善後可以提升病患在家自我運動的可行性。**方法：**本研究使用的計畫 (Plan) 為以錄影方式記錄回家運動，執行 (Do) 的流程為骨科轉介至物理治療的病患在第一次治療時使用口頭的運動衛教，並請病人回家執行，第二次回到物理治療中心後再以錄影運動衛教，於第三次回來時給予滿意度問卷及評估前兩次回家運動執行的正確率為檢查 (Check)，最後再比較結果 (Action) 進行修正。**結果：**在口述衛教收錄了 27 份問卷，影片衛教收錄了 26 份問卷，而在滿意度的部分影片衛教的分數皆高於口述衛教，在執行正確率的部分也是運動衛教 (95.20 ± 9.12) 有顯著的優於口述衛教 (62.96 ± 25.76, $p < 0.01$)。**結論：**使用錄影的方式之後可以顯著的改善病人的滿意度以及運動的正確率。**臨床意義：**藉由錄影的方式，讓病人除了到醫院治療以外在家的時間，也可以藉由衛教影片自行運動，進而增加肌肉力量或關節活動度並提升生活品質。■

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新冠肺炎疫情期間線上物理治療實習課程之教學成效

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Online Physical Therapy Internship Course During the COVID-19 Pandemic

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背景與目的：桃園某區域教學醫院因新冠肺炎緊急狀況，基於感染控制及保護實習生安全，暫停物理治療臨床實習，進而啟動線上遠距課程。**方法：**線上遠距課程安排 40 小時課程，課程內容分為臨床老師授課之核心課程及實習生報告兩部分。採用 Cisco Webex Meetings 軟體進行，核心課程內容設計臨床情境，與學員進行雙向討論。核心課程以課程滿意度來評估教學成效，課後以 Google 表單匿名填寫；問卷共七個項目，每個項目計分方式採 5 分法，1 分為非常不滿意，5 分為非常滿意。實習生報告則由臨床老師評分，總分為 100 分，分數達 80 分以上為學習成效良好。**結果：**共 6 名實習生參與線上遠距課程，來自 3 所大學，進行 31 小時核心課程及 9 小時實習生報告。核心課程滿意度，結果顯示「軟體操作容易」為 4.79 ± 0.41 分、「課程目標清楚」為 4.83 ± 0.38 分、「課程可促進現有知識」為 4.84 ± 0.36 分、「課程內容架構清晰」為 4.81 ± 0.39 分、「講師解說有條理」為 4.84 ± 0.37 分、「講師重視與學員互動」為 4.92 ± 0.27 分、「課程有助於臨床運用」為 4.85 ± 0.35 分；實習生報告成績為 80.71 ± 6.18 分。**結論：**運用線上視訊軟體協助遠距教學，可達到課程滿意度和良好的學習成效。**臨床意義：**在新冠肺炎疫情緊急狀況時，可利用線上遠距課程，以維護學習權益，提供臨床教學參考。■

▶ P6

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跨領域合作之客觀結構式臨床測驗 (OSCE) 應用於心肺物理治療臨床醫事人員培訓評核

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Interprofessional Objective Structured Clinical Examination for Assessing Post-Graduate Year Training of Cardiopulmonary Physical Therapy

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背景與目的：進行心肺物理治療時，藥物會影響運動處方的設計，藉由與藥師的跨領域合作，設計心肺復健與藥物影響的考題，評核臨床醫事人員培訓計畫 (Post-Graduate Year, PGY) 學員相關衛教技巧。**方法：**評核前邀請藥師教授相關課程，由臨床教師與藥師合作撰寫教案及評分表單，評核項目包括基本藥物認識、溝通技巧、諮商衛教和藥物對心肺復健之影響。由臨床教師與藥師擔任考官，測驗時間共 12 分鐘，閱讀試題 2 分鐘、考試 10 分鐘。評分表分為物理治療和藥師兩部分共 10 項（物理治療佔 4 項滿分 9 分、藥師佔 6 項滿分 11 分），預期 PGY 學員之平均分數為 13 分，整體表現分為 1 分（差）至 5 分（優秀）。**結果：**共 1 位第二年期 PGY 接受評核，物理治療部分評為 4 分、藥師部分為 4 分，總分 8 分比預期分數低，整體表現 3 分（普通）。學員在解釋藥物服用原因和藥物對心肺復健效益之分數較低，藥物副作用的解釋亦待加強。學員期望進行專業課程前，臨床教師列出學習重點，提供更清楚的學習方向。**結論：**首次與藥師合作跨領域的客觀結構式臨床測驗 (Objective Structured Clinical Examination, OSCE) 教案評核學員對心肺復健結合藥物的知識。未來可嘗試與不同職類合作教案，使學員在心肺復健的學習更完整。**臨床意義：**透過與藥師跨領域合作發展評核學員對心肺復健與藥物的 OSCE 教案，並作為全人照護教育的模式之一。■

▶ P7

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經皮椎體成型術治療對骨質疏鬆性脊椎壓迫性骨折病人之呼吸功能影響

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The Effects of Percutaneous Vertebroplasty on Respiratory Parameters in Patients With Osteoporotic Vertebral Compression Fractures

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Background and Purpose: The vertebral compression fractures (VCFs) cause severe back pain, lead to postural changes. Besides, past studies showed VCFs increase the risk of pulmonary functions decline and decrease the peak expiratory flows rate (PEFR). The percutaneous vertebroplasty (PVP) provides pain relief and stability to the vertebral body. However, whether the respiratory-related parameters could be improved after the PVP is still limited. **Methods:** The

measurements included the back pain scale, pulmonary function tests (FVC, FEV_1, PEFR), respiratory muscles strength (MIP and MEP), and the chest mobility test (rib expansion). The same physical therapist measured the participants before the PVP (1st Test), 24 hours after the PVP (2nd Test), one week after discharge (3rd Test), and three weeks after discharge (4th Test). **Results:** We enrolled 32 participants from orthopedics outpatient, E-Da hospital. Results showed that PVP led to significant improvements in back pain scale (1st Test = 3.00 ± 1.40; 2nd Test = 1.00 ± 1.00; $p < 0.001$) and chest mobility (1st Test = 0.80 ± 0.60; 2nd Test =1.00 ± 0.60; $p = 0.001$). Comparing to one week after discharge (1st Test versus 3rd Test), MIP (1st Test = 70.80 ± 42.00; 3rd Test = 82.40 ± 44.30; $p = 0.029$), FEV_1 (1st Test = 1.06 ± 0.35; 3rd Test = 1.29 ± 0.50; $p = 0.013$), and MVV (1st Test = 33.51 ± 22.01; 3rd Test = 41.43 ± 15.97; $p = 0.047$) also showed a significant increase. However, the improvements of MIP (1st Test = 61.84 ± 35.06; 4th Test = 65.98 ± 34.77; $p = 0.36$) and FEV_1 (1st Test = 1.09 ± 0.38; 4th Test = 1.20 ± 0.47; $p = 0.541$) did not extend to 3 weeks after discharge (1st Test versus 4th Test). **Conclusions:** For patients with VCFs, the decline in respiratory function is one of the symptoms. The PVP can solve the patient's pain problem (both resting and aggravating pain) and increase chest mobility immediately after the operation. And the MIP, FEV_1, and MVV would recover in one week after discharge. However, only pain status (resting and aggravating pain), MVV, and chest mobility indicated significant improvement at long-term effect (until three weeks after discharge). **Clinical Relevance:** According to the result, we will consider adding the respiratory muscle training program to the treatment protocol for patients with osteoporotic VCFs. Attempt to enhance the pulmonary performance. ■

▶ P8

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感覺神經肌肉促進術改善使用呼吸器個案潮氣容積——個案報告

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The Effect of Proprioceptive Neuromuscular Facilitation for Tidal Volume: Case Report

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背景與目的：物理治療師在加護病房，面對呼吸器個案，除了被動關節活動及正確擺位，等保守治療。尚可積極改善個案肺功能，以早日脫離呼吸器，常用胸部物理治療主要包括：姿位引流、胸部扣擊等。對意識清醒個案胸腔物理治療，如橫膈膜呼吸法，使用氣管內管無法圓唇式呼吸法，床頭搖高，使腹部內臟往下，增加肺部擴張空間，及訓練呼吸肌。本研究使用本體感覺神經肌肉促進術 (proprioceptive neuromuscular facilitation, PNF) 雙手 D2 Flexion 運動當自變因子，以呼吸器上潮氣容積為依變因子，觀察 PNF 對使用呼吸器個案潮氣容積的影響。**方法：**外科加護病房 22 歲年輕女性，頸椎左邊 4，5 節部分損傷，雙側第 7 節以下完全損傷 (C7, Frankel A) 脫離呼吸器失敗，重插管住進加護病房。呼吸器模式為 SPONT CPAP 6 cmH_2O。先記錄未加入 PNF D2 Flexion 運動前 10 次呼吸平均潮氣容積。治療師再引導個案，PNF D2 Flexion 運動 10 次。**結果：**前平均潮氣容積，呼吸器協助 434.5 ± 21.9 mL。PNF 運動，平均潮氣容積在呼吸器協助下為 595.5 ± 80.8 mL，其最大值為 750 mL，最小值為 480 mL。顯示 D2 Flexion 動作確實有增加潮氣容積。**結論與臨床意義：**除了姿位引流，拍痰，被動關節外，加入主動運動處方，呼吸肌的訓練，改善肺活量，脫離呼吸器，

本研究建議增加雙手 PNF，增加胸廓容積，牽拉前胸腹部組織，減少吸氣肌阻力，增加吸氣效率。■

▶ P9

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數位化重力本體感覺測量工具的信度測試

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The Reliability Test of the Digital Gravitational Proprioception Measurement Tool

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背景與目的：臨床上測量重力本體感覺 (gravitational proprioception) 的工具有很多種，但往往需要昂貴的設備，並且需要專業的人員來執行。我們的目的是設計一個便宜、方便使用的測量工具。以健康年輕人族群進行試驗，來驗證這個工具是否有良好的實用性和測量信度，將來可提供臨床使用。**方法：**本研究採便利樣本收案，總共 22 位健康年輕人（8 男 14 女），平均年齡為 21.68 ± 2.51 歲。研究使用數位式角度計、紅光雷射投射器與 3D 列印製作簡易測量工具。分別測量視覺垂直本體感覺 (subjective visual perception vertical, SVPV)、姿勢垂直本體感覺 (subjective postural perception vertical, SPPV)、觸覺水平本體感覺 (subjective haptic perception horizontal, SHPH)、觸覺垂直本體感覺 (subjective haptic perception vertical, SHPV)。每一測試均分順時鐘與逆時鐘方向執行且各重複測試 3 次，測試順序依亂數產生安排，每次間隔 15 分鐘，使用級內相關係數 (intraclass correlation coefficient, ICC) 計算測試的信度。**結果：**SVPV：坐姿 ($ICC_{順時鐘/逆時鐘}$ = 0.867/0.746)、站姿 ($ICC_{順時鐘/逆時鐘}$ = 0.745/0.707)。SPPV：坐姿 ($ICC_{順時鐘/逆時鐘}$ = 0.798/0.830)、站姿 ($ICC_{順時鐘/逆時鐘}$ = 0.768/0.919)。SHPH：坐姿 ($ICC_{順時鐘/逆時鐘}$ = 0.912/0.867)、站姿 ($ICC_{順時鐘/逆時鐘}$ = 0.791/0.932)。SHPV：坐姿 ($ICC_{順時鐘/逆時鐘}$ = 0.900/0.889)、站姿 ($ICC_{順時鐘/逆時鐘}$ = 0.928/0.940)。**結論：**所有測試項目 ICC 值都大於 0.7，表示此測量工具有良好的信度。**臨床意義：**本研究可以提供臨床一個操作簡單且具有信度的重力垂直本體感覺的測量工具。■

▶ P10

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貝恩輔具科技系統之臨床應用：個案報告

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Clinical Application of Bain Assistive Technology System: A Case Study

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背景與目的：貝恩輔具科技系統 (Bain Assistive Technology System, BATS) 的核心觀念，是以個案為中心，探討與環境、輔具、任務，各因子間互動之影響。本研究目的為運用 BATS 找出更適合居家個案的介入模式。**方法：**個案為中度阿

茲海默症 4 年的 83 歲女性，去年 7 月於家中跌倒，故家屬申請無障礙評估。於 2021 年 3 月 29 日至個案家中進行個案功能、環境、輔具綜合評估。**結果：**個案關節活動無受限。坐到站，需少量攙扶；室內小碎步行走，需中度攙扶；外出以輪椅代步。語言：可部分理解、表達多單詞。居家環境：大門、浴室有 3 cm 門檻，走道約 2 m 寬。此次評估著重於盥洗、如廁任務的安全。最初認為個案功能尚可，曾嘗試讓個案使用四腳拐，在輕度攙扶下行走執行任務。但發現室內空間狹窄、門檻不易跨過及憂慮如廁不及。便與家屬協商增購便盆椅進行移位，並用斜板輔助通過門檻、加止滑墊改善浴室環境，協助安全執行任務。**結論：**以 BATS 綜合評估，個案雖能以四角拐緩步行走，但因速度及環境，使無法有效完成任務。而便盆椅的使用，雖低估個案功能、但經環境改造，則能有效增加任務達成率及家屬配合意願。**臨床意義：**使用 BATS 協助評估，能幫評估者多面向瞭解個案生活脈絡、且思考因子間的影響，提供貼近個案實際生活建議。■

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義大醫院物理治療 OSCE 教案之改良重點

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Key Points of Improvement of OSCE Curriculums for Physical Therapy in E-Da Hospital

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背景與目的：客觀性結構化臨床技能測驗 (objective structured clinical examination, OSCE) 是常被推薦的教學模式。研究者服務單位已發展 27 項教案，故需探究教案改良重點以提升教案品質與效能。**方法：**研究者邀請臨床與 OSCE 專家（物理治療專家並有參與 OSCE 經驗）給予教案修改建議。審查重點：(1) 測驗目標明確性；(2) 測驗器材合適性；(3) 考生指引合適性；(4) 考官指引訓練合適性；(5) 標準病人劇本訓練合適性；(6) 測驗情境設定合理性；(7) 操作時間合適性。專家依據審查結果提出教案修改重點。採逐一審查，再開會共同審查取得共識。**結果：**3 位相關專家各自審查意見一致性低（平均約 35%，第一項至第七項之一致性各別為 42%、45%、30%、24%、22%、39% 與 48%），經共識會議後取得建議：(1) 1 ／ 3 教案測驗目標用詞宜改善，提升明確性；(2) 測驗器材合適性佳；(3) 2 ／ 3 教案考生指引需修改內容，提升語意完整明確；(4) 約 3 ／ 4 教案考官指引訓練需修改內容，提升內容完整可讀；(5) 約 3 ／ 4 教案標準病人劇本需修改內容，提升內容語意完整明確；(6) 教案情境設定合理性佳；(7) 教案操作時間合適性佳。**結論：**專家個別建議一致性低顯示共識會議重要性。專家提供明確 OSCE 教案修改重點，研究者依據建議修改並進行測試，以提升教案品質與效能。**臨床意義：**採用客觀標準有規劃的 OSCE，讓學生藉臨床技能訓練，將醫學知識應用於解決臨床問題，以確保病人安全。■

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足踝扭傷 OSCE 四項問卷之專家效度與修改建議

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Expert Validity and Revision Suggestions of Four Questionnaires for OSCE of Ankle Sprain

