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摘要集

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Basic Science in Rehabilitation

康复基础科学

Oral Presentation



Effectiveness of Lordotic Curve-Controlled Traction with or without Rotational Technique for Lumbar Intervertebral Disc Disease Patients

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The study compared the effectiveness of two traction techniques, LCCT-RT and LCCT-noRT, in treating lumbar intervertebral disc disease. Forty-nine patients with disc disease were divided into three groups: TT, LCCT-noRT, or LCCT-RT. During treatment, patients were positioned on a traction table and received gradual traction intensity using the LCCT method to maintain the natural lordotic curve of the spine. Functional changes were assessed using pain scores (VAS, ODI, RMDQ), and morphological changes in the lumbar central canal area were evaluated with MRI. All groups experienced significant pain reduction after traction treatment. The LCCT-RT group showed the largest improvements in VAS and RMDQ scores, while the LCCT-noRT group had the largest improvement in ODI score. Statistically significant differences were observed among all groups for VAS and ODI scores but only between LCCT-RT and TT groups for RMDQ score. Improvements in lumbar central canal area morphology were observed in both LCCT-noRT and LCCT-RT groups but did not reach statistical significance. The study concludes that both LCCT-RT and LCCT-noRT are effective in improving functional outcomes compared to transitional traction. While no significant superiority of one technique over another was found, it suggests that LCCT-RT may enhance flexibility and allow for higher levels of traction force application. Further research is needed to explore these potential benefits more comprehensively and improve traction techniques.



	VAS			ODI			RMDQ		
	Pre-traction	Post-traction	Difference	Pre-traction	Post-traction	Difference	Pre-traction	Post-traction	Difference
TT (n=15)	5.60 ± 1.50	4.47 ± 1.51	1.00 ± 0.94	29.49 ± 10.17	28.59 ± 12.30	0.79 ± 6.03	6.33 ± 3.42	5.67 ± 3.92	0.59 ± 1.80
LCCT_noRT (n=15)	5.94 ± 1.61	3.25 ± 0.86	2.53 ± 1.55	30.43 ± 14.32	20.41 ± 10.86	9.43 ± 9.41	6.25 ± 3.55	3.63 ± 2.31	2.47 ± 2.12
LCCT_RT (n=18)	4.71 ± 1.40	1.94 ± 1.52	2.61 ± 1.61	12.33 ± 6.03	6.56 ± 4.71	5.75 ± 8.14	7.26 ± 6.26	2.39 ± 2.28	4.89 ± 6.04
All patients	5.40 ± 1.57	3.17 ± 1.67	2.06 ± 1.56	23.49 ± 13.46	17.83 ± 13.23	5.34 ± 8.59	6.65 ± 4.63	3.80 ± 3.14	2.69 ± 4.22
p-value		0.0000*	0.0018*	0.0000*	0.0000*	0.0104*		0.0084*	0.0078*

Pain and functional score measurements before and after traction treatment

	Cross sectional area (mm ²)		
	Pre-traction	Post-traction	Difference
TT (n=15)	132.68 ± 52.06	130.78 ± 52.65	-1.90 ± 5.14
LCCT_noRT (n=16)	131.49 ± 51.37	137.97 ± 51.06	6.48 ± 4.98
LCCT_RT (n=18)	143.53 ± 64.95	144.27 ± 58.58	0.74 ± 16.74
All patients	136.28 ± 56.042	138.08 ± 53.568	1.81 ± 11.258
p-value	0.7934	0.7787	0.1012

Central canal area in MRI before and after traction treatment

Key Words: function, intervertebral disc, lumbar lordosis, morphology, pain

Effects of Pulsed Electromagnetic Fields on the Expression of P53 and P21 and Osteogenic Markers in Aged Rats with Osteoporosis

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OBJECTIVE: To examine the potential defensive influences of pulsed electromagnetic fields (PEMFs) in a rat model of senile osteoporosis and elucidate the molecular mechanisms underlying these effects.

METHODS: A group of 24-month-old male Sprague-Dawley (SD) rats was randomly allocated into two groups: elderly control and PEMFs groups (n = 8 each). Another group of 6-month-old male SD rats was designated as the young-age control group. Various parameters including bone mineral density, bone microarchitecture, serum levels of NTX-I and PINP, and the expression of P53, P21, PPAR γ , BMP2, Runx2, and Osterix in the bone marrow cells of the rat femur were assessed.

RESULTS: The 8-week intervention of PEMFs resulted in a significant increase in body parameters, including BMD, BV/TV and Tb. N, while reducing Tb. Sp in the proximal tibia and L4 vertebral. Moreover, although the serum levels of NTX-I of rats in the PEMF group displayed a tendency to increase, and the level of PINP decreased relative to the aged group, these differences were not statistically significant. Furthermore, PEMFs exhibited a substantial downregulation of the expression of p53, p21, and PPAR γ , while upregulating BMP2, Runx2, and Osterix.

CONCLUSION: The findings of the study indicate that the application of PEMFs can effectively mitigate bone loss and preserve the structural integrity of bone in elderly osteoporosis-afflicted rats. This is achieved through the facilitation of osteogenic differentiation in mesenchymal stem cells found in bone marrow, and the activating of



the P53/P21 signaling pathway. Further clinical studies are necessary to ascertain the validity of these findings.

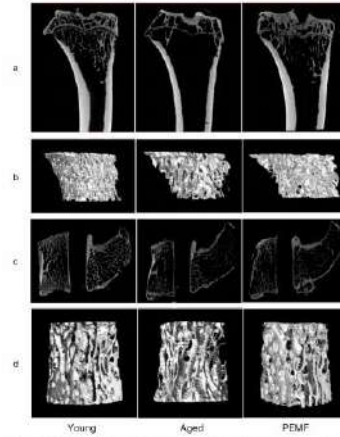


Figure 1. PEMF-induced changes in micro-CT images in vivo. At the end of the experiment, the proximal tibia and L4 vertebral body were obtained, and their micro-CT images were analyzed. a, Micro-CT 3D images of proximal tibia. b, Micro-CT 3D images of proximal tibia. c, Micro-CT 3D images of L4 vertebrae. d, Micro-CT 3D images of L4 vertebrae. PEMF, pulsed electromagnetic field.

PEMF-induced changes in micro-CT images in vivo

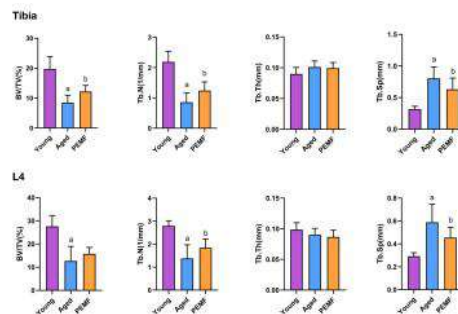


Figure 2. PEMF-induced changes in micro-CT images in vivo. The summarized data of Figure 1. The data were summarized as mean \pm SD. * $p < 0.01$ vs. the Young rats; # $p < 0.05$ vs. the Aged rats. BV/TV, bone volume ratio; Tb.N, trabecular number; Tb.Th, trabecular thickness; Tb.Sp, trabecular separation; PEMF, pulsed electromagnetic field.

PEMF-induced changes in micro-CT images. The summarized data of Figure

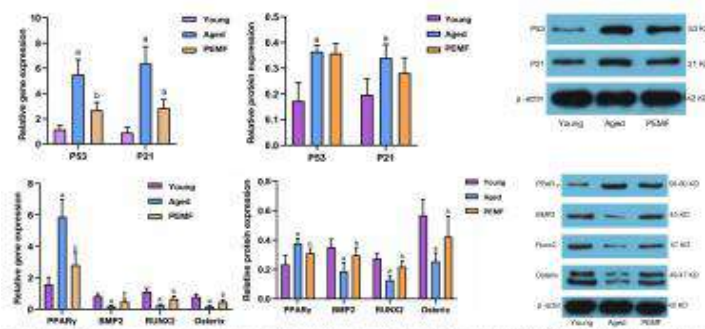


Figure 3. PEMF-induced changes in gene expression and protein expression in vivo. At the end of the experiment, qRT-PCR and western blotting analysis were performed on bone marrow cells obtained from the right femur. The data were summarized as mean \pm SD. * $p < 0.01$ vs. the Young rats; # $p < 0.05$ vs. the Aged rats. PEMF, pulsed electromagnetic field.

PEMF-induced changes in gene expression and protein expression in

Key Words: osteoporosis, pulsed electromagnetic field, P53, P21, osteogenic differentiation

Radial Extracorporeal Shockwave Promotes Osteogenic and Angiogenic Differentiation of Bone Mesenchymal Stem Cells from Senile Osteoporosis by Activating Piezo1

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背景: 探究 r-ESW 在缓解 SOP 中的治疗作用机制。**方法:** 从骨髓样本中分离出 BMSCs, 用不同剂量的 r-ESW 处理, 评估其对 BMSCs 增殖、凋亡的影响。检测 Piezo1 含量。**结果:** r-ESW 能够以剂量依赖的方式增强 SOP-BMSCs 的增殖能力。最佳参数的 r-ESW 显著增强了 SOP-BMSCs 的成骨和成血管能力, 而对细胞凋亡没有显著影响, 并促进了 Piezo1 的表达。利用 SAMP6 动物模型, r-ESW 通过激活 Piezo1 也能缓解 SOP。**结论:** r-ESW 通过激活 Piezo1, 改善 SOP。

关键字: Senile osteoporosis; Radial extracorporeal shockwave; Bone mesenchymal stem cells; Piezo1

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The Effect and Mechanism Studies of Cai Qiao Massage Therapy on Inhibiting Pain Sensitization for Rats with Lumbar Disc Herniation Through Trpv4-p38 Mapk Pathway

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Objective To verify that cai qiao massage can inhibit neuropathic pain through TRPV4-p38 MAPK pathway in rats which was caused by continuous dorsal root ganglion compression. **Methods** The study consists three parts:(1) To establish model of continuous compression of rat dorsal root ganglion;(2)TRPV4-p38MAPK pathway mediates neuropathic pain in CCD rats;(3)cai qiao massage mediates neuropathic pain sensitization of CCD by down-regulating the TRPV4-p38MAPK pathway. **Results** (1)MWT and PWL were significantly decreased after surgery in CCD($P<0.01$); The dorsal root ganglion samples were collected for qPCR,western blot and immunohistochemistry.TRPV4 and p38MAPK were increased in CCD ($P<0.01$). (2)MWT and PWL in CCD, RR and SB were significantly decreased ($P<0.01$); The RR and SB were higher than CCD after inhibitor intervention ($P<0.01$).TRPV4 and p38MAPK expressions among Sham, SB and RR were lower than CCD ($P<0.01$). (3)TRPV4 mRNA expression in SB , RR were higher than Cai qiao ($P<0.01$). P38MAPK expression in cai qiao was lower than SB ($P<0.05$). TRPV4, p38MAPK and p-p38MAPK were lower than CCD on Western blot and immunohistochemistry ($P<0.01$). **Conclusion** Cai qiao massage can effectively improve neuropathic pain in CCD rats, and its mechanism may be through TRPV4-P38MAPK pathway.

Key Words: Cai qiao massage; Lumbar disc herniation;CCD; TRPV4; p38MAPK; Pain sensitization

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Inhibitory Activity and Mechanism of Antidepressant FXT on Melanoma Growth and Metastasis

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Background: Psychological well-being is crucial for patients' overall recovery in cancer rehabilitation [1]. Antidepressant medications are commonly used to alleviate symptoms in cancer patients, who frequently experience emotional fluctuations during rehabilitation journey [2]. Understanding the impact of antidepressant drugs, such as fluoxetine hydrochloride (FXT), on cancer patients' rehabilitation is of significant importance. Melanoma often presents challenges in cancer rehabilitation due to its potential for metastasis. FXT may possess anti-tumor properties, but its potential inhibitory activity on melanoma and the possible underlying mechanism are not fully understood. Therefore, this study aims to explore the impact of FXT on melanoma and its metastasis, with a particular focus on its relevance to cancer rehabilitation.

Methods: We assessed the effects of FXT on melanoma cells using MTT and colony formation assays, flow cytometry, RNA sequencing, western blot, established mouse models of melanoma metastasis to investigate FXT's inhibitory activity. In addition, we examined the influences on immune cells in the lung microenvironment of melanoma lung metastasis.

Results: FXT demonstrated effects on inhibiting melanoma cell proliferation, inducing intrinsic apoptosis, and promoting protective autophagy while blocking autophagic flux, and leading to G0/G1 cell cycle arrest. FXT effectively inhibited the growth of melanoma in mouse models of lung and brain metastasis, and also modulated the population of crucial immune cells in the lung microenvironment.

Conclusion: This study revealed the possible effects of FXT on melanoma metastasis, which may contribute to enhancing the effectiveness of rehabilitation strategies for melanoma patients.

Key Words: Melanoma, Fluoxetine, Cancer rehabilitation



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Effects of rTMS on A β 1-42-treated Microglial Phenotypic Polarization and Its Mediated Neuroinflammation

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Background: Microglia-mediated neuroinflammation plays an important role in the pathogenesis of Alzheimer's disease (AD), and regulating the polarization of microglia from pro-inflammatory phenotype (M1) to anti-inflammatory phenotype (M2) can reduce neuroinflammation and is an important target for AD therapy. **Objective:** To observe the effect of rTMS on the phenotypic polarization of A β 1-42-treated microglia and its mediated neuroinflammation. **Methods:** Microglia were divided into control group, A β group and rTMS group, the control group were not treated at all, A β group was treated with A β 1-42 for 24h, rTMS group was treated with A β 1-42 for 24h after rTMS intervention (frequency 10Hz, 10min each time, once a day for two consecutive days), each group of cells and hippocampal neurons HT22 were co-cultured for 24h, and the survival and apoptosis of HT22 were detected by CCK8. Western blot and immunofluorescence detected the expression of the microglial M1-type marker iNOS and the M2-type marker Arg-1, and ELISA detected the levels of inflammatory factors in the supernatant of each group. **Results:** The survival rate of HT-22 after co-culture with rTMS group was higher than that in A β group. The expression of Arg-1 in the rTMS group decreased while the expression of iNOS decreased, the content of inflammatory factors IL-10 and IL-4 increased significantly, and the content of IL-1 β and TNF- α decreased. **Conclusion:** rTMS can induce the polarization of A β 1-42-treated microglia to M2 to reduce neuroinflammation, which provides an experimental basis for the therapeutic application of rTMS in AD.

Key Words: rTMS; Microglia; Alzheimer's disease;



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Intermittent Hypoxia Improves Fatty Acid Metabolism and Protects Cardiac Function Through Ampk Pathway after Mi In Rats

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Abstract: Introduction: Intermittent hypoxia (IH) has been shown to have a protective effect on myocardium following myocardial infarction (MI), but the underlying mechanisms remain unclear[1-3]. The aim was to investigate the effect of IH on myocardial fatty acid metabolism (FAM) after MI and its molecular mechanism.

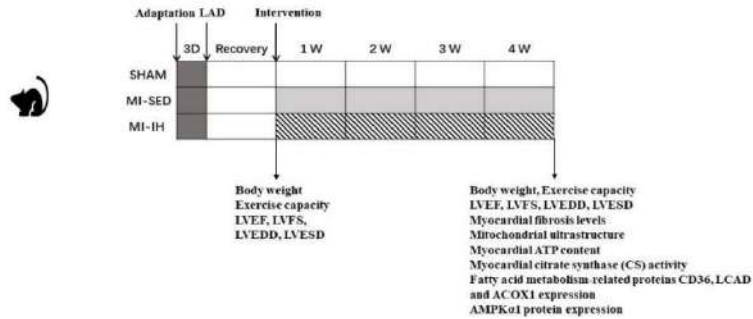
Methods: SD rats were randomly divided into sham operation group (SHAM), MI-sedentary group (MI-SED), MI-IH group (MI-IH). 7 days after MI, the MI-IH group was placed in a hypoxic chamber to simulate a hypoxic environment with an oxygen concentration of 13%(5000m above sea level) for 4 weeks(1 h hypoxia, 10 min rest for each cycle, 4 cycles/d, 5 d/w). The changes of cardiac function and FAM were observed.

Results: After intervention, compared with MI-SED group, the body weight, exercise capacity, LVEF and LVFS of MI-IH were significantly increased, while LVEDD, LVESD, and myocardial fibrosis levels significantly reduced. Under electron microscope, the MI-SED group showed muscle fiber dissolution, mitochondrial swelling, ridge breakage and reduced number of cardiomyocytes. The structure of cardiomyocytes and mitochondria in MI-IH were significantly improved, and the mitochondria number, the contents of mitochondrial membrane potential, ATP and citrate synthase activity were significantly increased. In addition, IH significantly increased the expressions of FAM-related proteins.

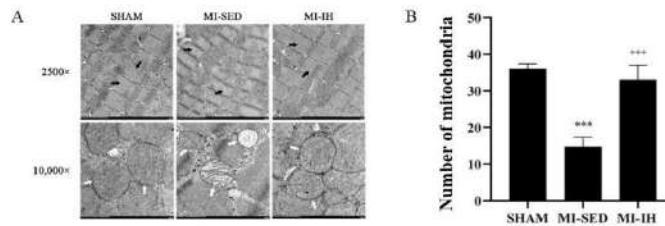
Discussion and Conclusion: IH intervention promoted the expression of key enzymes of FAM, increased the efficiency of mitochondrial tricarboxylic acid cycle, and increased ATP synthesis by upregulating AMPK pathway in post-infarction myocardium, thereby protecting mitochondrial structure and function, reducing



myocardial fibrosis, improving cardiac function, and increasing exercise capacity after MI.

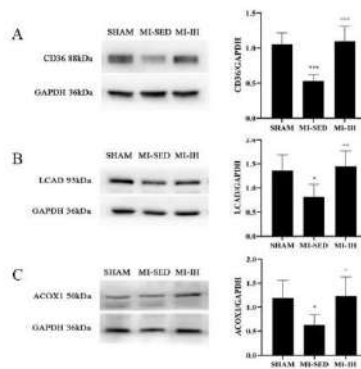


Flow chart of the experiment



Note: Compared with SHAM group, *** $P < 0.001$; compared with MI-SED, *** $P < 0.001$.

Mitochondria of rats in different groups



Note: Compared with SHAM group, * $P < 0.05$, *** $P < 0.001$; compared with MI-SED, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Myocardial fatty acid metabolism related proteins of rats in different groups

Key Words: Myocardial infarction, Cardiac rehabilitation, Intermittent hypoxia, Fatty acid metabolism

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Therapeutic Effects of JZL184 Combined with Environmental Enrichment on Cognitive Recovery After TBI: A Preclinical Investigation for Specialized Ward Design

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Background:In the early phases of traumatic brain injury (TBI), individuals frequently exhibit diminished attention in environments with excessive stimuli. Paradoxically, some scholarly sources propose that the introduction of environmental enrichment (EE) may have a beneficial effect on the cognitive rehabilitation of TBI patients, which is contrary to initial expectations. Despite the difficulties associated with restoring attention, the therapeutic possibilities offered by EE have captured our attention. JZL184, an endocannabinoid (2-AG) degradation inhibitor, is vital for neuroprotection, anti-inflammation, and neuroplasticity. Therefore, this study aims to investigate the potential of the combined treatment with JZL184 and EE to improve attention deficits in TBI patients and reconstruct cognitive networks, enhancing overall cognitive recovery.

Methods/Design:Mice with consistent cognitive status underwent controlled cortical impact (CCI) injury or sham injury and were randomly assigned to receive JZL184 (10mg/kg; intraperitoneally [i.p.]) or a solubilizing vehicle (VEH; 1ml/kg; i.p.). The mice were further randomized into groups receiving either 6 hours of daily EE or standard (STD) housing, starting 24 hours after the surgical procedure. Evaluations, including behavioral assessments, fMRI, and histological analysis in the hippocampus, were conducted 19-25 days post-surgery. Additionally, depressive status was assessed as a secondary outcome.

Discussion:Preclinical studies focusing on EE can establish a strong basis for the logical and evidence-driven development of specialized wards customized for patients with TBI. Emphasizing the collaborative impact of post-TBI inflammation, immune response, and EE in fostering neurorestorative and synaptic plasticity within rehabilitation management exhibits potential as a therapeutic approach to tackle cognitive impairment following TBI.

Key Words: Environmental enrichment (EE), Cognitive recovery, Traumatic brain injury (TBI), JZL184, Neuroplasticity

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Dynamic Changes of Cerebral Blood Flow and Electroencephalography during the Preparation of Bilateral Common Carotid Artery Occlusion (BCAO) Model in Rats

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Abstract: Objectives : The bilateral carotid artery occlusion (BCAO) model is commonly used to study post-stroke cognitive impairment[1], but its underlying mechanism remains not well understood[2]. This study aimed to investigate dynamic changes in cerebral blood flow (CBF) and electrocorticography (ECoG) during BCAO surgery in rats.

Materials and Methods: Male Sprague-Dawley rats (n=16, 220-320g) were selected. Anesthesia was induced with 2.5% isoflurane during surgery and 2% isoflurane during monitoring experiment. Two cranial windows (AP: -2.3mm to -6.3mm; ML: ±1mm to ±5mm) were opened to monitor CBF and ECoG (AP: -3mm to -3.5mm; ML: 1.5mm to 2mm). Four frequency bands, Delta (0.1-4Hz), Theta (4-8Hz), Alpha (8-13Hz), and Beta (13-30Hz), were defined for analysis. BCAO surgery was performed with continuous monitoring for 2 hours.

Results: CBF rapidly decreased to the lowest level (51.78%±5.78%, P<0.0001) within 32 seconds after BCAO and gradually recovered within 10 minutes (63.53%±6.72%, P<0.0001), remaining stable until 2 hours (65.09%±9.72%, P=0.001). All frequency bands showed similar trends, with a significant increase in Delta wave power (0.86±0.81, P=0.001) during BCAO. (Delta + Theta)/(Alpha + Beta) Ratio (DTABR) also significantly increased (2.02 ±1.26, P=0.033) during BCAO, with a significant difference compared to the 0.5-1 hour periods (P=0.02).

Conclusions: During BCAA model preparation, CBF rapidly decreased, and Delta power and DTABR significantly increased in the ECoG. After 30 minutes of BCAA, CBF slightly increased, and cortical electrical signals recovered without significant difference from pre-surgery levels. The study may help optimize experimental designs related to the BCAA model, interpret experimental results, and identify potential therapeutic targets.

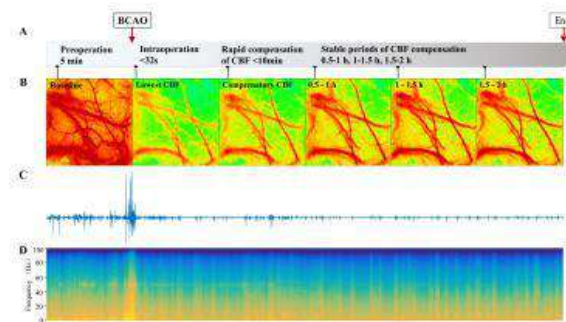


Figure 1. Monitoring CBF and ECoG during BCAA surgery. (A) The monitoring process lasted a total of 2 hours and was divided into six periods for data processing and analysis. They were preoperation (baseline), intraoperation (BCAO), rapid compensation of CBF (CBF-compensation), and three stable periods of CBF compensation (0.5-1h, 1-1.5h, 1.5-2h). (B) CBF monitoring by laser speckle with sample rate every eight seconds. (C) ECoG signal. (D) Spectrogram of ECoG.

Monitoring CBF and ECoG during BCAA surgery.

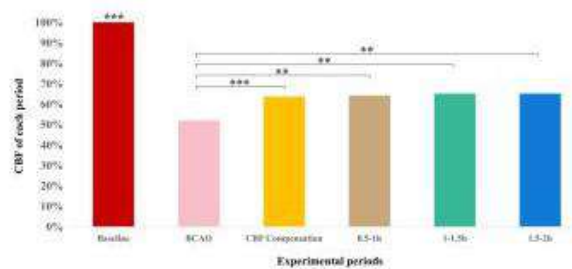


Figure 2. The CBF at each time period was based on baseline. They were preoperation (baseline), intraoperation (BCAO), rapid compensation of CBF (CBF-compensation) and three stable periods of CBF compensation (0.5-1h, 1-1.5h, 1.5-2h). CBF of baseline had significant differences with other periods. There were significant differences between BCAA and other periods. The double black asterisk (**) represents statistical significance with $P < 0.001$; the triple black asterisk (***) represents statistical significance with $P < 0.0001$, one-way repeated measures anova test.

The CBF at each time period was based on baseline.

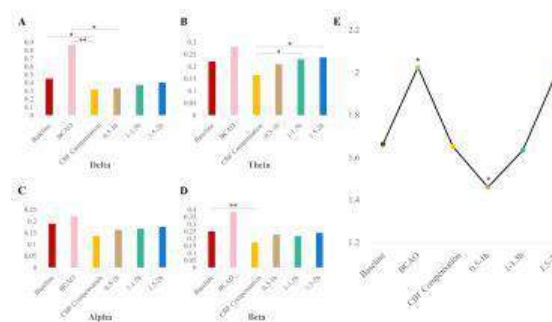


Figure 3. Delta, Theta, Alpha and Beta wave power and DTABR at each time period. (A) Delta wave power had significant differences between BCAA and CBF compensation periods and BCAA and 0.5-1h periods. There was a significant difference between baseline and CBF compensation periods in delta wave power. (B) Theta wave power had significant differences between CBF compensation and 1-1.5h periods and CBF compensation and 1.5-2h periods. (C) Alpha wave power. (D) Beta wave power had a significant difference between baseline and CBF compensation periods. (E) DTABR = (Delta+Theta)/(Alpha+Beta). There was a significant difference between BCAA and 0.5-1h periods. The black asterisk (*) represents statistical significance with $P < 0.05$; the double black asterisk (**) represents statistical significance with $P < 0.01$; the Friedman non-parametric repeated measures anova test.

Delta, Theta, Alpha and Beta wave power and DTABR at each time period.



Key Words: Cerebral blood flow, Electrocorticogram, Bilateral common carotid artery occlusion, Neurovascular coupling, Ischemic stroke

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The Effect of Exercise Training on The Gait of 2Vo Model Rats

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Abstract: Objectives: The bilateral common carotid artery occlusion (2VO) model has been commonly used to study vascular cognitive impairment [1]. Gait changes indicate an increased risk of cognitive impairment[2]. The exercise training may improve cognitive impairment, but the effect of exercise training on gait performance remains unclear. This study aims to observe the effect of exercise training on the gait of 2VO model rats.

Materials and Methods: 22 male SD rats(220-280g) underwent permanent ligation of bilateral common carotid arteries to establish a 2VO model. They were randomly divided into 2VO-run group (n=11) and 2VO-control group (n=11). After 48 hours, the exercise group underwent exercise training on a treadmill for 30 minutes/day for 2 weeks with gradually increasing speed (5-6-7-9-11 m/min). The gait tests were performed on both groups on baseline, 7 and 14 days after starting intervention, measuring stride length, swing speed, body speed, stand and step cycle[3]. This study was approved by the Ethics Committee of Laboratory Animal Center, Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (Ethics number: SIAT-IACACC-221110-DJT-A2216).

Results: After 2VO, mNSS index of rats was examined and there was no significant difference between the two groups. At 7 and 14 days after exercise training, the gait performance of the exercise group was significantly increased in body speed and stride length. Body speed was significantly higher in the run group compared to the control group after 7 days.

Conclusions: The exercise training may improve the gait of 2VO rats in various aspects.

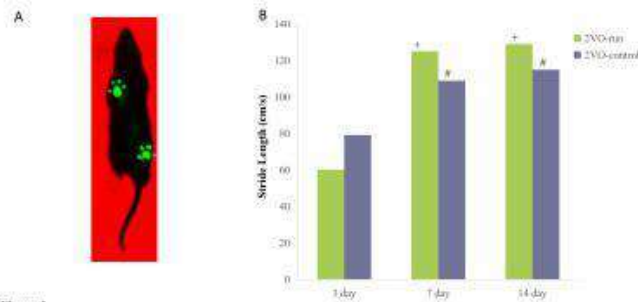


Figure 1.
 (A) Gait patterns of rats tested.
 (B) Body speed in 3-day, 7-day and 14-day after starting intervention. There were significant differences between 3-day body speed and 7-day and 14-day body speed in 2VO-run group. There were significant differences between 3-day body speed and 7-day and 14-day body speed in 2VO-control group. The 3-day baseline value in the 2VO-run group was significantly lower than that in the 2VO-control group. The overall body speed in the 2VO-run group was higher than that in the 2VO-control group at 7 and 14 days.
 The hashtag (#) represents 2VO-control inter-group statistical significance with $P < 0.05$. The plus (+) represents 2VO-run inter-group statistical significance with $P < 0.05$.

Figure 1

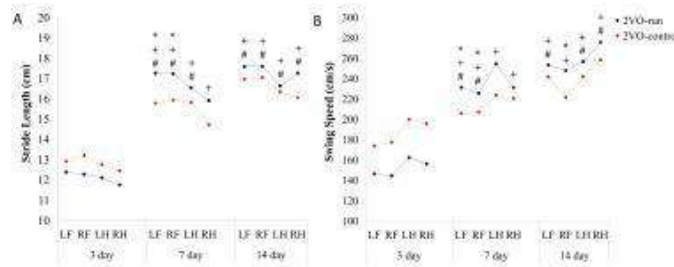


Figure 2.
 (A) Stride length in 3-day, 7-day and 14-day after starting intervention. The stride length of both groups showed significant differences from the 3-day baseline value at both 7 and 14 days. After 7 and 14 days of running, the overall stride length of the 2VO-run group was higher than that of the 2VO-control group. Moreover, at 3 days, the overall level of the 2VO-run group was lower than that of the 2VO-control group, with a greater increase in amplitude.
 (B) Swing speed in 3-day, 7-day and 14-day after starting intervention. The swing speed of the 2VO-run group was significantly lower than that of the 2VO-control group at day 3, while it significantly increased over the 7th and 14th days of exercise and overall higher than the 3-day baseline level compared to the 2VO-control group.
 LF, RF, LH, and RH represent the four feet of the rat, which are left front, right front, left hind, and right hind. The hashtag (#) represents 2VO-control inter-group statistical significance with $P < 0.05$. The plus (+) represents 2VO-run inter-group statistical significance with $P < 0.05$.

Figure 2

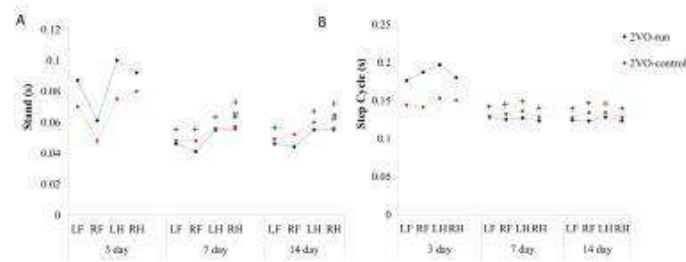


Figure 3.
 (A) Stand in 3-day, 7-day and 14-day after starting intervention. The stand of the 2VO-run group was higher than that of the 2VO-control group at day 3, but significantly lower than both the day 3 baseline value and the 2VO-control group after days 7 and 14 of exercise.
 (B) Step cycle in 3-day, 7-day and 14-day after starting intervention. The 2VO-run group had a significantly higher whole-leg cycle period circulation at 3 days compared to the 2VO-control group. Both at 7 and 14 days after exercise, this value was significantly lower than the 3-day baseline value. Furthermore, the overall cycle period circulation of the four-legged step after exercise was lower than that of the control group, which demonstrated that exercise improved the cycle period circulation of the step in 2VO rats.
 LF, RF, LH, and RH represent the four feet of the rat, which are left front, right front, left hind, and right hind. The hashtag (#) represents 2VO-control inter-group statistical significance with $P < 0.05$. The plus (+) represents 2VO-run inter-group statistical significance with $P < 0.05$.