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背景與目的：為確認與提升實習學生之學習效能，研究者已發展足踝扭傷之客觀性結構化臨床技能測驗 (objective structured clinical examination, OSCE)。足踝扭傷 OSCE 之執行過程共使用四項問卷：考生填寫之「自我學習能力評估」問卷、「OSCE 測驗滿意度評值表」、考官評核的「OSCE 測試後考官問卷調查表」以及標準化病人填寫之「OSCE 測試後標準化病人問卷調查表」等。因此本研究目的，為驗證物理治療實習學生參與足踝扭傷 OSCE 時，所使用四項問卷之內容效度與表面效度，以作為後續使用上述問卷之實證依據以及作為後續修改之依據。**方法：**研究者邀請 3 位專家審核足踝扭傷 OSCE 四項問卷項目之內容效度與表面效度，並請專家提出修改建議。資料分析方面，以同意程度 (0–100%) 驗證內容效度或表面效度。**結果：**四項問卷項目之內容效度，專家之同意程度介於 72 ~ 81%。內容效度較差者為：項目內容不明確、欠缺部分內容（如標準化病人填寫之「OSCE 測試後標準化病人問卷調查表」欠缺考證內容對於難度以及訓練時間合適度）。表面效度介於 77 ~ 85%，表面效度較差者為部分項目語意不明。四項工具之主要優點為可呈現主要專業技能領域、整體能力或 OSCE 品質之滿意度或同意程度。**結論：**研究者設計之足踝扭傷 OSCE 四項問卷具備初步表面效度與內容效度。所有問卷數據可提供足踝扭傷 OSCE 之品質指標，且可依據同意程度較差之項目（如項目內容不明確、欠缺部分內容、以及語意不清之項目）做出修改，以提升四項問卷之內容效度與表面效度。**臨床意義：**可藉由考生、考官、標準病人填寫相關問卷等資訊，以作為後續修改之科學依據，並提升問卷品質，支持 OSCE 在物理治療臨床之應用價值。■

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頭部前傾姿勢對年輕人頸椎及胸椎活動度和靜態平衡的影響

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Impacts of Forward Head Posture on Cervical and Thoracic Spine Motion and Static Balance in Young Adults

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背景與目的：年輕人的生活與 3C 產品的使用緊密連結，不自覺地呈現上頸椎過度伸直及下頸椎

過度屈曲之頭部前傾姿勢 (forward head posture, FHP)，導致顱頸肌力失衡或疼痛。本研究調查 FHP 對健康年輕人的脊椎活動度及平衡能力的影響，做為預防與治療處方之依據。**方法：**召募 19 ~ 30 歲健康的參與者，拍攝其側面坐姿半身照片，以第七頸椎 (C7) 棘突水平線與 C7 棘突至耳珠連線夾角為顱頸角度 (craniovertebral angle, CVA)。定義 CVA ≤ 50° 為 FHP，CVA > 50° 為非 FHP (NFHP)。問卷調查參與者基本資料，包括身體質量指數 (body mass index, BMI)、使用 3C 電子產品時間、疼痛指數等。量測頸椎各活動角度、胸椎後凸指數 (thoracic kyphosis index, TKI) 及張眼、閉眼時慣用腳站立於地板和圓盤軟墊的時間。以單因子獨立變異數分析比較兩組間連續變項的差異；以皮爾森相關分析連續變項之間的相關性。**結果：**FHP (n = 29) 使用 3C 產品時間 (p = 0.03)、頭頸疼痛指數 (p < 0.0001) 皆高於 NFHP (n = 53)；FHP 閉眼單腳站立於地板的秒數較 NFHP 短 (18.01 vs. 23.32; p = 0.02)。兩組的頸椎活動角度及 TKI 無顯著差異，但 CVA 與頸椎伸直角度呈正相關 (r = 0.21, p = 0.05)；FHP 與 BMI 呈顯著負相關 (r = –0.71, p < 0.0001)。**結論：**大多數 FHP 使用 3C 產品超過 5 小時且常抱怨頭頸疼痛；頭部前傾越嚴重，頸椎伸直角度越受限、BMI 較高，且閉眼單腳站立的能力下降。**臨床意義：**年輕人應維持正確姿勢，以避免頭部前傾姿勢所引發的不良影響。■

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物理治療系學生對學習人體解剖學的主觀感受

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Physical Therapy Students' Perception of Learning the Human Anatomy Course

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背景與目的：人體解剖學是醫學知識的基礎，物理治療相關課程皆由此延伸，且關係著專業學習成效。本研究調查物理治療系學生對學習解剖學的主觀感受，以作為教學策略之參考。**方法：**使用 Google 表單建立線上調查問卷 15 題，隨機發送給 150 位大學二年級以上且完成人體解剖學課程的學生，請學生自評學習人體解剖學的感受及心得，不記名蒐集此問卷資料。**結果：**總共回收 45 份問卷，大多數學生（38 人，84.4%）認為解剖學難度高，35 位 (77.8%) 覺得學起來很痛苦，其中 7 位 (15.6%) 重修過解剖學。半數以上（31 人，68.9%）學生覺得上下肢骨骼、肌肉與其支配的神經，比其他單元較容易學習。雖然，44 位 (97.8%) 學生相信只要用對方法、付出時間，就能學會解剖學，卻只有 5 ~ 6 位願意自主閱讀或學習解剖學課本以外的知識。即使再重修一次，29 位 (64.4%) 覺得不一定能學好。34 位 (75.6%) 學生表示上課聽不懂老師講授的解剖學內容，成為導致不想學習的主要原因，喜歡利用遊戲方式學習勝於傳統自學模式。超過九成學生表示，若教師不僅止於單純講授解剖學內容，添增課堂中的互動與趣味性，可提升學習解剖學的動機與專注力；當解剖學成績進步，亦能提升自信心和成就感，且增進其他專業科目的學習成效。**結論：**擬研發以遊戲方式進行解剖課程教學，並探討其介入之成效。**臨床意義：**建構一個能提升解剖學自主學習動機與效益的教學措施。■

▶ P15

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藉由研發解剖卡牌和遊戲瞭解物理治療系學生對學習人體解剖學的興趣與動機

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Understanding Physical Therapy Students' Interest and Motivation in Learning Human Anatomy Through the Development of Anatomy Cards and Games

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背景與目的：人體解剖學為醫學相關科系入門之基礎，卻鮮少文獻探討多元教學策略對物理治療系學生學習解剖學的影響，故本研究初步探討學生從事解剖卡牌設計與製作對學習解剖學之興趣和動機。**方法：**以一學期的時間引導 9 位物理治療系學生，從事人體上肢及下肢解剖卡牌研發，包含將中、英文神經及肌肉名稱、該肌肉可執行的功能性動作與結構圖像印製成撲克牌，並制定遊戲規則。完成後，以線上問卷調查學生參與卡牌研發前、後對學習解剖學的主觀感受、學習興趣與動機，而學生參與前未被告知有問卷調查。**結果：**上肢和下肢各有 64 張解剖卡牌和 1 張鬼牌，四人為一組，以動作功能為主軸，配對執行該動作的肌肉及其所支配的神經，最快完成者即贏得遊戲分數。問卷結果有 8 位 (88.9%) 學生過去是為了「學習而學習」，6 人 (66.7%) 覺得學習困難；完成卡牌製作後，8 位 (88.9%) 感覺解剖學變有趣且學習動機強烈；雖對卡牌遊戲喜愛程度有個別差異，但參與遊戲後，仍有 8 位 (88.9%) 學生的學習興趣提升了。**結論：**藉由圖文配對的解剖卡牌和遊戲互動，讓學生由原本被動聽講轉換為主動思考與建構知識的角色，激發學生完成目標的決心與得分的成就感，使解剖課程變得有趣並從中獲得知識，未來將驗證運用卡牌遊戲於解剖教學之成效。**臨床意義：**提供一個有趣且能提升學習解剖學動機與成效的教學方式。■

▶ P16

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藍芽感測器與功能性伸取測試之效度驗證

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Validity Verification of Bluetooth Sensor Functional Extension Test

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背景與前言：功能性伸取測試 (Functional Reach Test, FRT) 是物理治療常見評估方式，但較無法作為治療的選擇。藍芽感測器是具有即時回饋訊號的感測技術，此技術將可提供臨床使用者有一種結合評估及治療的設備，能更有效率的治療方式。**目的：**將藍芽感測器與 FRT 進行效度驗證，以做為未來結合臨床治療之依據。**方法：**本研究收案為便利樣本的取樣。受試者站立於牆邊，手持藍芽感測器平舉並向前延伸之最大位移，也就是執行 FRT，牆上約肩膀的高度處有一條皮尺記錄移動之距離。測試指令為請你將手臂

向前延伸，並停留 5 秒。測試動作重複 5 次，測量間隔中間休息 30 秒。參數計算以目測出最大之位移作為實際測量參數；藍芽感測器之參數將會採納其中最大的 5 筆資料取平均值。**結果：**本研究納入 10 位健康受試者，平均年齡為 32.10 ± 0.81 歲。在 Wilcoxon 符號等級檢定實際測量平均值與藍芽測量平均值相比，結果 $p = 0.511$，代表實際測量與藍芽測量兩者沒有顯著差異。Pearson 相關係數上在檢視實際測量平均值與藍芽測量平均值相比，相關係數高達 0.998。**結論與臨床意義：**經由 Wilcoxon 及 Pearson 相關性評估可判斷兩種評估方式結果一致，也就是藍芽感測器具有相當的效度，目前正在開發有關藍芽感測器之即時訊號回饋處理相關的治療應用，以提升治療的趣味性及品質。■

▶ **P17**

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透過標準化團隊合作照護模式探討物理治療成效之影響因子——以南部某醫院全膝人工關節置換術病人為例

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Exploring the Influence Effects of Physical Therapy Through Standardized Inter-Professional Practice Model (SIPPM)—Take Patients Undergoing the Total Knee Arthroplasty (TKA) as an Example

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背景與目的：標準化團隊合作照護模式 (standardized inter-professional practice model, SIPPM) 參酌世界衛生組織針對跨領域團隊合作照護之定義與臨床照護認證計畫之衍生出適合臺灣醫療體制下之應用模式。本研究將以 SIPPM 去探討全膝人工關節置換術後物理治療成效之影響因子。**方法：**本研究採用病例回顧法作為回溯性研究，蒐集南部某大型醫學中心經由團隊收案且進行 WOMAC、VAS、TUG 評估，並執行完全膝人工關節置換術後之病人，共計 222 人。應變數為住院天數，自變數為入帳天數、功能性分數、關節活動度、疼痛分數並使用回歸分析進行物理治療成效之影響因子相關性。**結果：**本研究結果顯示，關節活動度 ($p < 0.004$)、疼痛分數 ($p < 0.016$)、功能性分數 ($p < 0.001$)、入帳天數 ($p < 0.001$)，皆與住院中介入物理治療有相關性。**結論：**透過 SIPPM 可以回復身體之功能性活動，進而使住院天數下降。**臨床意義：**全膝人工關節置換術是可以加速出院的一種手術。若透過 SIPPM，可以減少併發症風險並改善病人生活品質。■

▶ **P18**

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車輛誘發動暈之動作相關因子：系統性回顧

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Motion-Related Factors of Motion Sickness Induced by Vehicles: A Systematic Review

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Background and Purpose: Motion sickness can be provoked by dynamic transport environments, including cars, ships, airplanes, and space. Since people began to use vehicles, motion sickness has existed. In recent years, more smart display systems have been developed for vehicles, motion sickness becomes the potential burden for users. Understanding the movement-related factors for motion sickness is essential for future development of the guideline of the display systems in vehicles. The purpose of this systematic review was to identify the parameters of movement related to motion sickness induced by vehicles. **Methods:** The two electronic databases (PubMed and Embase) were searched for relevant studies including titles, keywords, and abstracts before May 2021. Only human clinical trials in English and studies related to motion sickness induced by vehicles were included. The exclusion criteria were simulating no gravity in space, Coriolis, and visual flow trials. Two authors independently reviewed and extracted the searched studies. Sixteen studies were systematically reviewed after excluding irrelevant researches. **Results:** The identified factors were direction and frequency of oscillation. The seated horizontal motion was more nauseogenic than vertical motion, and the level of motion sickness was similar between the forward-and-afterward and lateral oscillation. The frequency of horizontal oscillation from 0.0315 Hz to 0.2 Hz was more likely to induce nausea, while above 0.2 Hz reduced the symptoms. **Conclusions:** The seated horizontal oscillation easily provoked motion sickness. More sickness occurred at the oscillation frequency of 0.2 Hz. **Clinical Relevance:** The current systematic review provides important information to examine the susceptibility of motion sickness and suggestions for people with motion sickness. Acknowledgment: This study was supported by the Industrial Technology Research Institute (MOEA 110-EC-17-A-24-1716), Taiwan. ■

▶ P19

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不同身體質量指數的青壯年在健康體適能表現之差異比較

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Comparison of Health-Related Fitness Performance Among Different Body Mass Index Levels of Young Adults

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背景與目的：專家主張提早控制身體質量指數 (body mass index, BMI) 是對付肥胖的最佳策略，而在其他族群如青少年已證實 BMI 與體適能表現高度相關。本研究目的為分析 30 ~ 50 歲青壯年健檢族群的 BMI 與健康體適能表現。**方法：**本篇為橫斷性研究，蒐集臺北市某健康檢查中心自 2016 年 1 月 1 日到 2018 年 12 月 31 日之健檢資料，篩選出年齡為 30 ~ 50 歲客戶共 3,209 人（男性 1,740 人、女性 1,469 人）之 BMI 與體適能檢測數據為樣本。BMI 依衛生福利部標準分成過輕、正常、過重與肥胖組，體適能採用手持式握力器、坐姿體前彎、閉眼單腳站來進行檢

測。數據使用 SPSS 25.0 軟體進行處理，採單因子變異數分析比較 BMI 各組間體適能表現差異，以 Scheffé 或 Games-Howell 法進行事後比較。**結果：**平衡方面，男性肥胖組閉眼單腳站的時間顯著短於正常組和過重組，而女性肥胖組和各組相比時間皆顯著較短。握力方面，男女性 BMI 較高的組別握力皆顯著大於 BMI 較低的組別，其中只有男性過輕組和正常組相比、女性過重組和肥胖組相比無顯著差異。不同 BMI 分組之男女性在柔軟度的表現上，則皆無統計上顯著差異 ($p > 0.05$)。**結論：**青壯年族群中 BMI 較高者握力表現較佳，可能與其肌肉量較高有關；不論男女性，肥胖組的平衡表現皆較差。**臨床意義：**結果顯示肥胖會影響平衡能力，因此肥胖者除需控制體重外，建議再加入平衡與姿勢的運動訓練。■

▶ P20

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運動員對運動物理治療師角色心理期待：文獻回顧

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The Role and Psychological Expectation About Sport Physical Therapist in Athletes: A Literature Review

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背景與目的：運動物理治療師泛指在運動場域工作的物理治療師，提供運動傷害預防或運動技能強化的角色。不論是休閒或菁英運動選手，在運動場邊皆有機會接觸物理治療。最佳復健成效需要醫療團隊、運動員、教練共同配合，瞭解運動員的心理需求，以提供實務面良好的運動團隊關係。**方法：**本研究採文獻回顧方式，截至 2021 年 1 月之文獻資料，來源為網路資料庫：PubMed、Web of Science、Google Scholar 及 Airiti Library。關鍵字包含 physical therapy、sport、sport injury、expectation、athlete、sport performance、sport professional 等。**結果：**蒐集 16 篇相關文章歸納分析國內外對運動物理治療專業發展，相較之下，國內運動醫療專家的特殊專業性與定位還有成長空間，例如運動風氣、選手價值、政策等。研究說明運動員與物理治療師關係中，運動員對物理治療師心理期待，從認知評價模式心理層面探討下，不同背景變項，包含女性、運動傷害類型、運動種類、比賽等級、國家文化、過去治療經驗，造成運動員對個人承諾、外在環境、專業知識皆有不同的重視度。**結論：**文獻回顧結語表示除了重視滿足生理上改善，不同背景之運動員有不同期待與需求，並與運動物理治療師角色提供的服務相關。**臨床意義：**本文獻回顧建議瞭解運動員的心理期待，促進運動團隊合作與運動員關係，增加復健或訓練效果。■

▶ P21

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以跨領域團隊模式，運用協助性運動介入安寧病房高惡性淋巴水腫病患：個案報告

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Assistive Exercise Combined Transdisciplinary Approach for High-Malignant Lymphedema in Hospice Ward: A Case Report

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背景與目的：高惡性淋巴水腫 (high-malignant lymphedema)，是指因惡性腫瘤直接侵犯、壓迫淋巴管及淋巴結，加劇淋巴回流阻塞，而快速產生的淋巴水腫現象，經常伴隨令人難以忍受的疼痛、皮膚紫紺、腫瘤傷口，甚至即將到來的死亡。本研究主要探討物理治療如何結合跨領域團隊資源，透過協助性運動介入，改善高惡性淋巴水腫病患身體舒適度。**方法：**60 歲鼻咽癌男性，曾接受過放射線及化學治療，因皮膚多處轉移、腫瘤壓迫影響呼吸及嚴重疼痛問題，入院接受安寧照護。物理治療評估發現，病患身上多處腫瘤突起；雙上肢淋巴水腫；呼吸短淺；身體僵硬無法翻身移位。物理治療師以徒手方式協助誘發胸廓活動度，搭配自主圓唇吐氣，調整呼吸頻率及深淺，利用呼吸促進淋巴回流；另由安寧病房護理師，每天多次協助執行特定上肢動作及肩胛骨放鬆技巧，避免臥床不動加重水腫惡化。**結果：**結合舒適照護、疼痛控制、協助性運動多方介入，病患於生命末期階段，右上肢淋巴水腫由 4+ 減為 2+，活動功能從完全臥床進步至部分協助下翻身下床並移位至輪椅。**結論：**針對高惡性淋巴水腫，協助性運動介入，有助於末期患者改善身體舒適程度。**臨床意義：**如何透過協助性運動，幫助生命末期患者，提升生活品質及餘生價值，提供臨床作參考。■

▶ P22

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新冠肺炎疫情下線上教學翻轉教室經驗分享：以高醫物理治療實習生為例

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Experience Sharing of Flipped Classroom for Online Teaching Based on COVID-19 Aspect: An Empirical Study of Physical Therapy Intern in KMUH

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背景與目的：因應新冠肺炎全國疫情警戒升至第三級，本單位當時尚有 11 名物理治療實習學生，基於安全理由，提出採用線上教學取代實體課程並規劃 6 週之物理治療線上翻轉教室課程。**方法：**課程採用 Google Meet 作為施行平臺。內容有讀書報告（15 次）、專題討論（10 次）、影片教學（2 次）、模擬個案討論（11 次）、衛教講座（2 次）等課程，課前活動為先給教學影片、個案病歷資料、期刊文章等教材，讓學生事前準備；課中活動為實習學生讀書報告、分組討論影片內容、報告個案治療目標、與授課老師即時互動等；課後活動為心得回饋學習單、專題報告書面作業、衛教講座影片製作等做為平時成績考核依據。期末線上教學成績則利用線上筆試、線上影片考試、線上即時視訊考試來呈現。課程結束後完成線上教學滿意度調查。**結果：**6 週期間，學生出席率為 100%。課程滿意度分析在整體滿意度分數平均為 4.87 分（低到高，1 ~ 5 分）。**結論：**因應新冠肺炎疫情，為降低群聚感染之風險並確保學生實習訓練完善及證照應考之需要，

以特定比例之線上教學方式取代實體實習是不可避免之趨勢，但對於物理治療實體實習中徒手學習仍然有所限制。**臨床意義：**本文提供其他教學醫院在未來線上課程規劃時可參考的課程設計與內容。■

▶ P23

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應用網路進行客觀結構式臨床技能評估 (OSCE) 評量以檢驗臨床技能學習成效之可行性

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The Feasibility of Online Objective Structured Clinical Skills Examination (OSCE) to Test the Learning Effectiveness of Clinical Skills

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背景與目的：物理治療師養成教育中，實習著重於培養臨床操作技能與推理能力，故多安排客觀結構式臨床測驗 (objective structured clinical examination, OSCE) 來檢視學習成效。2021 年 5 月臺灣由於 COVID-19 疫情實施三級警戒，實習課程轉為遠距教學，而期末也採線上考核。因此本研究比較實體與線上進行 OSCE 的滿意度與可行性。**方法：**於某醫學中心以小兒 OSCE 教案施測兩梯實習生，第一梯完成實體實習，第二梯則實習 3 週後轉為線上教學。兩梯課程設計與臨床經驗皆不同，故本研究不比較成績，僅討論自填滿意度問卷結果，來檢視應用網路進行 OSCE 的可行性。除了網路 OSCE 中考官兼任標準病人外，教案、考官、施測時間等變項皆一致。**結果：**25 位實習生參加並完成問卷（實體組 19 位、網路組 6 位），兩組除了學制（大學／五專）的比例有顯著差異（實體：89.4；網路：33.3，$p < 0.05$）外，年齡與 OSCE 的經驗值並無顯著差異。此問卷為李克特量表共 12 題，以 SPSS 軟體進行曼－惠特妮 U 檢定 (Mann-Whitney U test) 發現除了在「評估的客觀性」（實體：4.1；網路：4.8，$p < 0.01$）與「回饋有助瞭解學習成效」（實體：4.1；網路：4.8，$p < 0.05$）達顯著差異外，其他項目與總分皆無顯著差異。**結論：**實體組與網路組在 OSCE 的受試者滿意度差異不大。**臨床意義：**當面臨無法實體執行 OSCE 評量時，使用網路進行線上 OSCE 評估學習成效可能是適用方法之一。■

▶ P24

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智能運動介入對老年人身體功能及生活品質之探討：以日間照顧中心長輩為例

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The Effectiveness of Technically Assisted Exercise on Physical Function and Quality of Life Among Older Adults in Adult Day Care Centers

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背景與目的：日照中心導入智能運動可降低照顧人員工作負荷並提升老人健康狀態，其對於老人身體功能表現及生活品質成效值得探討。**方法：**類實驗設計，配額抽樣日照 65 歲以上老人 (N = 28)，比較等速智能運動 (n = 9)、等張智能運動 (n = 9) 及等長團體運動 (n = 10) 介入之前後差異。三組運動皆設定頻率 5 天／週、2 次／天、連續 2 週，自覺運動強度為中等（有點出汗但仍可輕鬆對談）、每次持續 15 分鐘。以變異量分析三種運動模式之成效差異，結果指標含身體功能（平衡能力、行走速度、五次坐站、坐站起走、坐姿體前彎）和生活品質（歐洲健康五維量表）。**結果：**身體功能方面，以「等速」智能運動對於老人平衡能力的改善成效最佳（等長：–0.70 ± 1.06、等速：0.22 ± 0.67、等張：0.00 ± 0.50，p = 0.04），其餘指標未達統計顯著差異；生活品質方面，三組介入成效未達統計顯著差異（等長：–1.20 ± 1.75、等速：–0.89 ± 3.26、等張：1.00 ± 3.87，p = 0.26）。**結論：**智能運動產品提供多元訓練模式，具備實務操作可行性。本研究以日照老人為例，證實「等速」智能運動可提升老人平衡，其餘身體功能指標及生活品質改善成效，則須擴大樣本進一步討論。**臨床意義：**日照老人普遍活動量下降，本研究證實透過智能運動產品設定於「等速」模式可改善老人平衡能力，建議日照可列入常規活動課表。■

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女性高齡者之手握力與呼吸肌肌力及肺功能之關係

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The Relationship Between Handgrip Strength, Respiratory Muscle Strength and Pulmonary Function in the Female Elderly

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背景與目的：肌少症是老化社會之新興議題，有許多研究證實肌少症與高齡者跌倒、失能等問題有關，特別是女性族群容易受停經的因素影響而導致肌肉質量流失更為嚴重。手握力 (handgrip) 是肌少症篩檢三項指標之一，手握力測試結果是否可反映呼吸肌肌力或肺功能表現，仍待研究探索，因此本研究目的為探討社區女性高齡者，其手握力與呼吸肌肌力及肺功能之間的關係。**方法：**本研究納入 122 位社區女性高齡者（年齡 74.5 ± 7.9 歲）進行手握力、呼吸肌肌力及肺功能測量。呼吸肌肌力以最大吸氣壓 (maximal inspiratory pressure, MIP) 和最大呼氣壓 (maximal expiratory pressure, MEP) 呈現，其單位為公分水柱。肺功能分析參數包含用力肺活量 (forced vital capacity, FVC)、第一秒用力呼氣量 (forced expiratory volume, FEV_1) 及最大自主通氣量 (maximal voluntary ventilation, MVV)。以斯皮爾曼等級相關 (Spearman rank correlation) 分析手握力、呼吸肌肌力及肺功能參數之相關性。**結果：**手握力與 MIP 及 MEP (r

= 0.40, $p < 0.001$; r = 0.38, $p < 0.001$) 呈中度顯著正相關，與 FVC 及 MVV (r = 0.25, $p < 0.01$; r = 0.28, $p < 0.01$) 呈低度顯著正相關，與 FEV_1 (r = 0.05, $p = 0.559$) 則無顯著相關。**結論：**社區女性高齡者其手握力與呼吸肌肌力、肺活量及呼吸肌耐力具有低至中度的相關性。**臨床意義：**本研究結果顯示手握力與呼吸肌肌力及肺功能間具有一定的關聯性，建議未來臨床上對手握力較差女性高齡者，應留意其呼吸肌肌力、肺功能之表現，並視需求給予適當介入。■

▶ P26

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探討複合運動與輔具應用對衰弱前期及衰弱成人的身體功能及活動參與的影響

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Exploring the Effects of Multicomponent Exercises and Application of Assistive Devices on Body Functions, Activities and Participation in Pre-Frail and Frail Adults

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背景與目的：目前透過複合精準肌力與平衡訓練，並搭配輔具應用改善衰弱成人之活動及參與的研究非常有限。本研究目的為探討複合精準肌力訓練與平衡訓練以及輔具應用對衰弱前期及衰弱成人的身體功能與活動及參與的影響。**方法：**本研究之整合介入為期 3 個月，包含複合精準肌力訓練與平衡訓練以及輔具應用。在介入前、介入 6 週以及介入 12 週後各做一次評估，評估內容有身體功能與活動及參與；身體功能包含握力、步行速度、重複一次最大重量 (one repetition maximal) 及簡短身體功能表現量表 (Short Physical Performance Battery)，而活動及參與以國際健康功能及障礙分類系統 (International Classification of Functioning, Disability, and Health) 之 9 大領域描述表現的改變。**結果：**本研究共有 17 位研究參與者，平均年齡為 69.9 ± 6.5 歲，經過 12 週介入後，在身體功能方面，步行速度、重複一次最大重量及簡短身體功能表現量表分數皆有顯著進步 ($p < 0.05$)，握力則沒有顯著進步；在活動及參與方面，行動 (d4)、自我照顧 (d5)、居家生活 (d6) 及社區、社交與公民生活 (d9) 這 4 項領域中的表現獲得改善。**結論：**本研究之複合精準肌力與平衡訓練以及輔具應用能顯著改善衰弱前期及衰弱成人之身體功能與活動及參與。**臨床意義：**本研究之複合運動能促進衰弱前期與衰弱成人運動的動機，培養持續運動以維持身體健康的良好習慣。■

▶ P27

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高或中低阻力運動合併有氧運動對於肌少症老人在肌肉力量之成效：系統性回顧與統合分析

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The Effects of High Intensity or Moderate-Low Intensity Resistance Exercise Combined With Aerobic Exercise on Muscle Strength in the Elderly With Sarcopenia: Systematic Review and a Meta-Analysis

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背景與目的：肌少症好發於老年人，常有身體肌肉量減少及肌肉力量下降，且因肌力不足，易導致活動失能及長期臥床發生，並提高跌倒發生的機率。許多研究結果指出運動訓練可顯著提升肌力，且部分研究更提出提升肌力與延緩失能有高度相關。訓練方式多採阻力訓練，但訓練採用的強度暫無定論，且有研究探討不同運動訓練方式（有氧訓練、阻力合併有氧訓練）對於肌力改善之成效。故本研究藉由回顧文獻，探討不同運動訓練方式及不同阻力訓練強度，針對肌肉力量的改善效果。**方法：**搜索 Google Scholar、PubMed 資料庫之文獻至 2021 年 6 月止，關鍵字為：Sarcopenia、Resistance training、HI-RT、Endurance training 及 Moderate intensity，並使用 Comprehensive Meta-Analysis v3 版進行分析。**結果：**共計 10 篇文獻符合條件進行內容討論，其中 3 篇符合條件進行運動類型對於肌力改善的統合分析。阻力訓練相較有氧訓練可達較顯著之肌力改善 (standard difference in means [SDM]: 8.6, standard error (SE): 3.5, p = 0.017)；而阻力合併有氧訓練與純阻力訓練有相似的肌力提升效果 (SDM: 4.2, SE: 2.4, p = 0.074)。**結論：**純阻力訓練與合併阻力及有氧訓練相較純有氧訓練，對於肌力提升有較顯著的效果。無論採高強度或中低強度進行阻力訓練皆可顯著提升肌力，但兩種強度並無明顯差異。**臨床意義：**可提供臨床訓練肌少症病人，依病人表現或意願作為調整適當的運動類型及強度選擇之建議。■

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以測力板探討推者症候群病人接受機器人輔助步態訓練的效果：個案報告

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Using Force Plate to Explore the Effect of Robot-Assisted Gait Training for A Patient With Pusher Syndrome: A Case Report

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背景與目的：部分的中風病人會出現「推者症候群 (pusher syndrome) ，健側肢體一直推向患側，使軀幹往患側傾倒，姿勢平衡困難，阻礙復健。研究顯示機器人步態訓練能更快速改善推者症候群的症狀，本研究欲以測力板探討機器人步態訓練的效果。**方法：**個案為 61 歲男性，顱內出血導致左側偏癱伴隨推者症候群。評估方式包含推者症候群評估量表、布氏動作階段、功能性表現、步態分析。步態分析中顯示此個案舒適走路的步長為 30 cm。上銀機器人（型號 MRG-P100）設定的步長 30 cm、步頻為每分鐘 20 步、步態軌跡為扁橢圓。常規的物理治療外，加做每次 15 分鐘共 3 次的上銀機器人訓練。**結果：**病人左上下

肢的動作從布氏第 I 階段進步到第 V 階段，推者症候群評估量表從 6 分降為 1 分，功能性表現從需要極大協助轉位，進步到接觸保護下能使用四腳拐行走。步態分析發現步長變長、步寬縮短，且平均足底壓力的分布有進步。**結論：**對於患有推者症候群的中風病人進行常規的物理治療搭配機器人步態訓練，可快速且有效減少推者症候群現象。**臨床意義：**此機器人步態訓練，能讓身體維持正中，減少病人害怕跌倒的心理，能更快速有效減少推者症候群，且因有內隱學習的特性，可應用認知與語言理解困難的推者症候群。■

▶ P29

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膝過度伸直之腦中風病患使用下肢副木的問卷調查

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Questionnaire Survey on the Use of Lower Limb Gaiters in Stroke Patients With Hyperextended Knees