Figure 3

Key Words: Bilateral common carotid artery occlusion; Aerobic exercise; gait

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基于骨微结构参数对骨质疏松腰椎骨骨折大鼠的有限元分析

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目的：以骨微结构参数为基础，开展相应的有限元分析。方法：将 10 只大鼠建立骨质疏松腰椎骨骨折大模型，比较骨折区域及非骨折区域的骨微结构相关参数的差异性，建立 10 个骨质疏松性腰椎模型，开展应力加载，依据前 5%、2%、1%及 0.5%应力均值为最大应力值，后续则是以多元回归，研究各指数的相关因素。结果：骨折区域及正常区域的骨微结构参数的差异，与非骨折区

骨微结构参数	骨折区域	非骨折区域	t	P 值
骨体积分数 (mm ⁻¹)	32.52±6.30	39.66±8.20	2.177	0.043
骨表面积密度 (mm ⁻¹)	15.66±2.88	19.60±3.54	2.730	0.014
骨小梁数量 (mm ⁻¹)	3.36±1.25	5.22±1.60	2.897	0.009
骨小梁厚度 (mm)	0.04±0.01	0.08±0.03	4.000	0.001
骨小梁分离度 (mm)	0.16±0.02	0.12±0.03	3.508	0.002
骨小梁结构模型指数	1.69±0.54	1.53±0.61	3.194	0.004
骨小梁连接度 (1/cm ³)	226.36±43.26	289.57±46.62	3.143	0.005
各向异性度	0.28±0.05	0.24±0.06	3.009	0.009
总孔隙率 (%)	64.52±5.66	60.51±4.58	2.742	0.028
骨矿密度 (g/cm ³)	0.18±0.05	0.22±0.07	2.470	0.048

表 1 骨质疏松性腰椎骨折不同区域的骨微结构参数差异性

模型序号	弹性模量 (MPa)	单元数	节点数
1	1306.35	175631	47520
2	1563.30	202563	55631
3	2056.40	255410	63228
4	1456.20	189630	70140
5	1851.02	215620	58662
6	1755.30	205563	60335
7	1596.70	287745	57882
8	1768.52	206354	65510
9	2130.25	268841	56884
10	1930.20	212350	62338
平均值	1741.42	221971	59813

表 2 骨质疏松性腰椎骨折感兴趣区域骨小梁模型基本参数

模型序号	弹性模量 (MPa)	单元数	节点数
1	1306.35	175631	47520
2	1563.30	202563	55631
3	2056.40	255410	63228
4	1456.20	189630	70140
5	1851.02	215620	58662
6	1755.30	205563	60335
7	1596.70	287745	57882
8	1768.52	206354	65510
9	2130.25	268841	56884
10	1930.20	212350	62338
平均值	1741.42	221971	59813

表 3 感兴趣区域骨小梁有限元模型应力结果

关键字：骨质疏松； 腰椎骨折； 有限元； 骨微结构； 骨小梁

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强制性运动疗法对中性粒细胞外诱捕网的清除依赖于小胶质细胞

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目的: 我们的前期研究已经证实强制性运动疗法 (CIMT) 通过抑制缺血皮质中中性粒细胞外诱捕网的堆积缓解运动功能障碍。本研究旨在明确 CIMT 对 NETs 的清除作用是否与小胶质细胞有关。

方法: PLX3397 和二甲胺四环素分别被用于耗尽和灭活小胶质细胞。磁珠分选的小胶质细胞用于后续转录组测序。

结果: CIMT 增加了小胶质细胞内 CD68+溶酶体的表达。PLX3397 和二甲胺四环素用药后, CIMT 干预不能降低 CitH3、MPO、NE 等 NETs 相关指标; 当小胶质细胞再植后, CIMT 对 NETs 的抑制作用恢复。转录组测序及富集分析结果显示, CIMT 对缺血皮层中吞噬作用的调节与 Il1r1 上调有关。

结论: CIMT 介导了缺血皮层中小胶质细胞对 NETs 的吞噬, IL-33/ST2 可能是介导这种吞噬作用的靶点。

关键字: 强制性运动疗法, 中性粒细胞外诱捕网, 小胶质细胞, 吞噬

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电针对前交叉韧带切断大鼠 Gas6/Axl 信号通路的影响

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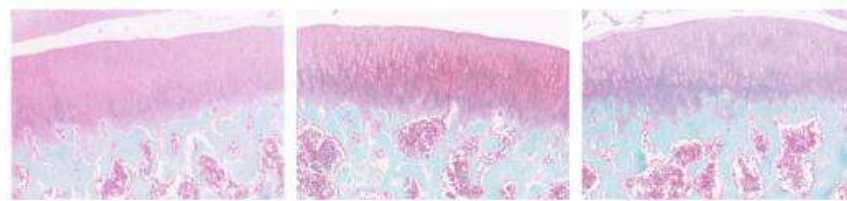
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背景和目的: 探讨电针对前交叉韧带切断大鼠造模的创伤后膝骨关节炎前期炎症反应及 Gas6/Axl 信号表达的影响

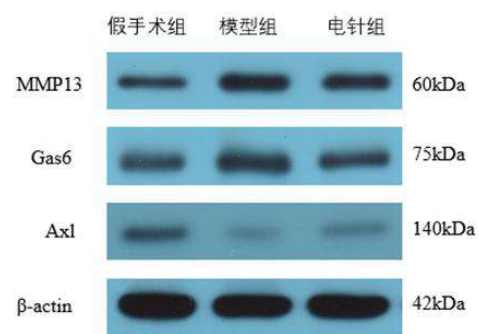
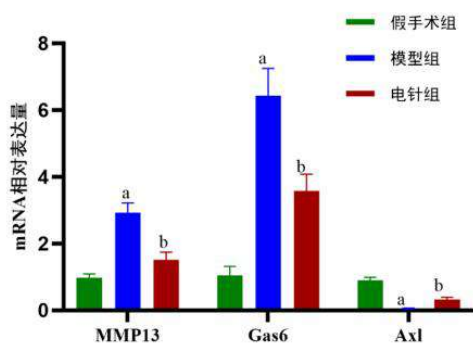
方法: 24 只大鼠随机分为假手术组、模型组和电针组, ACLT 造模。电针组予以电针刺激。ELISA 法检测 IL-1 β 、IL-10、TNF- α 、TGF- β 1 水平; 番红 O-固绿染色与 Mankin's 评分观察软骨损伤程度; PCR、WB 检测软骨 MMP13、Gas6、Axl 的 mRNA 及蛋白表达水平。

结果: 与模型组相比, 电针组大鼠 IL-1 β 、TNF- α 表达降低 ($P < 0.05$), TGF- β 1 水平上升 ($P < 0.05$), IL-10 表达有上升趋势 ($P > 0.05$); 番红 O-固绿染色示软骨表面较平整光滑, Mankin's 评分降低 ($P > 0.05$); MMP13、Gas6 mRNA 及蛋白表达降低 ($P < 0.05$); Axl mRNA 及蛋白表达升高 ($P < 0.05$)。

结论: 电针可能通过胞葬作用上调 Gas6-Axl 信号通路减少炎症反应, 延缓关节软骨退变, 抑制创伤后骨关节炎的形成。



各组大鼠膝关节组织番红 O-固绿染色比较 ($\times 100$)



MMP13、Gas6、Axl 的 mRNA 表达比较

MMP13、Gas6、Axl 的蛋白表达比较

关键字: Gas6-Ax1 信号通路, 前交叉韧带损伤, 炎症反应, 电针, 胞葬

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电针对老年大鼠 KOA 及 Nrf2/HO-1 信号通路的影响

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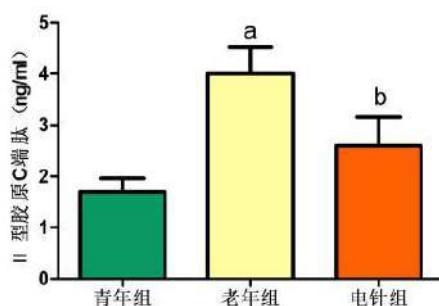
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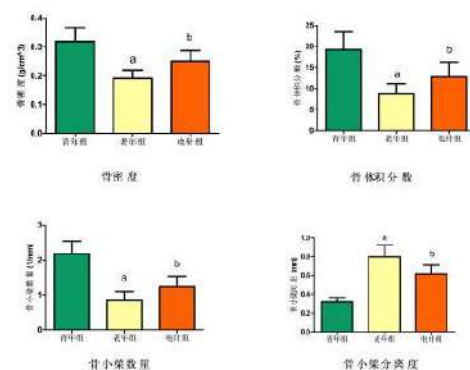
方法: 将 16 只 24 月龄 SD 雄性大鼠分为老年组和电针组, 每组 8 只, 8 只 6 个月龄 SD 雄性大鼠为青年组。电针组接受电针干预, 其余 2 组不做处理。连续干预 8 周后取材, ELISA 检测血清中 CTX-II 水平、显微 CT 检测骨微结构、RT-PCR、WB 分别检测 aggrecanase-1、aggrecanase-2、Nrf2、HO-1 mRNA 及蛋白表达水平。

结果: (1) 与青年组相比, 老年组 CTX-II 水平增高($P < 0.05$), BMD、BV/TV%、Tb.N 降低 ($P < 0.05$), Tb.Sp 增大 ($P < 0.05$); aggrecanase-1、aggrecanase-2 的 mRNA 及蛋白表达水平均增高 ($P < 0.05$), Nrf2、HO-1 mRNA 及蛋白表达水平均降低($P < 0.05$) (2) 与老年组相比, 电针组 CTX-II 水平降低 ($P < 0.05$); BMD、BV/TV%、Tb.N 均增加($P < 0.05$), Tb.Sp 减小($P < 0.05$); aggrecanase-1、aggrecanase-2 的 mRNA 及蛋白表达水平均降低 ($P < 0.05$), Nrf2、HO-1 mRNA 表达水平均增高 ($P < 0.05$); Nrf2 蛋白表达水平增高 ($P < 0.05$), HO-1 的蛋白表达有增高趋势($P > 0.05$)。

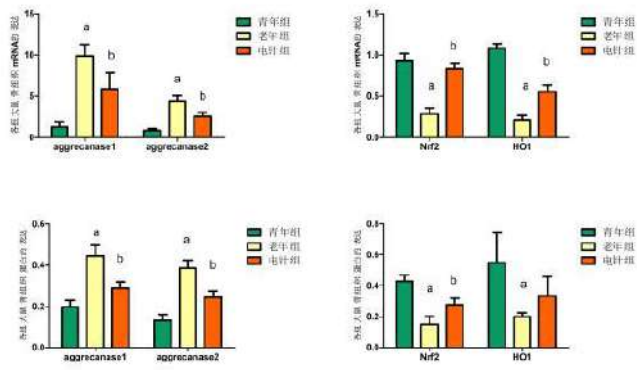
结论: 电针可能通过促进 Nrf2/HO-1 信号通路表达, 缓解关节软骨降解, 改善关节软骨下骨的骨微结构, 保护关节软骨。



各组大鼠 CTX-II 水平比较



各组大鼠软骨下骨微结构比较



各组大鼠 PCR, WB 比较

关键字: 电针, KOA, Nrf2/HO-1 信号通路

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电针对骨质疏松大鼠 Cath K 及 Col I 表达的影响

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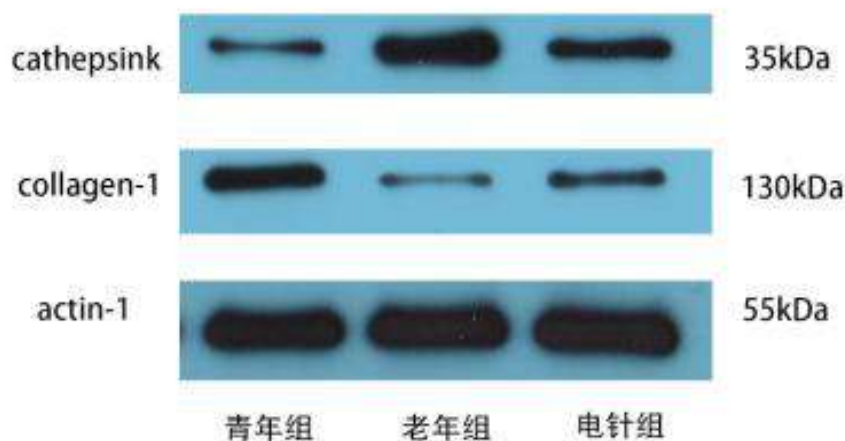
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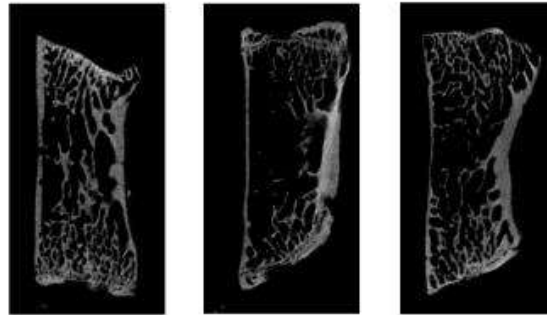
方法: 6月龄 SD 雄性大鼠为青年组 (n=8), 16只24月龄 SD 雄性大鼠随机分老年模型组和电针组 (n=8)。电针组接受电针干预, 余2组不做处理。8周后取材, ELISA 检测 PINP、NTX 水平, 显微 CT 检测右胫骨和 L4 椎体的骨微结构, PCR、Western blot 分别检测 Cath K、Col I mRNA 及蛋白表达水平。

结果: ①与青年组相比, 老年组 PINP 水平升高(P<0.05), Col I 水平降低(P<0.05); BMD、BV/TV%、Tb.Th、Tb.N 降低(P<0.05), Tb.Sp 增大(P<0.05); Cath K mRNA 及蛋白表达升高(P<0.05), Col I mRNA 及蛋白表达降低(P<0.05)。②与老年组相比, 电针组 PINP 水平降低(P<0.05), Col I 水平升高(P<0.05); BMD、BV/TV%、Tb.N 升高(P<0.05), Tb.Sp 降低(P<0.05); Tb.Th 无显著差异外(P>0.05); Cath K mRNA 及蛋白表达降低(P<0.05), Col I mRNA 及蛋白表达升高(P<0.05)。

结论: 电针可能通过下调 Cath K 的表达从而抑制 Col I 蛋白的降解, 达到治疗骨质疏松的作用。



各组大鼠 Cath K、Col I 蛋白表达



青年组

老年组

电针组

各组大鼠 L4 椎体显微 CT 检测结果比较



青年组

老年组

电针组

各组大鼠右胫骨近端显微 CT 检测结果比较

关键字：电针；骨质疏松；Cath K；Col I ；

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冲击波通过 TGF- β /SMAD 信号促进过度使用后肌腱修复和功能重建

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目的：探讨过度使用性肌腱病损伤特征及冲击波治疗的作用效果及机制。

方法：大鼠分为正常、休息和损伤组，每组 8 只。利用跑台训练构建过度使用性跟腱病模型。造模结束后，治疗组大鼠接受 7 次冲击波治疗，休息组不做干预。治疗结束后从行为学、蛋白组、mRNA 等水平分析治疗效果。

结果：大鼠过度使用后出现步态异常，包括跛行、运动速度减慢及姿势不稳；血清 IL-1 β 和 TGF- β 1 水平增加。冲击波治疗后大鼠功能改善，蛋白组学结果显示 SMAD 信号激活，同时成腱及基质重塑 mRNA 升高。

结论：过度使用导致肌腱组织病理结构改变，冲击波治疗可通过 TGF- β /SMAD 通路修复损伤肌腱。

Clinical Physical and Rehabilitation

Medicine Sciences

临床物理医学与康复医学科学

Oral Presentation





Disc Prolapse (PLID)&Herniation Successful Treatment by Integrated Acupuncture

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PLID a disease which are non curable by Lemenectomies or others procedure of treatment except Acupuncture combinations. Because act. Cell regeneration and strengthen of muscle power and indications can be remeady of PLID problems by combination of Acupuncture treatment. In our medical college and hospital acupuncture department of Bangladesh treated 1000 of PLID patients combination of Physical Medicine from my experiences in 30 yrs most post operative complicated PLID has get good response by this type treatment. All are referrals patient from renowned hospital from India. Thailand Singapore etc. Our successer rate is 89%



Key Words: P, L, I, D

Effectiveness of Denosumab on Bone Mineral Density in Patients with Osteoporosis and Stroke

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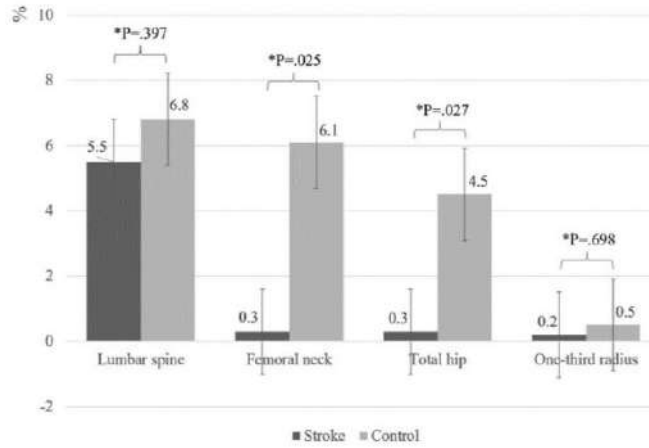
Background: This study aims to compare the BMD response to denosumab between stroke patients and control subjects with osteoporosis.

Methods: Ninety-six patients with osteoporosis consisted of 24 stroke patients (23 cerebral infarction and 1 cerebral hemorrhage) and 72 control subjects. Osteoporosis was diagnosed in all patients using dual-energy x-ray absorptiometry (DXA). After osteoporosis diagnosis, denosumab was injected subcutaneously twice six months interval along with daily oral vitamin D supplementation. Follow-up DXA examination was performed, and areal BMD was obtained at 12 months after the first denosumab injection.

Results: There were no significant intergroup difference in clinical characteristics and areal BMD before injection except higher proportion of women in the control subjects (Table 1). At 12 months after denosumab injections, areal BMD in lumbar spine, femoral neck, and total hip increased significantly in both groups compared with baseline ($p < .001$) (Table 2). The changes of femoral neck and total hip areal BMD in control subjects ($6.1 \pm 10.1\%$ / $4.5 \pm 7.8\%$) after injections were significantly higher than those ($0.3 \pm 12.5\%$ / $0.3 \pm 8.3\%$) in the control subjects ($p = .025$). However, there was no significant differences of areal BMD change in the lumbar spine and one-third radius between the two groups (Figure 1).

Conclusion: Denosumab therapy significantly increased areal BMD in the lumbar spine and hip in the control subjects and in the lumbar spine in stroke patients. Considering the high risk of hip fractures in the stroke patients with osteoporosis, other osteoporosis treatments are needed to increase areal BMD in the hip.

Comparison of Percent Change in Areal BMD after Denosumab Therapy between Stroke Patients and Control Subjects Demographic Data and Areal Bone Mineral Density in Stroke Patients and Control Subjects with osteoporosis



Comparison of Percent Change in Areal BMD after Denosumab Therapy between Stroke Patients and Control Subjects

Characteristics	Stroke patients (n=24)	Control subjects (n=72)	P value
Age (years)	75.0 ± 7.2	75.4 ± 7.8	0.784
Sex (male/female)	9/15	4/68	<0.001*
BMI (kg/m ²)	23.72 ± 3.98	22.84 ± 2.26	0.153
Affected side (right/left)	12/12		
Areal BMD (g/cm ²)			
Lumbar spine	.694 ± .107	.740 ± .095	.051
Femoral neck	.579 ± .086	.556 ± .069	.211
Total hip	.712 ± .124	.680 ± .088	.082
One-third radius	.563 ± .102	.526 ± .071	.052

Comparison of Percent Change in Areal BMD after Denosumab Therapy between Stroke Patients and Control Subjects

P value	Areal BMD (g/cm ²)		P value
	Stroke (n=24)	Control (n=72)	
<.001*	1.30 ± .106	1.46 ± .105	Lumbar spine
.924	1.17 ± .118	1.25 ± .096	Femoral neck
.188	1.18 ± .113	1.15 ± .101	Total hip
.026	1.06 ± .105	1.05 ± .105	One-third radius
<.001*	1.05 ± .105	1.08 ± .098	Lumbar spine
<.001*	1.00 ± .088	1.02 ± .088	Femoral neck
<.001*	1.07 ± .088	1.08 ± .088	Total hip
.585	1.25 ± .081	1.28 ± .071	Control subjects

Demographic Data and Areal Bone Mineral Density in Stroke Patients and Control Subjects with osteoporosis

Key Words: Osteoporosis, areal BMD, denosumab, stroke

The Various Effects of Customized Therapeutic Exercise in the Community for Subjects with Low Back Pain

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51 subjects who have symptoms of LBP and have been diagnosed with imaging studies were enrolled. They were randomly assigned to either intervention group A(n=37) or control group B(n=14). Group A underwent a customized exercise training program at a community gym once or two times a week to reduce pain and improve body function. The exercise program consisted of warm-up for 5 minutes, a customized exercise training for 30 minutes, and cooling down for 5 minutes. Group A underwent the exercise program 2 times a week for 4 weeks and once a week for next 4 weeks. Control group B home-training for themselves for 8 weeks. The evaluation tools were a clinical information, NRS to assess pain, an UCLA activity score to assess activities of daily living, a ROM in trunk, a Biering-Sorenson test to assess the isometric endurance of back extensor, a gait and balance functions {TUG, 10MWT, BBS} and an ODI over 3 times.

The NRS, ODI score, 10MWT showed statistically significant differences ($p < 0.05$) in the group A before and after 8 weeks exercise. Especially, there were the marked differences in the NRS of pain ($p < 0.001$) and ODI score ($p < 0.01$). However, there is no statistical difference within group B before and after 8 weeks. When comparing the two groups, there were statistically significant differences in NRS of pain, ODI score, and abdominal circumference ($p < 0.05$).

The customized therapeutic exercise training is more helpful for the pain, gait, and the body functions related to the lumbar spine compared to exercise at home in the subjects with LBP.

Key Words: Low back pain, Therapeutic exercise, Customized exercise, Pain, Body Function



Preservation of Windlass Effect of the Foot with Microsurgical Great Toe-to-Thumb Transfer

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Introduction

Microsurgical great toe-to-thumb transfer (mGTT) is a widely used procedure when immediate replantation of thumb is not feasible. The aims of this study were to investigate the alteration of plantar pressure profile of the donor foot after mGTT.

Methods

20 patients receiving mGHT between 1985 to 2014 and 16 healthy subjects were recruited. Group 1 consisted of 20 feet receiving mGTT while Group 2 consisted of 32 normal feet as control. The flap design in this study was to preserve one centimeter of the proximal phalanx to maintain the attachment of the plantar aponeurosis and intrinsic muscles. The Taiwan Chinese version of the Foot Function Index (TCv-FFI) was used for patient-reported outcome measurement. A Novel Emed-X system was used for dynamic plantar pressure measurement. A total of four parameters were collected, including peak pressure, contact area, contact time, and pressure-time integral.

Results

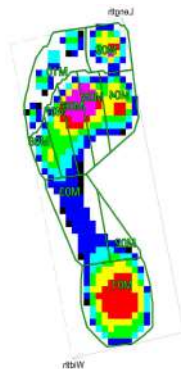
In Group 1, the peak pressure redistributed under the first metatarsal bone and was significantly higher than Group 2 ($P < 0.05$). There was no significant change of the contact area between the midfoot region of Group 1 and Group 2 ($P > 0.05$). Furthermore, similar foot clearance efficiency was demonstrated in Group 1 and Group 2 ($P > 0.05$).

Conclusion

The windlass effect of the foot will not be affected when performing mGTT with preservation of one centimeter of the proximal phalanx. Therefore, this surgical procedure is highly recommended for clinical application.

Conflict of interest

None



The Novel Emed-X system used for dynamic plantar pressure measurement divided the foot into ten regions containing the heel, the medial and lateral midfoot, the first, second, third, fourth and fifth metatarsals, the great toe and the second to fifth toes.



Donor foot after microsurgical great toe-to-thumb transfer.



Key Words: Foot Plantar Pressure, Microsurgical Great Toe-to-Thumb Transfer, Foot clearance efficiency, Contact area, Contact time, Pressure-time integral

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Electroacupuncture Alleviates Acute Lung Injury of Septic Rats by Down-regulating the Expression of Pkm 2 to Inhibit Warburg Effect and Reducing the Inflammatory Response.

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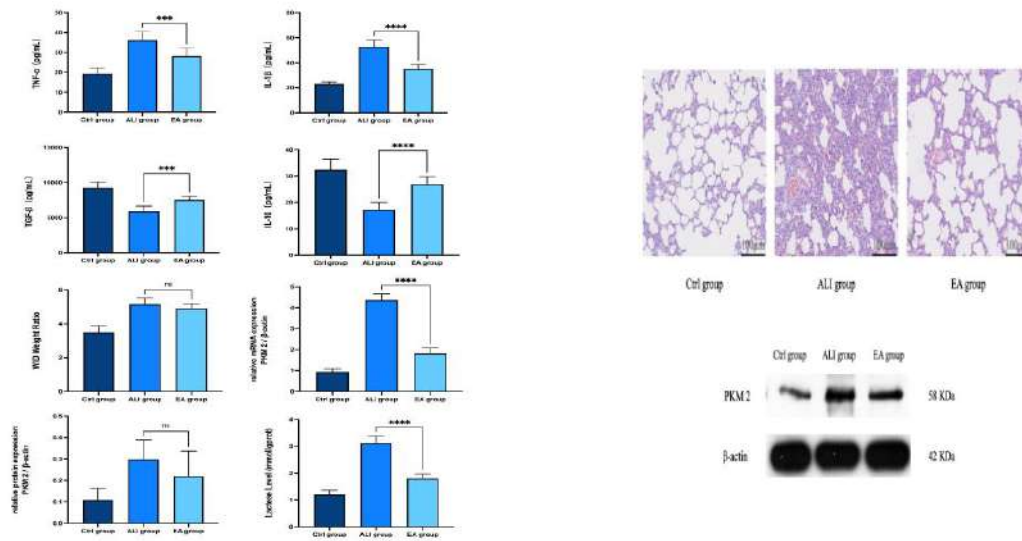
Introduction: PKM 2 mediated Warburg effect may attenuate inflammation and have a therapeutic effect in acute lung injury (ALI).

Methods: SPF male Sprague-Dawley rats (n=24) were randomly divided into Ctrl, ALI and EA groups (n=8 each). ALI and EA groups rats were injected with Lipopolysaccharide (LPS) via caudal vein, while Ctrl group received saline into caudal vein. EA group underwent electroacupuncture for 30 minutes once a day. After 5 days, rats were executed. Tumor Necrosis Factor - α (TNF- α) , Interleukin -1 β (IL-1 β) , Transforming Growth Factor - β (TGF- β) and Interleukin -10 (IL-10) levels were detected by Enzyme-Linked Immunosorbent Assay to quantify inflammatory activation, Wet/Dry Weight Ratio (W/D) was calculated to assess pulmonary edema, Hematoxylin-eosin staining was used to observe the inflammatory lesions; Reverse Transcription - Polymerase Chain Reaction (RT-PCR) and Western blot were used to detect the expression levels of PKM 2; Lactate kit was used to detect the lactate content.

Results: Compared with ALI group, TNF- α and IL-1 β were significantly lower, TGF- β and IL-10 were significantly higher ($P < 0.05$), and W/D tended to decrease, but the difference was not statistically significant ($P > 0.05$). PKM 2 mRNA expression level was significantly reduced ($P < 0.05$), PKM 2 protein expression level showed a trend of decreasing, but the difference was not statistically significant ($P > 0.05$), and lactate content was significantly reduced ($P < 0.05$).

Conclusion: Electroacupuncture may reduce the inflammatory response and symptoms of ALI in rats by down-regulating PKM 2-mediated Warburg effect.

Expression of inflammatory factors and PKM 2, differences in W/D and lactate content Differences in HE staining and PKM 2 protein expression



Expression of inflammatory factors and PKM 2, Differences in HE staining and differences in W/D and lactate content PKM 2 protein expression

Key Words: Electroacupuncture, Acute lung injury, PKM 2, Warburg effect

Different Types of Vestibular Stimulation Induce Different Responses In Ground Reaction Force During Walking: The Implication for Assessing Vestibular Function

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Background: With a prevalence of greater than 35% for adults, mild vestibular disorders (VD) affect people significantly worldwide. However, to early diagnose different mild types of VD is still a challenging task. Ground reaction force (GRF) is a standard technique for measuring dynamic balance control. Thus, this study attempted to understand the feasibility of using GRF to determine the differences in dynamic balance under different types of vestibular stimulations (VS).

Methods: A total of twenty healthy young adults participated in this study. These young adults walked under three types of vestibular perturbed tasks as follows: no, unilateral, and bilateral VSs. The VSs were generated by mastoid process vibration. The GRFs were measured by the treadmill with embedded force plates. The dependent variables were the GRFs in anterior-posterior, medial-lateral and vertical directions.

Results: A significant vestibular simulation effect was found in the braking phase in the anterior-posterior direction ($F_{2, 38} = 20.607, p < 0.001$), the second peak ($F_{2, 38} = 14.772, p < 0.001$) in the pushing-off phase in the medial-lateral direction.

Conclusion: This study was the first study to determine that applying GRF measure can differentiate balance control under different types of VS. The significance of this study was that GRF can be applied for future clinical use to differentiate different types of VD for early diagnosis.

Key Words: Vestibular disorder, Dynamic balance Control, Mastoid Process Vibrations

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Clinical Efficacy Study of Schroth Exercise Combined with Orthotic Treatment of Different Wearing Times in Adolescent Idiopathic Scoliosis

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Objective: To explore the clinical effects of wearing a full-time rigid brace compared to a part-time brace combined with Schroth three-dimensional exercises on adolescent idiopathic scoliosis correction.

Methods: Sixty AIS patients were randomly assigned to the full-time brace group and the comprehensive group, with 30 patients in each group. Patients in the full-time brace group were treated with a rigid thoracolumbar orthosis for 20-23 h/d. Patients in the part-time brace combined with Schroth exercise group were treated with Schroth three-dimensional exercise. The weekly training time was at least 4-5 hours, and the orthotic device was worn for 14-18 h/d. The two groups of patients were evaluated before enrollment and after 6 months of treatment.

Results: In the intragroup comparison, Cobb angles, the angle of trunk rotation (ATR), and thoracic expansion were significantly improved in the comprehensive group after 6 months of treatment compared to before treatment ($p < 0.01$), but the SRS-22 questionnaire was no significant difference ($p > 0.05$). In the full-time brace group, there was a significant reduction in the Cobb angles ($P < 0.01$), but there was no statistically significant difference in the ATR, thoracic expansion, and SRS-22. Comparing between groups, the comprehensive group showed greater improvement in Cobb angles, ATR, thoracic expansion, and the items of pain and psychology in the SRS-22 compared to the full-time brace group ($p < 0.05$).

Conclusion: Adequate Schroth exercise can appropriately reduce the time of brace wear without affecting clinical outcomes and support brace treatment. Therefore, conservative treatment of idiopathic scoliosis with bracing combined with Schroth 3D exercise is recommended.

A-E Schroth intervention, taking a patient with Rigo 4C type as an example



Key Words: Adolescent idiopathic scoliosis; Schroth exercise; Full-time brace; Part-time brace

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Combined Application of Extracorporeal Shock Wave Therapy and Closed Chain Stability Training in Rehabilitating Boxers with Rotator Cuff Tears

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Introduction To explore the effects of extracorporeal shock wave therapy combined rotator cuff muscles and shoulder joint closed chain stability training in rehabilitation of boxers with rotator cuff tears.

Methods A total of 36 professional boxers with rotator cuff tears due to competition training (small tear, conservative treatment), were treated in our department from November 2017 to January 2022 were selected and divided into observation group (A) and control group (B) according to treatment plans, with 18 cases in each group. Both groups accepted routine interventions. The B group accepted rotator cuff muscles and shoulder joint closed chain stability training treatment, and the A group accepted extracorporeal shock wave therapy based on the B group. After 8 weeks treatment, the visual analogue scale score (VAS), the University of California at Los Angeles shoulder rating score (UCLA) and American Shoulder and Elbow Surgery score (ASES) were compared between two groups.

Results The total effective rate (89. 86%) of A group was higher than that (62. 91%) of B group ($P<0. 05$). After 8 weeks treatment, the average value of VAS score of A group was significantly lower than that of the B group ($P<0. 05$), the ASES and UCLA scores of both groups were higher than those before treatment, and the A group were significantly higher than the B group ($P<0. 05$).

Discussion and Conclusion Extracorporeal shock wave therapy apparatus combined rotator cuff muscles and shoulder joint closed chain stability training can improve rotator cuff function of boxers with conservative treatment.



Extracorporeal shock wave therapy combined closed chain stability training

Key words: shock wave, closed chain stability training, rehabilitation, boxer, rotator cuff tear

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Effectiveness of Intravesical Injection of Botulinum Toxin Type A in Treating Autonomic Dysreflexia in Patients with High-Level Spinal Cord Injury.

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Objectives:To evaluate the efficacy of intravesical injection of botulinum toxin type A (BTX-A) for neurogenic detrusor overactivity (DO) in reducing the frequency and severity of autonomic dysreflexia (AD).

Methods:A cross-sectional nonrandomized trial with before (baseline) and after (follow-up) assessments. Twenty-five patients with SCI at or above T6 and a history of AD who underwent urodynamic studies (UDS) before and 3 months after BTX-A injection were included. The maximum detrusor pressure(Pdetmax) and volume at first DO(VFIDC), baseline and overall maximum systolic blood pressure (SBP) during UDS, and scores of Incontinence Specific Quality of Life Instrument (IQoL) were recorded before and 3 months after the injection. The change in SBP (Δ SBP) from baseline to maximum SBP during UDS was calculated to assess the severity. The frequency of AD was recorded using ambulatory blood pressure monitoring during a 24 h period before and 3 months after the injection.

Results:BTX-A injection decreased the Pdetmax and increased the VFIDC and mean urine volume per catheterization increased. The maximum SBP and the Δ SBP during UDS decreased significantly after the injection (151.44 ± 13.92 vs 133.32 ± 9.20 mmHg and 49.44 ± 12.81 vs 33.08 ± 9.11 mmHg respectively, $P < 0.05$). The frequency of bladder-related ADs (i. e. performed a clean intermittent catheterization or leakage) during a 24-h period significantly decreased from 11.04 ± 1.81 - 7.88 ± 2.15 ($P < 0.001$).

Conclusions:BTX-A decreases the severity of SBP increase and the number of AD episodes 3 months after intravesical injection.

Key Words: Autonomic dysreflexia; Neurogenic detrusor overactivity; Botulinum toxin type A; Spinal cord injury

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Using Status and Acoustic Analysis of Transparent Masks in Speech-Language Therapy for Children during Epidemic

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Objective: Speech-language therapy was affected by protective measures during epidemics. This research aims to investigate the usage and acoustic characteristics of transparent masks in speech-language therapy for children and explore the feasibility.

Methods: "The questionnaire of demands and experience in using transparent masks" was used to collect feedback from 7 speech-language therapists, 20 children and 9 parents. ATMOS LingWAVES, was used to conduct voice analysis on three college students to understand change in audio quality when wearing no mask, with transparent mask and with both transparent mask and loudspeaker, respectively.

Results: 75% (15/20) children chose the transparent mask over surgical mask. 55% (5/9) parents approved the use of transparent masks in rehabilitation treatment. All the therapists believed that transparent masks had a positive effect on speech therapy, and 71.43% (5/7) of them found it muffles the voice of therapist. We tested when no mask, with transparent mask and with both transparent mask and loudspeaker. The average loudness was 77.79dB, 71.51dB and 86.34dB. The s/z ratio were 0.82, 0.82 and 0.69. The Jitter was 0.27%、0.1%、0.48%. The Shimmer was 5.79%、3.43%、6.52%. Maximum Phonation Time (MPT) was 12.14s, 10.22s and 15.93s. Relaxed spoken text pitch rang was 226.50Hz, 182.75Hz and 254.67Hz. Using transparent mask with a loudspeaker can compensate the loudness and amplify the amplitude of pitch change.

Conclusions: Transparent masks are feasible in speech-language therapy for children, the volume and pitch of voice can be improved by using loudspeakers together with transparent masks.



Key Words: transparent mask, speech-language therapy, acoustic analysis, logopedia, epidemic

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Evaluation Strategy of Delirium in Critically Ill Children during the COVID-19 Epidemic

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It is necessary to screen delirium in children with central nervous system infection during COVID-19. This diagnosis helps to remind clinicians to pay attention to the use of sedative and analgesic drugs, timely rehabilitation intervention, and environmental improvement. The excessive inflammatory response caused by COVID-19 triggers autoimmune central nervous system diseases. Autoimmune encephalitis (AE) is characterized by clinical manifestations such as delirium, behavioral and mental status changes, epilepsy, insomnia, dyskinesia, anxiety and emotional instability. The screening and assessment of delirium in critically ill children have great challenges in this epidemic, including the shortage of medical staff, the limitation of personal protective equipment and so on. Our team prepared the scales used for screening and printed them into booklets in advance for quick access. In order to make the expression clearer and ensure that the child can get the information with protective equipment, the staff should raise the volume. In addition, the team used a transparent mask called 12mask developed by a team at Lingnan University in Hong Kong can be considered to meet the requirements of epidemic prevention and promote the communication between children and doctors. Our team always paid attention to the change of prevention and control level, when the level of prevention and control is lower, timely adjustment of protective measures will help the clinical evaluation. Above all this article summarized the experience of ICU medical staff cooperating with rehabilitation physicians and considerations during the epidemic. We hope to share our experience for future emergency events.

Key Words: Delirium; Assessment; Screen; Pediatric; Epidemic

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Association between Admission Gait Speed and Health-Related Quality of Life in Stroke Patients: A Prospective Cohort Study

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Purpose: This study aimed to investigate the association between acute-phase gait speed and health-related quality of life (HRQoL) at 3 and 12 months of follow-up in patients with ischemic stroke.

Methods: Patients with ischemic stroke (n=1838) were recruited from the Third China National Stroke Registry-III. Gait speed was assessed by the 10-metre walk test at baseline. HRQoL was evaluated using the EuroQol-five dimensions-three levels (EQ-5D-3L) questionnaire at 3 and 12 months of follow-up. Regressions analyses tested associations between gait speed and HRQoL and the individual EQ-5D-3L dimensions.

Results: Baseline gait speed was significantly positively associated with the EQ-5D-3L index and EQ-5D-3L VAS scores at 3 (B=0.0026, 95%CI 0.0006-0.0037, $p < 0.0001$ and B=0.2672, 95%CI 0.0907-0.4437, $p = 0.0030$, respectively) and 12 months (B =0.0025, 95%CI 0.0011-0.0038, $p < 0.0003$ and B =0.3402, 95%CI 0.1708-0.5096, $p < 0.0001$, respectively). In the dimension-specific analysis, having a gait speed within the highest tertile was associated with lower odds of having problems with mobility, self-care, and usual activities at 3 (OR and 95% CI=0.304 [0.188, 0.490], 0.359 [0.206, 0.626], and 0.396 [0.253, 0.618]; $p < 0.001$) and 12 months (OR and 95% CI=0.508 [0.326, 0.792], 0.495 [0.288, 0.852], and 0.419 [0.275, 0.639]; $p < 0.05$), after adjusting for all covariates, relative to the lowest tertile. Those in the highest gait-speed tertile had a reduced risk of pain/discomfort problems (OR and 95% CI=0.494 [0.314, 0.778]; $p < 0.05$) at 12 months.

Conclusions: Acute-phase gait speed was predictive of poststroke HRQoL at 3 and 12 months, especially when associated with EQ-5D-3L domain-specific questions.

Key Words: Health-related quality of life·Gait speed·Stroke·EQ-5D-3L

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Association of Age-adjusted D-Dimer Levels with Deep Vein Thrombosis Risk in Patients with Spinal Cord Injury: A Cross-sectional Study

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Study Design Article.

Objective To elucidate the association of age-adjusted D-dimer (AAD) with deep vein thrombosis (DVT) risk to lower limbs in patients with spinal cord injury (SCI).

Setting Rehabilitation Medicine Department of the First Affiliated Hospital of China University of Science and Technology

Retrospective analysis of 250 patients with SCI in the rehabilitation department from August 2018 to December 2021. Quartiles divided the D-dimer level into four groups to analyze the association between AAD level and DVT risk.

Age was identified as a covariate of D-dimer and DVT risk. For non-adjusted model, when D-dimer increased by 1 mg/L, DVT risk increased 0.23-fold ($P < 0.05$); for minimally-adjusted model (adjusted for age), the risk increased 0.22-fold ($P < 0.05$); and for fully-adjusted model (adjusted for age, sex, pulmonary infection, degree, grades, and career), it increased 0.19-fold ($P < 0.05$). AAD had a curvilinear association with DVT risk, and the fold point was 1.9 mg/L ($P < 0.05$). When serum AAD level was < 1.9 mg/L ($K < 1.9$), the estimated change in DVT risk was 3.35 ($P < 0.05$), and when serum AAD level was > 1.9 mg/L ($K > 1.9$), the estimated change was 1.12 ($P < 0.05$). Urinary tract infection (UTI) and fibrinogen (tertile) had a interaction association with D-dimer level and DVT risk (P interaction < 0.05). **Conclusion** Patients with SCI who receive rehabilitation treatment with AAD level > 1.9 mg/L need to be paid close attention to, especially those with UTI and high levels of fibrinogen.

Key Words: Spinal cord injury; Deep vein thrombosis; D-dimer; Urinary tract infection; Fibrinogen



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Effects of Pulmonary-Based Qigong Exercise on Stable Patients with Chronic Obstructive Pulmonary Disease: A Randomized Controlled Trial

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Background: Physical exercise training is the central component of pulmonary rehabilitation. This study aimed to further investigate the rehabilitative effects of pulmonary-based Qigong exercise (PQE) in stable patients with chronic obstructive pulmonary disease (COPD).

Methods: In this randomized, assessor-blinded clinical trial, 44 participants with stable COPD were randomly assigned to 2 groups in a 1:1 ratio. Participants in the control group received usual care for 3 months. Participants in the intervention group received usual care combined with PQE (60 min each time, 2 times per day, 7 days per week, for 3 months). The outcome included exercise capacity, lung function test, skeletal muscle strength, dyspnea, and quality of life were measured before and after intervention.

Results: A total of 37 participants completed the trial. Compared to the control group, after 3 months of PQE, the mean change in exercise capacity, skeletal muscle strength, and quality of life were statistically significant ($P < 0.05$), but no significant differences were observed in lung function and dyspnea ($P > 0.05$).

Conclusion: The findings of study suggest that the proposed program of 3 months of PQE intervention has significant improvement in exercise capacity, skeletal muscle strength, and quality of life of COPD-stable patients.

Main characteristics of pulmonary-based Qigong exercise

Key Words: Traditional Chinese exercise, Chronic obstructive pulmonary disease, Rehabilitation



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Effect of Hyperbaric Oxygen Therapy on Brain Injury Patients Infected with COVID-19

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Objective To investigate the clinical effect of hyperbaric oxygen therapy on patients recovering from brain injury infected with COVID-19, and to provide a reference for hyperbaric oxygen treatment of COVID-19. **Methods** A total of 56 patients in the recovery period of brain injury infected with COVID-19 in Nanjing Zijin Hospital from 2022. 12. 15-2023. 1. 5 were selected and divided into the hyperbaric oxygen treatment group (n=28) and the conventional treatment group (n=28) according to whether they received hyperbaric oxygen therapy (2. 0ATA, once a day, with a course of 5 days). The levels of liver and kidney function, blood routine, coagulation function, C-reactive protein, and inflammatory factors were collected before and after treatment. The intra-group and inter-group changes of observed indicators was compared. **Results** There were no difference of observed indicators between two groups ($P>0.05$) before therapy. After treatment, the observed indicators improved in both groups. Compared with the conventional treatment group, the levels of D-dimer, WBC, neutrophil(NE), and IL-6 decreased and lymphocytes rebounded remarkably in the hyperbaric oxygen treatment group, the differences were statistically significant ($P<0.05$). **Conclusion** Hyperbaric oxygen therapy based on conventional treatment can significantly reduce the level of inflammatory factors, improve coagulation and cellular immune function, and reduce the damage of the organism for patients recovering from brain injury infected with COVID-19, which is beneficial to alleviate clinical symptoms and improve prognosis.

Key Words: Novel coronavirus; Hyperbaric oxygen; Inflammatory response

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Effect of Nursing Intervention on Intestinal Dysfunction in Severe Patients

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Objective To explore the effect of abdominal massage and finger rectal stimulation on improving abdominal distension and constipation in severe patients. **Methods** The control group included 30 cases of severe patients before intestinal management training. Admission patients' bowel assessment, recording assessment, daily nursing measures implementation and results, and topical application of simple laxatives were recorded. The intervention group included 30 severe patients after intestinal management training. Patients were examined by abdominal percussion, auscultation, palpation, and digital rectal examination. The amount of drinking water of patients was standardized. Abdominal massage and finger rectal stimulation was used to promote the establishment of the recto colonic reflex. **Results** The incidence of abdominal distension, gastric remnant and constipation decreased, and the stool tended to normalize after the intervention. **Conclusion** Adhering to the correct rehabilitation nursing techniques such as standardized water intake, abdominal massage, and finger rectal stimulation can improve the gastrointestinal function of patients, increase appetite and promote rehabilitation.

Key words: Constipation; Intestinal management; Intervene

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Effect of Action Observation Therapy on Real Time Functional Magnetic Resonance Imaging in Stroke Patients: A Preliminary Study

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Introduction: To assess the effect of action observation (AO) therapy on real-time functional magnetic resonance imaging (rtfMRI) in hemiplegic stroke patients. **Materials and Methods:** Between 08/2019 and 10/2022, thirty-one stroke patients were randomized 1:1 to watch AO videos (action observation group, AO group) or sham AO videos (control group). The AO and control groups were administered routine rehabilitation treatment by the same trained occupational therapist, including exercise therapy, muscle strength training, exercise re-learning training, neuromuscular electrical stimulation, acupuncture, and routine occupational therapy, twice daily (5 days a week). All patients watched videos in a quiet environment for 30 minutes, twice daily (5 days /week), for a total of 8 weeks. The AO group watched action videos and imitate the observed movements; the control group watched sham AO videos. **Results:** The primary motor cortex (M1), premotor cortex (PMC), cerebellum (CE) and supplementary motor area (SMA) were selected as regions of interest (ROIs), from which data were collected and processed for brain function imaging and activation volume determination. In the AO group, the amounts of activated voxels increased after treatment in the M1, SMA, CE, and PMC regions (all $P < 0.05$); in the control group, the amounts of activated voxels increased after treatment in the M1, SMA, CE and PMC regions (all $P < 0.05$). **Conclusion:** Action observation therapy affects rtfMRI findings by increasing activated regions (M1, PMC, SMA and CE), altering motor function reorganization and improving motor function restoration in hemiplegic patients.

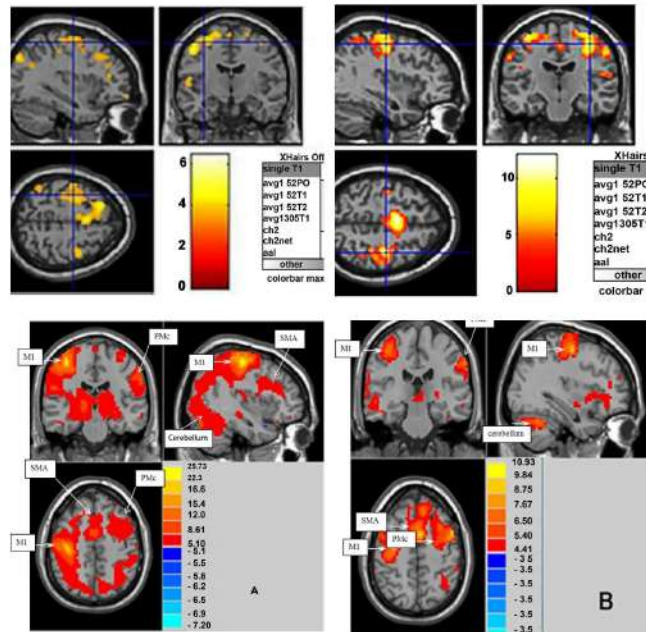


Figure 1 Pre-treatment activation maps in the ROIs of the control group by rtfMRI.

Figure 2 Pre-treatment activation maps in the ROIs of the AO group by rtfMRI .Figure 3 Post-treatment activation maps in the ROIs of the AO group by rtfMRI .Figure 4 Post-treatment activation maps in the ROIs of the control group by rtfMRI

Key words: action observation therapy, real-time functional magnetic resonance imaging (rtfMRI) ,stroke

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Meta-analysis of Clinical Efficacy of Hyperbaric Oxygen Therapy on Coma Patients After Severe Craniocerebral Injury

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Objective To systematically evaluate the clinical therapeutic effect of hyperbaric oxygen therapy on coma patients after severe craniocerebral injury. **Methods** Randomized controlled trials in Cochrane Library, PubMed, Embase, WanFang, CNKI, VIP and CBM on hyperbaric oxygen therapy for coma patients after severe craniocerebral injury were searched by computer from the establishment of the database to June 2023. The quality of included literatures were evaluated according to the methods recommended by the Cochrane Handbook., and the RevMan5.4 software was used for statistical analysis. **Results** A total of 6 studies and 352 patients were included. The meta-analysis showed the total treatment efficacy of hyperbaric oxygen treatment group was significantly higher than the conventional treatment group ($P<0.01$); and the GCS score elevation of hyperbaric oxygen treatment group was also significantly higher than conventional treatment group ($P<0.01$). **Conclusions** Hyperbaric oxygen has a good clinical effect on coma patients after severe craniocerebral injury, but the overall quality of the included literature is not high, more large-sample and multi-center randomized controlled studies are needed for further confirmation.

Key words: severe craniocerebral injury; Hyperbaric oxygen; Stunned; meta-analysis

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Effect of Hyperbaric Oxygen Combined with Acoustic and Photoelectric Stimulation on Awakening in Patients with Consciousness Disorders after Craniocerebral Injury

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Objective To explore the efficacy of hyperbaric oxygen combined with acoustic and photoelectric stimulation on the treatment of consciousness disorders in patients with traumatic brain injury. **Methods** From January 2021 to May 2022, 126 patients with cerebral injury and consciousness disorders in our hospital were selected and randomly divided into two groups. The control group (n=64) received hyperbaric oxygen therapy (2.0ATA), once a day for 30 times; The study group (n=62) underwent acoustic and photoelectric multiple sensory stimulation therapy after daily hyperbaric oxygen therapy for 30 days. The brainstem auditory evoked potentials (BAEP), somatosensory evoked potentials (SEP) N20, Glasgow Coma Scale (GCS), and Chinese Nanjing persistent vegetative state scale (CNPVSS) were compared before and after treatment for both groups, and the clinical efficacy was evaluated. **Results** After therapy, the BAEP and SEP of the study group were better than those of the control group, and the GCS and CNPVSS scores of the study group were higher than those of the control group ($P<0.05$). The total effective rate of the study group (88.71%) was higher than that of the control group (73.44%), with a statistically significant difference ($\chi^2=4.764$, $P<0.05$). **Conclusion** The combination of hyperbaric oxygen and acoustic photoelectric stimulation therapy can effectively improve the neuroelectrophysiological status of patients with traumatic brain injury, increase their GCS and CNPVSS scores, promote their consciousness awakening, and enhance clinical efficacy.

Key words: Hyperbaric oxygen therapy, Acoustic and photoelectric stimulation, Consciousness disorders, Observation of therapeutic effects

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Effect of Extracorporeal Shock Wave Therapy Combined with Surface Emg Biofeedback in Post-Traumatic Stiffness of the Elbow: a Randomized Controlled Trial.

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Objective: To assess the efficacy of combining extracorporeal shock wave therapy with surface electromyography biofeedback training (ESW-sEMGBF) in the management of post-traumatic elbow stiffness.

Design: Single-blind, randomized, controlled trial.

Participants: A total of eighty patients with post-traumatic elbow stiffness were randomly and equally assigned to the experimental (n=40) and control groups (n=40). Baseline demographic data, onset duration, and fracture location were comparable between the two groups.

Intervention: Both groups received conventional rehabilitation, including soft tissue release, joint mobilization, continuous passive movement, and ice compression. Additionally, the experimental group underwent ESW (0.02mJ/mm², 10Hz, 2000 pulses per session once a week) combined with sEMGBF (30 minutes per session five times a week) over an eight-week period.

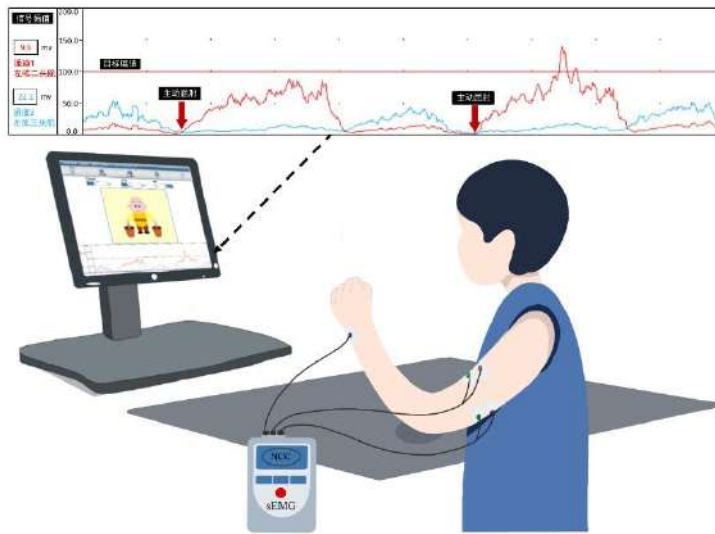
Outcomes: The Visual Analog Scale (VAS), active range of motion (AROM), and Mayo Elbow Performance Score (MEPS) were evaluated pre- and post-treatment.

Results: Significant improvements were observed in all outcomes for both groups following treatment (p<0.001). The ESW-sEMGBF group demonstrated a greater improvement in MEPS of 7.63 (95%CI: 3.71 to 11.54) and a greater improvement in AROM of 9.8 (95%CI: 5.60 to 13.90) compared to the control group (both p<0.001). Additionally, the ESW-sEMGBF group exhibited slightly but significantly superior pain relief as measured by the VAS score (0.40, 95%CI: 0.07 to 0.73, p=0.018).

Conclusion: Compared to conventional rehabilitation methods, the combination of extracorporeal shock wave therapy and surface electromyography biofeedback training demonstrates superior efficacy in enhancing elbow joint function and active



range of motion, as well as alleviating pain among patients with post-traumatic elbow stiffness.



Key words: post-traumatic elbow stiffness; shock wave therapy; surface electromyography; biofeedback training.

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Location of the Upper Esophageal Sphincter Relative to the Cervical Vertebrae during Swallowing : Analysis Using Swallowing CT

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Objective: To determine the location of upper esophageal sphincter (UES) along a superior-inferior axis and the distance of vertical displacement during swallowing with the effect of gender, age, and height in healthy subjects using 320-row area detector computed tomography (320-ADCT).

Methods: Ninety-four healthy adults (43 male, 51 female; 50.2±17.6 years) underwent 320-ADCT scanning while swallowing one trial of 10ml honey thick barium. UES location at bolus hold and at maximum displacement and its vertical displacement during swallowing were identified using the coordinates and the section-classification of vertebrae. The differences and correlation of UES location and distance in terms of gender, age, and height were analyzed using Mann-Whitney U test and Spearman's correlation coefficient.

Results: UES locations at bolus hold and at maximum displacement were significantly lower and the UES vertical displacement was significantly larger in males than in females ($P<0.001$), approximately 2.3 vertebrae in males and 2.1 vertebrae in females. UES at the bolus hold became lower with increasing age ($r=-0.312$, $P=0.002$), but the negative correlation became weak at maximum displacement ($r=-0.230$, $P=0.026$), resulting larger vertical distance with aging. UES locations at bolus hold and at maximum displacement showed strong negative correlation with height ($r=-0.715$, $P<0.001$ / $r=-0.555$, $P<0.001$), although this effect was unclear analyzed by gender.

Conclusion: UES location along a superior-inferior axis and its vertical displacement during swallowing were influenced by gender, age, and height in an interrelated manner.

Key words: Upper esophageal sphincter, multidetector computed tomography, deglutition, age, sex, body height

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Intermittent Theta-Burst Stimulation for Stroke: Primary Motor Cortex Versus Cerebellar Stimulation--A Randomized Sham-Controlled Trial

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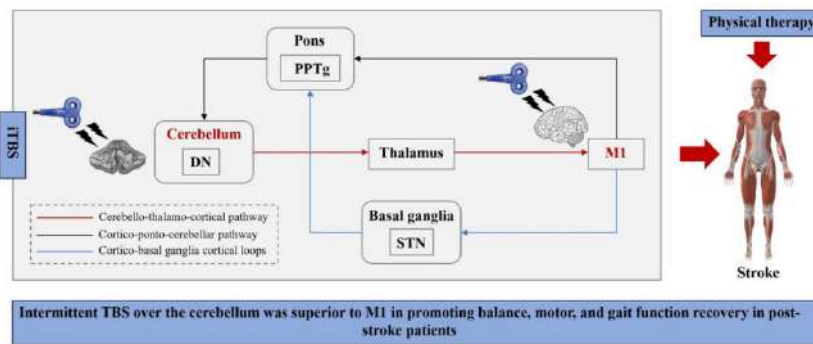
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Background: Stroke survivors with impaired balance and motor function tend to have relatively poor functional outcomes. The cerebellum and M1 have been suggested as targets for neuromodulation of balance and motor recovery after stroke. This study aimed to compare the efficacy and safety of iTBS to the cerebellum or M1 on balance and motor recovery in patients with stroke.

Method: In this randomized, double-blind, sham-controlled clinical trial, 36 patients with stroke were randomly divided into three groups: M1-, cerebellar- and sham-iTBS (n=12 per group; 15 sessions, 3 weeks). The BBS, FMA-LE, TIS, BI, mRS, FAC, and cortical excitability were evaluated before intervention (T0), after 1 week of intervention (T1), after 3 weeks of intervention (T2), and at follow-up (T3).

Result: At T2, M1- or cerebellar-iTBS significantly improved BBS scores compared with sham-iTBS ($P < 0.05$). Moreover, the cerebellar-iTBS group showed a significantly greater improvement in FMA-LE scores than the M1- and sham-iTBS groups at T2 ($P < 0.05$). The MEP amplitudes of the M1- and cerebellar-iTBS groups were higher than those of the sham-iTBS group ($P < 0.001$). The results indicated that the FAC scores were improved in both the M1- and cerebellar-iTBS groups compared with those in the sham group at T2 ($P = 0.041$).

Conclusion: Cerebellar iTBS was more effective than M1 iTBS in promoting balance, motor, and gait function recovery in post-stroke patients. Thus, cerebellar-iTBS may be a valuable new therapeutic option in stroke rehabilitation programs.



graphic abstract

Key words: repetitive transcranial magnetic stimulation; stroke; balance; cerebellum; motor recovery

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Effect of Hyperbaric Oxygen Therapy on Cerebral Blood Flow in Patients Recovering from Stroke

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Objective To investigate the effect of hyperbaric oxygen (HBO) therapy on cerebral blood flow in patients recovering from stroke. **Methods** From January 2023 to June 2023, a total of 20 patients recovering from stroke were enrolled as study subjects, and were randomly divided into two groups. The control group (n=10) treated with conventional therapy, and the observation group (n=10) treated with conventional combined HBO therapy. The course of treatment was 20 days. Systolic peak velocity (Vs), end-diastolic velocity (Vd), mean blood flow velocity (Vm), pulsatility index (PI), and resistance index (RI) of the middle cerebral artery (MCA) were checked with Transcranial Doppler (TCD) before and after treatment. **Results** Before treatment, the observed indicators had no difference in both groups. 20 days later, the Vs, Vd, Vm of the MAC reduced in both groups, but the reduction in the control group had no statistical significance ($P > 0.05$). Compared with the control group, the decline of Vs, Vd, Vm of the MAC in the observation group after treatment were significant ($P < 0.05$). There were no significant differences in PI and RI between the two groups ($P > 0.05$). **Conclusion** HBO therapy can effectively improve the cerebral blood flow in patients recovering from stroke and improve the prognosis of patients.

Key Words: Hyperbaric oxygen; Stroke; Transcranial Doppler; Middle cerebral artery

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A Study on the Effect of a Soft Hand Rehabilitation Robot on the Mitigation of Hand Spasticity After Stroke

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Background and objective: As a common complication of stroke patients, spasticity has high morbidity and complex pathophysiological mechanisms, which will seriously hamper the process of stroke rehabilitation. Hand spasticity after stroke is highly destructive and requires rehabilitation treatment as early as possible. Hand stretching training assisted by rehabilitation physicians is the most commonly used physical method for the mitigation of spasticity in clinical practice, but the number of rehabilitation physicians is severely insufficient and unevenly distributed in China. Therefore, rehabilitation robots with high intensity and repeatability are an important means to solve this problem.

Method: Based on the clinical characteristics of hand spasticity after stroke, the design requirements of a soft hand rehabilitation robot (SH-RERob) have been determined, and the overall design scheme of SH-RERob has been developed. Based on this, a SH-RERob which meets the personalized wearing needs of patients with hand spasticity, has been built. 10 patients with finger flexor spasticity after stroke were recruited to receive the stretching training assisted by SH-RERob in a clinical experiment.

Results: It has indicated that 30-minute stretching training assisted by SH-RERob significantly increased the muscle displacement ($p=0.029$) and Area Under Curve ($p=0.027$) of the flexor digitorum muscle of the forearm. Besides, it also has shown that two-week stretching training (30 minutes per day, five days per week) assisted by SH-RERob significantly reduced the MAS score ($P=0.016$).

Conclusion: The results indicate that the developed SH-RERob can effectively alleviate hand spasticity, which is expected to become an effective rehabilitation method for relieving spasticity.

Key Words: Stroke; Spasticity; Soft Hand Rehabilitation Robot

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A Study on the Effect of Mawangdui Guided Technique on Core Muscle Function in College Students with Chronic Non-Specific Lower Back Pain

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Objective Observe the clinical efficacy of Mawangdui Guiding Technique on college students with chronic non-specific lower back pain and investigating its effect on core muscle function.

Methods Sixty eligible subjects were equally divided into two groups , use the VAS to assess the pain level, JOA to assess the functional status, and EMG was used to determine the RMS and MPF value to assess the core muscle strength and fatigue.

Results The VAS scores of both groups were significantly lower after intervention ($P < 0.05$), and the Mawangdui guided surgery group was lower than that of the conventional rehabilitation group ($P < 0.05$), he JOA scores of both groups were higher after intervention ($P < 0.05$) and higher than the conventional rehabilitation group ($P < 0.05$), the RMS and MPF values of the core muscles of the two groups were significantly higher after intervention ($P < 0.05$), the RMS value of the erector spinae, RMS and MPF values of the rectus abdominis and external abdominal obliques in the Mawangdui guided surgery group were higher than the conventional rehabilitation group ($P < 0.05$).

Conclusion Both therapies were effective but the overall efficacy of the Mawangdui guided technique training was superior, and the mechanism of its efficacy was closely related to the reduction of patients' pain level, enhancement of lumbar spine function, improvement of the ability to perform activities of daily living, enhancement of the strength of the core muscles of the lumbar and back, and the improvement of the muscle's anti-fatigue level.

Key Words: Mawangdui guided technique, university students, chronic non-specific lower back pain, core muscles

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Difference of Muscle Stiffness Between Postpartum Women with and without Pelvic Girdle Pain

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Background:

Postpartum pelvic girdle pain (PP-PGP) is a common musculoskeletal disorder affecting the quality of life^[1]. It was reported that PP-PGP may be associated with imbalance on muscle function^[2, 3]. Shear wave elastography (SWE) allows quantification of muscle stiffness by measuring resting and contraction states, which demonstrate the strength of muscle contraction^[4, 5].

Aims:

Compare the difference of muscle stiffness between postpartum women with and without PGP, so as to explore the possible muscle property disorder for PP-PGP.

Method:

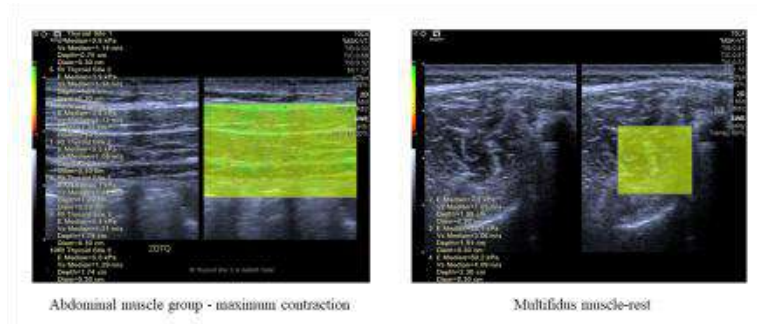
This was a cross-sectional study. Twenty-eight PP-PGP and 28 postpartum asymptomatic women (control group) participated in this study. The stiffness of stability muscles (external oblique, internal oblique, transversus abdominis, rectus abdominis, multifidus, gluteus maximus, gluteus medius) were evaluated by shear wave ultrasound imaging equipment during the relaxation and maximum contraction state. The recorded shear elastic moduli and wave velocity were regarded as indicators of muscle stiffness.

Result:

Both the elastic modulus and wave velocity of transverse abdominis was significantly increased, while the gluteus media muscle significantly decreased during the maximum contraction of PP-PGP group ($p < 0.05$). The elastic modulus of the multifidus significantly decreased ($p = 0.01$), and the wave velocity of the external oblique significantly increased ($p = 0.05$) in PP-PGP group during the maximum contraction.

Conclusion:

Preliminary results suggest that stiffness changes in different stability muscles during maximal contraction are associated with PGP. Specific therapies need to be addressed for different muscle stiffness changes.



Ultrasound elastography images

E kPa	PP-PGP group	Control group	t/Z	P
External oblique-rest	8.48 (5.90, 13.21)	8.45 (5.38, 11.80)	0.67	0.50
External oblique -maximum contraction	12.28 (7.66, 16.48)	9.23 (5.78, 12.53)	1.83	0.07
Internal oblique-rest	7.33±3.39	7.74±3.44	0.45	0.66
Internal oblique -maximum contraction	10.32 (7.09, 12.98)	8.15 (5.45, 12.16)	1.71	0.08
Transversus abdominis -rest	6.37 (4.58, 9.10)	6.25 (4.71, 8.91)	0.03	0.98
Transversus abdominis -maximum contraction	7.45 (5.08, 13, 19)	5.05 (4.51, 7.70)	2.30	0.02*
Rectus abdominis-rest	5.63 (5.02, 8.57)	7.07 (5.12, 8.77)	0.48	0.64
Rectus abdominis -maximum contraction	21.28(16.38, 30.66)	20.35 (14.28, 30.82)	0.80	0.42
Multifidus-rest	15.25(10.67, 22.12)	14.28 (11.45, 19.67)	0.13	0.90
Multifidus -maximum contraction	26.92±13.86	38.82±17.04	2.82	0.01*
Gluteus maximus-rest	2.67 (1.80, 3.74)	2.23 (1.63, 3.07)	1.21	0.23
Gluteus maximus -maximum contraction	5.45 (2.67, 10.78)	4.58 (3.17, 7.1)	0.16	0.88
Gluteus medius-rest	9.85(7.51, 14.70)	14.8(7.46, 17.94)	1.01	0.31
Gluteus medius -maximum contraction	15.58(12.19, 26.68)	22.12(18.03, 25.94)	2.08	0.04*

∴ E: Elastic modulus(results of comparison between the two groups)

Comparison of elastic modulus between groups

Vs m/s	PP-PGP group	Control group	t/Z	P
External oblique-rest	1.77±0.44	1.68±0.42	0.57	0.46
External oblique -maximum contraction	2.05±0.54	1.76±0.51	0.95	0.05*
Internal oblique-rest	1.51±0.34	1.55±0.36	0.93	0.61
Internal oblique -maximum contraction	1.86±0.42	1.67±0.40	0.89	0.09
Transversus abdominis -rest	1.48±0.30	1.48±0.34	0.80	0.99
Transversus abdominis -maximum contraction	1.57 (1.29, 2.08)	1.28 (1.22, 1.60)	2.28	0.02*
Rectus abdominis-rest	1.26 (1.28, 1.68)	1.51 (1.30, 1.70)	0.50	0.62
Rectus abdominis -maximum contraction	2.78±0.71	2.65±0.90	0.64	0.53
Multifidus-rest	2.25 (1.87, 2.67)	2.16 (1.92, 2.93)	0.33	0.74
Multifidus -maximum contraction	2.85±0.81	3.17±1.00	1.32	0.20
Gluteus maximus-rest	0.94 (0.77, 0.94)	0.84 (0.74, 1.00)	1.24	0.22
Gluteus maximus -maximum contraction	1.34 (0.94, 1.88)	1.23 (1.03, 1.51)	0.28	0.78
Gluteus medius-rest	1.79(1.57, 2.19)	2.19(1.57, 2.35)	1.12	0.26
Gluteus medius -maximum contraction	2.26(1.98, 2.96)	2.62(2.30, 3.04)	2.05	0.04*

Vs: Shear wave velocity(results of comparison between the two groups)

Comparison of shear wave velocity between groups



Key Words: Postpartum pelvic girdle pain; musculoskeletal disease; muscle stiffness; ultrasonography

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An Accessible Pre-Rehabilitation Bundle for Patients Undergoing Elective Heart Valve Surgery with Limited Resources: The Time Randomized Clinical Trial

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Background: Despite gradually increasing evidence in pre-rehabilitation for heart valve surgery, it remains underused, especially in developing countries with limited resources.

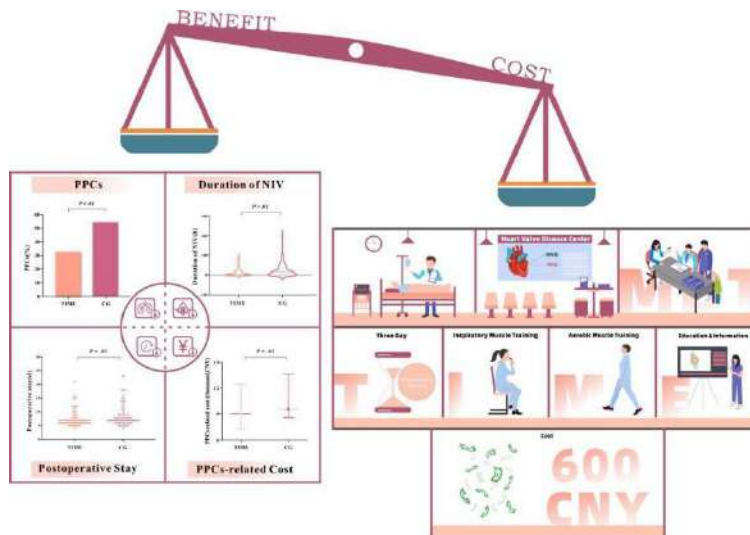
Objective: The study aimed to investigate the feasibility and effects of an innovative three-day pre-rehabilitation bundle for patients undergoing elective heart valve surgery.