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背景與目的：約 40% 腦中風病患的步態不對稱，膝伸直肌張力較高而屈肌肌力不足，腳趾離地與站立期無法保持膝關節微彎，只能採膝過度伸直行走。臨床對中風患者的訓練，常以鐵條式下肢副木 (gaiter) 提供靜態穩定和安全性。新型輔具充氣式下肢副木（專利字號 M555714）允許被固定的肢體保有自主的動作，以達動態控制的穩定性。本研究調查膝關節過度伸直的中風病患穿戴鐵條式與充氣式下肢副木後的主觀感受，以做為臨床治療活動之參考。**方法：**於南部某醫院徵召 20 位腦中風（右／左側偏癱：7 ／ 13）有膝過度伸直個案，隨機決定病患穿戴副木之順序，在地板站立 2 分鐘及行走 10 m 後回答問卷。包含：(1) 舒適度、穩定度、自覺膝關節活動度、省力程度及滿意度，以 1 ~ 5 等級評分，分數越高越良好；(2) 使用兩種副木的意願。**結果：**病患膝過度伸直平均為 11.40 (± 3.90)°，表示充氣式較鐵條式副木提供站立和行走時良好的穩定、省力、舒適性與膝關節活動度 ($p < 0.01$)，並且復健時選擇充氣式副木的意願亦高於鐵條式 ($p < 0.05$)。**結論：**人們的功能性動作需有骨骼和軟組織系統的動態調控，充氣式副木提供膝過度伸直之腦中風病患在站立及行走時的穩定協調，期待未來能驗證改善膝過度伸直步態之效益。**臨床意義：**提供中風病患使用副木輔助治療之多元化選擇。■

▶ P30

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上坡跑步機訓練對踝部控制不足慢性中風患者踝部控制之療效

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Effects of Inclined Treadmill Training on Ankle Control in Chronic Stroke With Inadequate Ankle

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Background and Purpose: Inadequate ankle dorsiflexion at initial contact is a common ankle impairment that affects locomotion after stroke. An increase in ankle dorsiflexion at initial contact has been reported while walking on the inclined treadmill in stroke subjects. The purpose of this study was to investigate the accumulative effects of inclined treadmill training on ankle control in chronic stroke participants with inadequate ankle control. **Methods:** Eighteen stroke subjects with inadequate ankle control were randomly assigned to the experimental group (n = 9) or control group (n = 9). Subjects in the experimental group received two 15-min of inclined treadmill training followed by 5 mins of over-ground walking for 12 sessions, and two 15-min of regular treadmill training followed by 5 mins of over-ground walking in the control group. All patients were assessed for ankle control during walking and walking performance before and after 12 training sessions. **Results:** The results on ankle control showed that increased ankle dorsiflexion angle at initial contact (p = 0.002), increased activation of tabialis anterior at initial contact (p = 0.003) and during swing (p = 0.006), and decreased dynamic spasticity of plantar flexors (p = 0.027) in the experimental group when compared to control. Although there was no significant improvement in gait velocity in the two groups, the cadence significantly decreased in the experimental group compared with the control group (p = 0.015). **Conclusion:** Our results suggested that the inclined treadmill training seems to be effective for ankle control by increasing angle and muscle activation of dorsiflexion and decreasing plantarflexion spasticity during walking. **Clinical Relevance:** Inclined treadmill training is suggested to be a beneficial addition into stroke rehabilitation program for ankle impairment. ■

▶ **P31** DOI:10.6215/FJPT.202112.P31

從實證醫學探討肩部吊帶對中風患者肩部半脫位之成效

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EBM: Effects of Shoulder Sling on Stroke Patients With Shoulder Subluxation

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背景與目的：肩部半脫位在中風患者發生率約17 ~ 66%，且影響患者治療時的活動選擇。肩部吊帶是臨床上最常見用來治療或預防肩部半脫位的方法。本文欲探討肩部吊帶對中風患者肩部半脫位之成效。**方法：**搜索 PubMed 資料庫之文獻至 2021 年 6 月為止，關鍵字為：shoulder sling/ shoulder orthosis、stroke、shoulder subluxation。**結果：**共得 38 篇文獻，經人工審閱後，有 3 篇系統性回顧和 2 篇隨機分配文獻（PEDro 8 ／ 10 和 7 ／ 10）符合條件。3 篇系統性文獻的結論為：穿戴正確的肩部吊帶可立即減少肩部半脫位程度，但對於肩部半脫位的預防目前證據力尚不足。在另外 2 篇隨機分配文獻中，Ada (2017) 發現兩組（一組用輪椅膝上托盤加三角巾，另一組用單側吊帶 [hemisling]）在減緩肩部半脫位的效果，彼此沒有差異；另一篇 van Bladel (2017) 則對於兩種不同吊帶和不穿吊帶於肩部半脫位效果做比較，在 6 週後，三組間對於減少肩部半脫位程度也沒有統計上的差異，甚至沒有穿肩部吊帶的控制組，在 6 週後，肩部半脫位減少的程度較其餘兩組好。**結論：**對於肩部半脫位，正確使用肩部吊帶後可立即減少半脫位的程度，但對於預防或長期減少半脫位的效果卻不明顯。**臨床意義：**本次的文獻回顧發現，肩部吊帶對於肩部半脫位並

沒有提供很好的治療或預防效果，或許更適合的方式是在日常生活或在治療性活動時隨時注意並保護好患側肢體，並儘可能地誘發和促進患側肢體動作的恢復。■

▶ P32

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探討對於小腦共濟失調患者進行傳統物理治療結合核心穩定訓練對於共濟失調、平衡及跌倒之成效：個案報告

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Effects of Conventional Physical Therapy Combined With Core Muscle Stability Training on Ataxia, Balance and Falls Efficacy in a Patient With Spinocerebellar Ataxia: A Case Study

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Background and Purpose: Studies have demonstrated that core muscle training can improve balance and postural stability in patients with stroke and multiple sclerosis. Minimal research, however, has investigated the effects of core muscle stability training on patients with spinocerebellar ataxia (SCA). The purpose of this study was to investigate the effects of conventional physical therapy combined with core muscle stability training on ataxia, balance, and falls efficacy in a patient with SCA. **Methods:** This 42-year-old male had been diagnosed as having SCA 2 years earlier and had not received any medication or treatment. Due to an increasing frequency of falls, he sought assistance at our outpatient department. The intervention programs were included (1) exercise modalities for 30 min and (2) core muscle stability training for 30 min. The total training duration was 60 min per session and 12 sessions over 4 weeks. The outcomes were evaluations of the severity of ataxia symptoms by using the Scale for the Assessment and Rating of Ataxia (SARA). The Berg Balance Scale (BBS) and Dynamic Gait Index (DGI) assessed the effects of balance. The fall effects were assessed using the Activities-specific Balance Confidence (ABC) scale and the Fall Efficacy Scale (FES). **Results:** After a 4-week intervention, we discovered no significant difference in SARA scores; however, the section of the "transfer" demonstrated improvement in BBS scores. The DGI score increased from 14 to 18 points postintervention, which met the criteria for minimal detectable change. The balance confidence measured using ABC scale scores, improved 0.19%, and efficacy of fall increased by over 40% according to FES scores. **Conclusion:** In this case study, conventional physical therapy combined with core muscle stability training was shown to improve the balance and fall confidence of a patient with SCA. **Clinical Relevance:** For patients with SCA, balance impairment and limitations in daily life participation are usually observed. In our study, we introduced stability training to enhance the patient's motor control ability. We hope that in the future, required long-term interventions and follow-up can improve participation in activities of daily living and reduce falls among patients with SCA. ■

▶ P33

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腹內斜肌、髖內收肌與外轉肌之誘發對於慢性中風病患之髖屈肌控制與步態表現之影響——個案報告

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The Effects of Abdominal Internal Oblique, Hip Adductors and External Rotators Facilitation on Hip Flexors Control and Gait Performance in Patient With Cerebrovascular Accident—A Case Report

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背景與目的：髖屈肌為步態擺盪期的主要動作肌，協助完成跨步動作。本體感覺神經肌肉誘發術 (proprioceptive neuromuscular facilitation, PNF) 為臨床針對中風病患常用之誘發技術，而其中下肢 D1 屈曲為誘發行走功能常見之模式，此模式包含骨盆向前抬高（腹內斜肌）、髖屈曲、髖外轉與髖內收。本研究針對一位慢性中風病患，誘發其患側腹內斜肌、髖內收肌與外轉肌，探討其對患側髖屈肌控制與行走功能之影響。**方法：**個案為 49 歲男性，2021 年 2 月 11 日診斷為左中大腦動脈梗塞之缺血性中風。為了改善髖屈肌控制與行走功能，採取腹內斜肌、髖內收肌與外轉肌之誘發。個案在仰躺下，將患側腳被動擺位在髖屈曲 90 度，請個案主動做出髖內收，以誘發腹內斜肌與髖內收肌；相同姿勢下，物理治療師將手放至於膝關節外側，給予輕度內轉阻力，請個案作出外轉以誘發髖外轉肌。共介入三次，每次各動作皆執行 20 下。**結果：**個案之髖關節主動角度由 0 ~ 30 度增加為 0 ~ 50 度；髖屈肌之徒手肌力測試由 2+ 分增加為 3 分；3 m 距離之行走，步伐由 10 步減少為 8 步。**結論：**單一個案之患側下肢 PNF D1 屈曲模式可增加髖屈肌之控制與增加行走步幅功能。建議未來能以更嚴謹之隨機試驗來討論其療效。**臨床意義：**下肢 PNF D1 屈曲模式在單一個案上可改善其步態，但仍須更多個案之研究結果來支持。■

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一項觀察性研究對於入住呼吸加護中心的中樞神經疾患持續接受早期活動計畫的影響：成效初探

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An Observational Study Investigating the Impact of Continuing Early Mobilization Protocol in Patients With Central Nervous System Disease Admitted to Respiratory Care Center (RCC): A Preliminary Study

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背景與目的：急性期的部分中樞神經損傷患者因呼吸器依賴而接受整合性照護計畫轉至呼吸加護中心 (Respiratory Care Center, RCC) 接續治療。RCC 期間的拔管率提升有利患者接受後續復健；同時，於離開 RCC 時的活動能力增加，將利於其長期功能恢復。**方法：**藉由持續性的早期復健活動介入於轉入 RCC 的中樞神經疾患，評估其加護病房活動評估表 (ICU mobility level)、Perme 重症加護活動狀態評估表 (Perme) 與拔管率等成效。**結果：**2019 年 8 月至 2021 年 6 月期間，轉入 RCC 的中樞神經疾患為 61 人。持續接受早期活動介入後，ICU mobility level 平均從 2.04 提升為 3.23 級（臨床最小差異值為 1 級），其中 88.52% 達到加

護病房活動等級 3 級（坐立於床邊）；Perme 總分平均由 2.04 進步至 9.11 分（臨床最小差異值 1.50 分）。整體拔管率為 93.44%，其中，創傷與非創傷病人的拔管率分別為 87.50% 及 95.56%；腦部損傷與脊髓損傷病人為 96.23% 及 75.00%；接受外科開刀手術與非手術為 97.73% 及 88.89%；活動程度等級未滿 3 級與 3 級以上之拔管率則為 100% 及 92.59%。**結論：**中樞神經疾患在 RCC 內接受持續性早期復健活動介入後，期間不僅可提高功能性活動等級和 Perme 分數，不同分類下的病人拔管率也都優於 RCC 的平均拔管率 70%。**臨床意義：**本研究結果顯示對於在 RCC 的中樞神經疾患，持續性給予早期復健活動介入能有助其提升功能活動能力，並有高拔管率的表現。■

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功能性電刺激結合傳統物理治療對於中風後平衡能力之影響：系統性文獻回顧

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The Effects of Functional Electrical Stimulation Combined With Conventional Physical Therapy on Balance Ability in Individuals With Stroke: Systematic Review

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背景與目的：中風患者常因為肌肉無力或是對下肢控制能力不佳而導致平衡能力缺損，過去研究顯示在基本的物理治療基礎上加入功能性電刺激 (functional electrical stimulation, FES) 可對治療後的復原情形有正向效果。本研究目的為使用利用系統性回顧探討下肢肌群之 FES 結合傳統物理治療對於中風後病人平衡能力之改善成效。**方法：**本系統性文獻回顧使用 PubMed 線上資料庫，以 FES、中風 (stroke)、平衡 (balance) 等作為關鍵字來搜尋 2011 至 2021 年英文發表之文獻，比對研究結果並分析改善成效。**結果：**本研究共選取 8 篇文獻納入系統性回顧，皆是評估傳統物理治療同時搭配脛前肌 FES 對於中風患者之平衡能力之改善情形。結果發現以持續 3 週、1 週 5 次、1 次 30 分鐘以上之合併治療模式下，跟治療前相比，對於柏格氏平衡量表 (Berg Balance Scale, BBS) 分數有顯著提升；此外，跟單一傳統物理治療比較中，BBS 之分數亦有顯著提升。**結論：**綜觀文獻回顧之結果，FES 結合傳統物理治療可以讓中風患者平衡能力進步，亦比單獨進行傳統物理治療有更顯著的效益。**臨床意義：**對於中風患者之平衡能力缺損，可以經由 FES 結合傳統物理治療改善，本研究結果可提供中風後病人對於平衡改善復健計畫之建議。■

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探討有無跌倒之門診中風個案在身體特徵及活動能力之表現差異

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The Difference of Physical Characteristics and Activity Among Fallers and Non-Fallers of Stroke Survivors in the Outpatient Rehabilitation Department

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背景與目的：相較於一般長者而言，跌倒對中風患者有更高的髖部骨折機率、失能情形、及發生率。肌力、平衡及步行能力被認為是影響一般長者跌倒的要素之一，由於中風患者因中樞神經系統損傷，會造成半側偏癱、平衡能力受損等特殊性，因此探討中風病人於跌倒與否在身體功能表現之差異更顯重要。然而，過去研究主要針對能夠在社區獨立行走之中風個案，鮮少探討仍需在醫院接受門診復健者。因此，本篇目的為探討有無跌倒經驗之門診中風個案在身體特徵及活動能力之表現差異。**方法：**收取自接受門診復健治療且功能性行走分類 (functional ambulation classification scale, FAC) 等級為 2 ~ 4 級的中風個案。記錄其身體特徵以及起身行走測試 (Timed Up and Go test, TUG) 和 5 次坐站測試 (five-times-sit-to-stand test, FTSST) 之時間。跌倒與否為回溯過去半年內個案是否發生跌倒事件。以無母數及卡方檢定 (Chi-Squared Test) 比較兩組之差異，$p < 0.05$ 顯示有統計差異。**結果：**共收錄 33 位個案，25 位男性，平均年齡 57.0 ± 12.9 歲，FAC 等級以 3 為最多 (45.5%)，其中，有 11 位個案表示過去有跌倒經驗。跌倒組與非跌倒組於女性比例、輔具使用比例及 FTSST 測試有顯著差異。**結論：**有跌倒經驗的門診中風個案有較高的女性及使用輔具比例，FTSST 測試亦較增加。顯示性別、下肢肌力或平衡能力可能是影響跌倒與否的重要因素之一。**臨床意義：**本研究建議應加強下肢肌力及平衡能力之評估或訓練以降低門診中風患者跌倒發生之風險或預防。■

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溝通與資訊輔具於閉鎖症候群患者之應用：個案報告

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Application of Assistive Products for Communication and Information on Person With Locked-In Syndrome: A Case Report

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背景與目的：閉鎖症候群 (Locked-in Syndrome) 是指患者雖然意識清楚，但全身隨意肌除部分面部及眼球外皆癱瘓，以致無法活動甚至喪失言語及表達能力，多為橋腦基底部栓塞所致，藉由特殊的溝通與資訊輔具可使患者與外界互動。本研究目的為呈現眼控滑鼠於閉鎖症候群患者之應用與成效。**方法：**個案為一名 56 歲男性，6 個月前因右側腦血管粥狀動脈硬化及左側基底動脈狹窄致缺血性腦中風，其醫學診斷為閉鎖症候群。本次入院期間除接受一般物理治療外，轉院前亦接受本團隊眼控滑鼠 (ToBii PCEye Mini) 操作訓練，搭配眼控軟體 (Look to Learn) 使個案學習操作滑鼠凝視停能力、滑鼠移動能力，以及滑鼠拖曳控制能力，每次訓練 30 分鐘，每週 3 次，為期 1 週。**結果：**經過 1 週的訓練，個案可運用凝視停能力來控制滑鼠選擇平板畫面中的選項，與外界進行有效溝通，而個案執行滑鼠移動及滑鼠拖曳控制的能力亦有提升。瞄靶任務（滑鼠移動能力）花費的時間由 61 秒 50 縮短至 47 秒 10。**結論：**閉鎖症候群患者經訓練後，可利用眼