Design: This was a single-center, assessor-blind randomized clinical trial.

Methods: A total of 148 subjects were randomly assigned to either usual care (control group, n=74) or usual care with an additional 3-day pre-rehabilitation bundle (TIME group, n=74). The main study outcome was the incidence of PPCs. Secondary outcomes included the feasibility of the intervention, duration of the non-invasive ventilator, length of stay, and PPCs-related medical costs on discharge.

Results: Of 148 subjects (54. 73%) were male, the mean age was 63. 45 years and PPCs were present in 24 of 74 patients in the TIME group, and 34 of 74 in the control group (OR, 0. 41; 95% CI, 0. 21-0. 80, $P < 0. 01$). The feasibility of the pre-rehabilitation bundle was good, and no adverse events were observed. Treatment satisfaction and motivation scored on 10-point scales, were $9. 1 \pm 0. 8$ and $8. 6 \pm 1. 4$, respectively. The TIME group also had fewer additional PPCs-related medical costs ($P=0. 02$) compared to the control group.

Conclusion: The three-day accessible pre-rehabilitation bundle reduces the incidence of PPCs, length of stay, and PPCs-related medical costs in patients undergoing elective valve surgery. It may provide an accessible model for the expansion of pre-rehabilitation in countries and regions with limited medical resources.



Key Words: elective heart valve surgery; pre-rehabilitation; postoperative pulmonary complications; medical costs

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Effect of Hyperbaric Oxygenation Combined with Transcranial Ultrasound Therapy on Changes of Neural Electrophysiology in Patients with Prolonged Disorder of Consciousness Caused by Stroke

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Objective To investigate the effect of hyperbaric oxygenation combined with transcranial ultrasound therapy on changes of neural electrophysiology in patients with prolonged disorder of consciousness (pDOC) caused by Stroke. **Methods** 84 pDOC patients were enrolled in the study. All patients were divided into treatment group (n=42) and control group (n=42) by random number table. The patients in both groups were accepted conventional drugs, basic rehabilitation and hyperbaric oxygen therapy. Meanwhile, patients in the treatment group were treated with transcranial ultrasound therapy once a day. The electroencephalograph (EEG) and limb somatosensory evoked potential (SEP) test were assessed in both groups before and one month after treatment respectively. **Results** One month later, the EEG and SEP scores were improved in patients of both groups, the difference was statistically significant ($P < 0.05$). The EEG and SEP scores in the treatment group were better than those in the control group after treatment, the difference was also statistically significant ($P < 0.05$). In the treatment group, the α or β waves of EEG were dominant and the N20 latency of SEP became normal after treatment. **Conclusion** The hyperbaric oxygenation combined with transcranial ultrasound therapy can improve the EEG activity and SEP effectively in patients with pDOC caused by Stroke.

Key Words: hyperbaric oxygenation; Prolonged disorder of consciousness; transcranial ultrasound; electrophysiological

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Three-day Preoperative Intensive Inspiratory Muscle Training to Prevent Postoperative Pulmonary Complications in Patients Undergoing Valvular Surgery

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Objective:

To investigate the prophylactic effect of three-day preoperative intensive inspiratory muscle training (IMT) in the incidence of postoperative pulmonary complication (PPC) in the elective heart valvular surgery population undergoing transapical catheter (TA) or median sternotomy (MS).

Methods:

A single-blind, randomized clinical trial was carried out at West China Hospital of Sichuan University from 2021-2022. Patients were randomly assigned to receive training with 30% Maximum Inspiratory Pressure (MIP) threshold load for IMT (IMT group), 10% MIP threshold load (Sham-IMT group), and for routine care (Control group). The primary outcome was the incidence of PPC, and secondary outcomes were pulmonary function, inspiratory muscle strength, and medical economic burden.

Results:

There were 24 PPCs in IMT group, 34 PPCs in Sham-IMT group, and 40 PPCs in Control group. Preoperative ventilatory capacity (Δ Maximal Ventilator Volume per minute[MVV]: 9.39 ± 10.79 L, $P < 0.01$) and inspiratory muscle strength (Δ MIP: 11.59 ± 9.44 , $P < 0.01$; Δ MIP%: 14.09 ± 12.05 , $P < 0.01$) were significantly improved in the IMT group, with a modest improvement in pulmonary function. According to the Kruskal-Wallis test, the IMT group had reduced time to noninvasive ventilation (0h vs. 16h, $P = 0.04$), and a shorter surgical ward stay (6.5d vs. 7d, $P = 0.01$) and fewer additional postoperative costs (7.31 vs. 8.79 thousand CNY, $P = 0.02$) compared to Control group.

Conclude:

An intensive preoperative 3-day IMT approach significantly improves inspiratory muscle strength and accelerates postoperative lung function recovery. This

intervention reduces the incidence of PPC in people undergoing heart valvular surgery with TA or MS and conserves hospitalization time and costs.

Key Words: inspiratory muscle training, heart valvular, pulmonary complication

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The Relationship of Radiographic Severity with Bmi, Pain, and Physical Function in Elderly Women with Knee Osteoarthritis: A Cross-Sectional Study

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Objective: The aim of this study was to investigate the relationship between radiographic severity and BMI, pain, and physical function in elderly women with knee osteoarthritis (OA).

Methods: A total of 80 elderly women with knee OA were enrolled in this study. Radiographic severity was assessed with the Kellgren-Lawrence (K/L) scale, and pain, stiffness, and physical function were assessed with Western Ontario and McMaster University Osteoarthritis Index (WOMAC) scales, objective assessment of patients' functional performance using the Time Up and Go (TUG) test. Spearman correlation analysis was used to assess the relationship between radiographic K/L scores and BMI, pain, and physical function. Logistic regression analysis was used to determine the important factors contributing to knee OA severity.

Result: There was no significant correlation between radiographic severity K/L and normal BMI ($p=0.087$), but there was a moderate correlation between radiographic severity K/L and high BMI ($p=0.02$, $r=0.457$). It was positively correlated with WOMAC pain, stiffness and physical function ($p=0.001$, $r=0.447$; $p=0.004$, $r=0.316$; $p=0.025$, $r=0.250$). In addition, K/L grading was positively correlated with TUG ($p=0.001$, $r=0.395$). On the other hand, BMI, pain, and stiffness may be the important influencing factors of the severity of knee OA, while age, course of disease, and physical function have little influence on the severity of knee OA.

Conclusion: The radiographic severity of knee OA was correlated with high BMI, pain, and physical function, and high BMI, knee pain and stiffness were important factors for the severity of knee OA.

Key Words: knee osteoarthritis; radiographic; BMI; pain; physical function

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Core Exercise Combined Interferential Therapy Induces Greater Improvements in Male Adults with Low Back Pain

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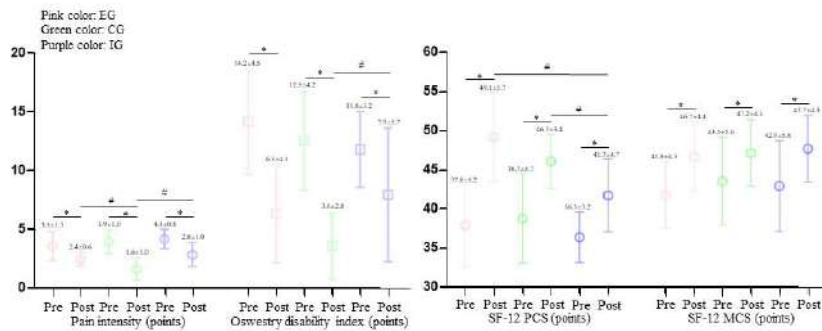
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Background: The purpose of this study was to investigate whether core muscle training combined interferential current (IFC) therapy would decrease pain severity and related disability and thus improve the core muscle function in inactive males adults with chronic low back pain (LBP).

Methods: 53 inactive males adults with chronic LBP were randomized into core muscle exercise combined IFC group(CG, n=19), core muscle exercise group(EG, n=19) or IFC group(IG, n=15) to perform the therapeutic intervention 5 times a week for 12 weeks. The primary outcomes were pain intensity, Oswestry disability index (ODI) and SF-12 questionnaire to assess health condition. Secondary outcomes included tests of trunk muscle strength, endurance, and range of motion (ROM) of hip medial/lateral rotation to assess muscle function. Measurements were taken before and after the intervention therapy. To quantify the effect size of the interventions, the relative risk, absolute and relative risk reduction, and number needed to treat (NNT) were calculated for primary outcomes.

Results: A significant time×group effect was found for pain intensity, ODI, SF-12, strength of trunk and endurance (all, $p < 0.05$). In the analysis for treatment benefit, the NNT was 3(95%CI, 2 to 5, CG vs. EG) and 3(95%CI, 2 to 5, CG vs. IG)for pain intensity, and 3(95%CI, 2 to 14, CG vs. EG) and 3(95%CI, 2 to 6, CG vs. IG)for ODI.

Conclusion: Overall, 12-week core muscle exercise combined IFC therapy and core muscle exercise along had shown significant improvement on core muscle function; however, the combined therapy can be a useful therapy strategy for greater alleviation in pain and disability.



Comparison of scores for self-reported back pain, disability, and quality of life among three groups

关键字: core muscle exercise; interferential current; physical therapy; low back pain

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A Comparison of the Effects of Stabilization Exercises and Proprioceptive Training Programs in Patients with Chronic Nonspecific Neck Pain: A Randomized Controlled Trial

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Background: Chronic nonspecific neck pain is associated with pain, disability, reduced mobility and impaired proprioceptive control.

Objective: The purpose of this study was to investigate the effects of four weeks cervical stabilization exercises and proprioceptive training programs on pain and disability in patients with chronic nonspecific neck pain(CNNP).

Methods: Forty-five patients with CNNP(18-45 years) were recruited and randomly allocated to one of three groups: stabilization exercises group(SE, n=15), proprioceptive training group(PT, n=15), and interferential current group(IC, n=15). The therapeutic program was carried out three days/week for four weeks. Pain intensity, neck disability index(NDI), quality of life(SF-12), range of motion(ROM), cervical muscle strength, balance ability, and tests of deep neck flexor muscles strength were measured at baseline and after the intervention.

Results: After four weeks, the NDI improvements were greater in PT than that of SE [95%CI, (0.22 to 2.84), $P<0.05$] and IC [95%CI, (-2.78 to -0.16), $P<0.05$]; pain intensity and SF-12 PCS improvements were significantly greater in the SE group and PT group($P<0.05$). For the strength of deep neck flexor muscles and ROM were greater in the SE and PT group($P<0.05$); however, there was no significant differences in IC($P>0.05$). The maximum isometric strength of neck was significantly improved for SE and PT, but such improvement was greater in SE($P<0.05$). Balance ability improved only in the PT($P<0.05$).

Conclusion: The study indicates that cervical stabilization exercises and proprioceptive training had improved pain, disability, quality of life, range of motion, muscle strength. However, such improvement in the stabilization exercises was not clinically relevant.



Key Words: neck pain, proprioception, therapeutic exercise, rehabilitation

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The Effect of Enriched Environment in Patients with Cognitive Impairment after Stroke: An Randomized, Crossover Study

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Objective: The effectiveness of enriched environment (EE) in patients with cognitive impairment after stroke, especially compared with a simple environment is unclear. Therefore, we aimed to investigate the effectiveness of EE in patients with cognitive impairment after stroke.

Methods: This randomized cross-over trial comprised 13 patients with cognitive impairment after stroke (9 males; age range, 59. 54 ± 10. 22 years). Patients were randomized into an EE/simple (EE-S) sequence group (n =8) and a simple/EE sequence group (n = 5). The two sequences were 14 days respectively and in two different centers with completely different environments but homogenized rehabilitation professionals. The functional independence measure (FIM), Mini-Mental State Examination (MMSE); Montreal Cognitive Assessment (MoCA); Hamilton Depression Scale (HAMD) were assessed pre- (T0) and post- (T1) sequence and final sequence (T2). The treatment effects were analyzed between T0 to T1, T0 to T2, and T1 to T2 inter-group.

Results: Significant change in FIM score was in EE-S group in EE sequence ($p = 0.027$). The MMSE and MoCA score in EE-S group also significantly increase during EE sequence ($p = 0.042$ and $p = 0.014$, respectively). Moreover, the MoCA score in S-EE group was also significant during EE sequence ($p = 0.042$).

Conclusion: The rehabilitation under EE condition benefits for patients after stroke, specifically improving cognitive functions, might simultaneously improve functional capability for daily activities.

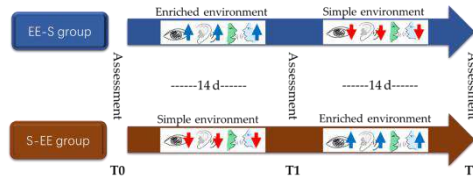


Figure 1. Study protocol. EE, enriched environment; S, simple environment; T, assessment time.

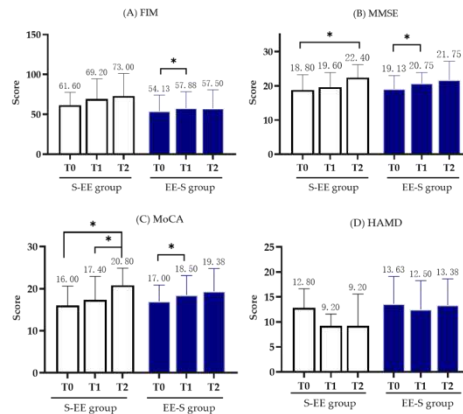


Figure 2. Comparison of change of outcomes follow the two environments. EE, enriched environment; S, simple environment; FIM, Functional Independence Measure; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; HAMD, Hamilton Depression Scale.

Key words: Enrich environment, Rehabilitation therapy, Stroke, Cognitive impairment

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Research on Virtual Reality Game Therapy based on Near-Infrared Brain Network Modulation for Improving Standing Balance Impairments in Stroke Patients.

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Objective: This study aims to explore the effects of immersive virtual reality (VR) on the cortical functional activity, structure, and metabolism in patients with post-stroke balance impairments, based on the perspective of cortical functional reorganization using near-infrared spectroscopy. It is expected to elucidate the relevant mechanisms of virtual reality on the cortical functional area related to balance.

Methods: A total of 20 patients with post-stroke balance impairments from our hospital were included in the study. The control group (n=10) completed 8 weeks of conventional balance training using near-infrared technology, while the observation group (n=10) underwent immersive VR game therapy training using near-infrared technology.

Results: After 8 weeks, the observation group showed significantly higher performance in posture control and standing balance compared to the control group, with statistically significant differences ($P < 0.05$).

Conclusion: The study confirmed that immersive VR game therapy, compared to conventional balance training, can effectively improve standing balance in patients with post-stroke impairments.

Key Words: Keywords: virtual reality, near-infrared spectroscopy, stroke, balance, brain network, game therapy.

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Combined Repeated Passive Range of Motion Therapy and Neuromuscular Electrical Stimulation for Improving Ankle Dorsiflexion Ability in ICU-AW Patients: A Clinical Study

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Objective: To provide evidence-based and standardized techniques for intensive care therapists to enhance the poor ankle dorsiflexion ability in ICU-AW patients, thereby enriching the diversity of effective treatment modalities for neurologically critically ill patients.

Methods: A total of 20 neurologically ill patients who were bedridden for an extended period in the ICU of our hospital were enrolled in the study. The control group (n=15) received 8 weeks of conventional physical therapy combined with standard electrical stimulation, while the observation group (n=15) underwent 8 weeks of combined repeated passive range of motion therapy (ankle dorsiflexion) and neuromuscular electrical stimulation.

Results: After 8 weeks, the observation group exhibited significantly higher scores than the control group in terms of electromyography of the ankle dorsiflexion muscle group, muscle strength assessment, and active joint range of motion. These differences were statistically significant ($P < 0.05$).

Conclusion: This study validates that the combined approach of repeated passive range of motion therapy and neuromuscular electrical stimulation is more effective in improving ankle dorsiflexion ability in ICU-AW patients when compared to routine physical therapy and electrical stimulation.

Key Words: Keywords: Repeated Passive Range of Motion Therapy, Intensive Care Unit-Acquired Weakness (ICU-AW), Muscle strength, Ankle dorsiflexion, Electrical stimulation, Neuromuscular Electrical Stimulation (N



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Application of Exoskeleton Robot in Improving Pulmonary Ventilation Ability of ICU Mechanically Ventilated Patients

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Objective: This study aimed to compare the effects of exoskeleton robot-assisted rehabilitation training with conventional treatment on respiratory capacity, spontaneous breathing trial, and respiratory fatigue in mechanically ventilated patients in the ICU. The study investigated the potential of exoskeleton robot-assisted early upright gait training to improve respiratory function and prolong spontaneous breathing trials in ICU mechanically ventilated patients.

Methods: A total of 20 mechanically ventilated patients who met the inclusion and exclusion criteria were randomly assigned to either the experimental or control group, with 10 patients in each group. The experimental group received 30 minutes of exoskeleton training for a total of 4 weeks, while the control group received 30 minutes of conventional physical fitness training for the same duration. Both groups received training once a day, 5 days a week, with similar training intensity.

Results: After 4 weeks of treatment, the experimental group showed significantly higher scores on various evaluation indicators (vital capacity, forced expiratory volume, tidal volume, spontaneous breathing trial) compared to the control group, with all differences being statistically significant ($P < 0.05$).

Conclusion: This study validates that compared to conventional treatment, exoskeleton robot-assisted intervention can effectively improve respiratory function in mechanically ventilated patients in the ICU. It increases lung capacity, prolongs treatment duration, shortens the duration of mechanical ventilation, and reduces the hospitalization period.

Key Words: Keywords: Exoskeleton robot, lung capacity, mechanical ventilation, rehabilitation, ICU, spontaneous breathing trial



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Machine Learning for the Prediction of Cognitive Impairment in Older Adults

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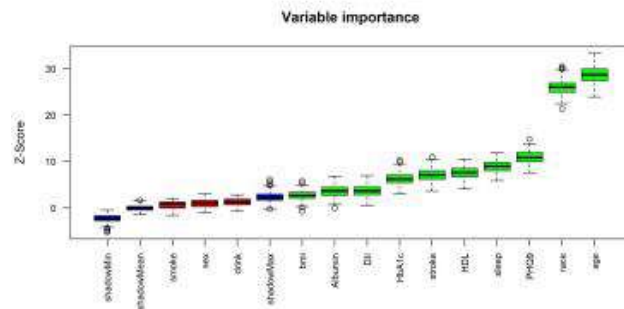
E-mail address: zhuang20062634@163.com

Objective: The purpose of this study was to develop and validate a predictive model of cognitive impairment in older adults based on a novel machine learning (ML) algorithm.

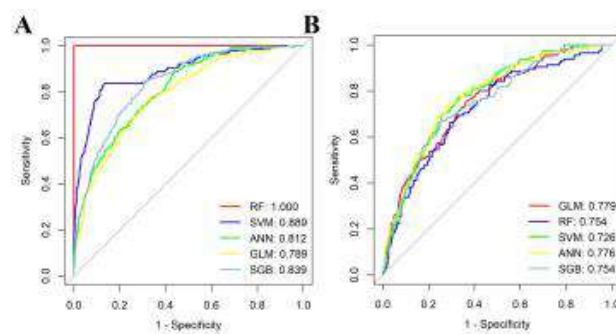
Methods: A total of 2226 participants. Cognitive abilities were assessed using a composite cognitive functioning score (Z-score) calculated using a correlation test among the Consortium to Establish a Registry for Alzheimer's Disease Word Learning and Delayed Recall tests, Animal Fluency Test, and the Digit Symbol Substitution Test. 13 demographic characteristics and risk factors associated with cognitive impairment were considered. Feature selection is performed using the Boruta algorithm. Model building is performed using tenfold cross-validation, machine learning (ML) algorithms such as generalized linear model (GLM), random forest (RF), support vector machine (SVM), artificial neural network (ANN), and stochastic gradient boosting (SGB). The performance of these models was evaluated in terms of discriminatory power and clinical application.

Results: The study ultimately included 2226 older adults for analysis. A total of 10 variables such as age, race, BMI, direct HDL-cholesterol level, stroke history, DII, HbA1c, PHQ-9 score, sleep duration, and albumin level were selected to construct the model. GLM, RF, SVM, ANN, and SGB were established to obtain the area under the working characteristic curve of the test set subjects 0.779, 0.754, 0.726, 0.776, and 0.754. Among all models, the GLM model had the best predictive performance in terms of discriminatory power and clinical application.

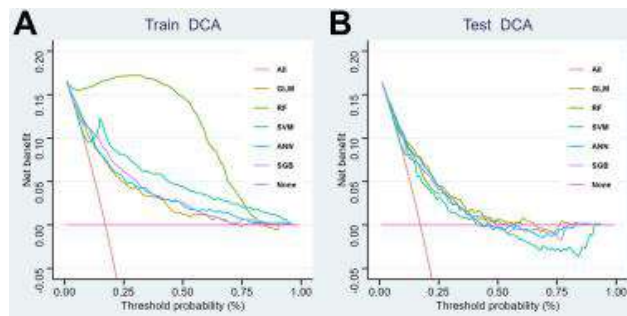
Conclusions: ML models can be a reliable tool to predict the occurrence of cognitive impairment in older adults.



Feature selection based on the Boruta algorithm



ROC curves from seven models, training set (A) and test set (B)



Decision curve analysis for four models, training set (A) and test set

Keywords: cognitive function¹, Machine learning², NHANES 3, Prediction model⁴, older adults⁵.

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The Influence of Asymmetry in Paraspinal Muscle Cross-Sectional Area on the Measurement Results of the Scoliometer

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Objective: To evaluate the influence of asymmetry in paraspinal muscle cross-sectional area on the measurement results of the scoliometer.

Methods: Twenty patients with scoliosis, with a mean age of 13.15 years (SD=0.73), underwent measurement of trunk inclination direction and degree during the forward bending test using the scoliometer. Use musculoskeletal ultrasound to measure the paraspinal muscles of the thoracic and lumbar segments on both sides of the spine, including the iliocostalis, longissimus, and multifidus muscles, and calculate the difference in their muscle cross-sectional areas, with a negative value indicating the left side is smaller and a positive value indicating the right side is smaller.

Results: The difference in cross-sectional areas of the longissimus muscles in the lumbar spine was positively correlated with the measurement results of the thoracic and thoracolumbar scoliometer ($P<0.05$). The difference in cross-sectional areas of the lumbar iliocostalis muscle was positively correlated with the measurement results of the lumbar scoliometer ($P<0.05$).

Conclusion: The measurement results of the scoliometer are influenced by asymmetry in paraspinal muscle cross-sectional area, mainly concentrated in the longissimus muscles and the iliocostalis muscle in the lumbar spine. The longissimus muscles primarily affect the upper part of the trunk, while the iliocostalis muscle primarily affects the lower part of the trunk.

Key words: Keywords: scoliosis; paraspinal muscles; scoliometer ; longissimus; iliocostalis

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Assessment Capacity of Scoliometer Measurement on Spinal Rotation and Lateral Deformities

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Objective: To evaluate the assessment capacity of scoliometer measurement on the spinal rotation and lateral curvature of patients with scoliosis.

Methods: For 20 patients with scoliosis, the average age was 13.15 years (SD=0.73). The direction and degree of back inclination during the Adam's forward bending test were measured using a scoliometer. Whole spine X-rays were used to examine the overall spinal image and measure the direction and degree of spinal rotation, as well as the direction and Cobb angle of the curvature. Use Kendall's tau-b test to analyze the correlation between back inclination and spinal rotation and lateral curvature direction, and use Spearman's test to analyze the degree of correlation.

Results: The correlation coefficient between back inclination and spinal rotation direction was 0.47 ($P<0.01$), and the degree correlation coefficient was 0.30 ($P<0.05$). There was no significant correlation between back inclination and spinal curvature direction, but the degree correlation coefficient was 0.30 ($P<0.05$).

Conclusion: By using scoliometer to measure the direction and degree of back inclination during the Adam's forward bending test, the direction and degree of spinal rotation, as well as the degree of spinal scoliosis, can be roughly evaluated, but the direction of spinal curvature cannot be evaluated.

Key words: Keywords: scoliosis; scoliometer measurement; spinal rotation; spinal curvature

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远程医疗支持的运动/身体活动计划对膝骨关节炎的有效性：系统评价和荟萃分析

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目的：远程医疗支持计划已越来越多地融入慢性病管理，我们对随机对照试验进行了系统评价和荟萃分析，以评估远程医疗支持的运动/身体活动计划对膝骨关节炎患者的疼痛、身体活动、身体功能、生活质量、自我效能和整体改善的有效性。

方法：在这项随机对照试验的系统评价和荟萃分析中，我们检索了 Embase（通过 OVID 平台）、MEDLINE（通过 OVID 平台）、CENTRAL（通过 Cochrane 图书馆）、Web of Science、PubMed、Scopus 和物理治疗证据数据库，该数据库成立至 2022 年 9 月。我们纳入了关注远程医疗支持的运动/身体活动计划对膝骨关节炎结局的随机对照试验，并排除了没有明确的远程医疗支持的运动/身体活动干预对有效性的研究。两位评价员使用 Cochrane 协作组织的偏倚风险工具和物理治疗证据数据库（PEDro）量表独立评估研究质量，并使用标准化模板提取资料。主要结局是疼痛、身体活动和功能。系统评价和荟萃分析方案已在 PROSPERO（CRD42022359658）注册。

结果：23 项研究（包括 3824 名受试者）符合纳入标准，其中 20 项研究纳入 meta 分析（n=3509）。针对膝关节骨关节炎患者的远程医疗支持的运动/身体活动计划减轻了疼痛（标准化平均差 [SMD] -0.39 [95% CI -0.67 至 -0.11]; p=0.0004）、更好的身体活动（SMD 0.13 [95% CI 0.03 至 0.23]; p=0.01）和更好的功能（SMD -0.51 [95% CI -0.98 至 -0.05]; p=0.0004）。此外，在生活质量（SMD 0.25 [95% CI 0.14 至 0.36]; p<0.00001）、疼痛自我效能（平均差 [MD] 0.72 [95% CI 0.53 至 0.91]; p<0.00001）和整体改善（OR 2.69 [95% CI 1.41 至 5.15]; p=0.0005）方面观察到更好的改善，但身体功能自我效能无显著改善（MD 0.14 [95% CI -0.26 至 0.53]; p=0.50）。根据世界卫生组织的数字健康分类、干预组的远程技术类型和对照干预为主动或非主动活动进行的亚组分析显示亚组差异显著。

结论：远程医疗支持的运动/身体活动计划可能会减轻膝盖疼痛，并改善膝骨关节炎患者的身体活动、身体机能、生活质量、自我效能和整体改善。未来的研究应评估远程医疗支持的运动/体育活动计划的效果。

关键字： 远程医疗； 身体活动； 膝骨关节炎； 运动； 系统评价

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HIIT 通过骨骼肌源性 MALAT1 改善 NASH 氧化应激的作用及机制研究

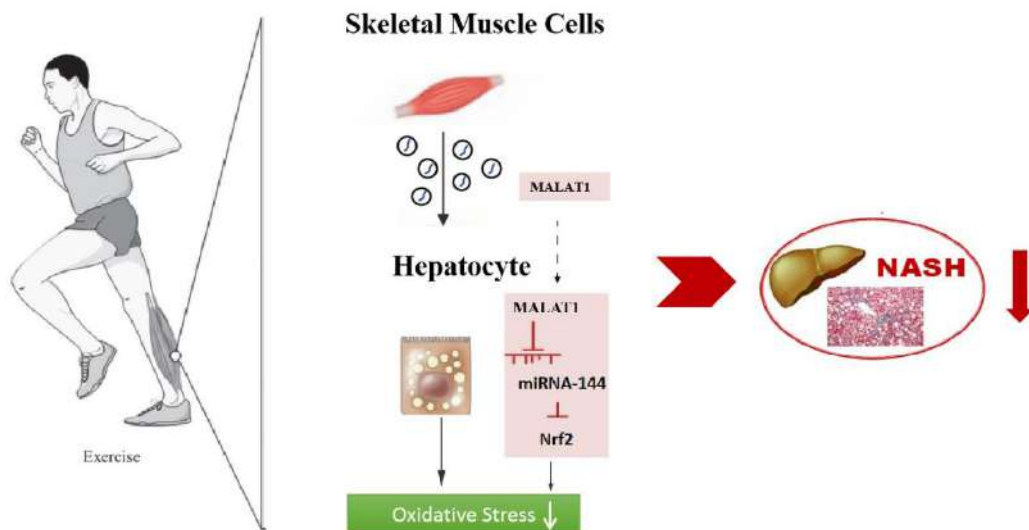
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氧化应激是 NASH 进展的核心环节，抗氧化治疗可改善 NASH。近期发现骨骼肌外泌体可作为新型肌肉因子介导骨骼肌与肝脏信息交流，但其是否调控 NASH 氧化应激尚不明确。我们发现 HIIT 干预自发性脂肪肝模型小鼠 4 周后，骨骼肌外泌体 LncRNA-MALAT1 增多，肝脏抗氧化基因 Nrf2 表达升高，氧化应激缓解，脂肪性肝炎改善；通过生信学发现 MALAT1 可与 miR-144 结合，抑制 Nrf2 的表达。据此 HIIT 可能通过刺激骨骼肌分泌富含 MALAT1 的外泌体来调控肝脏 Nrf2 基因表达，进而改善 NASH 氧化应激。



HIIT 改善 NASH 的可能分子机制

关键字：高强度间歇有氧训练；非酒精性脂肪肝炎；骨骼肌；组织间调控

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呼吸模式再学习在长期气管切开堵管困难患者中的应用

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背景：长期气管切开状态患者，在具备堵管条件（自主呼吸、自主咳嗽排痰均具备）下，相当一部分患者在尝试堵管时，指脉氧迅速下降、患者憋喘难以耐受，临床上往往延后或放弃堵管【1-4】。

目的：探讨长时期气管切开堵管困难的难点，为临床快速达到撤管指征提供思路。

方法：收集 30 例具备气管切开堵管指征，在常规堵管方法堵管失败后，采用自身前后对照的方法，堵管前教会患者呼吸训练方法。

结果：30 例患者呼吸模式再学习后堵管成功率 100%，7 天内撤除气切管道。

结论：堵管前呼吸模式再学习可加速气切患者达到撤管指征。

关键字：气管切开；气管切开堵管；呼吸训练；呼吸模式

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观察体外冲击波结合冷空气治疗跟腱炎的临床效果与舒适度

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目的：观察体外冲击波结合冷空气治疗跟腱炎的效果与舒适度。方法：将 60 例跟腱炎患者作为研究对象，分为对照组、试验组 A 以及试验组 B。对照组接受常规体外冲击波治疗；试验组 A 在接受常规体外冲击波治疗的同时进行冷空气治疗；试验组 B 在接受常规体外冲击波治疗后，进行单独的冷敷治疗。在治疗前及治疗后都会进行 VAS、AOFAS 以及 Maryland 评分。结果：治疗后三组 VAS、AOFAS 及 Maryland 评分均较治疗前改善；试验组 A 与试验组 B 在疼痛方面改善优于对照组；踝以及足功能方面，试验组 A 略优于对照组与试验组 B。结论：体外冲击波结合冷空气治疗跟腱炎提高了治疗过程中的舒适度，从而能更有效地对治疗部位进行精准治疗。

关键字：体外冲击波；冷空气治疗；跟腱炎；舒适度

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CTBS 刺激辅助运动区后的皮质激活变化--一项基于 fNIRS 的大程度运动研究

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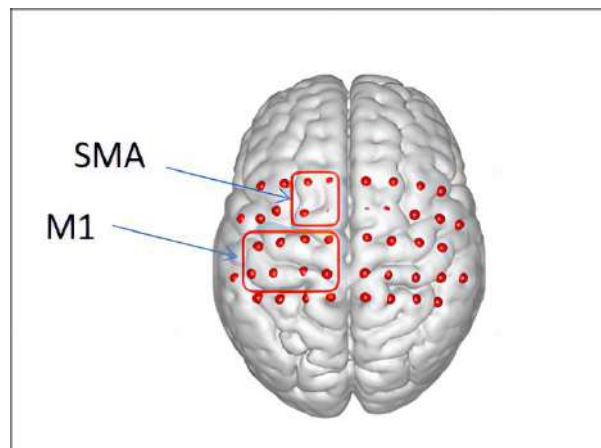
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探讨持续短阵快速脉冲刺激（cTBS）调控辅助运动区（SMA）对健康受试者大程度运动范式下的皮质激活影响。

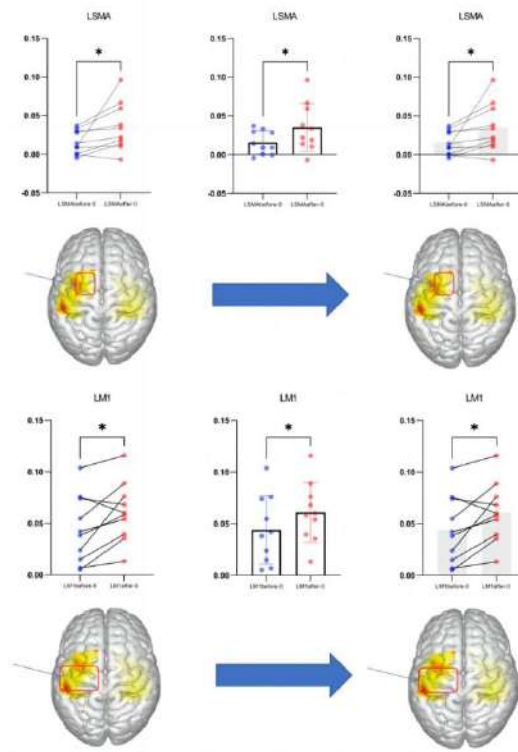
10 名受试者在进行 fNIRS 测试时被要求每组运动分别在 0 磅、3 磅和 15 磅的负载下完成 12~14 次 0.5Hz 频率的右手举起和放下并休息 30s, 重复 4 组。cTBS 刺激定位的左侧 SMA 后再进行一次 fNIRS 测试。受试者佩戴的 fNIRS 盖板均进行通道定位。

cTBS 刺激后 0 磅负载运动下左侧 SMA 和 M1, 3 磅负载运动下左侧 M1 的激活 β 值相比刺激前显著增加。混合效应线性模型中不同负载运动下的 SMA 及 M1 激活均存在线性关系, 负载和时间的交互效应对 β 无显著影响。

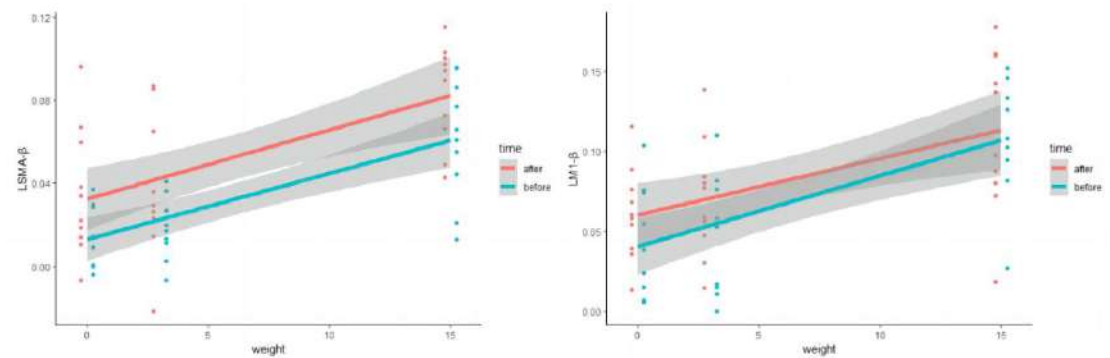
SMA 的调控能够影响同侧 M1, 任务脑激活的增加可能与运动强度及努力程度有关, SMA 有望成为卒中后上肢运动功能调控的靶点。



SMA、M1 定位图



0 负载运动下 cTBS 刺激后左侧 SMA、M1 的激活 β 变化



10 名受试者三种不同负载运动下左侧 SMA、M1 的激活 β

Key words: SMA; cTBS ; fNIRS; Stroke; Function

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《国际功能、残疾和健康分类康复组合》在膝骨性关节炎人群中的信效度研究

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目的: 探讨 ICF-RS 是否可以反映慢性膝骨性关节炎 (KOA) 患者身体功能、活动、参与的功能现状, 检验其在 KOA 人群使用的可靠性、区分效度、与常用量表关联性等属性。

方法: 对 60 例慢性 KOA 患者给予 ICF-RS、HSS 等量表评估。采用 Cronbach α 系数检验内部一致性信度; 采用相关系数检验其与临床常用量表的校标关联效度。

结果: ICF-RS 在 KOA 人群具有良好的内部一致信度, Cronbach α 提示删除 b620 排尿功能、b730 肌肉力量功能、d710 基本人际交往、d850 有报酬的就业, 有助于提高整体信度。ICF-RS 大部分条目具有较好的区分效度, 但 b130 能量和驱动力功能、b640 性功能、b730 肌肉力量功能、d550 吃、d710 基本人际交往、d850 有报酬的就业区分效度不足。ICF-RS 与临床常用量表有高度相关性。

关键词: 膝骨性关节炎, 国际功能、残疾和健康分类 (ICF), 康复组合, 信效度

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ICF 康复组合 (ICF-RS) 评估股骨骨折患者康复结局及医疗支出构成研究

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摘要: 引言: 采用 ICF-RS 评定股骨骨折患者术前、术后及康复后的功能变化、康复疗效及医疗占比。

方法: 用 ICF-RS (中国国家标准) 评估 29 例股骨骨折患者在术前 (入院)、术后第 2 天及康复后 (出院) 的功能状态 (正常, 轻度、中度、重度功能障碍), 秩和检验比较术前、术后和康复后的功能变化, Kappa 系数评价 APP 模型与评估者判断功能等级之间的一致性, 并分析成本效益。

结果: 患者术前、术后和康复后 ICF-RS 得分见图 1; 模型预测与评估者判断功能等级之间的 Kappa 系数见表 1; 医疗支出构成比见图 2。

结论: ICF-RS 可用于评估股骨骨折患者的功能变化、康复疗效与医疗支出构成比。

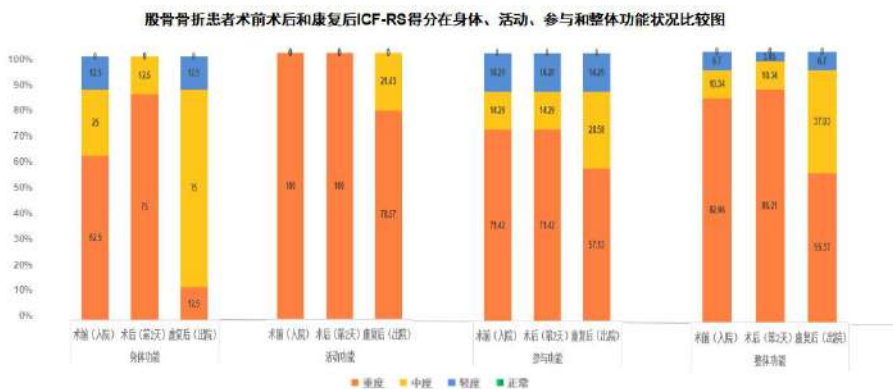


图 1 股骨骨折患者术前术后和康复后 ICF-RS 得分在身体、活动、参与功能状况比较图

表 1 模型判断(根据 ICF-RS 得分)与评估者判断(根据临床经验)的一致性比较

维度	身体功能	活动功能	参与功能	整体功能
Kappa 系数	0.951	1	0.963	1

备注: 表中所有 Kappa 系数数值比较 P<0.005。

表 1 模型判断(根据 ICF-RS 得分)与评估者判断(根据临床经验)的一致性比较



图2 股骨骨折患者各项费用支出比较



图2 股骨骨折患者各项费用支出比较

关键词：ICF-RS 评定；股骨骨折；康复疗效；医疗占比

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镜像疗法联合改良强制性诱导运动疗法在偏瘫患儿作业治疗中的临床应用

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目的: 探讨镜像疗法与改良强制诱导运动技术联合应用于痉挛型偏瘫患儿作业治疗, 对上肢运动功能及日常生活影响。方法: 选择 2019 年 1 月—2020 年 12 月在南京儿童医院康复科痉挛型偏瘫患儿 60 例, 分观察组与对照组, 每组 30 例。对照组予以常规康复, 观察组加以镜像疗法并联合改良强制性诱导运动。治疗前、治疗 12 周后, 评价两组患儿 PDMS-FM 评分、FMFM-C 区评分, Barthel 指数(BI), 旋前圆肌改良 Ashworth 量表。结果: 治疗前两组患儿 PDMS-FM、FMFM-C 区、MAS、BI 无明显差异。治疗后两组患儿 PDMS-FM、FMFM-C 区、BI、MAS 较治疗前改善。观察组治疗后 PDMS-FM、FMFM-C 区、BI 评分高于对照组, MAS 评分无差异。结论: 镜像疗法联合改良强制性运动应用于作业治疗中, 改善偏瘫患儿上肢运动功能及日常生活能力。

关键词: 镜像疗法; 改良强制性诱导运动疗法; 痉挛型偏瘫 ; 作业治疗

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老年骨性关节炎全膝关节置换术后深静脉血栓形成预测模型的构建及验证

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目的 探讨老年骨性关节炎全膝关节置换术后深静脉血栓形成的原因，并构建预测模型及验证。方法 选取 2020 年 11 月至 2022 年 11 月在我院接受 TKA 治疗的 OA 患者。根据术后第 3 天双下肢深静脉影像检查，结果，46 例划入 DVT 组，148 例划入 Non-DVT 组。比较分析个体特征和临床资料。进行逻辑回归分析以确定 THA 患者 TKA 后 DVT 的危险因素。结果 共纳入 194 例，患者下肢 DVT 发生率为 38.33%，患者的年龄、BMI、糖尿病史、总胆固醇、D-二聚体、卧床时间、手术时间、术中出血量、存在差异性且有统计学意义 ($P < 0.05$)。年龄 ≥ 60 岁、BMI ≥ 26 kg/m²、有糖尿病史、TC ≥ 5.17 mmol/L、LDL-C ≥ 1.04 mmol/L、D-二聚体 ≥ 0.5 mg/L 均是 DVT 病情的影响因素 ($P < 0.05$)。结论 注意 DVT 的影响变量，并强调有针对性的干预措施以预防术后 DVT。

中文名称	英文名称	简称
纤维蛋白原/血纤维蛋白原	Fibrinogen	FIB
凝血酶原时间	Prothrombin time	PT
活化部分凝血活酶时间	Activated partial thromboplastin time	APTT
凝血酶时间	Thrombin time	TT
低密度脂蛋白胆固醇	Low density lipoprotein cholesterol	LDL-C
血小板计数、高密度脂蛋白胆固醇	High density lipoprotein cholesterol	HDL-C
甘油三酯	Triglycerides	TG
总胆固醇	Total cholesterol	TC
载脂蛋白 A1 血清水平		
载脂蛋白 B 血清水平		

表 1 血液相关数据列表



项目	DVT 组 (n=46)	Non-DVT 组 (n=148)	χ^2	P
性别 [n(%)]			0.836	0.360
男	29 (63.04)	82 (55.41)		
女	17 (36.96)	66 (44.59)		
年龄 (岁)	78.68±8.34	74.85±8.21	2.753	0.006
BMI (kg/m ²)	27.78±3.97	26.05±3.84	2.648	0.009
吸烟史 [n(%)]			0.008	0.927
有	14 (30.43)	44 (29.73)		
无	32 (69.57)	104 (70.27)		
糖尿病史 [n(%)]			16.298	<0.001
有	31 (41.89)	50 (33.78)		
无	15 (32.61)	98 (66.22)		
高血压史 [n(%)]			1.283	0.257
有	23 (50.00)	88 (59.46)		
无	23 (50.00)	60 (40.54)		
恶性肿瘤史 [n(%)]			0.513	0.474
有	10 (21.74)	40 (27.03)		
无	36 (78.26)	108 (72.97)		
心血管病史 [n(%)]			1.204	0.273
有	11 (23.74)	48 (32.03)		
无	35 (76.26)	100 (67.97)		
手术史 [n(%)]			2.403	0.121
有	20 (43.48)	46 (30.41)		
无	26 (56.52)	102 (69.59)		
TG (mmol/L)	1.41±0.64	1.50±0.98	0.585	0.559
TC (mmol/L)	4.81±0.83	4.48±0.89	2.231	0.027
HDL-C (mmol/L)	1.35±0.34	1.31±0.33	0.713	0.477
LDL-C (mmol/L)	2.57±0.67	2.23±0.63	3.149	0.002
FIB (g/L)	3.18±0.74	3.26±0.79	0.609	0.543
PT (s)	11.31±0.73	11.20±1.05	0.662	0.509
APTT (s)	25.15±3.14	25.48±4.13	0.499	0.619
TT (s)	17.69±1.73	17.40±1.74	0.989	0.324
血小板计数 (×10 ⁹ /L)	203.11±61.27	209.16±71.91	0.515	0.607
D-二聚体 (mg/L)	0.95±0.17	0.47±0.16	17.509	0.000

表 2 两组患者临床资料的比较



表 3 多因素 Logistic 回归分析影响 DVT 的因素

参数	β	标准误差	Wald χ^2	P 值	OR 值	95%CI
年龄	1.785	0.443	16.236	0.000	5.962	2.500~14.219
BMI	1.050	0.417	2.152	0.012	2.859	1.263~6.470
糖尿病史	1.728	0.443	15.215	0.000	5.630	2.362~13.420
TC	1.170	0.421	7.723	0.005	3.222	1.412~7.355
LDL-C	1.314	0.440	8.918	0.003	3.720	1.571~8.809
D-二聚体	1.534	0.443	11.991	0.001	4.636	1.947~11.043
卧床时间	0.078	0.413	0.036	0.850	1.081	0.481~2.430
手术时间	0.713	0.453	2.477	0.116	2.040	0.839~4.961
术中出血量	0.182	0.412	0.195	0.658	1.200	0.535~2.692

表 3 多因素 Logistic 回归分析影响 DVT 的因素

关键词：骨性关节炎；全膝关节置换术；深静脉血栓形成；预测模型

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肺康复训练对新型冠状病毒肺炎出院患者功能障碍影响的临床研究

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目的：探讨肺康复训练对新冠肺炎出院患者肺功能、运动能力、生活质量以及心理状况的影响。

方法：符合纳排标准的受试者被随机分配到试验组或对照组。对照组接受健康教育，试验组在对照组的基础上增加肺康复训练。每周3次，持续6周。结局指标包括：肺功能，6分钟步行试验、SF-36、SAS以及SDS。

结果：干预结束后，试验组的最大吸气压较干预前有所提高，第一秒最大呼气容积、最大吸气压与对照组相比差异具有统计学意义。此外，试验组的6分钟步行距离较治疗前明显增加，两组患者的变化值比较具有统计学意义。

结论：肺康复训练可提高新冠肺炎出院患者的运动能力，改善其呼吸功能。

关键字：肺康复训练；新冠肺炎；肺功能

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基于机器学习探究神经电生理指标对脑卒中患者上肢运动功能恢复的预测模型研究

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目的 利用神经电生理指标构建脑卒中后上肢运动功能恢复预测模型，明确预测因素，为患者的康复评定及治疗提供决策依据。

方法 收集患者的基线资料，基于机器学习构建卒中后2周及4周的上肢运动功能恢复的预测模型。

结果 预计纳入500例患者，构建的预测模型在2周和4周的上肢运动功能恢复预测中均显示出较高的准确率。某些神经电生理指标在预测卒中后上肢运动功能恢复方面更具有参考价值。

结论 基于机器学习证明了神经电生理指标有助于预测卒中患者的上肢运动功能。临床医生基于此模型可以更好地评估患者的恢复情况，制定更加合适的康复方案。

关键字: 脑卒中，上肢运动功能，机器学习，预测模型，神经电生理

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超声可视化重复单体中药制剂注射对比封闭治疗对偏瘫肩痛的远期疼痛疗效

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摘要: 目的 探讨超声可视化单体中药制剂注射与封闭对偏瘫肩痛的远期疗效。方法 选取2022年至2023年1月南京紫金医院的脑卒中后偏瘫肩痛患者64例, 两组各32例。单体中药组在超声引导下正清风痛宁注射, 疗程10天, 每日1次; 封闭组在超声引导下复方倍他米松注射, 治疗1次; 记录治疗前、3、10和30天患者疼痛评分, 治疗前和2周后的肱二头肌长头腱和肩峰下滑囊积液量。结果 封闭组第3天的疼痛评分优于单体中药组, 第10天疗效相当, 30天时单体中药组优于封闭组。两组都减少了肱二头肌长头腱和肩峰下滑囊积液量, 组间对比无差异。结论 封闭疗法短时间改善疼痛方面效果更佳, 但正清注射可以更有效地改善远期疼痛。

表3 两组疼痛情况比较
Table1 Pain situation of the two groups

组别	n(例)	疼痛评分				F	p
		治疗前	第3天	第10天	第30天		
正清组	30	6.30±1.21	4.93±0.83 ^a	2.83±0.83 ^{bc}	2.00±0.37 ^{abc}	119.09	0.000
封闭组	30	6.03±1.35	3.83±1.23 ^a	2.50±0.82 ^{bc}	2.57±0.77 ^{abc}	92.24	0.000
F		0.694	16.440	2.437	13.075		
p		0.424	0.000	0.124	0.001		

注: “a”表示与治疗前比较P<0.05; “b”表示与治疗3天比较P<0.05; “c”表示与治疗10天比较P<0.05。

两组疼痛评分比较

表2 两组肩峰下滑囊积液量比较
Table5 Subacromial Bursa effusion of the two groups

组别	治疗前	治疗后	t检验	
			t	p
治疗组	2.48±0.76	1.10±0.53	13.593	0.000
对照组	2.76±0.48	1.26±0.64	13.510	0.000
t	-1.668	-1.365		
p	0.101	0.178		

注: 治疗前两组肩峰下滑囊积液量总体均数无统计学差异, P>0.05; 治疗后两组肩峰下滑囊积液量总体均数有统计学差异, P<0.05; 治疗组和对照组治疗前肩峰下滑囊积液量无统计学差异, P>0.05。

两组肩峰下滑囊比较

表1 两组长头腱积液量比较
Table4 Tendinous effusion of long head of the two groups

组别	治疗前	治疗后	t检验	
			t	p
治疗组	2.66±0.70	1.14±0.37	16.423	0.000
对照组	2.72±0.56	1.28±0.39	13.590	0.000
t	-0.387	-1.379		
p	0.700	0.173		

注: 治疗前两组长头腱积液量总体均数无统计学差异, P>0.05; 治疗后两组长头腱积液量总体均数有统计学差异, P<0.05; 治疗组和对照组治疗前长头腱积液量无统计学差异, P>0.05。

两组肱二头肌长头腱积液对比

关键字: 偏瘫肩痛; 肌骨超声; 封闭疗法; 单体中药注射



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基于醒脑开窍针法行针时进行经颅直流电治疗对慢性意识障碍的研究

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目的 探讨醒脑开窍针法行针时行经颅直流电治疗 (TDCS) 对脑卒中后慢性意识障碍 (pDoC) 患者的促醒效果。

方法 选取南京紫金医院 2022 至 2023 年 6 月在院的 pDOC 患者 60 例, 随机分为两组各 30 例。对照组行常规针刺和 TDCS; 治疗组在醒脑开窍针法操作的同时行 TDCS, 每日 1 次, 疗程 4 周。记录两组患者每周的 CRS-R 评分及治疗前后的脑电图 (EEG)、四肢体感诱发电位 (SEP) 结果。

结果 CRS-R 评分自第 3 周始治疗组优于对照组; 治疗 4 周后的 EEG 与 SEP 评分治疗组优于对照组, 差异有统计学意义 ($P < 0.05$)。

结论 醒脑开窍针法行针时行 TDCS 治疗能改善 pDOC 患者脑电活动, 对 pDOC 患者有较好的促醒效果。

组别	例数	cnpvss评分					F	P
		治疗前	1周	2周	3周	4周		
舱内组	30	5.143±3.41	6.543±3.73 ^a	8.286±4.66 ^{ab}	10.314±5.76 ^{abc}	12.514±6.37 ^{abcd}	16.713	0.000
舱外组	30	4.513±3.37	5.154±3.82 ^a	6.590±5.38 ^{ab}	7.513±6.11 ^{abc}	8.308±6.90 ^{abc}	4.817	0.002
F		0.638	2.498	2.078	4.089	10.226		
P		0.427	0.118	0.154	0.047	0.008		

注: "a"表示与治疗前比较 $P < 0.05$; "b"表示与治疗1周比较 $P < 0.05$; "c"表示与治疗2周比较 $P < 0.05$; "d"表示与治疗3周比较 $P < 0.05$ 。

两组 CRS-R 比较

关键字: 慢性意识障碍; 醒脑开窍针刺法; 经颅直流电

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基于物联网的运动训练对社区中老年 KOA 患者的临床疗效研究

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基于物联网的运动训练能够显著改善社区中老年 KOA 患者的疼痛和僵硬症状、提高步行能力和身体功能，从而提高其生活质量；且基于物联网的功率自行车训练方式在改善中老年 KOA 患者的膝关节疼痛、关节僵硬、步行能力、生理功能方面优于神经肌肉训练。本研究提供了一种在社区中实施康复训练的有效方法，有助于改善 KOA 患者的社区康复。

关键字： 膝骨关节炎， 神经肌肉训练， 功率自行车， 物联网， 远程康复

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针刺治疗蛛网膜囊肿压迫小脑致共济失调 1 例

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摘要: 小脑性共济失调是以小脑变性为主引起随意运动失调的征群。邬某, 女, 23 岁, 行走不稳 20 余年; 无言语含糊, 无意向性震颤, 无家族史。3 年前查头颅磁共振示: 枕大池局部呈脑脊液信号, 范围约 6.8cm×3.6cm×2.7cm, 小脑下缘弧形向上压迹。诊断为蛛网膜囊肿压迫小脑致共济失调。考虑患者已成年, 手术不能明显改善症状及预后, 多家医院建议无需手术, 定期复查。针刺以“头体同针、腹背同刺、形神同调”为原则, 取头穴(百会透刺太阳)、任督二脉、手足阳明经和足太阳膀胱经腧穴为主, 治疗 1 月后患者步履不稳和肢体摇晃明显改善, 全身协调性和反应能力提高, 后随访病情稳定。

关键词: 蛛网膜囊肿; 小脑性共济失调; 针刺; 神经调控

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经颅磁刺激治疗在意识障碍患者中的应用效果： 系统评价和 Meta 分析

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目的：本文基于现有研究提出经颅磁刺激影响意识障碍患者的证据。

方法：通过检索英文数据库。寻找经颅磁刺激对意识障碍患者治疗效果的临床随机对照实验。对纳入的研究进行系统评价和 Meta 分析。

结果：总计纳入 6 篇文章，366 名受试者。Meta 分析结果表明，经颅磁刺激治疗组与假刺激对照组相比，可明显提高意识障碍患者 CRS-R 量表评分(MD=3.04, 95%CI (1.89, 4.20), P<0.00001)。

结论：本研究结果表明，经颅磁刺激治疗能在一定程度上能提高意识程度。并且在治疗过程中，经颅磁刺激治疗无明确的不良反应，因此，将经颅磁刺激治疗引入意识障碍患者的常规治疗有助于患者的意识恢复，有利于患者病情转归。

关键字：经颅磁刺激，Meta 分析，意识障碍，疗效

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超声可视化富血小板血浆再生技术治疗脊柱侧凸腰痛的临床研究

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回顾性观察超声引导下富血小板血浆干预脊柱侧凸腰痛的临床疗效，为脊柱侧凸腰痛提供一种全新的治疗靶点。分析 2021 年 1 月至 2022 年 10 月四川大学华西医院康复科符合脊柱侧凸侧腰方肌区域疼痛患者 22 例，每位患者进行 1 次超声引导下腰方肌 PRP 修复治疗。分别在治疗前，治疗后 24 小时、2 周、1 月、3 月观察 VAS 指数、ODI 指数。结果显示治疗后 24 小时、2 周、1 月、3 月与治疗前相比，VAS 评分及 ODI 评分均降低。治疗后 2 周、1 月、3 月 VAS 及 ODI 差异无统计学意义。说明对脊柱侧凸侧腰方肌进行 PRP 修复治疗，可以有效干预脊柱侧凸引起的腰痛，改善患者的功能。



图 1 标记定位点，定位进针点



图 2 超声引导下定位腰方肌

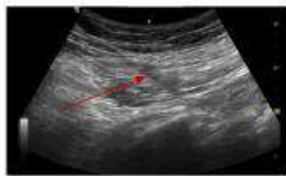


图 3 超声引导下针道定位腰方肌



图 4 超声引导下腰方肌 PRP 注射

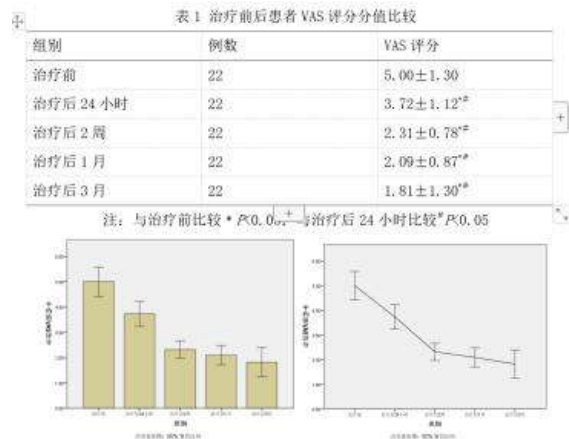


图 1 治疗前后患者 VAS 评分分值比较

关键字：超声引导，PRP，腰椎凸侧，慢性肌筋膜疼痛综合征，腰方肌

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超声引导下关节囊液压扩张改善肘关节旋转功能的临床疗效观察：一项回顾性研究

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目的: 超声引导下关节囊液压分离扩张术治疗肘关节骨折术后旋转功能受限的临床疗效分析。

方法: 回顾性分析南昌市洪都中医院康复科 2022 年 1 月至 2022 年 12 月收治的 20 例肘关节骨折后肘关节旋转功能僵硬患者, 所有病例全部采用超声引导下肱桡关节囊液压分离术结合常规关节常规训练, 观察术后 1 周以及 1 月后肘关节 VAS 评分、MPES 评价情况。结果: 与术前相比, 术后 1 周、1 个月的肘关节 VAS 评分、MPES 等肘关节活动度指标均有明显改善, 与术前相比均具有统计学差异 ($P < 0.05$) 结论: 超声引导下肱桡关节囊液压分离术治疗肘关节骨折后旋转功能受限临床疗效满意, 是一种操作简单, 肘关节功能恢复优良率较高的治疗方法。



图 1: 肱桡关节进针点

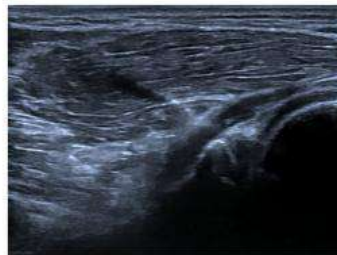


图 2 肱桡关节囊超声下关节囊扩张

肱桡关节注射点

表 1 20 例患者 MPES 肘关节功能评分、肘关节活动度及肘关节 VAS 评分比较 ($\bar{x} \pm s$)

时间	VAS 评分	MPES 评分	肘关节旋前	肘关节旋后
治疗前	6.70 ± 0.865	52.30 ± 10.712	59.75 ± 8.540	52.00 ± 8.784
治疗后 1 周	4.70 ± 0.733	77.15 ± 6.184	71.80 ± 5.454	70.05 ± 4.019
治疗后 1 月	2.30 ± 0.470	86.15 ± 7.220	77.45 ± 1.701	77.85 ± 1.387
F	193.455	89.915	46.452	110.762
P	<0.05	<0.05	<0.05	<0.05

20 例患者 MPES 肘关节功能评分、肘关节活动度及肘关节 VAS 评分比较

关键字： 超声引导， 肱桡关节， 关节囊扩张， 肘关节旋转功能

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脑卒中后认知障碍患者皮质反应异常：一项 TMS-EEG 研究

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目标:

使用 TMS-EEG 评估 PSCI 患者的皮层反应。

方法:

研究招募了 31 名参与者(10 名 PSCI、10 名中风但非 PSCI 和 11 名健康对照组)。采用 MoCA 和 MMSE 量表对受试者的认知功能进行评估。使用 TMS-EEG 技术对受试者的脑电反应进行记录。通过时域分析和时频域分析来量化 TMS 诱导的脑电图反应。

结果:

相比于对照组, PSCI 组和非 PSCI 组 θ 和 α 波段 TRSP 显著下降, 以及 TMS 诱发的 N100、P180 显著减少。PSCI 组在 Peak3 的 GMFP 振幅下降。N100 振幅与卒中人群的 MoCA 评分相关。

结论:

中风后 TMS 诱导的皮质反应显著改变, PSCI 人群经历了更大的变化。我们的研究扩大了对 PSCI 中 TMS-EEG 特征的认识, 该技术未来具有广阔的应用前景。

关键字: 脑卒中后认知障碍, 颅磁刺激-脑电图, 颅磁刺激诱发电位(TEP), 皮层反应性, 颅磁刺激诱发振荡

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口面肌功能治疗改善 Pierre-Robin 序列征术后吞咽功能及语言障碍的疗效观察

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目的: 探讨口面肌功能治疗(OMT)对 Pierre-Robin 序列征 (PRS) 术后患儿吞咽功能及言语语言障碍影响。 **方法:** 将 52 例 PRS 下颌骨牵引成骨术后吞咽障碍患儿分为观察组及对照组各 26 例。 对照组患儿术后给予常规营养支持, 观察组在此基础上给予 OMT 治疗。 **结果:** 干预 6 个月后发现观察组藤岛一郎吞咽障碍评分较治疗前及对照组均提高, 营养风险筛查结果、营养相关指标均较对照组改善, 随访至 3 岁发现观察组患儿口面肌功能分级优于对照组, 言语语言障碍发生率较对照组降低。 **结论:** OMT 能显著改善 PRS 术后患儿吞咽功能及营养状况, 促进患儿体重发育, 降低言语语言障碍发生率。

关键字: 口面肌功能治疗; Pierre-Robin 序列征术后; 吞咽障碍; 营养状况; 言语语言障碍

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低频重复经颅磁刺激治疗痉挛型偏脑性瘫痪的疗效与修复机制研究

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目的: 探究低频 rTMS 对脑瘫大鼠的保护作用。方法: 采用 Rice 法构建大鼠脑瘫模型, 分为 Sham 组、CP 组、rTMS 治疗组。rTMS 组予以 14 天 rTMS 干预。结果: 造模后 CP 组大鼠的记忆认知功能较 Sham 组受损, rTMS 治疗后, CP 组大鼠的记忆认知功能得到改善; HE 染色可见 rTMS 治疗后海马 CA1 及 CA3 区细胞较 CP 组坏死减少; RNA 测序结果显示: Sham 组和 CP 组的差异基因共 2744 个, 上调 1294 个, 下调 1450 个。CP 组和 rTMS 治疗组的差异基因共 3281 个, 上调 2295 个, 下调 986 个。KEGG 通路提示 Sham 组和 CP 组与 CP 组和 rTMS 组有 37.9% 的信号通路重合, 差异基因共同富集至氧化磷酸化及细胞外基质。结论: 低频 rTMS 治疗可以改善脑瘫大鼠的认知记忆功能及海马神经元细胞损伤。其作用机制可能与氧化磷酸化代谢紊乱及细胞外基质异常有关。

关键字: 脑性瘫痪; 痉挛型偏瘫; 重复经颅磁刺激; RNA 测序

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基于龙氏量表探索康复科老年住院患者精神药物使用与跌倒的相关性

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目的: 基于国家标准—龙氏日常生活活动能力量表 (The Longshi Scale, LS), 探究康复科老年住院患者跌倒与精神药物使用的关系。

方法: 收集中国 23 个省共 103 家康复科老年住院患者的基本信息。记录跌倒事件和精神药物使用情况, 采用 Logistic 回归分析二者的相关性。

结果: 6425 例患者中, 711 例 (11.07%) 发生跌倒, 333 例 (5.18%) 曾使用精神药物。精神药物使用是康复科老年住院患者跌倒的独立危险因素 (OR=1.86, 95%CI: 1.36-2.53), 尤其会使 LS 分组为床上人 (OR=1.82, 95%CI: 1.21-2.72) 和家里人 (OR=2.00, 95%CI: 1.13-3.54) 的跌倒风险显著增加。

结论: 精神药物使用会显著增加康复科老年住院患者的跌倒风险, 尤其是对于床上人和家里人。建议关注康复科老年住院患者的合理用药, 并采取预防措施预防跌倒事件的发生。

表 1 研究人群的一般人口学特征 [例(%)]

变量	未跌倒 (n=4714)	发生跌倒 (n=711)	OR (95%CI)	P 值
性别				0.014
男	2815 (49.61%)	311 (44.73%)	1.0	
女	2819 (50.39%)	399 (55.27%)	1.22 (1.04, 1.42)	
年龄				0.567
65-75	2414 (43.30%)	313 (44.02%)	1.0	
75-85	2011 (35.19%)	258 (36.29%)	0.94 (0.79, 1.13)	
>85	1129 (20.51%)	160 (22.69%)	1.06 (0.87, 1.29)	
LS 分值				<0.001
床上人	2878 (52.77%)	359 (47.85%)	1.0	
家里人	1476 (26.52%)	259 (36.43%)	1.44 (1.21, 1.71)	
社会人	1160 (20.98%)	121 (17.06%)	0.76 (0.61, 0.95)	
是否使用精神药物				<0.001
否	3417 (63.15%)	451 (63.43%)	1.0	
是	217 (4.05%)	56 (7.88%)	1.46 (1.25, 1.70)	
居住状态				0.999
独自	238 (4.32%)	52 (7.31%)	1.0	
同住	2436 (43.98%)	299 (42.02%)	1.00 (0.82, 1.19)	
婚姻				<0.001
<1 年	2408 (43.72%)	411 (57.82%)	1.0	
≥1 年	3216 (56.28%)	299 (42.18%)	0.25 (0.47, 0.85)	
受教育程度				<0.001
<21	1844 (33.77%)	131 (18.43%)	1.0	
21-40	822 (14.81%)	131 (18.43%)	2.02 (1.57, 2.59)	
41-60	810 (14.86%)	132 (18.58%)	1.97 (1.53, 2.54)	
>60	2433 (44.56%)	395 (55.16%)	1.52 (1.23, 1.87)	
文化程度				<0.001
低	4372 (80.01%)	521 (73.29%)	1.0	
高	1112 (20.09%)	190 (26.71%)	1.46 (1.22, 1.75)	
文化程度				<0.001
低	5208 (94.14%)	611 (86.02%)	1.0	
高	596 (10.86%)	99 (13.98%)	1.09 (1.00, 1.19)	
教育程度				0.009
小学及以下	2394 (43.75%)	334 (46.99%)	1.0	
初中	1499 (27.27%)	151 (21.11%)	0.78 (0.65, 0.93)	
高中	1069 (19.27%)	162 (22.67%)	1.14 (0.95, 1.36)	
大学 (专科) 及以上	561 (9.89%)	63 (8.83%)	0.88 (0.65, 1.17)	
高中	318 (5.74%)	20 (2.81%)	0.89 (0.59, 1.34)	
大学及以上	249 (4.47%)	35 (4.90%)	0.64 (0.41, 1.00)	
家庭月收入				<0.001
5 万元以下	2046 (37.31%)	291 (40.93%)	1.0	
5-10 万	2002 (36.44%)	191 (26.87%)	0.64 (0.55, 0.75)	
10-15 万	1006 (18.36%)	151 (21.11%)	1.07 (0.87, 1.32)	
15-20 万	316 (5.72%)	52 (7.31%)	1.12 (0.84, 1.50)	
20 万以上	244 (4.37%)	19 (2.67%)	0.52 (0.25, 0.84)	

研究人群的一般人口学特征 [例(%)]

表2 二元 logistic 回归分析康复科老年住院患者精神药物使用与跌倒的相关性

精神药物	原始模型		模型 I		模型 II	
	OR (95%CI)	P 值	OR (95%CI)	P 值	OR (95%CI)	P 值
否	1.0		1.0		1.0	
是	1.68(1.25, 2.26)	0.0007	1.68(1.24, 2.26)	0.0007	1.86(1.35, 2.53)	<0.0001

注：原始模型：不调整任何混杂因素；模型 I：调整年龄、性别；模型 II：在模型 I 的基础上进一步调整表 1 中单因素分析有统计学意义的变量（性别、LS 分组、病程、BI 分数、是否吸烟、是否饮酒、教育程度及家庭年收入）。

二元 logistic 回归分析康复科老年住院患者精神药物使用与跌倒的相关性

表3 二元 logistic 回归分析 LS 各分组患者精神药物使用与跌倒的相关性

LS 分组	精神药物	原始模型		模型 I		模型 II	
		OR (95%CI)	P 值	OR (95%CI)	P 值	OR (95%CI)	P 值
床上人	否	1.0		1.0		1.0	
	是	1.60(1.09, 2.36)	0.0159	1.60(1.09, 2.35)	0.0169	1.82(1.21, 2.72)	0.0037
家庭人	否	1.0		1.0		1.0	
	是	1.72(0.99, 3.00)	0.0554	1.70(0.97, 2.97)	0.0618	2.00(1.13, 3.54)	0.0180
社会人	否	1.0		1.0		1.0	
	是	1.89(0.72, 4.98)	0.1945	1.85(0.70, 4.89)	0.2116	1.82(0.67, 4.94)	0.2412

注：原始模型：不调整任何混杂因素；模型 I：调整年龄、性别；模型 II：在模型 I 的基础上进一步调整表 1 中单因素分析有统计学意义的变量（性别、病程、BI 分数、是否吸烟、是否饮酒、教育程度及家庭年收入）。

二元 logistic 回归分析 LS 各分组患者精神药物使用与跌倒的相关性

关键字：跌倒；精神药物；老年；龙氏量表；住院患者

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体感仿真机器人用于不同人群平衡能力的特征分析

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目的: 本研究基于体感仿真机器人分析了不同年龄/性别人群平衡测量指标变化的特点和相关指标。

方法: 共招募 120 名无跌倒史的健康社区居民, 包括青年、中年和老年组。应用自主开发体感仿真机器人, 在静态、动态、反应态下收集平衡相关运动学指标, 分析其随年龄/性别的变化情况。

结果: 共 46 项平衡指标与增龄显著相关。男性静态平衡、女性动态平衡、全部反应平衡均随年龄增长显著下降。同时总结出平衡指标随增龄逐渐恶化的 5 种类型。

结论: 随年龄增长, 女性的动态平衡功能和男性的静态平衡功能更易受损。反应性平衡功能在中年早期即开始下降。



Therapeutics and Modalities

治疗学与物理因子治疗

Oral Presentation



Lumbar Traction for Chronic Low Back Pain; Biomechanical Analysis and Clinical Trial with New Traction Apparatus

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BACKGROUND: Lumbar traction is a traditional treatment modality for chronic low back pain (CLBP), but its effectiveness has not been demonstrated in clinical practice. This is due to (1) the lack of in vivo biomechanical confirmation, (2) the lack of a precise delivery system for traction force, and (3) few randomized controlled trials proving its effectiveness and utility.