控滑鼠操作平板設備與外界互動，短時間的訓練亦可提升個案執行滑鼠移動及拖曳控制的能力。**臨床意義：**透過特殊的溝通與資訊輔具，可協助閉鎖症候群患者與外界互動，進而表達自身需求，使其不再只是接受被動照顧。■

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住院期之物理治療介入對於原發性腦瘤術後病人日常生活功能恢復：系統性回顧

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The Effects of Physical Therapy on Functional Recovery for Inpatients With Primary Brain Tumor After Operation: A Systematic Review

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背景與目的：原發性腦瘤發生率占每年新診斷癌症 1.4%，在癌症死亡率占 2.6%。在接受腦瘤切除手術後何時能開始進行復健活動、復健強度以及效果仍未有一定的共識。因此文章將回顧整理近十年之文獻提供臨床參考。**方法：**檢索線上資料庫 PubMed 中 2000 年至 2020 年 12 月發表之文獻。檢索關鍵字為「brain tumor」、「rehabilitation」及「inpatient」；納入條件為：以英文為書寫語言，以住院期復健為治療，探討原發性腦瘤術後患者在日常生活功能的效果，並以功能獨立量表為依變項之臨床試驗。**結果：**共 74 篇文章符合條件，經審查摘要後共納入 3 篇前瞻性研究和 7 篇回溯性研究。多數文獻指出物理治療的頻率為每次 1 小時，每週執行 5 ~ 6 次，包含關節活動、牽拉運動、漸進式阻力訓練、功能性活動訓練及平衡訓練；病人於術後 6 ~ 14 天即開始治療，總時間為 9 ~ 37 天；出院時功能獨立量表之分數有顯著進步，其效率值為 0.8 ~ 1.8 分／天。**結論：**原發性腦瘤患者於術後若進行住院期物理治療，可以顯著改善病人之功能表現，未來可透過隨機控制試驗來釐清住院期復健對於原發性腦瘤術後的效果及可能影響成效的因素（如治療形式及運動強度）。**臨床意義：**若原發性腦瘤病人在術後身體狀況穩定，即可開始做密集的住院期的復健治療，以改善病人的動作表現及日常生活功能。■

▶ P39 DOI:10.6215/FJPT.202112.P39

合併運動及認知促進介入對於社區疑似失智症長者之下肢肌力、平衡、認知功能及生活品質之成效初探

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An Exploration of the Effects of Combined Physical Exercise and Cognitive Stimulation Intervention on Muscle Strength of Lower Limbs, Balance, Cognitive Function and Quality of Life Among Community-Dwelling Elderly With Suspect Dementia

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Background and Purpose: Dementia mainly affects cognitive function, and often proceeds by deterioration in behavior and emotional control, motor function, and

independence in activities of daily living. Although little evidence has demonstrated greater cognitive improvement in favor of combined physical and cognitive intervention, the effects of such combined intervention on physical and cognitive outcome as well as the quality of life remain to be determined. Therefore, the purpose of this study was to assess the effects of combined physical exercise and cognitive stimulation intervention on muscle strength of lower limbs, balance, cognitive function, and quality of life in community-dwelling elderly with cognitive impairment. **Methods:** This study was conducted with a single-group pretest-posttest design. We recruited 28 subjects aged 50 and over, either with suspect dementia confirmed by an assessment tool, Clinical Dementia Rating (CDR) ≥ 0.5, or with a definite diagnosis of dementia, from community-based care centers in Changhua County. All subjects participated in a 2-hour combined physical exercise and cognition stimulation program once a week for 12 weeks, and were assessed using the 30-s Chair Stand test (CST), Timed Up and Go Test (TUG), Saint Louis University Mental Status (SLUMS) Examination, and Quality of Life-Alzheimer's Disease (QoL-AD) before and after the program. All interventions and assessments were administered by experienced physical therapists. **Results:** A total of 28 participants were included (7 males, 21 females; mean age = 79.61 ± 7.65; CDR 0.5 = 42.9%, CDR 1 = 7.1%, CDR 2 = 3.6%, CDR 3 = 3.6%). Significant improvement was found in SLUMS (pre-test = 11.57, post-test = 13.76, $p < 0.05$) after 12-week intervention, while there was difference in neither STS, TUG, nor QoL-AD. The post-test of QoL-AD had significant moderate correlation between the CST (r = 0.51) and TUG (r = –0.66), but no correlation was found in SLUMS. **Conclusion:** Weekly 2-hour combination of physical and cognition intervention had a positive effect on cognitive function among community-dwelling elderly with dementia. **Clinical Relevance:** Our results provide information about the profile and change in the domains of physical, cognitive, and social-emotional status among elderly with cognitive impairment, which could be helpful for designing more appropriate operating modules and applications in clinical practice and long-term care policies in Taiwan. ■

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一位 61 歲患有多重系統退化症的物理治療介入——個案報告

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A 61 y/o Woman With Multiple System Atrophy—Case Report

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背景與目的：多重系統退化症為一罕見疾病，目前以症狀治療為主，且少有文獻探討物理治療對於多重系統退化症的影響。**方法：**本文使用「個案處理模式」與「國際健康功能與身心障礙分類系統」進行分析。個案為一名 61 歲女性，因在功能性活動的表現退化快速，因此被轉介到物理治療尋求幫助。患者所有功能性活動完全需要協助，並可以在最大協助下行走 1 ~ 2 m。**結果：**經過 12 週的治療後，個案會主動參與執行功能性活動的過程，但還是需要最大的協助，坐到站能力由依賴進步到中度協助，用懸吊系統協助下的行走耐力可以為 30 m。另外治療師依據患者需求，教育主要照顧者照護技巧，並針對排便功能，吞嚥功能以及溝通能力做出照護建議，並轉介語言治療師。**結論：**物理治療對多重系統退化症末期患者的功能性活動改善雖然不多，但可提升功能性肌力，耐力以及改善照顧者的照護技巧，以減輕照顧者照護上的負擔及增進患者生活品質。**臨床意義：**此篇文章主要提供多重系統退化症末期患者之物理治療目標以及治療方向，藉此提供重要的參考資訊。■

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全膝關節置換術後物理治療介入效益：系統性文獻回顧

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Effectiveness of Physiotherapy Intervention Following Total Knee Replacement: A Systematic Review

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Background and Purpose: Knee osteoarthritis (KOA) is a common disorder in the elderly population. KOA would cause the inflammation that induces knee pain and also lead to functional limitation in daily activity. Several studies indicated that total knee replacement (TKR) combined with physical therapy has been effective for improving pain and functional ability. Thus, the aim of the review was to review the efficacy of intervention of TKR combined with physical therapy in patients with KOA. **Methods:** The following data base was searched including the PubMed form 2020 to 2021 by using relevant keywords "total knee replacement, randomized controlled trial, and physical therapy". Studies that didn't focus on TKR and didn't get any physical therapy intervention were excluded. **Results:** Based on the database search, 33 articles were selected. Following the selection criteria, 11 out of the 33 articles met the criteria. Based on the 1,565 sampling subjects (age range = 45–85 years old) from 11 studies, 4 to 6 weeks post TKR physical therapy interventions exhibit a greater change in pain, knee range of motion, strength, balance ability, and walking ability as compared to the post TKR routine care. **Conclusion:** Following this review, physical therapy intervention following TKR exerted benefits on pain, knee range of motion, strength, balance ability, and walking ability in patients with KOA. **Clinical Relevance:** A regular 4 to 6 weeks post TKR physical therapy intervention in KOA patients is necessary. ■

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虛擬實境介入對於腦型麻痺患者平衡之系統性回顧

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Effects of Virtual Reality Intervention on Balance of Cerebral Palsy: A Systematic Review

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背景與目的：虛擬實境 (virtual reality, VR) 可以增加感覺回饋及趣味，是目前新穎之介入方法。但臨床缺乏以 VR 介入對腦性麻痺 (cerebral palsy, CP) 平衡之系統性回顧。本篇以系統性回顧探討 VR 介入對 CP 患者平衡效果。**方法：**由 PubMed、PEDro 及華藝電子資料庫搜尋至 2021 年 8 月發表之所有隨機控制的研究，關鍵字包括腦性麻痺 (cerebral palsy)、虛擬實境 (virtual reality) 及平衡 (balance)。所有文章必須符合：腦性麻痺患者必須含有虛擬實境介入且有評估平衡。符合條件之文章，會以物理治療實證資料庫量表 (PEDro scale) 評定文章等級。**結果：**僅有 2 篇符合條件之研究來自同樣研究團隊。PEDro 分別為 6 分和 4 分。第一篇為痙攣型 CP 比較以

跑步機加 VR 相較跑步機效果 (n = 9, 9)，顯示 8 週 VR 加跑步機對 CP 的兒童平衡指標 (Pediatric Balance Scale) 改善較多 (effect size = 0.30)。第二篇為術後 CP 患者在接受傳統復健加 VR 比較傳統復健效果 (n = 8, 8)，結果顯示 VR 介入可以提升較多兒童平衡指標 (effect size = 0.75)。**結論：**VR 介入對 CP 患者平衡研究相當少，2 篇控制組（跑步機或傳統復健）顯示已有改善平衡指標，再加入 VR 後可以改善更多平衡指標。**臨床意義：**VR 可增加趣味性與學習動機，使訓練更生動。然而本系統性回顧僅有 2 篇符合納入標準文章，因此證據較為薄弱。建議未來有更多研究支持，並提供臨床治療師使用 VR 支持依據。■

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徒手治療對足底筋膜炎患者之療效：統合分析與系統性回顧

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The Effects of Manual Therapy in Patients With Plantar Fasciitis: A Systematic Review and Meta-Analysis

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Background and Purpose: Plantar fasciitis is one of the most common foot orthopedic complaints. Previous studies have shown that manual therapy could decrease pain and improve function by restoring soft tissue flexibility and joint mobility. Different types of manual therapy have been used, and manual therapy has been applied in combination with other therapy. It is not well understood whether all types of manual therapy are effective and whether manual therapy provides additional therapeutic effects in patients with plantar fasciitis. Therefore, the purposes of this systematic review and meta-analysis were to determine which types of manual therapy is an effective treatment for plantar fasciitis in comparison with other physical therapy and to examine the additional effects of manual therapy. **Methods:** A systematic search of the randomized controlled trials was conducted in databases of PubMed, Physiotherapy Evidence Database (PEDro), Cochrane Library and, Airiti Library until May 31, 2021. Three researchers critically appraised studies with the PEDro scale. The outcomes included pain intensity and foot function. **Results:** After the screening, 11 studies with the range of PEDro scores from 3 to 8 were included. The results of meta-analysis showed that manual therapy had better effects on pain than the control therapy with a standardized mean difference (SMD) of 1.41 (p = 0.001). When specific types of manual therapy were analyzed, we found that myofascial release resulted in better improvement in pain intensity and foot function than the control group (SMD: 1.17, p = 0.032; SMD: 2.54, p = 0.025). For those studies that could not be pooled to conduct meta-analysis, two studies with high quality (PEDro scores: 6) indicated that when combined with conventional physical therapy, both soft tissue mobilization and joint mobilization could have additional effects on pain intensity and functional outcomes. **Conclusions:** Manual therapy, particularly myofascial release, could help decrease pain intensity and improve functional performance in people with plantar fasciitis. Treatment programs including soft tissue mobilization or joint mobilization could also provide better effects than those without manual therapy. **Clinical Relevance:** To provide better treatment effects, manual therapy is an essential component of treatment protocols for individuals with plantar fasciitis. ■

▶ P44

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以自動化功能性動作評估系統比較不同性別健康人動作型態與關節活動度

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Comparison of the Movement Patterns and Range of Motion Between Different Genders in Healthy Adults by Using Automated Functional Movement Screening System

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背景與目的：功能性動作評估 (functional movement screen, FMS) 廣泛應用於各運動中，由檢測結果給予訓練建議，然而研究中較少針對不同性別做比較；此外 FMS 使用人工評分，人工評分會因評估經驗影響，為解決此問題，可利用輔助設備來解決，如執行動作時關節角度，可定量動作角度範圍。本研究目的使用自製自動化關節角度追蹤設備來評估不同性別健康成人 FMS 分數與關節活動度。**方法：**招募男性 25 位與女性 20 位，使用 FMS 評估工具、自製自動化關節角度追蹤設備，並以一位物理治療師同時進行人工評估。以卡方檢定分析不同性別的七個 FMS 項目人工評分差異，及獨立樣本 *t* 檢定分析不同性別在七個 FMS 自動化關節角度追蹤設備評估關節角度與 FMS 總分差異。**結果：**在人工評分，只有主動直膝抬腿及總分（男性 13.6 ± 1.5 分，女性 14.8 ± 1.7 分）在性別間達顯著 ($p < 0.05$)；而 FMS 自動化關節角度追蹤設備評量在肩部活動度（兩拳距離以女性較男性佳）、主動直膝抬腿（女性皆比男性佳）、及軀幹穩定俯臥撐（手臂與軀幹角度：男性比女性佳）的關節角度有顯著 ($p < 0.05$)。**結論：**FMS 人工評分上並未能明顯區分出男女性別在功能性動作差異，可加入關節角度評估更能瞭解其差異。**臨床意義：**FMS 自動化關節角度追蹤設備輔以關節角度評估可瞭解男性與女性動作型態差異。■

▶ P45

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麥肯基與希理氏介入對急性下背痛伴隨硬膜夾擠之治療成效：個案報告

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The Effect of McKenzie's Approach and Straight Pull for Acute Lumbago With Dural Impingement: A Case Report

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背景與目的：下背痛是現代人常見的疾病之一，其造成原因很多，常與重複性重物抬舉或無預警腰椎旋轉動作有關，伴隨著疼痛、痠、緊等不適症狀。有 84% 的民眾一生中曾有過下背痛經驗，其中有 11 ~ 12% 的人有失能的情形發生，23% 會發展成慢性下背痛。在過去研究中，針對腰痛

患者多僅以麥肯基 (Mckenzie) 方式介入，無麥凱基式合併希理氏 (Cyriax) 介入的成效，故本篇將探討麥肯基式合併希理氏的評估與治療成效。本篇記錄之個案為一名 19 歲男性大學生，因急性下背痛至本中心尋求物理治療，評估後發現個案除有椎間盤突出症狀外合併有夾擠到硬膜的情形，本篇針對個案問題以合併 2 種方式介入 3 個月後，個案在疼痛、動作幅度以及麻程度的影響。**方法：**依據希理氏及麥肯基的動作測試及重複動作測試，加上硬腦膜評估及一般理學檢查，分別依照個案狀況執行介入，包括 : 擺位、矯正姿勢、伸直導向運動以及恢復神經張力等手法。**結果：**再次評估，個案在疼痛、動作幅度以及麻程度明顯改善且不影響日常生活。**結論與臨床意義：**急性下背痛與一般腰痛不一樣，容易伴隨夾擠硬膜以及姿勢偏移，在治療上都應先以矯正姿勢為主，而後硬膜的處理也相當重要。■

▶ P46

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青少年特發性脊椎側彎的重力本體感覺：系統性回顧

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Gravitational Proprioception in Adolescent With Idiopathic Scoliosis: A Systematic Review

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背景與目的：藉由重力本體感覺 (gravitational proprioception) 來比較青少年特發性脊椎側彎 (adolescent idiopathic scoliosis, AIS) 不同治療介入的差異、及健康族群之間比較有無差異。**方法：**搜尋 PubMed 和 Medline 資料庫文獻至 2021 年 5 月為止，搜索關鍵字使用 proprioception、perception、vertical、verticality、scoliosis。**結果：**總共搜尋到 9 篇，其中 7 篇比較 AIS 患者與健康人的主觀視覺垂直 (subjective visual vertical, SVV)，4 篇比較主觀姿勢覺 (subjective posture perception, SPP)。在比較 SVV 中有 3 篇結果達到統計顯著差異，其他 4 篇沒有達到顯著差異。在 SPP 的研究中，4 篇均有達到顯著差異。研究發現 SVV 與年齡、性別、科卜氏角度 (Cobb's angle) 沒有顯著的相關性。有 2 篇比較不同介入法（運動 + 背架、核心穩定訓練、身體感知訓練），發現核心穩定訓練和身體感知訓練對於 AIS 患者的影響，介入前後相比 SVV 與 SPP 達到顯著差異，而運動 + 背架組沒有達到顯著差異。在觀察組及運動 + 背架組相比，兩組 SVV 達到顯著差異 ($p < 0.05$)。**結論：**(1) SVV 結果並不一致，這樣的差異有可能是因為個案人數太少或實驗方法不同造成。而 SPP 結果較一致，根據孩童發展 AIS 患者與健康青少年相比可能是本體感覺障礙而不是與前庭障礙有關。(2) SVV 不受年齡、性別、科卜氏角度影響。(3) 核心穩定訓練和身體感知訓練可以有效的幫助改善內在定向感 (orientation)。**臨床意義：**可提供未來臨床訓練方向的建議或研究參考。■

▶ P47

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有無監督下訓練骨盆底肌對壓力性尿失禁婦女在治癒率及生活品質之成效——系統性回顧

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The Effects of Pelvic Floor Muscles Training With or Without Supervision on the Cure Rate and Quality of Life in Women With Stress Urinary Incontinence—Systemic Review

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研究背景：壓力性尿失禁 (stress urinary incontinence, SUI) 為尿失禁最常見類型。患有 SUI 的婦女，常因為此症狀較為隱私而較少尋求醫學上的幫助，並降低出門參與社交活動之頻率，且因疾病問題而影響生活品質。本次論文回顧之目的為探討對 SUI 婦女進行門診式 (outpatient) 或居家式 (home-based) 骨盆底肌訓練，在治癒率及生活品質方面的影響。**方法：**從 PubMed 資料庫搜索西元 2016 年至 2021 年之相關文獻，關鍵字包括：pelvic floor muscle training、stress urinary incontinence 及 female，共篩選出 3 篇符合條件之文獻進行探討。**結果：**經 3 個月的介入，門診組個案的治癒率可達 65.7% 至 75.0%，而在居家組則為 35.7% 至 37.8%。生活品質以量表 (Incontinence Quality of Life & King's Health Questionnaire) 調查發現迴避及行為限制上，兩種介入方式之組內均有顯著差異 ($p < 0.005$)。**結論：**在 3 個月內進行每天 3 次，每週 2 ~ 3 天，每月至少為 82 次的門診式或居家式骨盆底肌訓練，在 SUI 的治癒率及行為限制上均有顯著改善效果，而門診式介入的治癒率相對於居家式介入有較高的現象，然而是否存在長期效益則需更進一步追蹤研究。**臨床意義：**在個案初期骨盆底肌訓練時，由門診式介入方式可及時提供正確反饋，可能讓個案在訓練時有正確肌肉收縮的認知，進而增加個案之動機與依從性，並提高治癒率。■

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出院前平衡訓練介入對全膝關節成型術之功能性成效——出院一週後追蹤報告

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Outcome Measures of Balance Training for Total Knee Arthroplasty—One Week Follow-Up Report

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背景與目的：全膝關節成型術後住院期間的常規物理治療內容常以增進膝關節角度、下肢肌力及恢復功能性活動為主。平衡訓練的介入更能增進病人在功能性活動上的表現，使病人在出院後日常功能性活動能獨立甚至不需輔具協助。本篇追蹤報告為全膝關節成型術後住院之病人，其住院期間物理治療內容以常規物理治療復健計畫並加入平衡訓練，並於出院 1 週後追蹤功能性成效。**方法：**控制組執行常規物理治療介入，實驗組病人於術後第 2 天起進行 5 天常規物理治療再加上平衡訓練介入，於出院前當日進行功能性評估，並於出院後 1 週再進行一次功能性評估，評估包含起身行走測試、功能性前伸測試及伯格式平衡量表。**結果：**3 位控制組出院 1 週後，起身行走

測試平均進步 23.04 ± 14.80 秒，功能性前伸測試平均進步 3.8 ± 3.2 cm，伯格式平衡量表平均進步 11.00 ± 5.19 分，3 位實驗組的起身行走測試平均進步 26.9 ± 8.0 秒，功能性前伸測試平均進步 4.5 ± 4.1 cm，伯格式平衡量表平均進步 10 ± 2 分。**結論：**住院期間接受常規物理治療再加上平衡訓練介入於出院 1 週後發現，功能性整體表現明顯持續進步。**臨床意義：**病人於住院期間接受常規物理治療再加上平衡訓練，可使病人增進在出院後功能性活動的獨立，減少輔具協助，提升生活品質。■

▶ P49

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以超音波量化不同下肢負重測試難度下之橫膈厚度與位移變化並比較

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Comparison of Diaphragm Thickness and Displacement Change Among Different Level Leg Loading Test via Ultrasound Imaging

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背景與目的：本研究使用超音波來造影橫膈，目的是為了瞭解橫膈肌肉厚度及位移變化是否隨下肢負重測試動作難度不同而有不同，並探討橫膈位移變化量與下肢負重測試動作難度間的關係。**方法：**共徵求 30 位健康自願者（年齡平均 29.35 ± 7.11 歲，男性與女性各 15 位），受試者執行不同難度「雙腳對稱與不對稱的下肢負重測試」動作並以攜帶式超音波系統 (ACUSON P500 Ultrasound System, SIEMENS healthineers, USA) 來造影橫膈。所有影像在事後使用圖片分析軟體 (Image J) 來測量橫膈厚度變化量（100 × [收縮後厚度 − 收縮前厚度] ／休息時厚度）與位移量（收縮後位置與休息時位置之距離）。以重複量數變異數分析在各難度動作下厚度變化及橫膈位移變化的差異。以 Spearman's 相關性進行橫膈收縮程度與動作等級的關連性。**結果：**橫膈厚度變化量與變化率於對稱與不對稱的下肢負重測試皆無差異（所有 $p > 0.05$）。但橫膈位移變化量在執行對稱下肢負重測試會因不同難度動作而有差異 ($p = 0.002$)，其位移量與動作難度具統計上有意義的相關 (Spearman's rho = 0.298, $p = 0.001$)。**結論與臨床意義：**橫膈主要在對稱動作任務中受難度不同而影響其位移量，難度愈大位移量愈大。此研究結果可提供物理治療師在執行以下肢動作為腰椎穩定性評估或治療運動時，瞭解橫膈在核心穩定角色的參考。■

▶ P50

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肌內效貼布對於慢性腳踝不穩定患者在本體感覺與肌力之影響：系統性回顧

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The Effects of Kinesio Tape in the Proprioception and Muscle Strength in Individuals With Chronic Ankle Instability: A Systematic Review

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背景與目的：踝關節扭傷為造成慢性腳踝不穩定 (chronic ankle instability) 之主要因素之一，過去研究顯示肌內效貼布 (Kinesio tape) 能提升本體感覺和肌力，進而降低傷害再度發生。本研究目的為利用系統性回顧方法，探討肌內效貼布對慢性腳踝不穩定患者在踝關節之本體感覺、肌力之效果。**方法：**本系統性文獻回顧搜索 PubMed 和 PEDro 資料庫之相關文獻，關鍵字包含慢性腳踝不穩定、肌內效貼布、本體感覺與肌力。**結果：**共 11 篇相關文獻納入本文獻回顧，所有文獻之介入組皆只使用肌內效貼布，控制組包含未貼紮及安慰劑貼紮組。在 8 篇對於本體感覺效果之文獻中，其中 4 篇指出經肌內效貼布介入後，相較未貼紮組具顯著提升之效果，而 4 篇相較未貼紮組及安慰劑貼紮組未達顯著差異。在 3 篇關於肌力之文獻中，有 2 篇顯示在肌內效貼布介入後，相較介入前有顯著效益，其中 1 篇顯示與安慰劑貼紮組相比，對肌力有顯著提升。**結論：**綜觀文獻結果，尚不能定論肌內效貼布對慢性腳踝不穩定患者之本體感覺及肌力之改善，可能原因和各文獻之介入部位、貼法、時間不同有關，未來可針對不同介入部位、貼法、時間進行研究。**臨床意義：**對於肌內效貼布在慢性腳踝不穩定患者是否能改善本體感覺、肌力之效果，未來仍應更進一步研究與探討來確定其效益。■

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系統性回顧：探討慢性頸痛族群接受疼痛神經生理學衛教後能否改善疼痛與認知行為的部分

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Systematic Review: Could Pain Neurophysiology Education Improve Pain or Cognitive Behavior in People With Chronic Neck Pain?

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背景與目的：頸痛是相當常見的問題，慢性頸痛的定義是頸痛症狀持續超過 3 個月以上，此族群除疼痛外可能會伴隨功能、認知、行為或情緒性等改變。疼痛神經生理學衛教可以透過深層認知學習來啟動可能的生理及行為的改變。本次探討的問題是以疼痛神經生理學衛教來介入慢性頸痛族群在疼痛或行為是否有改善的效果。**方法：**以 chronic neck pain 及 pain neurophysiology education 為關鍵字，使用 PubMed 電子文獻資料庫搜索至 2021 年 6 月所發表的文獻。**結果：**經搜索共有 5 篇文獻，人工篩選後符合主題有 2 篇文獻。一篇為先驅試驗研究，以單一個案研究方式進行 (Van Oosterwijck et al, 2011)，在移動恐懼量表 (Tampa Scale for Kinesiophobia: baseline: 38.61 ± 4.85, follow-up: 33.29 ± 7.80, p = 0.03) 及疼痛部分 (Visual Analogue Scale [VAS]: baseline: 31.15 ± 18.25, follow-up: 12.47 ± 0.70, p = 0.04) 顯示有統計上的差異。另一篇為臨床隨機試驗 (Andias R et al, 2018) (PEDro:7/10)，在疼痛 (VAS: mean change from baseline ± SE (95% CI): control: –0.3 ± 0.4 (–1.1; 0.4), experiment: –1.1 ± 0.4 (–1.9; –0.4), p = 0.132) 沒有統計上的意義；在頸部伸直耐力 (neck extensors endurance: control: +14.2 ± 13.1 (12.4; 40.7) 秒 , experiment: +47.5 ± 13.5 (20.1; 74.8) 秒 , p = 0.004) 及疼痛神經生理學問卷 (Neurophysiology of Pain Questionnaire: control: –0.6 ± 0.6 (–1.7; 0.5), experiment: +9.8

± 3.2 (8.7; 10.9), $p < 0.001$) 有統計上的差異。**結論：**就目前的文獻顯示疼痛神經生理學的衛教對於慢性頸痛族群在疼痛未有一致性結論。在建立正確的疼痛神經生理學知識有證據顯示有用。對於頸部伸直肌耐力有提升的可能。**臨床意義：**對慢性頸痛的個案可以考慮合併疼痛神經生理學衛教或許可以極大化治療效益。未來也需要有更多研究來探討這部分效益。■

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從實證醫學角度探討彼拉提斯應用於慢性下背痛患者之成效

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EBM: Effects of Pilates on Patients With Chronic Low Back Pain

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背景與目的：慢性下背痛約近 84% 的成人都曾經歷，且是失能 (disability) 的主因。彼拉提斯運動著重核心肌群強化、腰椎骨盆帶穩定訓練與功能性動作控制；本文欲探討此運動在慢性下背痛患者臨床之成效。**方法：**搜索 PubMed 資料庫近 5 年之系統性回顧文獻至 2021 年 6 月為止，關鍵字為：「pilates」、「low back pain」、「chronic low back pain」。**結果：**總共 6 篇文獻符合條件，經人工審閱後，選出 3 篇文獻做整理。3 篇在彼拉提斯運動對疼痛 (Visual Analogue Scale, Numerical Rating Scale) 及日常生活功能 (Roland Morris Disability Questionnaire, Oswestry Disability Index) 部分比起最小介入／常規照護組在短期內都有較佳的改善；而 6 ~ 8 週的彼拉提斯運動訓練及其他類型運動訓練做比較，在疼痛及日常生活功能則沒有達到統計差異。另一方面，慢性下背痛經過 6 ~ 12 週的墊上或器械彼拉提斯運動介入，對於疼痛和功能皆有顯著改善；而比較器械與墊上彼拉提斯訓練差異，在 6 週的訓練後，器械組與墊上彼拉提斯組在慢性下背痛均有改善，然而墊上組與器械組對於下背痛患者之成效何者較優目前則尚無一致的結論。**結論：**目前文獻支持彼拉提斯運動可提供為下背痛患者的一種治療，對於疼痛和失能改善皆是有效的療法；但其益處與其他運動介入則無統計上差異。**臨床意義：**本研究結果支持彼拉提斯運動可提供慢性下背痛患者有效的治療選擇。而多數文章以每週 2 ~ 3 次，每次 30 ~ 60 分鐘，至少 20 小時或持續 3 ~ 6 個月為原則，可為選擇治療參數的參考。■

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接受乳癌術後肩關節物理治療個案之資料分析

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Data Analysis of Cases Receiving Physical Therapy for Shoulder After Breast Cancer Surgery

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背景與目的：乳癌是國內女性好發癌症，罹病年齡年輕化，加上手術方法、術前衛教、術後復健介入，個案重回職場、生活的比例很高。手術外，許多個案接受化療、放療，體力下降、身體

疲累外，常因術後影響肩關節活動，造成生活功能受限。因此本篇研究目的為分析 108、109 兩年至醫學中心接受門診物理治療的乳癌個案，手術方式及上肢自覺緊 (tension)、痛 (pain)、重 (heaviness) 的程度。**方法：**整理 108、109 年門診個案病歷資料，分別記錄個案執行手術的方式、患側邊、是否接受重建手術及方式、治療前自覺緊、痛、重的程度。**結果：**共分析 100 位個案，平均年齡為 50.10 ± 10.41 歲，右側 47 位、左側 50 位、雙側 3 位，36 位接受 modified radical mastectomy、13 位接受 nipple mastectomy、19 位接受 partial mastectomy，其他 32 位接受 breast conserving surgery 等其他手術，其中 66 位接受 axillary lymph node dissection。治療前自覺緊共有 29 位 (3.3 ± 1.3)、痛共有 54 位 (2.5 ± 0.9)、重有 3 位 (2.7 ± 0.6)，共有 35 位接受重建手術。**結論：**乳癌術後破壞肌肉、筋膜造成肩關節與肩胛骨位置改變，加上痛、關節囊沾黏上肢功能受限比例提高。同時接受重建手術的比例也將近 3 成。**臨床意義：**本研究結果可提供物理治療師分析手術方式會造成的軟組織傷害，給予肩關節治療，改善肩胛功能，協助個案避免後續活動受限與淋巴水腫的發生。■

▶ P54

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病理性肥胖執行腰椎融合術及椎板切除後合併肺栓塞病患之物理治療介入成效——個案報告

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Effectiveness of Physical Therapy for a Patient With Obesity and Posterior Screw Fixation With Fusions, Laminectomy and Discectomy Combined With Pulmonary Embolism: A Case Report