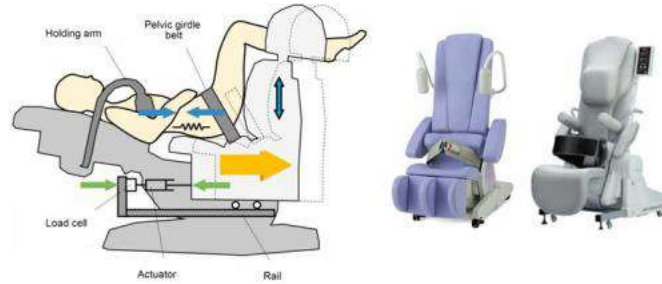
METHODS: We conducted (1) biomechanical experiment (54 patients from 6 orthopaedic clinics) and (2) cross-over randomized controlled trial (95 from 28 clinics and hospitals) with computer-controlled traction apparatus. The patients were randomly assigned to either the intermittent traction with vibration (ITV) first group or the intermittent traction only (ITO) first group; the former was treated with repeated traction and vibration force added to preload. They were followed up weekly for 2 periods. The primary outcome measure was Japan Low back pain Evaluation Questionnaire (JLEQ).

RESULTS: We confirmed the distraction force lineally correlated to the movement of traction unit and the Finite Element Method simulation provided at least 3.0 mm shifting distance at the lumbar spine.

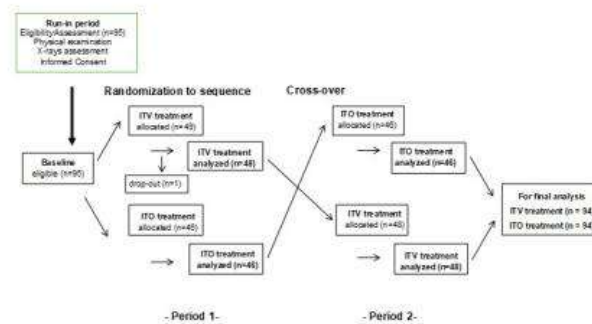
The differences in JLEQ scores over time showed significant improvements in the treatment to which vibrational force was added. Mean difference was significant to compare ITV treatment and ITO treatment (-1.75 (p = 0.001), 95% CI; -2.69 to -0.80).



CONCLUSION: Lumbar traction can provide a *in vivo* distractive force at the lumbar spine. The results of clinical trial indicate that lumbar traction was able to improve the pain and functional status in patients with CLBP.



Mechanics of traction apparatus and the photo of two types of apparatus. These two main components of the apparatus were separately moved on the rail with a help of actuator connected with a load cell.



Flow diagram of patients according to the CONSORT statement expanding to cover a crossover trial.

Key Words: chronic low back pain, lumbar traction, biomechanical experiment, finite element method simulation, cross-over randomized controlled trial

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Effect of Intermittent Theta Burst Stimulation to Cerebellar Vermis on Balance Function in Patients with Clinically Probable Multiple System Atrophy : A Case Report

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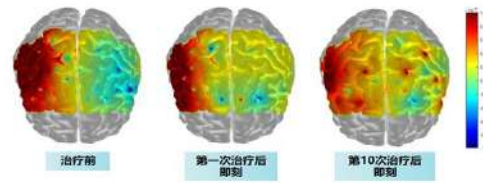
Introduction: Repeated transcranial magnetic stimulation is increasingly used in patients with multiple system atrophy (MSA). Its stimulation parameters and stimulation mode are the focus of current research. There are few studies on the application of intermittent theta burst stimulation (iTBS) mode to improve the balance function for MSA patients.

Case Description: A 69-year-old female patient was clinically diagnosed as C subtype of clinically probable MSA. The iTBS was used to stimulate the cerebellar vermis for her. The functional near-infrared spectroscopy system detected and evaluated the brain function activity imaging of the patient when finished sitting to stand, standing with eyes open and standing with eyes closed; The Berg Balance Scale, Fugl-Meyer Balance Assessment Scale and the Gait and Balance Training Assessment System were used to evaluate and analyze the patients' balance function at before the treatment, immediately after the treatment, and on the tenth day.

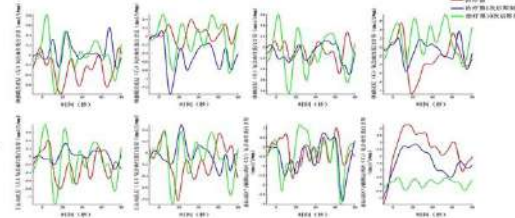
Case Discussion: The activation of oxygenated hemoglobin in the parietal lobe of the patient tended to balance on both sides, and the oxygenated hemoglobin content in the left premotor area and the left auxiliary motor area increased when performing the balance task after treatment. The score of Berg balance scale was increased from 25 points before treatment to 39 points; The score of Fugl-Meyer balance function evaluation scale was increased from 10 points before treatment to 11 points. Gait has also improved in all aspects. This case suggests that iTBS could improve the balance function of cerebellar vermis in patients with clinically probable MSA-C subtype.



The patient was treated with ITBS and tested for ENRS while performing a balance task



Brain functional activity imaging of patient during balance tasks at different time periods



The trend of changes in oxygenated hemoglobin content in different brain regions of patients during balance tasks in different time periods

The process of the study and the results of the trial

The scores of BBS scale, Fugl-Meyer scale and MBI scale in different periods of time

	Before the treatment	Immediately after the first treatment	Immediately after the 10th treatment
BBS	25	34	39
Fugl-Meyer	10	10	11

The scores of BBS scale, Fugl-Meyer scale and MBI scale in different periods of time

Key Words: Multiple System Atrophy, Intermittent Theta Burst Stimulation, Transcranial Magnetic Stimulation, Balance Function

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Efficacy of Balance Foam Pad as Adjunct Therapeutic Exercise in Knee Osteoarthritis: A Randomized Controlled Trial

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General Objective: To determine the efficacy of balance foam pad as adjunct to therapeutic exercise versus standard therapeutic exercises alone in controlling pain and improving balance among knee osteoarthritis patients.

Participants: A total of 40 patients diagnosed with knee osteoarthritis with radiographic evidence of grades 0-2 Kellgren and Lawrence Scale.

Method: The participants were randomly assigned into two groups: Intervention group wherein they performed balance foam pad exercises plus therapeutic exercises and the Control group performed standard therapeutic exercises alone. Baseline outcome measures were assessed prior to initiation of the program. Both groups received physical modalities before the exercises. The two groups underwent 3 times sessions per week completing 24 physical therapy sessions.

Main Outcome: Study outcome measurements include Visual Analog Score (VAS), Berg Balance Scale (BBS) and Timed up and Go test (TUG).

Results: Forty subjects were able to meet the inclusion criteria and complete the training sessions. Both groups showed significant decrease in VAS after completing the training sessions. Among the participants in control group, their BBS and TUG scores significantly changed. A similar trend was also noted in the intervention group in their BBS and TUG scores. Analysis showed no significant difference comparing the two groups as stated in the outcome measures.

Conclusion: Both groups showed improvement in pain control and balance after performing the exercises. Balance foam pad exercises in combination with therapeutic

exercises is as equally effective in pain relief and improving balance and may be used as adjunct to patient's physical therapy program.



Balance Foam Pad

Table 2: BBS and TUG from Baseline to Week 8 between Control and Intervention Groups

Phase	BBS* (points)		p-value	TUG** (seconds)		p-value
	Control	Intervention		Control	Intervention	
Baseline	53.8(0.83)	53(2.1)	0.122	14.81(1.69)	15.23(2.47)	0.534
Week 2	53.5(1.15)	52.8(2.46)	0.256	13.47(1.39)	13.99(2.81)	0.468
Week 4	53.6(0.6)	53.65(1.18)	0.867	12.71(1.28)	13.73(2.3)	0.090
Week 6	53.55(1.67)	53.55(1.1)	0.468	13.14(1.9)	12.71(1.79)	0.503
Week 8	53.85(1.46)	53.75(0.91)	0.641	13.09(1.81)	12.27(2)	0.165
Test change p-value	<0.01	<0.01		<0.01	<0.01	

*Berg Balance Scale (BBS): 41-56 points = low fall risk; 21-40 = medium fall risk; 0-20 = high fall risk

**Timed Up and Go test (TUG): ≥12 seconds = high risk of falling

BBS and TUG from Baseline to Week 8 between Control and Intervention Groups

Key Words: Balance foam pad, Knee osteoarthritis, Balance impairment

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30206 Therapeutics and Modalities

Therapeutic Effects of Robot-Assisted Gait Training Using an Active Exoskeleton in Stroke Patients: A Case Series Study

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Background and Aims

The lower limb exoskeletal robot with patient-initiating movement is designed for patients' unique needs by compensating their gait (Fig. 1), but its therapeutic effect in stroke patients remains unclear. In the present study, we investigated the therapeutic effect in stroke patients in a variety of rehabilitation phases by dividing these patients into groups with stroke onset periods longer or shorter than 6 months. In addition, we evaluated its effects on stroke patients recruited in the Taiwan post-acute stroke care (PAC) program.

Methods

A one-arm designed study was conducted. The participant would receive a robot-assisted gait training 40 min/ session, 1 session a day, 2-3 sessions a week, and 5-6 sessions in total. Before each training, the parameters of knee motors would be set according to the participant's performance of gait symmetry for well-supporting.

Results and Conclusion

We enrolled 11 patients and assigned them to three groups (Fig. 1). Within-group analysis showed that significant improvement of BBS was found in the ≤ 6 months group, and significant improvements of 5MWS and TUG were found in the > 6 months group, however, no significant effect was observed in the PAC group (Fig. 2). Between-group analysis also showed significantly greater improvement of TUG in the > 6 months group as compared with the ≤ 6 months group ($p=0.014$). No adverse



events were reported in the present study. Further studies are needed by applying a larger sample size, advanced gait assessment tools, and control groups for comprehensively evaluating its therapeutic effects.

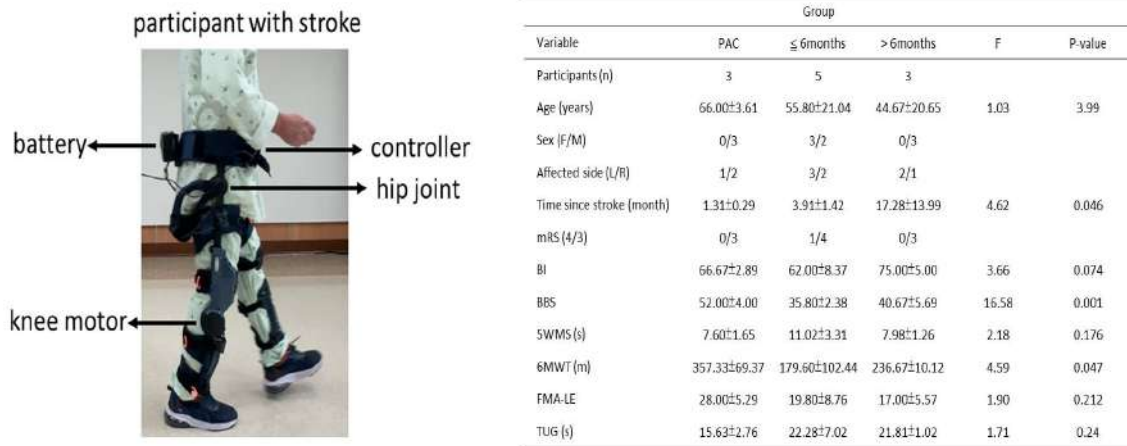


Fig. 1 The patient-initiated exoskeleton and participants' characteristics

Variable	Pre-			Post-			ANCOVA		
	PAC	≤ 6months	> 6months	PAC	≤ 6months	> 6months	F	P-value	η ²
BI	66.67±2.89	62.00±8.37	75.00±5.00	68.33±2.89	72.00±11.51	80.00±8.66	0.9	0.449	0.204
BBS	52.00±4.00	35.80±2.38	40.67±5.69	53.33±3.86	42.20±3.56‡	44.67±2.89	0.209	0.816	0.056
5WMS (s)	7.60±1.65	11.02±3.31	7.98±1.26	6.14±0.56	9.68±5.00	6.20±1.12‡	0.28	0.76	0.075
6MWT (m)	357.33±69.37	179.60±102.44	236.67±10.12	404.33±93.3	256.40±104.40	267±13.75	0.34	0.72	0.089
FMA-LE	28.00±5.29	19.80±8.76	17.00±5.57	31.33±1.15	23.40±7.50	22.67±10.02	0.15	0.86	0.041
TUG (s)	15.63±2.76	22.28±7.02	21.81±1.02	11.88±1.50	17.10±3.63	13.36±1.51‡	5.44	0.038*	0.608

‡ denotes the significant differences between pre- and post- evaluations.

* denotes the significant differences among groups.

Fig. 2 Results of outcome measurements.

Key Words: robot, exoskeleton, stroke, gait, lower limb

References:

J. J. Huang, S. C. Chang, C. H. Cheng, T. Wan, and Y. C. Pei, "Gait Analysis in Powered Exoskeleton-Assisted Walking in Patients with Stroke: A Case Series Cohort", APSIPA ASC 2023, Taipei, 2023

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Therapeutics and Modalities

Effect and Mechanism of Low-Intensity Focused Ultrasound on the Anxiety-Depression-Like Behavior in Chronic Social Defeat Stress Mice

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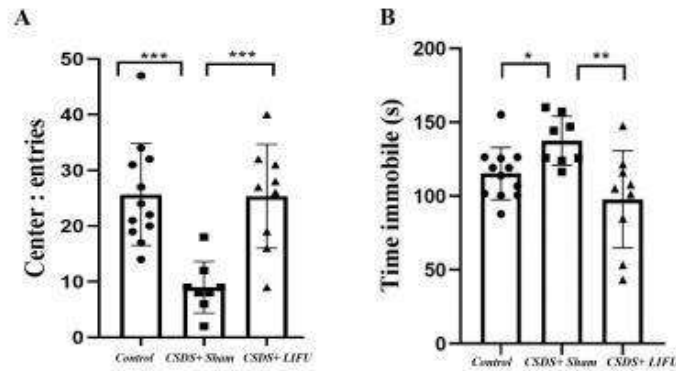
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Introduction: To observe the effect of low-intensity focused ultrasound on the anxiety-depression-like behavior in chronic social defeat stress (CSDS) mice and to explore its possible mechanism.

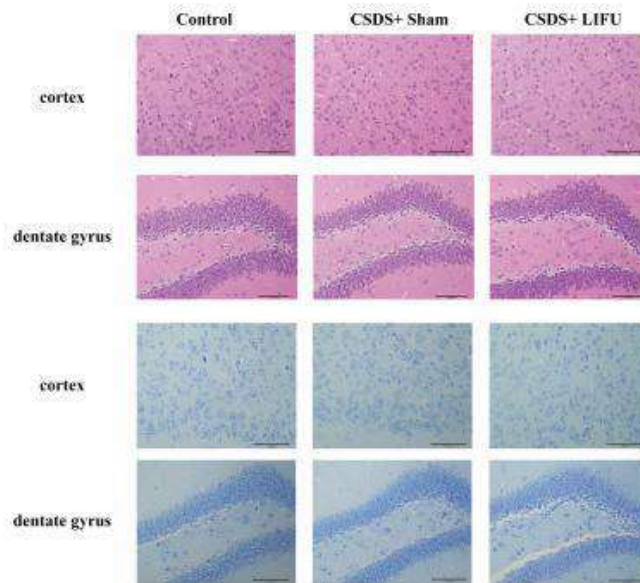
Methods: We established CSDS model via 30 male C57BL/6J mice. The mice were randomly divided into control group, CSDS+sham group and CSDS+LIFU group with 10 mice in each. In the CSDS+ LIFU group, the right hippocampus of mice was sonicated with LIFU (Bregma -2.06mm, lateral +1.93mm) once a day with a total of 7 days. Social interaction test, open field test (OFT) and forced swimming test (FST) were conducted before and after treatment to detect behavioral changes. HE and Nissl staining were used to measure the safety of LIFU. The expression levels of notch pathway were detected by Western-Blot.

Results: After 7 days of LIFU treatment, The number of entering into central zone in the OFT of CSDS+ LIFU group increased significantly compared with CSDS+sham group, and the immobility time of mice in FST decreased significantly (Figure 1). HE as well as Nissl staining showed that there was no bleeding and the distribution of Nissl bodies was uniform within the sonicated area (Figure 2). LIFU markedly suppressed the up-regulation of notch pathway which was caused by CSDS in the right hippocampus. The expression levels of Jagged1、Notch1 and Hes1 decreased after LIFU treatment (Figure 3).

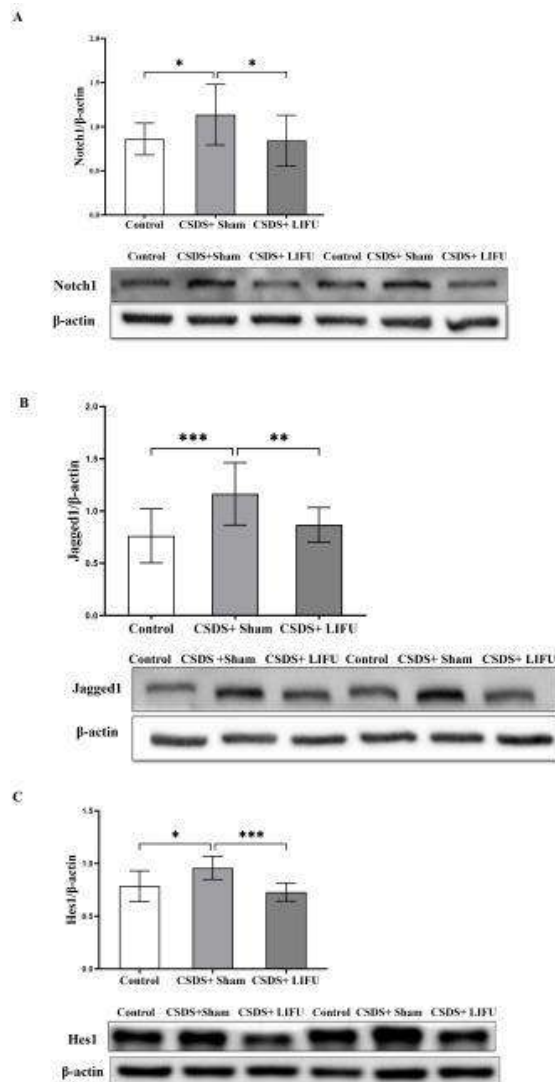
Conclusion: LIFU exerts the ability of alleviating anxiety-depression behavior of mice induced by CSDS and the mechanism may be related to the suppression of Notch pathway via LIFU.



The result of open field test (A) and forced swimming test (B) after LIFU. The number of entering into central zone in the OFT significantly decreased in the CSDS+sham group compared to the control which was inverted via LIFU. The immobility time that CSDS+sham mice spent in the FST was significantly increased compared to the control which decreased after LIFU treatment. * $p < 0.05$; ** $p < 0.01$.



HE and Nissl staining of the sonicated brain region after LIFU. There was no edema, hemorrhage, or cell necrosis detected and the distribution of Nissl bodies was uniform in the sonicated area in the CSDS+LIFU group.



7 days of LIFU sonication reversed the up-regulation of Notch signaling pathway in the right hippocampus of CSDS mice. LIFU treatment reduced the content level of notch1 (A), jagged1 (B) and Hes1 (C) in the targeted hippocampus. Each symbol represents the mean \pm SD; One-way ANOVA; n =3 per group. *p < 0.05; **p < 0.01; ***p < 0.001;

Key Words: low-intensity focused ultrasound, chronic social defeat stress, notch pathway



Effect of Different Injection Times on the Efficacy of Platelet Rich Plasma in the Treatment of Knee Osteoarthritis: A Pilot Randomized Controlled Trial

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Introduction: To assess the effects of different platelet-rich plasma injection times on pain and physical function in patients with knee osteoarthritis .

Methods: A total of 90 patients with grade II-III KOA were randomly divided into three groups: PRP1 received a single injection of PRP, PRP2 received three injections of PRP one week apart, and PRP3 received five injections of PRP. The WOMAC were assessed before treatment and at weeks 6, 12 and, 24 after treatment. 0.5-1 ml of synovial fluid from the knee joint of the three groups of patients before and 6 week after the treatment, to detect IL-6 ,8, TNF- α levels.

Results: Eighty-three patients completed the study. All groups showed significant improvements in WOMAC scores compared to pre-treatment. The treatment with 3 and 5 injections of PRP was more significantly efficient than treatment with a single injection, in reducing knee pain and stiffness, and improving physical function in KOA patients. There was no statistically significant difference between PRP2 and PRP3 at all follow-up stages. There was no statistically significant difference between 3 and 5 PRP injections at all follow-up stages.

Conclusions: Three and five PRP injections are safe, significantly better than single injection, and show significant clinical improvement in reducing joint fluid IL-6 ,8 , TNF- α levels, reducing knee pain in patients, and improving joint stiffness and physical function. There is no significant difference between three injections and five injections of PRP. We advise three injections of PRP should be considered in the treatment with II-III KOA.



Figure 1 PRP preparation equipment and samples



Figure 2 PRP preparation equipment and samples



Figure 3 Ultrasound-guided PRP injection

Figure 1 PRP preparation equipment, samples and injections

Key Words:platelet-rich plasma , knee osteoarthritis , different injections

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Exoskeleton Rehabilitation Robotic Training on Patients' Balance and Lower Limb Function in Subacute Rehabilitation Phase after Stroke: A Pilot Randomised Controlled Trial

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Objective: Aimed to investigation of the effect of rehabilitation robot training on balance and lower limb function amongst patients in the subacute stage of stroke rehabilitation.

Methods: 24 patients were randomly divided into robot group and control group. The control group received conventional upright bed rehabilitation training (n = 12), whereas the robot group received REX rehabilitation robot training (n = 12). Both groups received training at a frequency of 30 minutes a day, 5 days a week, 4 weeks. At the time of enrolment, 2 weeks and 4 weeks after treatment, FMA-LE, BBS, PASS, MBI, Tecnobody balance testing and sEMG were used to evaluate.

Results: Repeated measures ANOVA of BBS showed that the two groups had a significant interaction between groups and evaluation time, with significant group difference at 4 weeks ($F = 5.24, p = 0.032, \eta^2 = 0.19$). Repeated measures ANOVA of PASS showed that the two groups had a significant interaction between groups and evaluation time, with significant group differences at 2 and 4 weeks ($F = 8.08, p = 0.009, \eta^2 = 0.269; F = 9.58, p = 0.005, \eta^2 = 0.303$). The repeated-measures variance results of the eye-closed motor area measured by Tecnobody balance function testing showed that the two groups had a significant interaction between groups and evaluation time, showing a significant group difference at 2 weeks ($F = 5.514, p = 0.028, \eta^2 = 0.200$).

Conclusions: The Robot group showed improvements in balance function, postural control ability, lower limb motor function, ADL and muscle strength, with significant differences compared with the control group.

Key Words: Rehabilitation robot, Stroke, Balance function, Lower limb function



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Dual Tdcs Ameliorates Cerebral Injury in a Rat Model of Ischemic Stroke

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Abstract: Objective:

To investigate whether the use of dual transcranial direct current stimulation (Dual-tDCS) can alleviate ischemic brain injury in a rat model of ischemic stroke.

Materials and Methods:

30 male SD rats weighing 250-280 g were randomly assigned to the Sham group, MCAO group, Dual-tDCS group, with 10 rats in each group. The Dual-tDCS group began to receive Dual-tDCS (500 μ A, 15 min, once a day for 5 days, followed by 2 days rest and additional 5 days tDCS) 1 day following middle cerebral artery occlusion (MCAO) operation. Ethology, MRI, HE, TUNEL staining and the expression of BDNF and NGF were assessed.

Results:

On 3, 7, and 14 days after modeling, the mNSS score, ARST time, screen test score, and infarct volume in the Dual-tDCS group were less than those in the MCAO group. HE staining showed that in the peri-infarction zone, the brain injury in the Dual-tDCS group was ameliorated. The number of apoptosis cell in the Dual-tDCS group was prominently reduced, which was evidenced by TUNEL staining. In the peri-infarction zone, the expression level of BDNF and NGF in the Dual-tDCS group was up-regulated compared with that in the MCAO group.

Conclusion:

Dual-tDCS may improve MCAO-induced brain injury and promote nerve plasticity, thus promoting the recovery of neuromotor function.

Key Words: Rehabilitation; Cerebral ischemia; tDCS; Neuroprotection

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绳带疗法联合平地行走式下肢外骨骼机器人对脑卒中患者步行能力的影响

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目的 观察绳带疗法联合平地行走式下肢外骨骼机器人对脑卒中患者步行功能的影响。**方法** 将符合标准的 50 例脑卒中患者随机分为对照组和实验组, 每组各 25 例。两组均接受常规康复治疗; 在此基础上, 对照组使用机器人进行步行训练; 实验组在对照组基础上增加绳带疗法。分别于治疗前和治疗 4 周后采用 FMA-LE、ADL、Berg、6min 步行测试、10m 步行时间、Holden 进行评定。结果: 治疗 4 周后, 2 组患者的各项评分较治疗前提高 ($P<0.05$), 其中 Berg、6min 步行测试、10m 步行时间、Holden 试验组优于对照组 ($P<0.05$)。结论 绳带疗法联合平地行走式下肢外骨骼机器人能显著改善患者的步行能力。

关键词: 绳带疗法 机器人 脑卒中 平衡 步行能力

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基于运动想象的脑-机接口联合虚拟情景训练对卒中患者注意力和平衡功能的影响：一项初步研究

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引言：脑机接口联合虚拟情景 (BCI & VR) 可降低运动想象执行难度[1], 提高训练参与度[2]。本研究旨在探究 BCI & VR 对卒中患者注意力和平衡的影响。

方法：对 9 名卒中患者进行 20 次 BCI & VR 系统训练, 20min/次。分析注意力指数 (前额叶脑电 β 和 α 波段信号能量比) 变化趋势, 记录数字符号转换测试(SDMT) 和 Berg 量表 (BBS) 评分变化, 进行 SDMT 与 BBS 相关性分析。

结果：平均注意力指数呈上升趋势, SDMT 和 BBS 评分训练后显著提升($P<0.05$), SDMT 变化与 BBS 变化呈正相关 ($P<0.05$, $r=0.799$)。

讨论与结论：BCI & VR 可改善卒中患者注意力和平衡, 提高注意力有利于改善平衡, 降低摔倒风险。

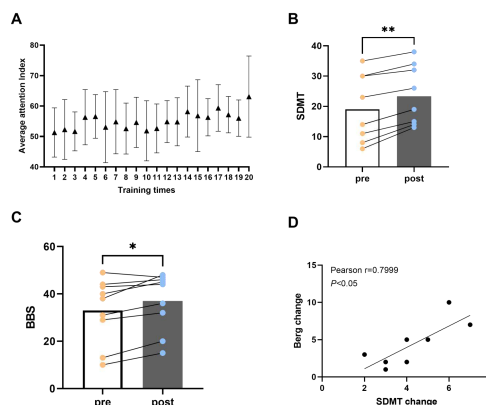


Figure 1 A: Average Attention Index 变化趋势; B: SDMT 评分治疗前后变化; C: BBS 评分治疗前后变化; D: SDMT 评分变化与 BBS 评分变化相关性分析。

SDMT: Symbol Digit Modalities Test, BBS: Berg Balance Scale.