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背景與目的：世界衛生組織指出身體質量指數 (body mass index, BMI) 大於 35 即是重度肥胖，研究顯示此類患者為糖尿病、心血管疾病等慢性疾病的主要風險因素，對於復原預後有影響。有氧運動與阻力運動訓練可改善心血管疾病的危險因子與降低體脂肪，亦可增加肌肉的血流量增加肌肉慢肌纖維數，增強肌耐力。**方法：**個案為 37 歲男性，體重 190 kg，BMI 57.6 kg/m^2，診斷脊椎狹窄且神經根病變，經腰椎融合及切除術後併發雙側大面積肺栓塞，雙側下肢無力，腳踝垂足且下肢水腫 2+，術後功能性活動需在重度協助下完成，復健介入前功能性評估在巴氏量表得分為 25 分。經 7 週物理治療介入，主要的運動計畫為有氧運動與阻力運動訓練，運動強度依據運動自覺強度為 11 ~ 13，每次執行運動時間為 60 分鐘，1 週 5 次。**結果：**在 7 週的物理治療介入訓練後病患能在監督下自行從床上坐起，巴氏量表進步 25 分，用助行器下 6 分鐘行走測試 13 m，可自推輪椅 100 m，體重下降 16 kg，腰圍從 167 cm 下降為 164 cm。**結論：**此類患者未來仍須著重於減輕體重為首要目標，以減輕自身活動負擔，再搭配持續的物理治療介入，增進日常生活中的獨立。**臨床意義：**對於肥胖患者之日常功能活動需安排適當的物理治療訓練，使病患生活自理，改善自身生活品質。■

▶ P55

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骨折術後病患急性後期居家物理治療之療效研究

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The Effect of Post-Acute Home Program for Patients Undergoing Orthopedic Intervention

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背景與目的：個案經歷下肢骨折常會因疼痛、喪失關節活動度、肌力衰退等問題，影響其肢體動作及日常生活機能。本院於 2019 年開始參與居家模式急性後期照護計畫，治療人員採一般性原則，運用簡易器材、就地取材、並透過家屬衛教方式，增進個案日常生活功能及促進社區參與能力，提供適切居家物理治療。本篇研究藉由縱向病歷回顧方式，探討急性後期骨科居家個案物理治療訓練之療效。**方法：**使用不記名回顧方式，分析 2019 年至 2020 年間共 19 位個案病歷，在介入後於基本日常生活功能、疼痛指數及 Harris Hip Score 量表 (HHS) 之治療成效。利用描述性資料統計方式分析個案基本資料，以成對 *t* 檢定來分析介入前後統計上的差異。**結果：**個案平均年齡為 68.47 ± 16.70 歲。結案後與初期相比，巴氏量表由 54.21 ± 9.32 分進步至 78.16 ± 15.20 分，疼痛指數由 2.42 ± 1.02 減少為 1.11 ± 1.05，HHS 量表由 48.73 ± 14.67 分進步至 65.53 ± 9.28 分，在統計學上皆有顯著差異 ($p < 0.01$)。**結論：**急性後期骨科居家個案在物理治療介入後，可在短期內有效改善基本日常生活功能、疼痛指數 (visual analog scale) 及 HHS 量表，提高生活品質，降低失能狀況。**臨床意義：**本研究結果以 2 年的急性後期居家骨科個案物理治療成效，佐證急性後期居家骨科照護計劃能延續醫療照護，幫助個案恢復更佳生活品質。■

▶ P56

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肌內效貼布對於慢性非特異性下背痛個案之療效——系統性回顧

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The Effectiveness of Kinesio Taping on Patients With Non-Specific Chronic Low Back Pain—Systematic Review

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背景與目的：根據文獻大約有 75 ~ 90% 的人會經歷一或多次下背痛，其中慢性非特異性下背痛又占了大部分，長期下來會影響情緒、生活品質及工作。近來肌內效貼布被認為有止痛、消腫、保護、引導動作執行等療效，故希望藉由本次研究瞭解肌內效貼布是否可應用於慢性非特異性下背痛患者。**方法：**在 PubMed、PEDro、EBSCOhost 及華藝資料庫，鍵入關鍵字，搜尋 2016 至 2020 年間期刊，納入個案為慢性非特異性下背痛患者，有其他診斷或使用其他介入則排除。**結果：**共有 5 篇期刊符合。3 篇顯示使用肌貼比控制組在疼痛、腰椎活動度及失能狀況皆有顯著差異，另 2 篇顯示使用肌貼沒有顯著大於控制組，進一步發現，其中一篇因年齡分布較廣、複評時間過長，可能無法單純顯示肌貼的效果，另一篇雖無顯著差異，但於森林圖中顯示肌貼的

臨床成效略優於控制組。**結論：**肌貼組於治療後的立即評估及短期追蹤較可緩解疼痛、提升活動度及減少失能，但於長期追蹤結果顯著差異較小。但因各組別貼法及追蹤時間不盡相同，故無法明確說明是否為貼布本身的效應或其他原因影響。**臨床意義：**使用肌貼可於短時間緩解非特異性慢性下背痛患者之疼痛、活動度及失能狀況，延續物理治療效果、增進生活及工作品質。■

▶ P57

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橫膈膜徒手放鬆對慢性頸痛患者之疼痛失能與橫膈移動性效應

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Effects of Manual Diaphragm Release on Pain, Disability, and Diaphragm Excursion in Patients With Chronic Neck Pain

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背景與目的：隨著電子科技產品盛行，慢性頸痛是當今常見的肌肉骨骼問題，造成個人、醫療及社會成本增加。研究發現 83% 慢性頸痛個案呈現頸式或上胸呼吸模式。頸部呼吸輔助肌過度活化可能與慢性頸痛或是橫膈呼吸失能有關。橫膈是身體最主要的呼吸肌，亦具有脊椎穩定功能。過去研究發現橫膈膜放鬆可改善下背痛患者的疼痛失能，但至今仍沒有相關慢性頸痛研究。因此，本研究目的是探討橫膈膜徒手放鬆介入對慢性頸痛患者的疼痛失能與橫膈移動性效果。**方法：**本前驅研究共招募 10 位慢性頸痛患者。所有受試者皆接受每週 2 次，共計 2 週之橫膈膜徒手放鬆介入。介入前後各有一次評估，包含疼痛強度、頸部失能程度、頸部關節活動度、及超音波影像下的橫膈膜移動性。以成對樣本 t 檢定比較介入前後差異。**結果：**橫膈膜徒手放鬆可顯著減輕疼痛 (7.90 ± 1.99 vs. 4.05 ± 3.08 mm, p = 0.022)；增加頸部各個方向之關節活動度 (p < 0.05)；及顯著地增加橫膈移動性 (84.43 ± 17.77 vs. 96.13 ± 18.71 mm, p = 0.014)。頸部失能程度在介入後有減緩趨勢，但未達統計差異 (16.60 ± 11.15 vs. 12.00 ± 8.43%, p = 0.08)。**結論：**本前驅研究證明橫膈膜徒手放鬆或許可以改善慢性頸痛患者的疼痛、關節活動度、與增加橫膈移動性。**臨床意義：**本研究結果提供臨床工作者對慢性頸痛患者的評估與治療另一參考面向。■

▶ P58

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動態貼紮對於圓肩姿勢之效果

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Effects of Dynamic Taping on the Round Shoulder Posture for Active People

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Background and Purpose: Round shoulder posture is one of the common musculoskeletal problems. It may result in headaches or neck pain. The purpose of this study was aimed to understand the effect of Dynamic Taping on the round shoulder for active people. **Methods:** A total of 20 male subjects with round shoulder posture were participated in this study and randomly divided into 2 groups: the dynamic taping (DT) (n = 10, age: 27.9 ± 4.8 years, height: 177.0 ± 5.6 cm, bodyweight: 83.3 ± 15.7 kg) and the control (CO) (n = 10, age: 28.5 ± 6.2 years, height: 175.3 ± 4.9 cm, bodyweight: 70.4 ± 9.9 kg) group. The vertical distance from the lateral edge of the acromion to the treatment bed when in the supine position (Distance from Acromion to Bed) and the forward shoulder angle (FSA) of both sides were assessed before and after the taping interventions. The mix-design, repeated measure two-way ANOVA was used to analyze the pre-and post- taping intervention between 2 groups. **Results:** There were significant interaction in Distance from Acromion to Bed (CO right side: pre 5.4 ± 1.4 cm, post 5.4 ± 1.4 cm; DT right side: pre 6.9 ± 1.4 cm, post 6.0 ± 1.2 cm, $F_{(1,18)} = 15.250$, $p = 0.001$, $\eta^2 = 0.459$, Power = 0.958; CO left side: pre 5.1 ± 0.9 cm, post 5.1 ± 0.9 cm; DT left side: pre 6.4 ± 1.2 cm, post 5.6 ± 1.0 cm, $F_{(1,18)} = 16.603$, $p = 0.001$, $\eta^2 = 0.480$, Power = 0.971) and FSA (CO right side: pre 31.6 ± 10.5 deg, post 31.6 ± 10.4 deg; DT right side: pre 39.3 ± 9.9 deg, post 35.1 ± 9.5 deg, $F_{(1,18)} = 31.166$, $p < 0.001$, $\eta^2 = 0.634$, Power = 1.000; CO left side: pre 31.2 ± 7.0 deg, post 31.0 ± 7.6 deg; DT left side: pre 37.2 ± 5.2 deg, post 32.8 ± 4.7 deg, $F_{(1,18)} = 21.322$, $p < 0.001$, $\eta^2 = 0.542$, Power = 0.992) of both sides. **Conclusion:** Dynamic Taping was shown to be efficacy in improving round shoulder posture for active male people. **Clinical Relevance:** Dynamic Taping is one of the effective methods for improving round shoulder posture. ■

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以超音波影像測量下頷髁側移的信度

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The Reliability of Measuring the Mandibular Condylar Deviation by the Ultrasonography

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背景與目的：過去評估顳顎關節障礙患者的張嘴受限與下頷偏移等症狀，大都使用尺規量測上下門牙間的垂直與左右位移。然有學者指出嘴巴開合距離將因骨骼及咬合形態上的差異而受影響。過去有學者以超音波測量下頷髁的前移距離，但下頷髁除了前移，尚有旋轉及側移的動作。由於過去資料的缺乏，因此本研究目的即是探討以超音波測量顳顎關節障礙患者的下頷髁側移之信度。**方法：**本研究徵召 26 位顳顎關節障礙患者參與實驗，分別在閉嘴與最大張嘴時，各擷取一張下頷髁的影像。後續將兩張影像左右擺放，量測兩下頷髁間的垂直距離即為側移。測試者有 A、B 兩人。**結果：**測試者 A 所量得的健、患側側移分別為 1.9 ± 1.2、0.7 ± 1.1 mm ($p < 0.001$)，變異係數為 0.63、1.57。測試者 B 所量得的健、患側側移分別為 1.9 ± 1.1、0.8 ± 1.0 mm ($p < 0.001$)，變異係數為 0.58、1.25。測試者內信度在健、患側分別為 ICC = 0.94、0.97；測試者間信度在健、患側分別為 ICC = 0.95、0.98。**結論：**結果顯示以超音波測量下頷髁的側移，其測試者內與測試者間信度均逾 90%。然其變異係數卻非常高，推測可能是每位受試者最大張嘴程度的差異較大。因此建議進行超音波檢測前，應讓受試者練習最大張嘴運動。**臨床意義：**測量下頷髁的側向位移

對於治療師的徒手治療，可提供療效評估的依據。■

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以超音波影像探討顳顎關節障礙及頭部前移姿勢患者的頸屈肌群肌肉厚度

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Investigation on the Muscle Thickness of Neck Flexors by the Ultrasonography in the Individuals With Temporomandibular Disorder and Forward Head Posture

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背景與目的：頭部前移姿勢易造成肩頸肌筋膜疼痛，進而導致肌源性顳顎關節障礙。可能因頸深肌群失能，淺肌群過度使用而疼痛。因缺乏相關資料，故本研究目的即探討顳顎關節障礙患者頸屈肌肌肉厚度的變化。**方法：**本研究徵召 27 位具頭部前移姿勢的肌源性顳顎關節障礙患者參與實驗。將充氣墊置於受試者頸下並使之做顱頸屈曲運動，在休息與最大用力時，擷取胸鎖乳突肌 (sternocleidomastoid muscle, SCM) 與深層頸屈肌 (deep cervical flexor muscle, DCF) 的超音波影像。後續再量測這兩肌肉厚度以代表肌肉收縮的程度。**結果：**SCM 休息時的厚度在患健側分別為 6.7 ± 1.3、6.6 ± 1.5 mm (p = 0.70)，而 DCF 休息時在患健側分別為 11.7 ± 2.1、11.5 ± 2.7 mm (p = 0.73)。SCM 最大用力時在患健側分別為 7.9 ± 1.4、7.0 ± 1.5 mm (p = 0.01)，DCF 最大用力時在患健側分別為 11.5 ± 1.8、13.5 ± 2.6 mm (p < 0.001)。兩種狀態時 DCF 厚度均顯著比 SCM 大 (p < 0.001)。患側 SCM 在最大收縮時厚度顯著比休息時大 (p < 0.001)，但患側 DCF 在最大收縮與休息時厚度並無差異 (p = 0.41)。SCM/DCF 的比值，僅休息時的患健側之間無顯著差異 (p = 0.95)；最大用力時的患健側、以及患健側在最大用力與休息時，其比值皆有顯著差異。**結論：**結果顯示患側 DCF 的收縮程度並不顯著，而 SCM 卻在收縮時顯著變大。故頭部前移姿勢時的 DCF 的收縮不良，而淺層的 SCM 過度收縮。**臨床意義：**本實驗結果可提供治療師擬定治療處方之參考。■

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以假設為導向之規則系統評估足部疼痛之臨床案例分享

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The Hypothesis-Oriented Algorithm for Clinicians II Applicate on Foot Pain Assessment and Treatment: A Case Report

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背景：臨床推理在物理治療師養成教育以及臨床物理治療師訓練當中都是相當重要的訓練項目，

是藉由適切的個案資料收集（包含主觀／客觀資料、影像學資料、檢驗數據以及用藥資料等），進而得出合理之臨床印象及治療策略；而臨床工作者以假設為導向之規則系統除提供以病人為中心的思維外，還強調實證的應用。**方法：**一位46歲男性因左側腳踝內側疼痛至物理治療部門治療，站、走、上／下樓梯均會引起疼痛，但不踩地即不痛。觀察發現左踝有腫脹，步態於承重期有過多的旋前動作；足部姿勢指數與舟狀骨下沉測試均顯示有扁平足；活動度在不承重的狀態下無明顯受限，內翻肌肌力不足且會疼痛；選擇性組織張力測試顯示內翻肌受損；觸診發現舟狀骨後方有壓痛，蹲姿測試以及單腳墊腳尖測試均為陽性；足部X光檢查無異常。經由病人確認的問題、非病人確認的問題以及可能的假設分析得出脛後肌肌腱炎之臨床印象。實證搜尋後擬定三項治療策略，深層橫向按摩、貼紮、離心肌力訓練以及縮足運動訓練。**結果：**經4次物理治療介入後症狀完全解除，並建議可考量使用客製化鞋墊。**臨床意義：**應用臨床工作者以假設為導向之規則系統於臨床，可提供物理治療師有實證依據以及有效的治療。■

▶ P62

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分娩方式對於產後骨盆帶疼痛婦女之疼痛失能與腰椎骨盆肌肉的影響

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Influence of Mode of Delivery on Pain, Physical Functions, and Lumbopelvic Muscles in Postpartum Women With Pelvic Girdle Pain

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Background and Purpose: Pregnancy-related pelvic girdle pain (PPGP) is a common problem affecting the physical functions and quality of life of women. Pelvic instability is believed to attribute to PPGP. Taiwan is one of the countries performing more Caesarean (CS) with a rate of 35% in all delivery women each year. Multiple layers of skin, muscles, fascia, and uterus are incised during the CS, while traumatic laceration of the pelvic floor muscles (PFMs) might occur during the vaginal delivery (VD). The mode of delivery may affect each lumbopelvic muscle differently in those postpartum women with PPGP. To date, only limited studies found that women received CS tended to have more chronic pain and impairments of the abdominal muscles than women received VD. The purpose of this study was to investigate the influence of mode of delivery in pain, physical functions, and the activations of the lumbopelvic muscles in postpartum women with PPGP. **Methods:** Postpartum women with PPGP were classified into two groups based on their mode of delivery: CS (n = 16) or VD (n = 16). Age, height, weight, and postpartum year did not differ between groups. Pain was assessed using the Visual Analog Scale. Physical functions were assessed using the active straight leg raise (ASLR) test and timed up and go test. Muscle activations of the abdominal muscles (rectus abdominis, external oblique muscles, internal oblique muscles, and transversus abdominis) and PFMs during resting and ASLR were assessed using the ultrasonography. Independent *t* tests were used for examining the group differences. **Results:** The CS group had a higher perception of difficulty during ASLR (3.06 ± 1.06 vs. 2.25 ± 0.78 mm, $p < 0.019$), reduced PFMs contraction during right ASLR (5.98 ± 4.02 vs. 2.90 ± 3.75 mm, $p < 0.032$) and during left ASLR (8.45 ± 3.70 vs. 3.03 ± 4.70 mm, $p < 0.001$) compared to the VD group. However, there were no differences in pain, performance of timed up and

go, and muscle activations of abdominal muscle. **Conclusion:** Caesarean might have more impacts on the PFMs but not abdominal muscles in postpartum women with PPGP. **Clinical Relevance:** Current findings suggest comprehensive assessment and training of the PFMs might be required in postpartum women with PPGP who received CS during delivery. ■

▶ P63

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人工智慧護膝於前十字韌帶重建術後膝功能和穩定度之效果

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The Effect of Artificial Intelligence Knee Brace on Knee Function and Stability Following Anterior Cruciate Ligament Reconstruction

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Background and Purpose: Artificial intelligence (AI) knee brace has been developed to enhance the outcome after anterior cruciate ligament reconstruction (ACLR). We conducted a study to compare the effectiveness of post-operative intervention combined with AI knee brace and conventional physical therapy. **Methods:** The patients with ACLR were recruited. There were 18 subjects in the experimental group who wore the AI knee brace and practiced app-guided exercise at home. There was 1 subject in the control group who received one session of conventional physical therapy weekly. All subjects returned for assessment before operation (phase 0), 1 month (phase 1), 2 months (phase 2), 3 months (phase 3), 4 months (phase 4), and 6 months (phase 5) after operation. Pain in visual analog scale (VAS), anterior cruciate ligament laxity represented by force/displacement curve slope (FDCS), and the ratio of hamstring/quadriceps strength (HQ ratio) were assessed. **Results:** The results showed progress for both groups. The pain in VAS reduced substantially from phase 0 (1.82 ± 2.19) to phase 1 (1.29 ± 1.53) and then reduced gradually to phase 4 (0.73 ± 1.42) and phase 5 (0.00 ± 0.00) for the experimental group. A similar result was found from the subject in the control group (4, 3, 0, 2, for phase 0, 1, 4, 5, respectively). Comparing phase 0 and phase 5, the FDCS in the experimental group reduced from 10.25 ± 6.64 mm/N to 3.15 ± 2.05 mm/N, suggesting more stable knee joint integrity. In contrast, the FDCS in the control increased from 6.20 mm/N to 10.00 mm/N. The HQ ratio of the operated leg increased from 81.88 ± 33.21% to 93.50 ± 40.81% when assessed at 60º/s and increased from 78.50 ± 30.58% to 99.25 ± 41.31% when assessed at 120º/s in the experimental group. A similar trend was found for the control group, HQ ratio increased from 89% to 155% when assessed at 60º/s and increased from 86% to 138% when assessed at 120º/s. **Conclusion:** AI knee brace seems a feasible device to improve effectiveness after ACLR. Further data will be collected and discussed. ■

▶ P64

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鞋墊對於腦性麻痺兒童步態效果之影響：系統性回顧

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Effects of Insole on Gait in Children With Cerebral Palsy: A Systematic Review

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背景與目的：腦性麻痺是大腦在發育未成熟前，所產生的永久性傷害，且因神經或肌肉骨骼系統異常影響平衡，導致日常生活活動受限、運動障礙或姿勢不穩。研究顯示鞋墊可以將足弓回復正確位置，進而改善足部排列與姿勢並影響平衡或步態，但目前沒有針對腦性麻痺兒童鞋墊介入步態後之系統性回顧。本篇研究的目的是利用系統性回顧方法，探討鞋墊對腦性麻痺兒童步態之影響。**方法：**由 PubMed、PEDro 與華藝資料庫搜尋至 2021 年 5 月前發表之所有隨機控制的研究，關鍵字包括腦性麻痺 (cerebral palsy)、步態 (gait) 與鞋墊 (insole)，所有文章必須符合：受測者均診斷為腦性麻痺兒童，必須有鞋墊介入並評估步態的影響，所有文章以物理治療實證資料庫量表 (PEDro) 評定文章等級。**結果：**共搜尋到 2 篇符合條件之研究，均為四肢痙攣型腦性麻痺兒童鞋墊介入之效果，PEDro 分級為 6、7 分。2 篇之對照組均使用安慰性鞋墊，實驗組使用具功能性姿勢鞋墊。一篇是探討姿勢鞋墊介入之立即步態改變效果，顯示步頻與速度可明顯立即改善。另一篇研究則探討鞋墊介入之立即、長期與追蹤 1 個月後之效果，顯示穿著鞋墊（立即、3 個月）可以改善步頻與速度，若停止穿著鞋墊 1 個月後則無明顯效果。**結論：**依據系統性回顧步驟，在有限的證據裡顯示四肢痙攣型腦性麻痺患者，使用功能性姿勢鞋墊可以立即改善步頻及速度，長期使用也有相同的效果，若停止穿著鞋墊則回復先前步態。然而本系統性回顧僅有 2 篇符合納入標準，因此證據較為薄弱，建議未來有更多研究支持，並提供臨床治療師使用鞋墊支持。**臨床意義：**針對腦性麻痺以鞋墊改善步態的研究不多，但顯示姿勢性鞋墊介入可以改善四肢痙攣型腦性麻痺兒童步態的步頻與步速，仍然可以提供臨床治療師參考。■

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個案報告：物理治療介入改善先天性靜脈畸形肢體肥大症候群 (Klippel-Trénaunay Syndrome, KTS) 患者活動參與度之成效

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Case Report: Physiotherapy Intervention to Improve the Activity and Participation of Patients With Congenital Venous Malformation and Hypertrophy Syndrome (Klippel-Trénaunay Syndrome, KTS)

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背景與目的：研究顯示，先天性靜脈畸形肢體肥大症候群 (Klippel-Trénaunay Syndrome, KTS) 影響個案的身體功能與結構外，因疼痛或其他併發症，使互動、參與度降低。本篇探討藉由輔具和物理治療介入改善罹患此病個案的活動參與度之成效。**方法：**個案為出生即確診此疾病的 8 歲女性，從未接受早療，因臀部、下肢體積差異，個案不愛活動、在校常趴著，無法以左腳單腳站立；老師與家長擔憂故對孩子有較多幫助及限制。109 年 7 月進行每年 1 次針對該疾病之雷射手術後傷口感染且發燒，住院臥床約 2 個月，出院後造成無法獨坐、日常生活功能完全依賴照顧者並

休學。轉介物理治療師給予此個案及家長適當的輔具建議與調整、門診物理治療介入、對於活動參與度的正向觀念及居家活動建議。**結果：**介入5個月後，個案進步到3 m坐站測驗可5～6秒內完成，左腳單腳站立可超過10秒，兒童動作ABC評量表第二版標準分數為10分；於治療室內案母給予個案的協助量接近無。因恢復良好於110年2月復學，老師回應個案除體育課外其餘課室活動均與同學相同參與度；在校移動頻率、課堂間維持直立坐姿時間、同儕互動頻率較住院前高近兩倍。**結論：**物理治療及輔具介入改善此個案臥床併發症、提升活動參與度。**臨床意義：**物理治療若能更早介入KTS個案可提升活動參與度。■

▶ P66

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八週運動介入對於發展遲緩兒童體適能能力之影響

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Effects of 8 Weeks of Exercise Training on Physical Fitness Ability in Children With Developmental Delay

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Background and Purpose: Several studies indicated that children with developmental delay showed poor physical fitness ability than healthy ones. In addition, previous studies also proposed that regular exercise training can improve the physical fitness ability in children with normal development. However, there is few studies of exercise training for children with developmental delay. In this point of view, the effects of exercise training on physical fitness ability were investigated in children with developmental delay. **Methods:** Fifteen children with developmental delays whose ages range from 4 to 6 years were recruited in this study. All of them underwent the same exercise protocols consisting of bicycling, treadmill training, and rope ladder climbing. In addition, they received the intervention 2 times per week lasting for 8 weeks. Outcomes for the physical fitness test, including body mass index (BMI), sit ups, standing long jump, knee push-ups, V-sit reach, and 6-minute walk test, were evaluated at pre-intervention and 8-week post-intervention time point. Differences between two evaluation times would use paired sample *t*-test. **Results:** After 8 weeks regular exercise training, the results of physical fitness ability showed significant improvement in standing long jump ($p = 0.006$), and in 6-minute walk test ($p = 0.047$). However, there was no difference in BMI, sit ups, knee push-ups, and V-sit reach after intervention. **Conclusion:** For children with developmental delay, 8 weeks exercise training can effectively improve the physical fitness ability in the muscle strength domain (standing long jump test) and cardiopulmonary endurance domain (6-minute walk test). **Clinical Relevance:** In order to improve the physical fitness ability, exercise training could be a regular intervention protocol for children with developmental delay. ■

▶ P67

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密集式下肢功能性訓練對6歲腦炎兒童之成效——個案報告

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Effects of Lower-Extremities Intensive Functional Training for a 6-Year-Old Child With Encephalitis—A Case Report

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背景與目的：密集式下肢功能性訓練 (Lower-extremity Intensive Functional Training, LIFT) 是以訓練患側下肢肌力、平衡及協調性為目標以改善步態和下肢粗大動作能力的治療方式；理論結合動作學習、結構式密集性學習、技巧及阻力訓練。近年來這類研究對象尚未在罹患腦炎的兒童身上介入過。因此本個案報告為以 LIFT 方式，對一名患有後天腦炎且半邊無力的個案進行治療的訓練成效。**方法：**介入 3 週，成效指標：30 秒坐到站，一分鐘行走測試，步行速度，雙腳前後站立 (tandem stand)，ABILOCO-Kids 量表及兒童伯格氏平衡量表。**結果：**介入 3 週後在所有測試項目中皆有改善。30 秒坐到站（16 次 → 21 次），1 分鐘行走測試（66.4 m → 80.2 m），步行速度（自選速度：1.25 m/s → 1.38 m/s，最快速度：1.50 m/s → 1.69 m/s），雙腳前後站立（左腳在前：3 秒 → 68 秒，右腳在前：4 秒 → 47 秒），ABILOCO-Kids 量表 (1.519 logits → 1.828 logits)，兒童伯格氏平衡量表（總分 50 → 52）。**結論：**三週介入後，個案在行走能力、速度和平衡表現都有進步，因此 LIFT 介入可以改善腦炎後半邊無力個案在粗大動作部分的功能表現。**臨床意義：**LIFT 能改善腦炎後半邊無力的兒童下肢的功能性表現，未來若遇到相似個案時建議可以使用此方式介入，並將活動內容融入於居家生活，增進兒童的活動參與，提升兒童自信並改善生活品質。■

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肌內效貼布對發展協調障礙兒童下肢肌電圖活動改善之系統性回顧

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The Effects of Kinesio Taping on the Electromyographic Activity of Lower Extremities in Children With Developmental Coordination Disorder: A Systematic Review

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背景與目的：發展協調障礙 (developmental coordination disorder, DCD) 是一常見感覺運動障礙，學齡期盛行率達 6%，行走時下肢肌電圖活動 (electromyography [EMG] activity) 低，導致步態變異高行走耗能。肌內效貼布 (Kinesio taping, KT) 可促使肌肉收縮。故本研究希望藉系統性回顧，探討 KT 對 DCD 之 EMG 活動之改善效果。**方法：**搜尋 PubMed、PEDro、Cochrane Library、CINAHL 之資料庫至 2021 年 6 月以前，關鍵字為：developmental coordination disorder、DCD、Kinesio taping、Kinesiotaping、Electromyogram、EMG，PEDro 評定等級達 5 分

以上。**結果：**搜尋到 2 篇文獻，其治療組雙下肢接受 KT，貼紮部位為股直肌 (rectus femoris, RF) 與腓腸肌 (gastrocnemius medialis, GM)，貼紮方向由近到遠端；控制組未接受 KT。介入前後都評估 RF、股二頭肌 (biceps femoris, BF)、脛前肌 (tibialis anterior, TA)、GM 內側之 EMG。其中一篇在個案執行跑步機行走時量測；另一篇在個案執行 Y 平衡測試儀 (Lower Quarter Y-balance Test, YBT-LQ) 時量測。2 篇之 EMG 結果顯示：(1) KT 組在治療後，在跑步機測試時的 GM ($p \leq 0.05$) 與平衡測試時的 RF 肌肉活動度 ($p \leq 0.01$) 均顯著增加。(2) KT 組不論在跑步機行走時的 GM ($p \leq 0.01$) 與平衡測試時的 RF 肌肉活動度 ($p \leq 0.05$) 較控制組顯著增加。**結論：**KT 在行走或平衡測試均顯示增進 DCD 之 EMG 活動表現。但目前相關文獻少，有待未來更多研究才更有力度證實 KT 與 DCD 之 EMG 活動關係。**臨床意義：**本研究說明 KT 能增進 DCD 下肢 EMG 活動，KT 可增為臨床 DCD 治療選項之一。但療效仍待更多文獻說明與支持。■

▶ P69

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探討以作息本位為基礎之早期介入於一名小頭症兒童之成效

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The Effects of Routines-Based Model Early Intervention for Children With Microcephaly

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背景與目的：小頭症 (microcephaly) 為神經發育障礙，頭圍小於同年齡正常頭圍平均值三個標準差以上，並合併多重神經缺陷。近年受 COVID-19 影響導致家長減緩帶孩子到醫院上早療課意願，促使以家庭為中心早療介入模式成為替代傳統治療之一。本研究將探討一名患有小頭症兒童以作息本位為基礎的早療介入之成效。**方法：**個案為 5 歲 2 個月小頭症男童，符合「全民健康保險早期療育門診醫療給付改善方案」收案條件，母親經治療師說明此計畫內容後同意參與。計畫強調整合性照護，將目標融入居家作息中配合執行。**結果：**共介入 12 個月，嬰幼兒綜合發展測驗 (Comprehensive Developmental Inventory for Infant and Toddlers) 在語言及社會領域之發展年齡有改善；兒童生活功能量表中文版 (Chinese Version of Pediatric Evaluation of Disability Inventory) 功能性技巧之「行動」常模標準分數 < 10 為落後範圍外，其他領域均為正常，而在照顧者協助之「自我照顧」、「行動」及「社會功能」均為正常，顯示個案生活參與大多能獨立完成。親子壓力量表 (Parenting Stress Index) 結果正常，但分量表「親職能力」結果稍高（37 分），母親認為為人父母角色及解決孩子問題比預期困難。**結論：**作息本位介入模式讓家長能將療育目標融入作息活動中執行，有助提升執行意願外，更貼近兒童生活參與練習，家長也較能觀察到孩子的進步程度。**臨床意義：**提供臨床工作者執行以作息本位為基礎之介入參考。■