关键词：脑卒中, 脑机接口, 虚拟情景, 注意力, 平衡

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经尿道膀胱电刺激治疗逼尿肌活动低下下的疗效和安全性

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目的 观察经尿道膀胱电刺激（IVES）治疗逼尿肌活动低下下的疗效和安全性。

方法 2022年10月至2023年2月对逼尿肌活动低下患者采用IVES治疗。记录治疗前及治疗结束后尿动力学检查结果、间歇性导尿次数和完全脱离间歇性导尿患者的比例。

结果 共28例患者完成研究（男性22例，女性6例）。治疗后患者平均初始尿意膀胱容量由330.32ml降至180.02ml；平均最大尿流率由5.07ml/s提高到9.94ml/s；平均膀胱剩余尿量由269.71ml降至152.04ml；间歇性导尿次数由6.18次/天降至4.84次/天,3例患者完全脱离间歇性导尿。

结论 IVES可改善逼尿肌活动低下患者膀胱感觉和促进膀胱排空。



图 1：经尿道膀胱电刺激操作步骤

疗效指标	治疗前 N=28	治疗后 N=28
初始尿意膀胱容量, ml	330.32 ± 61.18	180.02 ± 70.23*
最大尿流率, ml/s	5.07 ± 2.33	9.94 ± 2.17*
膀胱剩余尿量, ml	269.71 ± 84.01	152.08 ± 66.94*
间歇性导尿次数, 次/天	6.18 ± 0.91	4.84 ± 1.16*
间歇性导尿患者数, n(%)	28 (100)	25 (89.28%)

*P 值<0.05

IVES 治疗前后患者疗效指标比较



关键词：膀胱电刺激；逼尿肌活动低下；疗效及安全性

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反重力跑台系统的倒走训练结合常规腰背核心训练治疗非特异性下腰痛的效果

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目的 观察反重力跑台系统的倒走训练结合常规腰背核心训练治疗非特异性下腰痛的效果。方法 将2022年7月-12月在复旦大学附属中山医院康复科就诊的40例非特异性腰痛患者按随机数字表法分为试验组(20例)和对照组(20例)。对照组接受常规腰背部核心训练,试验组在对照组基础上利用反重力跑台系统进行倒走训练。分别在治疗前和治疗4周后对2组患者的ODI、VAS、BPS进行评分。结果 治疗前2组ODI、VAS和BPS评分无显著性差异($P>0.05$);治疗4周后,2组患者的ODI、VAS和BPS评分均有所下降,且试验组的ODI、VAS和BPS评分显著低于对照组,2组差值差异具有统计学意义($P<0.05$)。结论 反重力跑台系统的倒走训练可以有效改善非特异性腰痛患者状态,值得临床推广。

组别	例数	ODI评分		VAS评分		BPS评分	
		治疗前	治疗后	治疗前	治疗后	治疗前	治疗后
对照组	20	8.0 (5.0, 11.8)	4.0 (2.3, 6.8) [*]	5.0 (3.0, 6.0)	2.0 (1.0, 3.0) [*]	4.5 (2.0, 8.0)	3.0 (1.0, 5.8) [*]
试验组	20	8.5 (4.0, 14.0)	1.0 (0.2, 2.0) [*]	4.5 (3.0, 6.0)	1.0 (0.1, 1.0) [*]	5.0 (2.0, 8.8)	0 (0.1, 1.0) [*]
Z值		-0.190	-4.274	-0.206	-4.510	-0.122	-3.794
P值		0.849	<0.001	0.837	<0.001	0.903	<0.001

注: ODI=Oswestry 功能障碍指数, VAS=视觉模拟评分, BPS=腰背行为量表; *表示与治疗前比较 $P<0.05$ 。

两组治疗前后 ODI、VAS、BPS 评分比较 [M (P25, P75), 分]

组别	例数	ODI 评分差值	VAS 评分差值	BPS 评分差值
对照组	20	-4.0 (-5.0, -2.0)	-2.0 (-3.0, -2.0)	-2.0 (-2.0, -1.0)
试验组	20	-7.0 (-13.8, -3.0)	-4.0 (-5.0, -3.0)	-4.0 (-6.8, -2.0)
Z值		-1.987	-3.013	-3.209
P值		0.047	0.003	0.001

两组干预前后 ODI、VAS、BPS 评分差值比较 [M (P25, P75), 分]



关键词：非特异性腰痛；腰背核心训练；反重力跑台；倒走训练

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电刺激在脊髓损伤康复中的研究进展

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背景: 脊髓损伤 (spinal cord injury, SCI) 通常会导致生活质量下降和高昂的医疗保健费, 从而给个人和公众带来沉重的经济负担。电刺激已被广泛用于 SCI 后的康复训练。本文拟总结近年来电刺激在 SCI 中应用的最新进展。

方法: 我们以电刺激和脊髓损伤作为关键词在 PubMed, Embase 和 Web of Science 等数据库检索了近十年发表的文章。

结果: 电刺激在临床试验中对脊髓损伤患者功能有一定的改善。动物试验研究发现电刺激促进 SCI 后功能恢复的机制和神经可塑性重塑、神经营养生长因子上调、髓鞘再生等方面有关。

结论: SCI 后电刺激在临床试验中显示出较满意的结果。但需要更多临床研究来评估其疗效。

关键词: 脊髓损伤 电刺激 康复

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重复经颅磁刺激对大鼠脑缺血再灌注损伤 及皮层巨噬细胞极化的影响

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探究重复经颅磁刺激对脑缺血再灌注大鼠巨噬细胞极化的影响。

将大鼠随机分为假手术组、模型组、干预组。造 MCAO 大鼠模型，干预组予以 rTMS 干预，用神经功能评分评估神经缺损程度，HE 染色观察大鼠皮层病理形态改变;ELISA 法检测血清 IL-1 β 、TNF- α 、IL-10、和 TGF- β 1 含量 RT-PCR 和 WB 分别检测缺血区脑组织的 IL-1 β 、TNF- α 、Arg-1、CD206 mRNA 和蛋白的表达。

与模型组比较，rTMS 组神经功能评分降低，神经元受损程度减轻，血清 IL-1 β 、TNF- α 含量降低，IL-10、和 TGF- β 1 含量升高，IL-1 β 、TNF- α 蛋白和 mRNA 表达降低，Arg-1、CD206 蛋白和 mRNA 表达升高。

rTMS 可能通过调节皮层巨噬细胞极化缓解大鼠缺血再灌注损伤。

关键字：缺血再灌注损伤 神经炎症 巨噬细胞极化

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脉冲电磁场对老年大鼠软骨及软骨下骨细胞凋亡的影响

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背景 骨关节炎是一种年龄相关性疾病，物理因子是一种重要治疗方法。脉冲电磁场可改善骨关节炎，但作用机制尚未完全明确。

目的 观察脉冲电磁场对老年大鼠软骨及软骨下骨细胞凋亡及骨关节炎的影响。

方法 将大鼠分为青年组、老年组和脉冲组，脉冲组行脉冲电磁干预 8 周，另两组不处理。8 周后处死，行 CTX-II 检测、番红-固绿染色、骨微结构检测和凋亡相关因子 mRNA 及蛋白表达检测。

结果 与老年组相比，脉冲组大鼠 CTX-II、Tb. sp、聚蛋白多糖酶 1/2、caspase3/8 的 mRNA 和蛋白表达降低($P < 0.05$); BV/TV、BMD、Tb. N 升高($P < 0.05$); 番红-固绿染色软骨表面平整，红染均匀，细胞形态结构改善。

结论 脉冲电磁场可能通过抑制软骨细胞凋亡，改善老年大鼠骨关节炎。

关键字: 脉冲电磁场; 骨关节炎; 软骨; 软骨下骨; 细胞凋亡

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基于系统整脊技术的手法治疗对治疗青少年特发性脊柱侧凸的疗效观察

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介绍：系统整脊学技术是福建省肿瘤医院李晓光教授由美国脊柱矫正学（Chiropractic）发展而来。在发病机制上强调骨骼-神经-内脏和骨骼-椎动脉-中枢等内容。

病例描述：本次个案病例是一名10岁女孩，22年初发现脊柱侧弯，胸腰弯Cobb角（22.1）度，矢状位颈椎生理曲度变直，腰骶角（38.98）度。经系统整脊隔日一次，7次治疗后复查站立位全脊柱X光片，胸腰弯Cobb角（9.2）度，矢状位颈椎生理曲度恢复前凸，腰骶角（35.25）度。

讨论：系统整脊技术强调人体骨骼系统的整体调整，将骨盆与脊柱视为一个整体来研究。在治疗因力学问题所引起的脊柱侧凸病人时，分析骶骨的位置和原发性半脱位的椎体并加以矫正，使骨盆、脊柱恢复至中立位。

关键字：手法治疗；青少年特发性脊柱侧凸；系统整脊

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弹性超声评价冲击波治疗痉挛疗效中的应用

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目的：拟通过实时弹性超声评价体外气压弹道式冲击波（ESWT）治疗中枢神经系统损伤后肢体痉挛的临床疗效。方法：住院痉挛的患者 20 例，采用每周 2 次的体外冲击波治疗（治疗参数为压力强度 1.0 bar, 频率 8 Hz），观察目标肌肉为前臂指深屈肌。结果：拉伸状态的杨氏模量：ESWT 治疗前，患侧痉挛与健侧正常肌肉杨氏模量平均值比较，患侧大于健侧，差异有统计学意义（ $P < 0.05$ ）。ESWT 前后比较，患侧痉挛肌肉治疗后杨氏模量平均值比治疗前小，差异有统计学意义（ $P < 0.05$ ）。结论：肌骨超声弹性成像技术可以检测出冲击波治疗痉挛的治疗效果，有一定应用推广前景。

治疗后超声图像 治疗前超声图像 治疗具体场景

关键字：肌骨超声， 超声剪切波弹性成像；杨氏模量；痉挛

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下肢智能反馈训练系统对脊髓损伤患者下肢静脉血栓形成的影响

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目的: 探讨下肢智能反馈训练系统对脊髓损伤 (SCI) 患者下肢静脉血栓形成 (DVT) 的效果。

方法: 36 例 SCI 患者随机分为对照组和实验组。对照组采用常规静脉血栓预防方案, 实验组在对照组基础上应用下肢智能反馈训练系统。于治疗前后检测股总静脉、股深静脉及腘静脉最大血液流速并比较两组 DVT 患病率。

结果: 实验组 DVT 患病率显著低于对照组 ($P < 0.05$)。两组治疗后股总静脉、股深静脉及腘静脉最大血液流速与治疗前相比有显著提高 ($P < 0.05$), 治疗后两组比较, 实验组显著高于对照组 ($P < 0.05$)。

结论: 下肢智能反馈训练系统对 SCI 患者下肢 DVT 有预防作用。

关键字: 脊髓损伤, 下肢智能反馈训练系统, 下肢深静脉血栓形成

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Biomedical Rehabilitation Sciences and Engineering

生物医学康复科学与工程

Oral Presentation



The Association of Hip-Extensor Strength with Lower Limb Sagittal-Plane Kinematics and Kinetics During Running in Female Runners with Patellofemoral Pain

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Introduction

Patellofemoral pain (PFP) is the most frequently occurring running-related injury with a higher prevalence among female runners. The objective of this study is to determine the relationships between hip extensor muscle strength and lower limb sagittal-plane kinematics and kinetics during running in female runners with PFP.

Methods

Thirty female runners diagnosed with PFP were recruited for this study. Maximum isometric strength of the hip extensors was measured using a dynamometer. Kinematics and kinetics of the lower limb in the sagittal plane during the stance phase of running were quantified while participants ran over ground at a controlled speed of 3.4 m/s. Pearson product moment correlation was used to examine the relationships



between hip extensor muscle strength and lower limb sagittal-plane kinematics and kinetics during running.

Results

Hip-extensor strength was correlated positively with hip-flexion angle ($r = 0.38$, $P = 0.040$) and hip-extensor work ($r = 0.43$, $P = 0.017$). It was correlated inversely with knee extensor work ($r = -0.41$, $P = 0.024$) and ankle-dorsiflexion angle ($r = -0.61$, $P < 0.001$).

Discussion & Conclusion

Our findings indicate that female runners with PFP who have weaker hip extensor display reduced hip flexion and increased ankle dorsiflexion during running. This kinematic strategy results in greater reliance on the knee joint for energy absorption rather than hip joint, potentially contributing to knee overload. Incorporation of a greater hip flexion during running or hip extensor strengthening may be an effective strategy to reduce overload on knee joint during running.

Key Words: Patellofemoral Pain, Anterior Knee Pain, Biomechanics, Runner, Female

Exoskeleton-Assisted Walking for Pulmonary and Exercise Performances of Sci Individuals

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Objective: To determine whether exoskeleton-assisted walking (EAW) improves pulmonary ventilation function, motor function and related body structure, and activities equivalently as the conventional exercise program for people with spinal cord injury (SCI).

Methods: Forty participants (7 females and 33 males; age 37.1 ± 12.0 years) with thoracic SCI were randomized into two groups and undertook 16 sessions of 50-60 min training (4 days/week). Participants in the EAW group received EAW trainings, such as assisted standing, walking, and climbing the stairs. The control group received a conventional exercise program. Outcomes were measured at baseline and upon completion of treatment.

Results: After trainings, the EAW group improved more than the control group in the forced vital capacity (FVC, 0.53 L [0.01–1.06 L]), predicted FVC% (19.59 [6.63–32.54]) and forced expiratory volume in 1s (0.61 L [0.15–1.07 L]), basic activities of daily living (BADL) (19.75 [10.88–28.62]), and distal femoral cartilage. Participants in the EAW group completed 6-minute walk test with median 17.3 meters while wearing the exoskeleton. There was no difference in trunk and lower extremity motor function, bone mineral density, and adverse events.

Conclusion: In people with lower thoracic neurological levels of SCI, EAW training has potential benefits to facilitate pulmonary ventilation function, walking, BADL and cartilage thickness compared to conventional exercise programs. **Significance:** This study provided more evidence for using EAW in clinic, and partly proved EAW had equivalent effects as conventional exercise program, which may combine with conventional exercise program for reducing burden of therapists in the future.

Key words: Spinal cord injury, Exoskeleton, Exercise, Pulmonary function, Fitness



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The Effect of Eight Weeks of Spinal Mobilization Apparatus on Pain and Muscle Fatigue in Patients with Non-Specific Low Back Pain: Study Protocol for a Single-Center Randomized Controlled Trial

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Background: The purpose of this study was to observe the effects of spinal mobilization apparatus combined with sling exercise training on pain and muscle fatigue in patients with Non-specific Low back pain.

Methods/Design: A total of 82 subjects were enrolled in this single-center randomized controlled trial, which were randomly divided into the intervention group and control group in a 1:1 ratio. Two groups of patients received conventional rehabilitation treatment, the intervention group was treated with spinal mobilization apparatus combined with sling exercise training, while the control group was only treated with sling exercise training. The treatment time of the spinal mobilization apparatus was 20 min, and the sling exercise training time was 20 min, a total of 40 min. Five times a week, for eight weeks. The main indicators were JOA scale, and secondary indicators included VAS score, core group endurance test (CET), Intra-abdominal pressure (IAP), surface electromyographic measurement of core muscle fatigue (SMEG), musculoskeletal ultrasound measurement of diaphragm thickness (DT), range of motion (ROM), and activity of daily life (ADL).

Discussion: This study is the first to investigate the effects of a spine mobilization apparatus based on the principles of arthrodesis on pain and muscle fatigue in non-specific low back pain patients.

Trial registration: Chinese Clinical Trial Register, ChiCTR2100042333. Registered on 19 January 2021.

Key words: Spine mobilization apparatus, Non-specific low back pain, Sling exercise training, Pain, Muscle fatigue



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Current Status of Non-Invasive Brain-Computer Interfaces in Functional Rehabilitation of Spinal Cord Injury

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Introduction: Spinal cord injury (SCI), as a common clinical disabling disease, can lead to motor, sensory, and autonomic dysfunction and reduce the ability of activities of daily living (ADL), which seriously affects the quality of survival of patients. Non-invasive brain-computer interface (BCI) is gaining attention in the functional rehabilitation of SCI due to its advantages of non-invasive, safe, economical, and simple operation. This paper reviews the current status of the application of non-invasive BCI in the functional rehabilitation of SCI, to provide reference for clinical practice.

Methods: We searched relevant literature at home and abroad to review the current status of the application of non-invasive BCI in the functional rehabilitation of SCI, the mode of development, and the improvement mechanism, and put forward the outlook.

Results: Currently, non-invasive BCI technology is mostly used in the rehabilitation of limb motor and sensory dysfunction after SCI, usually combined with motor imagery, functional electrical stimulation, virtual reality technology, and exoskeleton robotics, and the improvement mechanisms mainly include brain area activation, promotion of central nervous system plasticity and sensorimotor integration.

Conclusion: The application of non-invasive BCI to functional reconstruction of patients with spinal cord injuries improves the quality of survival. The technology needs to improve its reliability and accuracy in the future, and through continuous improvement to help more SCI patients to maximize functional improvement.

Key Words: Spinal cord injury; Non-invasive brain-computer interface; review

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Evaluation of Neural Functional Connectivity in Brain Motor-Related Regions in Stroke Patients Using High-Resolution Magnetic Resonance Imaging (Hrmri) Technology

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Purpose:

To evaluate the neural functional connectivity of brain motor-related regions in stroke patients using high-resolution magnetic resonance imaging (HRMRI) technology.

Methods:

HRMRI scans were performed on the brains of included stroke patients. The left corticospinal tract (CST), right CST, Brodmann area 4 on the affected side, and Brodmann area 6 on the affected side were selected as regions of interest (ROI). The fractional anisotropy (FA), mean diffusivity (MD), axial diffusion (AD), and radial diffusion (RD) were calculated using diffusion tensor imaging (DTI) within the ROI. The neurite density (ND) and orientation dispersion (OD) were calculated using neurite orientation dispersion and density imaging (NODDI) within the ROI. The fibre density (FD), fibre cross-section (DFC), and fibre density cross-section (FDC) were calculated using high angular resolution diffusion imaging (HARDI) within the ROI.

Results:

The values of FA, MD, AD, RD, ND, OD, FD, DFC, and FDC in bilateral CST, affected-side Brodmann areas 4 and 6, were found to be lowest in the lesioned side, followed by the affected-side Brodmann areas 4 and 6, then the affected-side CST, and highest in the unaffected-side CST. Refer to the attached file for the average values of the above 9 diffusion parameters in the ROIs.

Conclusion:

HRMRI can be used to evaluate the neural functional connectivity of motor-related brain regions in stroke patients. By combining structural and functional imaging of stroke patients, HRMRI can reveal the impact of stroke on the neural functional connectivity in motor-related brain regions and assess the degree of motor function recovery.

一、使用Siemens 3.0T 磁共振仪进行以下扫描:

1. 磁共振弥散张量成像(Diffusion Tensor Imaging, DTI)
b=0, 1000, 方向数=65
2. 轴突定向弥散和密度成像(Neurite Orientation Dispersion and Density Imaging, NODDI)
b=0, 3000, 方向数=65
3. 高角分辨率弥散成像(High Angular Resolution Diffusion Imaging, HARDI)序列的扫描
b=1000, 3000, 方向数=129

二、对扫描的磁共振弥散图像进行预处理, 并根据算法进行计算, 分别得出多个参数, 如下图所示:

1. DTI

各向异性分数 (Fractional Anisotropy, FA)

平均扩散系数 (Mean Diffusivity, MD)

轴向扩散系数 (Axial Diffusion, AD)

横向扩散系数 (Radial Diffusivity, RD)

2. NODDI

神经突密度 (Neurite Density, ND)

纤维散度 (Orientation Dispersion, OD)

3. HARDI

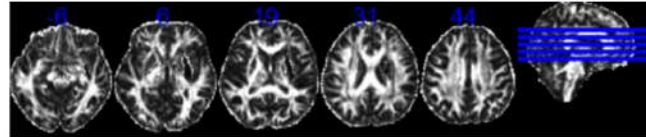
纤维密度 (Fibre Density, FD)

纤维横截面积 (Fibre Cross-section, Diffusion FC, DFC)

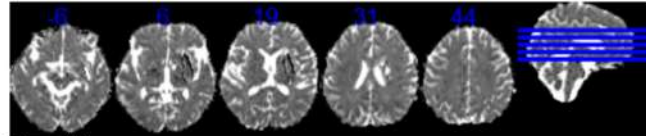
联合参数 (Fibre Density Cross-section, FDC)

1. DTI

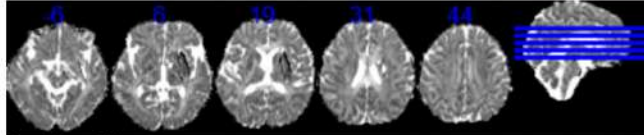
各向异性分数 (Fractional Anisotropy, FA)



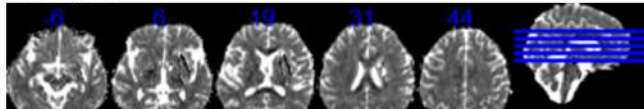
平均扩散系数 (Mean Diffusivity, MD)



轴向扩散系数 (Axial Diffusion, AD)

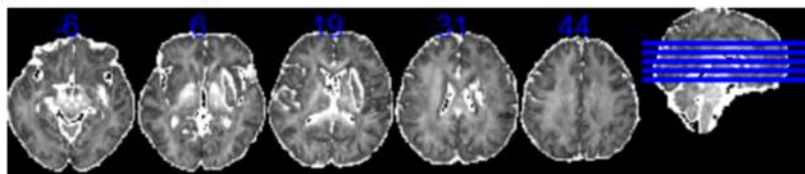


横向扩散系数 (Radial Diffusivity, RD)

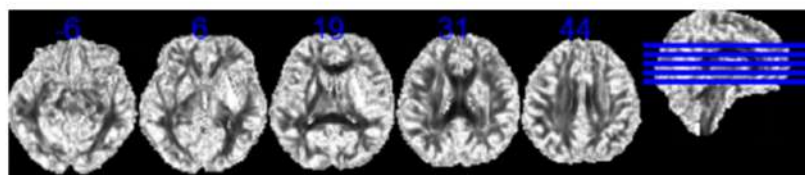


2. NODDI

神经突密度 (Neurite Density, ND)

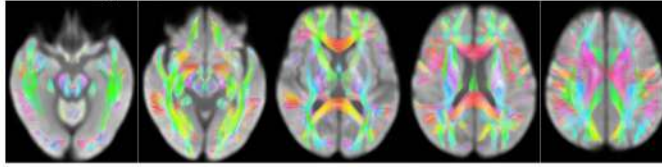


纤维散度 (Orientation Dispersion, OD)

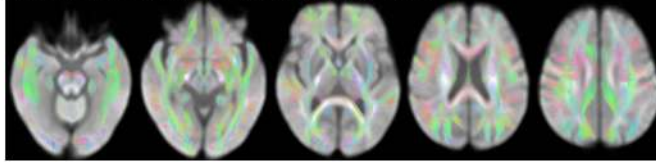




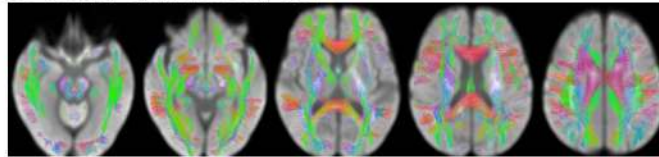
3. HARDI (因为是基于fixel的度量, 因此没有生成传统的标量图像, 均用fixel表示, 颜色代表fixel方向)
纤维密度 (Fibre Density, FD)



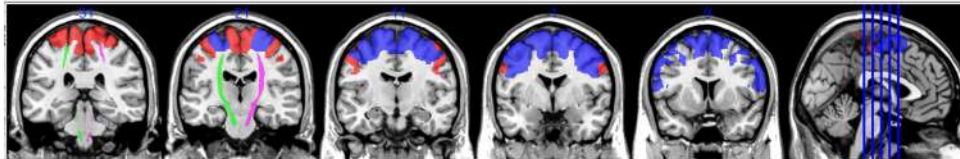
纤维横截面积 (Fibre Cross-section, Diffusion FC, DFC)



联合参数 (Fibre Density Cross-section, FDC)



一、选取双侧皮质脊髓束CST, brodmann图谱第4脑区、第6脑区为ROI, 分别测定ROI的上述9个弥散参数值 (均值)



备注: 上图蓝色区域代表brodmann图谱第4脑区, 红色区域代表brodmann图谱第6脑区, 浅红色和绿色代表双侧皮质脊髓束

一、选取双侧皮质脊髓束CST, brodmann图谱第4脑区、第6脑区为ROI, 分别测定ROI的上述9个弥散参数值 (均值)

	FA	MD(*10 ⁻³)	AD(*10 ⁻³)	RD(*10 ⁻³)	ND	OD	FD	DFC	FDC
左侧CST	0.382	0.829	1.162	0.664	0.724	0.314	0.264	/	0.284
右侧CST	0.496	0.820	1.292	0.583	0.722	0.223	0.363	/	0.384
病灶区	0.062	854	0.761	66	0.00071	0.060	0.00073	/	0.537
4区	0.182	0.898	1.034	0.829	0.498	0.469			
6区	0.199	0.936	1.103	0.853	0.500	0.438			

备注: DFC是一个相对值, 表示在配准过程中纤维横截面积的大小变化情况, 大于0则代表横截面积增大, 小于0则代表横截面积减小, 需要多个被试同时计算, 目前被试较少, 需等待被试量足够时即可开始计算。

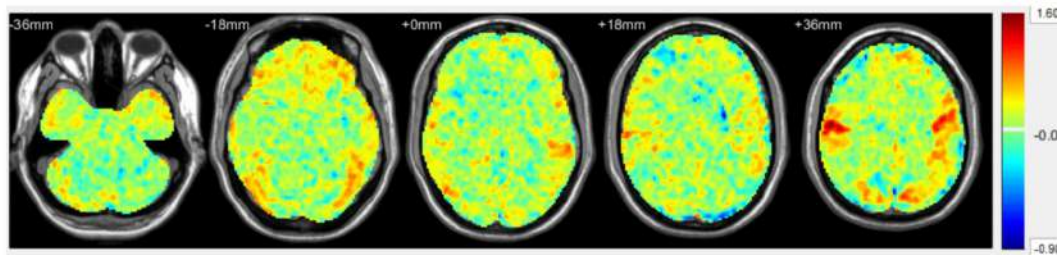
备注 (自己看的, 不要写在标书中): 4, 6区在FD, FDC上不好测值, 因为4, 6区不位于白质上, 无法测值, 原理来说brodmann尽量不要在弥散图像上测值。

四、静息态功能磁共振

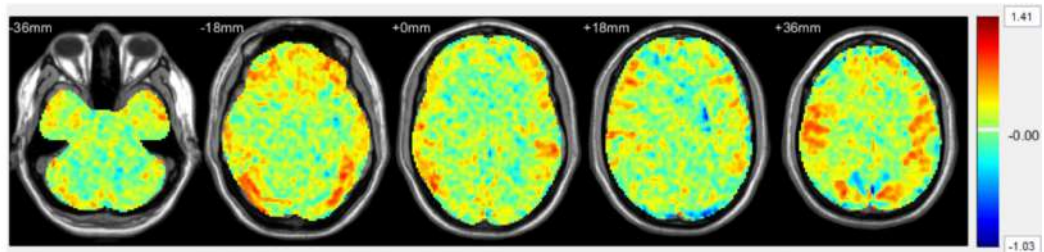
采用BOLD序列

进行预处理，之后选取brodmann4,6脑区为种子点，分别计算与全脑的功能连接（FC）

1. brodmann4区与全脑的功能连接：



2. brodmann6区与全脑的功能连接：



备注：彩色图表示ROI与全脑的功能连接，大于0表示正连接，小于0表示负连接，一般不提取定量值，数值只表示相关性，即整个图的每个体素都为数值。

Research-related images of high-resolution magnetic resonance imaging

Key Words: High-resolution magnetic resonance imaging , stroke , neural functional connectivity , brain motor-related areas



A Prospective Study of an Early Prediction Model of Attention Deficit Hyperactivity Disorder Based on Artificial Intelligence

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To compare the differences in important parameters between the articulation assessment and training system of intelligently extracted speech with those from the Praat acoustic software and those manually extracted. The speech of 32 normal subjects was captured by the two software. The former can automatically analyze speech parameters. The speech parameters collected by the Praat were extracted and analyzed by professionals. The two tools' consistency in terms of these important acoustic parameters was analyzed. The results with all 32 subjects when retested returned ICC values above 0.9 with all three vowels with the exception of mf0 for /u/ (ICC= 0.75), indicating excellent retest reliability for the articulation assessment and training system. The ICC values also indicated excellent consistency between the two kinds of software in analyzing mF0, F1 and F2 of the three vowels. The mF0, F1, F2, FCR, VA1, tongue spacing, VSA, and mandibular spacing of all three vowels were mostly distributed within the 95% confidence interval of the data points in Bland-Altman plots, indicating the high accuracy of both acoustic analysis systems in speech measurement. The mean fundamental frequency values of the male long vowels /a/, /i/ and /u/ were all significantly lower than for the female long versions. The retest reliability of the articulation assessment and training system was good, and the results of the articulation check in the natural state were in good consistency compared to the Praat check and were interchangeable in the articulation check.

Key Words: articulation assessment and training system; Praat; Acoustic analysis software; Voice Parameters; consistency

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双氢青蒿素对大鼠激素性股骨头坏死的治疗作用与机制

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目的: 探讨双氢青蒿素(DHA)对大鼠激素性股骨头坏死(SOFH)的治疗作用及其机制。

方法: 将 24 只雄性 SD 大鼠随机分为对照组、模型组、低剂量 DHA 组(1.0 mg·kg⁻¹·d⁻¹)以及高剂量 DHA 组(5.6 mg·kg⁻¹·d⁻¹), 每组 6 只。干预 4 周后行 Micro-CT 扫描、硬组织切片和 Von Kossa 染色、石蜡切片 HE 染色、Western blotting 和免疫组化染色。

结果: Micro-CT 结果显示, 与模型组相比, 高剂量 DHA 组 BTV、Tb.Th、Tb.N 均较模型组显著增加。通过硬组织切片 Von Kossa 染色、石蜡切片 HE 染色以及 TRAP 染色结果显示, 经过 DHA 干预的大鼠股骨头内骨小梁结构恢复。Western blotting 和免疫组化染色结果显示, 与模型组相比, 低、高剂量 DHA 组大鼠 OPG 蛋白表达量均增高, RANKL 和 RANK 蛋白表达量均降低。

结论: DHA 能上调 OPG 表达, 下调 RANKL 和 RANK 表达, 从而改变股骨头内的骨代谢异常, 抑制 SONFH 进展。

关键字: 激素性股骨头坏死, 双氢青蒿素, 骨代谢, 骨重建, 机制

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基于运动视觉捕捉与表面肌电分析指导构建脑卒中偏瘫中医功法新 康复技术的分析采集策略

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引言 太极拳显著改善神经系统疾病患者的运动与认知功能。为适应不同运动功能障碍，需在深入理解太极拳运动特征基础上进行筛选。

方法 本研究基于运动视觉与表面肌电，构建脑卒中太极拳新型康复技术。采用16通道表面肌电捕捉太极拳运动中上下肢关键肌激活情况，机器视觉分析关节轨迹以评估整体性和协调性，并根据脑卒中功能发展阶段个性化调整训练方案。

结果 通过表面肌电及运动视觉揭示了不同招式下的涉及优势肌肉及运动的协调性和技巧水平。

讨论与结论 生物力学运动分析技术客观评估与优化，量化运动中肢体协同关系与运动特征规律，融合脑卒中功能发展，实现个性化应用。

关键字：太极拳、脑卒中、生物力学、生物医学工程

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3D 打印脊柱矫形器配合运动疗法治疗脊柱侧弯的效果研究

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目的：选取青少年脊柱侧弯配合运动疗法进行 3D 打印脊柱矫形器，做治疗效果比较。方法：选取 2019 年 1 月到 2020 年 1 月脊柱侧弯畸形患者 60 例，对常规组患者进行功能锻炼，对重度脊柱侧弯畸形患者配合运动疗法进行 3D 打印脊柱矫形器。结果：通过对两组患者进行治疗有效率的情况比较，常规组、观察组患者的治疗有效率分别为 83.33%、93.33%。治疗前患者不良症状评分差异不大，治疗后患者评分差异明显($t=6.903$) $p<0.05$ 。通过对两组患者进行治疗前后 Cobb 角评分比较，两组患者治疗前 Cobb 角差异不大，治疗后 Cobb 角明显好转 ($p<0.05$)。结论：通过对青少年脊柱侧弯患者进行运动疗法 3D 打印脊柱矫形器的应用，患者情况明显好转，整体效果优良。

表 1 两组患者治疗有效率情况比较

组别	显效	有效	无效	有效率
常规组	18 (60.0)	7 (23.33)	5 (16.67)	83.33
观察组	20 (66.67)	8 (26.67)	2 (6.67)	93.33
t				8.536
P				0.000

表 1 两组患者治疗有效率情况比较

表 2. 常规组和观察组的治疗前后的不良症状评分对比

组别	治疗前	治疗后
常规组	17.6±4.3	6.6±2.1
观察组	17.4±4.2	3.1±1.0
t	0.653	5.054
P	0.947	0.000

表 2. 常规组和观察组的治疗前后的不良症状评分对比

表 3 两组患者治疗前后 Cobb 角评分比较

组别	治疗前 Cobb 角	治疗后 Cobb 角
常规组	28.09±2.03	23.40±2.25
观察组	27.40±2.19	19.20±1.26
t	0.590	6.409
P	0.000	0.000

表 3 两组患者治疗前后 Cobb 角评分比较



关键词：脊柱侧弯畸形；3D 打印脊柱矫形器；运动疗法；效果

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3D 矫形鞋垫配合关节松动术治疗下背痛临床观察

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目的：在慢性非特异性下背痛患者的康复治疗中用 3D 矫正鞋垫配合运动疗法，探究患者症状、肢体功能改善情况。方法：选取 90 例下背痛患者，按数字表法随机分为对照组、观察组，分析矫正前后患者疼痛程度、ODI 评分、下肢生物力学指标等，观察 3D 矫正鞋垫结合运动疗法对下背痛的疗效。结果：3 月后，观察组疼痛程度、ODI 评分均较低，与对照组指标比较 $P < 0.05$ ；观察组患者下肢胫骨扭转、前足外翻、股骨外旋等指标均得以改善，组间比较 $P < 0.05$ 。结论：在慢性非特异性下背痛患者的康复治疗中采用 3D 矫正鞋垫结合运动疗法，明显优于单纯运动疗法，患者力学指标的改善良好，肢体功能恢复较好，值得应用推广。

组别		对照组	观察组	T 值	P 值
疼痛程度 (分)	矫正前	7.06 ± 0.52	7.09 ± 0.57	0.2608	0.7948
	矫正后	4.19 ± 1.08	1.97 ± 0.87	10.7383	0.0000
ODI 评分 (分)	矫正前	28.69 ± 3.24	28.96 ± 3.52	0.3786	0.7059
	矫正后	14.93 ± 1.65	5.74 ± 1.97	23.9904	0.0000

表 1 矫正前后患者疼痛程度、ODI 评分的比较分

组别		对照组 (n=45)	观察组 (n=45)	T 值	P 值
股骨内旋 (°)	矫正前	43.96 ± 10.28	43.97 ± 10.31	0.0046	0.996
	矫正后	39.87 ± 11.97	39.46 ± 11.54	0.1654	0.8690
股骨外旋 (°)	矫正前	44.29 ± 12.41	44.34 ± 12.57	0.0190	0.9849
	矫正后	43.24 ± 11.89	43.98 ± 10.87	0.3081	0.7587
前足外翻 (°)	矫正前	6.39 ± 4.25	6.45 ± 4.43	0.0656	0.9479
	矫正后	5.71 ± 2.48	2.98 ± 1.65	6.1480	0.0000
胫骨扭转 (°)	矫正前	13.79 ± 5.47	13.64 ± 5.68	0.1276	0.8988
	矫正后	10.21 ± 4.21	6.46 ± 2.74	5.0080	0.0000

表 2 矫正前后患者左侧生物力学指标的比较分析



组别		对照组 (n=45)	观察组 (n=45)	T 值	P 值
股骨内旋 (°)	矫正前	41.52±12.57	41.68±12.87	0.0597	0.9526
	矫正后	39.58±11.87	38.97±10.79	0.2551	0.7992
股骨外旋 (°)	矫正前	45.98±14.63	45.87±13.97	0.0298	0.9763
	矫正后	43.79±12.98	37.85±7.69	2.3697	0.0200
前足外翻 (°)	矫正前	6.39±4.18	6.52±4.14	0.1482	0.8825
	矫正后	4.54±1.65	3.48±1.41	3.2762	0.0015
胫骨扭转 (°)	矫正前	11.09±5.60	11.58±5.48	0.4195	0.6759
	矫正后	10.23±4.63	6.52±1.97	4.9461	0.0000

表 3 矫正前后患者右侧生物力学指标的比较分析

关键词：矫正鞋垫；关节松动术；慢性非特异性下背痛；临床观察

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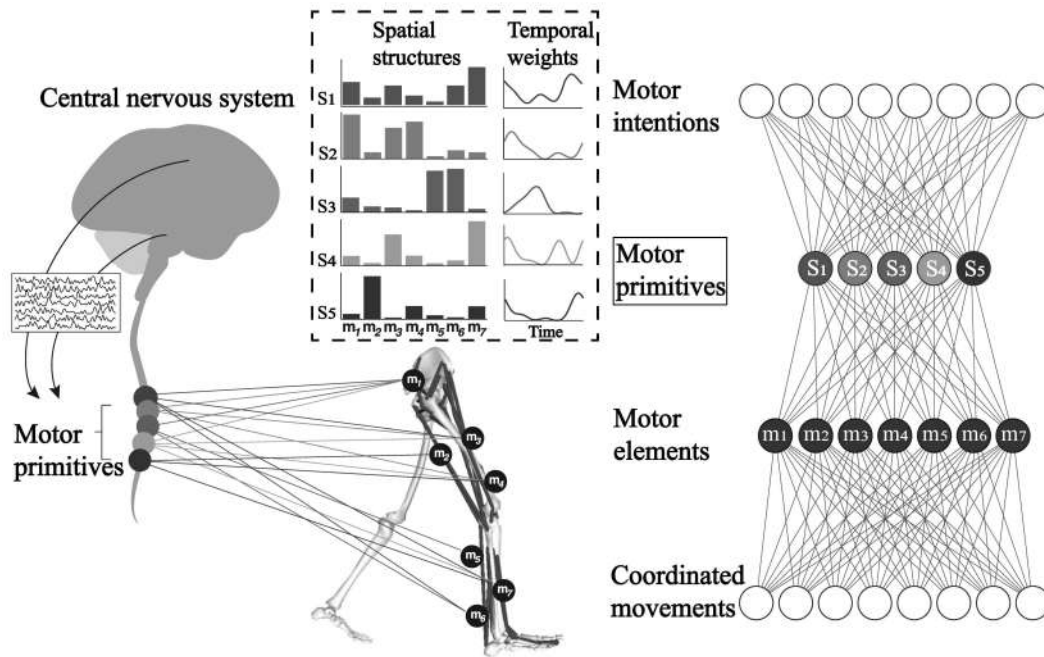
运动基元理论在康复领域的研究进展

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运动基元理论是学科交叉融合的产物。该理论归于运动控制理论,也随着人工智能、神经科学、生物医学工程等多学科的推动,在运动行为、智能算法、神经生理机制层面上得到不断发展,可为康复领域提供新颖的理论框架与实践基础。本文简要阐述了运动基元理论的基本概念、理论发展与关键概念辨析、及其在建立新型康复评估与干预技术的研究进展,以期从康复视角为面向运动功能的恢复、代偿与重建问题提供一定的理论和技术依据。



关键字: Motor primitive; Synergy analysis; Motor control; Theoretical model; Rehabilitation research

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头发中神经内分泌激素水平对脑卒中患者发病前后情绪的影响

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背景和目的: 脑卒中后抑郁和焦虑严重影响患者的功能康复和生活质量, 许多研究探讨了神经内分泌调节在脑卒中后抑郁和焦虑中的作用, 但其往往仅关注一个内分泌轴, 且结果存在争议。

方法: 为探讨神经内分泌激素对脑卒中后情绪的影响, 本研究采用质谱法(LC-MS/MS)测定32名患者发病前月和当月头发中4个神经内分泌系统中9种代表性激素水平。

结果: 发病前月头发中皮质醇、可的松、脱氢表雄酮总水平与抑郁、焦虑评分显著相关($P=0.017$ 、 $P=0.017$ 、 $P=0.018$; $P=0.007$ 、 $P=0.016$ 、 $P=0.032$), 而发病当月仅褪黑素总量与抑郁、焦虑相关($P=0.024$ 、 $P=0.02$)。

结论: 神经内分泌激素在卒中后抑郁、焦虑中起重要作用, 尤其是HPA轴相关激素和褪黑素。

关键字: 脑卒中; 抑郁; 焦虑; 神经内分泌激素

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Epidemiology, Health policy and systems

流行病学、卫生政策和系统

Oral Presentation





Prediction of Fall Risk Among Community-Dwelling Older Adults Using the Stopping Elderly Accidents, Deaths & Injuries (Steady) Algorithm

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Objectives: Falls are prevalent in older adults and associated with high mobility. The Stopping Elderly Accidents, Deaths, and Injuries (STEADI) algorithm aims at guiding the screening, assessment, and intervention of older adults. Several combinations of self-reported questions and physical tests are proposed to facilitate clinical feasibility. Our goal was to compare the predictive validity of these modified versions of the STEADI algorithm in a community-based setting.

Methods: This 6-month follow-up study included 217 older adults who were screened with questionnaires and physical tests recommended by the STEADI algorithm at baseline. The predictive validity of these screening tools to discriminate fallers and non-fallers at follow up was tested with a receiver operating characteristic curve analysis and a multi-variate logistic regression analysis.

Results: A total of 207 (95. 4%) participants were followed for 6 months, and 35 (16. 9%) of them reported at least one fall. Using either the questionnaires or physical tests, we achieved an area under the curve (AUC) of 0. 59 to 0. 64. Using a three- or two-level risk classification with questionnaires and physical tests did not achieve a higher AUC (0. 57 to 0. 64). Multi-variate logistic regression analysis showed that the Stay Independent Brochure and the three-level STEADI algorithm could predict subsequent falls.

Discussion and Conclusion: The STEADI algorithm has only moderate predictive validity in community-dwelling older adults, and adding physical tests did not

improve the discriminative ability for future falls. The result reflects the multi-factorial nature of falls, and a more sensitive screening tool is needed.

	Area	p value	Interval		Sensitivity	Specificity	PPV	NPV
SIB	0.64	0.01	0.53	0.74	54.3	73.3	29.2	88.7
SLS	0.62	0.03	0.52	0.72	65.7	58.1	24.2	89.3
Three-level risk classification								
3KQ and TUG	0.61	0.04	0.5	0.72	11.4	97.1	44.4	83.3
3KQ and SLS	0.64	0.01	0.53	0.74	22.9	93.6	42.1	85.6
SIB and SLS	0.62	0.02	0.51	0.73	17.1	95.4	42.9	85.0
Two-level risk classification								
SIB and TUG	0.64	0.01	0.53	0.74	60.0	67.4	27.3	89.2
SIB and SLS	0.64	0.01	0.55	0.74	80.0	48.3	23.9	92.2

Note: 3KQ=three key questions; SIB=Stay Independent Brochure; TUG=timed-up-and-go; SLS=single leg standing; PPV=positive predictive value; NPV=negative predictive value.

The results of the receiver operating characteristic analysis with each questionnaire, physical test, two-level algorithm and three-level algorithm to predict falls in 6 months (only the variables with area under the curve ≥ 0.6)

	B	S.E.	Wald	p value	Exp (B)	95.0% confidence intervals	
3KQ	0.95	0.48	3.91	<0.05	2.59	1.01	6.64
SIB	0.99	0.42	5.72	0.02	2.70	1.20	6.10
Three-level classification							
3KQ and SLS							
Moderate risk	0.35	0.46	0.57	0.45	1.41	0.58	3.47
High risk	1.58	0.58	7.46	<0.01	4.84	1.56	14.99
SIB and SLS							
Moderate risk	0.57	0.52	1.22	0.27	1.77	0.64	4.87
High risk	1.55	0.63	6.10	0.01	4.73	1.38	16.23
Two-level classification							
SIB and SLS	1.12	0.49	5.28	0.02	3.08	1.18	8.02

Note: 3KQ=three key questions; SIB=Stay Independent Brochure; SLS=single leg standing; S.E.=standard error

The results of multi-logistic regression with adjustment of sex and age. We listed only the variables with a significant results.

Key Words: Keywords: elderly, falls, risk classification, screening

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Development of a Medical Insurance Payment Method Focusing on Functional Improvement for Inpatient Rehabilitation of Patients with Brain Injury Diseases: A Preliminary Study

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[Background and Objective] The current rehabilitation medical insurance system has not yet established a payment system based on functional improvement. The aim of this study was to explore how to incorporate the degree of functional improvement into medical insurance payments for inpatient rehabilitation of brain injury diseases.

Methods: In this study, the patient's functional outcomes were assessed using the International Classification of Functioning, Disability and Health (ICF) Rehabilitation Set-17 at the time of hospital admission and discharge. Expert consultations were organized to determine the factors influencing rehabilitation outcomes. Data collection, including functional outcomes, factors and basic data, was conducted in Wuxi for one year.

Results: The Rasch model was used to convert patient's ICF assessment results to the total functional scores. A machine learning-based prediction model was developed to assess the extent of functional improvement in patients. The ratio of actual to ideal patient functional improvement served as a modifying factor in assessing the effectiveness of rehabilitation medicine.

Conclusion: The utilization of ICF assessments can develop the modifying factors that can be integrated into medical insurance reimbursement systems for brain injury conditions.

Key Words: ICF, brain injury, rehabilitation, medical insurance, function



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An Machine Learning Model to Predict Quality of Life Subtypes of Disabled Stroke Survivors

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Objective

Stroke causes serious physical disability with impaired quality of life (QoL) and heavy burden on health. The goal of this study is to explore the impaired QoL typologies and their predicting factors in physically-disabled stroke survivors with machine learning approach.

Methods

Non-negative matrix factorization (NMF) was applied to clustering 308 physically-disabled stroke survivors in rural China based on their responses on the short form 36 (SF-36) assessment of quality of life. Principal component analysis (PCA) was conducted to differentiate the subtypes, and the Boruta algorithm was used to identify the variables relevant to the categorization of two subtypes. A gradient boosting machine (GBM) and local interpretable model-agnostic explanation (LIME) algorithms were used to apply to interpret the variables that drove subtype predictions.

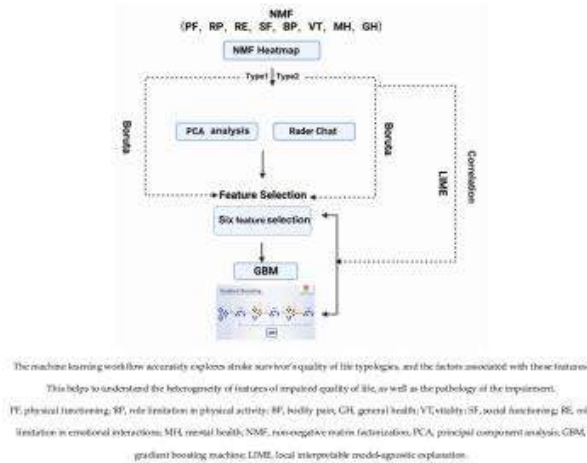
Results

Two distinct subtypes emerged, characterized by short form 36 (SF-36) domains. The features difference between worsen QoL subtype and better QoL subtype were: role-emotion (RE), body pain (BP) and general health (GH), but not physical function (PF); the most relevant predictors of worsen QoL subtypes were help from others, followed by opportunities for community activity and rehabilitation needs, rather than disability severity or duration since stroke.

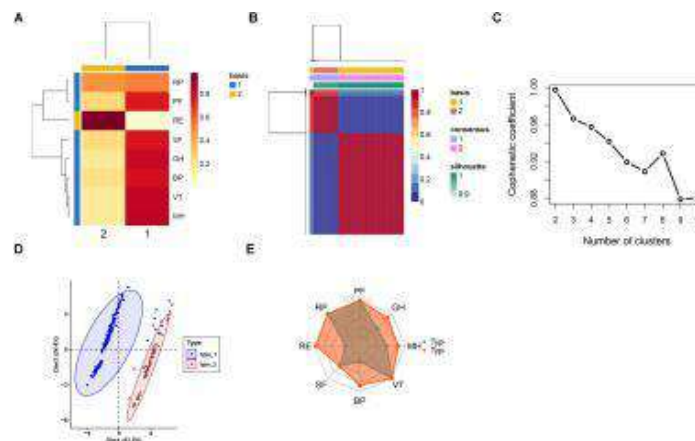
Interpretation



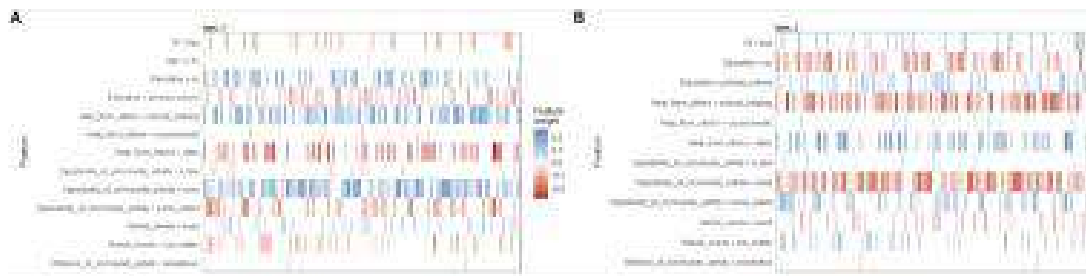
The results suggest that the rehabilitation programs should be tailored toward their QoL clustering feature; stroke survivors with worsen QoL subtype are most in need of social support and rehabilitation.



The machine learning workflow accurately explores stroke survivor's quality of life typologies



Identification of subtypes based on eight SF-36 domains



LIME graphs of the GBM model for type I and for type II. A blue bar indicates positive influence, and a higher density blue bar indicates a greater probability of influence. The red bars indicate less likely influence, with higher density indicating a lower probability

Key Words: stroke survivors; physical disability; quality of life; typology; machine learning; short form 36 assessment; help from others; community opportunity; rehabilitation needs

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Gender Differences in the Predicting the Perceived Convenience of Accessing Outdoor Activities Among Elderly Persons with Physical Disabilities in Rural China

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Background

Elderly, especially those with physical disabilities, may have barriers that prevent them from accessing to outdoor activities. This study aims to clarify the relationships among health-related quality of life, social factors, behavioral factors and the self-reported convenience of accessing outdoor activities among older Chinese people with physical disabilities. Gender differences were studied.

Methods

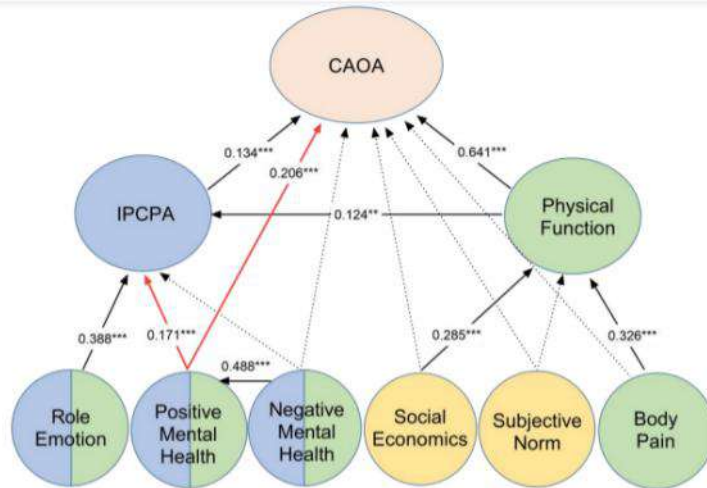
A cross-sectional survey of 1216 community-dwelling elderly people with physical disabilities in rural China. Gender-specific structural equation models predicting convenience perceptions were generated. The standardized coefficients explained the contributions of various factors to the variance.

Results

The final structural models demonstrated good fit. Perceptions of the convenience of accessing outdoor activities among both women and men were directly impacted by their physical functioning and their intention to participate, and indirectly by social and economic factors, pain, and role limitation in emotional interactions (role-emotion). Positive mental health was more influential for women, while men were more influenced by social norms.

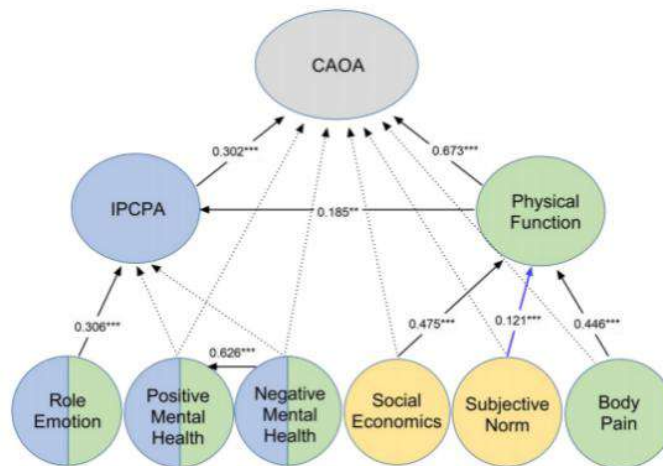
Conclusions

Both gender models demonstrated good fit in predicting self-reported convenience of accessing outdoor activities. Gender differences need to be considered in designing rehabilitation to encourage participation.



Notes. CAO = convenience of accessing outdoor activities, IPCPA = intention to participate in community physical activities, H = hypothesis
 *** indicates a relationship significant at the $p \leq 0.01$ (** $p \leq 0.05$) level of confidence. Solid lines indicate significant correlation. Dash lines indicate not-significant correlation, and unsupported hypotheses. Quality of life, social factors and behavioral factors are highlighted in green, yellow and blue respectively. Female-specific significant pathway are shown in red line.

Standardized coefficients relating factors in the final integrated model predicting female CAO



Note. CAO = convenience of accessing to outdoor activities, IPCPA = intention to participate in community physical activities, H = hypothesis,
 *** indicates a relationship significant at the $p \leq 0.01$ (** $p \leq 0.05$) level of confidence. Solid lines indicate significant correlation. Dash lines indicate no significant correlation and an unsupported hypothesis. Quality of life, social factors and behavioral factors are highlighted in green, yellow and blue respectively. A male-specific significant pathway is shown in blue.

Standardized coefficients relating factors in the final integrated model predicting male CAO

Key Words: quality of life, access to outdoor activities, gender, elderly, physical disability, structural equation models

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长沙市医保支付方式改革下 ICF-RS 对脑梗死恢复期患者康复疗效和医疗支出的初步报告

汪鑫¹, 徐珑^{1*}

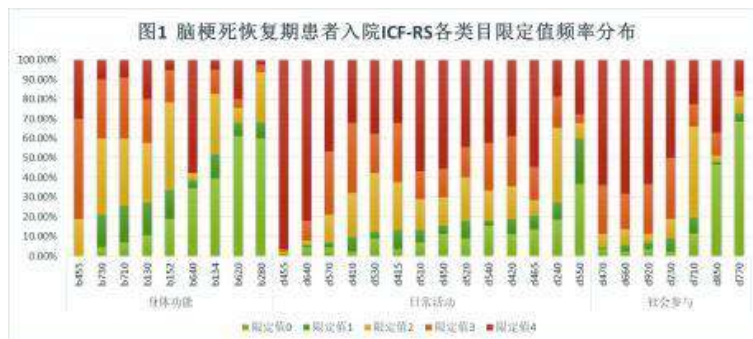
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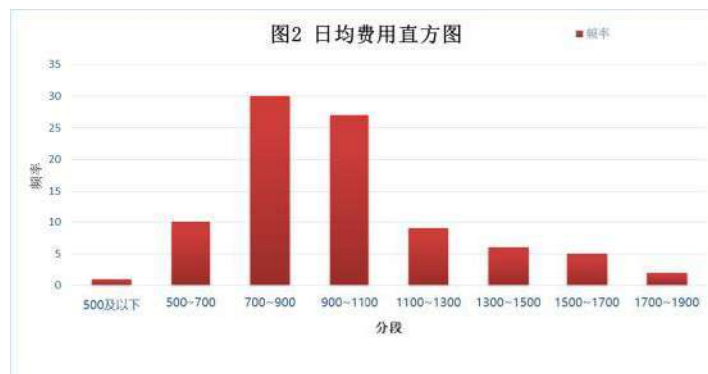
背景: 2022年4月, 长沙市医保局开始康复病组按价值付费医保付费方式改革, 我院为牵头及试点单位。

目的: 康复病组医保支付方式改革一年后, 采用 ICF-RS 评价脑梗死恢复期所有入组患者的功能障碍情况及医疗费用, 初步分析 ICF-RS 和医疗支出的关系。

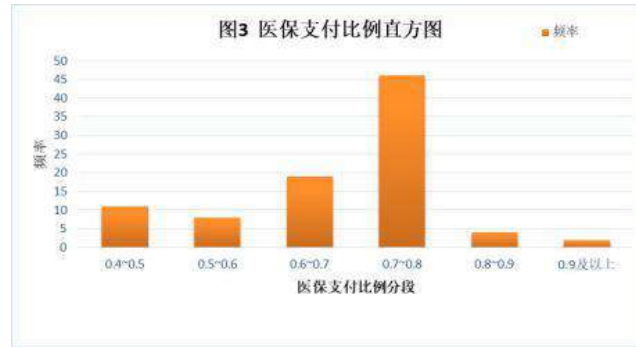
方法: 回顾性分析 2022年6月至 2023年5月期间 90例脑梗死恢复期入组患者的一般资料和评估资料, 统计 ICF-RS 入院评分, 记录住院医疗费用、医保报销比例等资料。结果: 脑梗死恢复期患者 ICF-RS 功能障碍等级分布见图 1, 医保支付比例及日均费用见图 2 和图 3; 此外, ICF-RS 总体每提升 1分, 平均医疗支出为 2719.05元。结论: ICF-RS 可指导脑梗死恢复期患者的功能等级和康复疗效判断, 并为医保支付提供参考数据。



脑梗死恢复期患者入院 ICF-RS 各类目限定值频率分布图



日均费用直方图



医保支付比例直方图

关键字： 医保改革； 医保付费； 国际功能、 残疾和健康分类； 康复组合； 脑梗死

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可能肌少症在中国社区老年人中的患病率及影响因素研究

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目的: 确定江苏地区社区老年人可能肌少症的患病率及影响因素。

方法: 招募江苏省三个社区共 2975 名老年人(男性 1556 人, 女性 1419 人, 平均年龄 69.94 ± 4.88 岁)。测量老年人的身高、体重、握力峰值并计算出 BMI; 询问老年人吸烟、饮酒、运动锻炼情况并评估其认知功能。

结果: 1. 可能肌少症人数为 1055 人, 患病率为 35.5%。2. 使用 logistic 回归分析, 表明女性可能肌少症的患病率为男性的 0.752 倍(OR 值=0.752, 95%置信区间为 0.630-0.898, $P < 0.05$)。3. 日常锻炼情况(OR 值=1.740, 95%置信区间为 1.480-2.046, $P < 0.05$)、痴呆(OR 值=1.859, 95%置信区间为 1.507-2.294, $P < 0.05$)是可能肌少症的独立影响因素。

结论: 江苏地区可能肌少症发生率较高且男性患病率更高。运动锻炼和不存在痴呆的社区老年人可能肌少症的患病率低于无日常锻炼和痴呆人群。

关键字: 可能肌少症; 社区; 患病率; 影响因素

基于 Delphi 法构建医保版龙氏量表的研究

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本研究旨在通过赋分, 将分类型龙氏量表转化为医保版龙氏量表, 使量表评分能够直观地反映失能者在康复治疗过程中的功能变化。

研究小组通过研究, 修订龙氏量表分值及其评定方法(0分、1分、2分), 拟定2种改良龙氏量表赋分方案(+7分, +9分), 运用德尔菲专家函询法进行咨询, 确定医保版龙氏量表。

本次研究共有24位专家受邀参与咨询, 66.7%(14/21)的专家支持+7分改良龙氏量表赋分方案。医保版龙氏量表的内部一致性及与BI的相关性均与初始龙氏量表一致。

本研究+7分的赋分方案将龙氏量表转变为连续性计分量表, 其分数变化可以衡量功能改善程度, 为以价值医疗为导向的康复医保支付提供新的依据。

关键字: 关键词: 龙氏量表; 康复医保; 功能康复; 价值医疗

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Rehabilitation Practice and Perspective

康复实践与展望

Oral Presentation



Case Study on the Return to Sport of Rugby Players after Shoulder Bristow Surgery

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This study suggests that the Bristow surgery is an effective method for treating shoulder instability in Rugby players and can meet the demands of Rugby special training and competitive confrontation, providing a reference for developing effective treatment and rehabilitation plans.

Key Words:return to sport, rugby players, Bristow surgery, athletic performance.

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Wakefulness Promoting Effect Of Maintaining the Normal Anatomical Structure of Brain on Patients with Severe Traumatic Brain Injury

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Objective To observe the effect of keeping normal brain structure by continuous lumbar drainage on coma after severe traumatic brain injury (TBI). **Methods** From December 2019 to May 2023, forty-four patients (mean age 42.63 ± 17.12 years, 29 males and 15 females) with severe disorders of consciousness (DOC) 2-4 weeks after trauma were selected. All the patients were accepted decompressive craniectomy after severe TBI. Those patients were randomly divided into two groups. The control group (n=21) treated with conventional therapy, and the observation group (n=23) treated with conventional combined continuous lumbar drainage therapy. The course of treatment was 2 weeks. Computed tomography (CT), Glasgow Coma Scale (GCS) and Coma Recovery Scale-Revised (CRS-R) assessments were performed before and after treatment. **Results** Before treatment, CT revealed mild ventricular enlargement or deformation, subdural effusion, brain tissue bulging from the bone window which leading to displacement of brain structure in all patients. The GCS and CRS-R scores had no significant difference between two groups. 2 weeks later, the anatomical structure of brain tissue were relatively normal by CT scanning in patients of the observation group, and no obvious changes were observed in the control group. Compared with the control group, the observation group showed a significant improvement in GCS and CRS-R scores. **Conclusion** At the early stage after operation, maintaining normal brain structure by continuous lumbar drainage can significantly improve consciousness and neurological function in patients with severe TBI.

Key Words: disorders of consciousness; traumatic brain injury; lumbar drainage



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Developmental Dysgraphia in a 8-Year Old Chinese girl: A Case Report

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Objective: Dysgraphia as a problem with handwriting, affects children's performance in academic participation. Although sensorimotor performance has an impact on Chinese handwriting, few studies have examined the efficacy of sensorimotor-based interventions on Chinese handwriting for primary school pupils who struggle with handwriting. The study aims to evaluate a sensorimotor-based intervention to improve handwriting in the first grade of primary school.

Case Presentation: We report the case of a 8-year-old female patient in the first grade of primary school, who was diagnosed with dysgraphia and had handwriting and visual perception issues while in the first grade of elementary school. She was treated for 1 hour per day, 5 days per week for one month, for a total of 20 sessions. The patient received sensorimotor intervention programme instruction in areas such as proprioception, hand strength, finger dexterity, visual perception training. Her handwriting function was evaluated before and after training using the Smart Handwriting Analysis and Recognition Platform (SHARP). The outcome was positive.

Results: The intervention had a substantial influence on writing speed, total writing time, ground time, air time, air/ground time ratio, SD of time per character, average pressure, and out of grid, but not on pressure.

Conclusions: The group-based sensorimotor intervention programme appeared to show improvements in students with fair skills in writing Chinese characters. It indicates that intensive training within a month is more helpful than a lengthy treatment. Certainly, the family parenting assistance and service, as well as the follow-up visit following the training sessions, should be utilised.



Examples of proprioception training



Examples of visual perception training



Evaluated hand function before and after training

Key Words: Dysgraphia, Chinese handwriting, Sensorimotor Intervention, Primary school students

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programme to improve Chinese handwriting of primary school students. *Heliyon*.

尿管球囊尿道扩张术治愈脊髓损伤后神经源性膀胱患者 1 例

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目的: 探讨尿管球囊尿道扩张术治疗神经源性膀胱的可能性, 客观评价其治疗效果。**方法:** 创伤性脊柱脊髓损伤患者 1 例, 经临床评估及尿流动力学检查, 诊断为神经源性膀胱。利用 F14 双腔导尿管, 采用注水方式使球囊充盈, 牵拉导尿管, 在超声引导下缓慢移动球囊扩张尿道外括约肌, 降低尿道外括约肌的紧张度, 重建排尿反射。**结果:** 患者恢复自主排尿, 残余尿量为 20ml, 尿流动力学检查结果接近正常。**结论:** 尿管球囊扩张术可降低尿道外括约肌张力, 减少膀胱出口阻力, 重建排尿反射, 改善神经源性膀胱排尿期功能障碍, 操作简单, 安全可靠。尿管球囊尿道扩张术治愈脊髓损伤后神经源性膀胱患者 1 例(包括介绍、报告和讨论)

关键词: 创伤性脊髓损伤; 神经源性膀胱, 球囊扩张术

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基于任务导向原则的数字 OT 训练系统对脑瘫儿童精细运动能力的疗效探究

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背景：脑性瘫痪是导致儿童运动残疾的常见疾患之一[1]，有超过 65.8%存在精细运动能力及协调障碍[2-4]，对他们生活、社交等造成困扰[5]。随着互联网技术的发展，数字化康复训练系统应用范围逐渐扩大[6]，但在儿童领域的临床应用研究少[7]。

目的：探究数字 OT 训练系统对脑瘫儿童精细运动能力的影响；

方法：选取 2022 年在我院治疗的脑瘫儿童 41 名，随机分为对照组（n=20）和观察组（n=21），均给予常规治疗，观察组增加数字 OT 训练系统治疗。比较治疗前、后 FMFM、UEFT 测试得分。

结果：治疗 12 周后，观察组 FMFM、UEFT 评分较对照组显著提高，差异有统计学意义（ $P < 0.001$ ）。

结论：数字 OT 训练系统能改善脑瘫儿童精细运动能力及手眼协调能力，值得临床推广；

关键词：脑性瘫痪 数字 OT 训练系统 精细运动能力 手眼协调能力

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现代学徒制背景下康复养生专业群培养“明德、明理、明技”人才的探索与实践

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目的：解决康复养生专业群人才的医德修养、理论水平、操作技能不够的问题。
方法：2017年始，将医德教育与专业课程教学相融合；校企联合应用适合的方法、有效的教育，教会学生应掌握的专业理论；以“三进阶”角色转换与能力递增模型，加强理论与实践的联系。我们与多家医院合作实施“3+1+1”现代学徒制培养模式，合作培养“明德、明理、明技”康复养生专业群人才解决上述问题。结果：人才培养质量显著提升，成果在境内外推广，获国家教学成果二等奖。结论：该模式对康复养生专业群，以及卫生类的其他专业人才培养有很好的借鉴和推广价值。

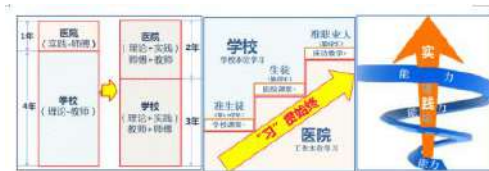


图1 “三进阶”能力提升模式图



图2 现代学徒制背景下康复养生专业群课程体系图



图3 校院“六共”深度融合

1.三进阶能力提升模式图；2.课程体系图；3.“六共”融合机制图

关键词：人才培养模式；现代学徒制；康复治疗技术；中医康复技术；中医养生保健

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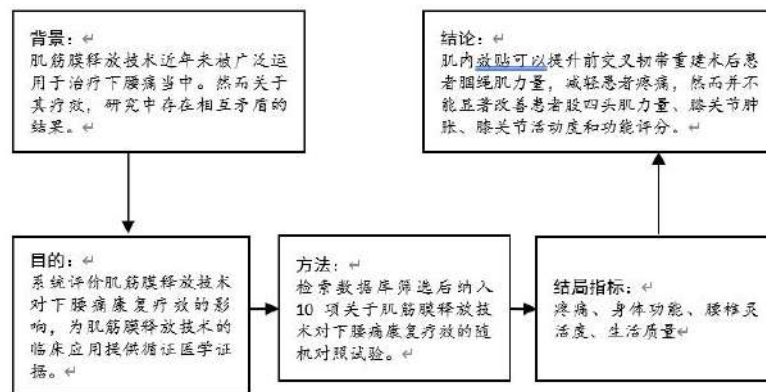
肌筋膜释放技术治疗下腰痛疗效的 Meta 分析

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目的：系统评价肌筋膜释放技术（myofascial release technique, MFR）对下腰痛（low back pain, LBP）的疗效。方法：检索 2023 年 3 月 1 日以前 Cochrane Library、Web of science、PubMed、SinoMed、Embase、中国知网、维普和万方数据库关于 MFR 对 LBP 患者影响的随机对照试验。结局指标包括：疼痛、身体功能、腰椎灵活性、生活质量。根据 Cochrane 手册对最终纳入的文献进行质量评价。应用 RevMan 5.4 软件进行 Meta 分析。结果：①共纳入 10 项随机对照实验，包括 509 例下腰痛患者，纳入文献整体质量较高。②Meta 分析显示，与对照组相比，MFR 可以改善患者疼痛 [SMD=-0.56,95%CL (-1.01,-0.11)，P=0.02]，显著提高身体功能 [SMD=-0.41,95%CL(-0.62,-0.20)，P=0.0001]，改善生活质量[SMD=0.52,95%CI：(0.04, 1.07),p=0.02]；但不能改善腰椎活动度 [SMD=1.02,95%CL (-0.09,2.13)，P=0.07]。结论 Meta 分析显示，MFR 有助于下腰痛患者减轻疼痛、提高身体功能、改善生活质量，但对改善腰椎活动度无显著作用。



关键词：肌筋膜释放技术；下腰痛；meta 分析；系统评价；

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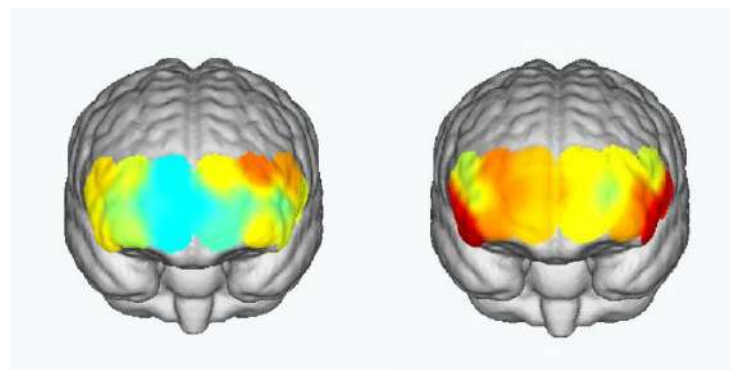
近红外脑功能成像引导下 tDCS 联合 TMS 对一氧化碳中毒后认知障碍治疗的一例个案报道

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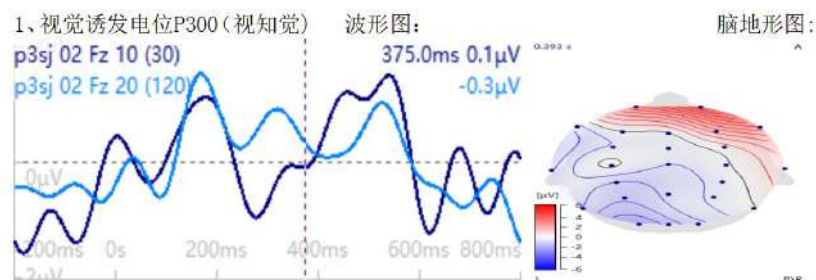
介绍: 报道一例基于近红外脑功能成像 (fNIRS) 引导下 tDCS 联合 TMS 治疗 CO 中毒性脑病重度认知障碍病例。报告: 一例 CO 中毒性脑病患者, 接受常规康复 2 个月效果不佳。对患者进行 fNIRS 评估, 对脑血流量募集差的右 DLPFC 先采用 tDCS 预激活, 20 分钟后进行 rTMS 高频刺激。采用 MMSE 量表、MoCA 量表、Barthel 指数、fNIRS 及 ERP 进行疗效评估。结果: 干预 2 周后, 患者认知功能显著改善; fNIRS 显示平均功能连接强度增加, 双侧额叶激活增加且右侧额叶的激活优于左侧。P300 波幅显著升高, 波形分化较好。视觉诱发电位 go/Nogo 潜伏期降低, 波幅升高。讨论: fNIRS 引导下 tDCS 联合 rTMS 能有效改善 CO 中毒后认知障碍。



治疗前 HbO 前视图

治疗后 HbO 前视图

治疗前后近红外脑区激活结果图



治疗前视觉诱发电位 P300 治疗后视觉诱发电位 P300



关键词: 近红外脑功能成像; 经颅直流电刺激; 重复经颅磁刺激; 一氧化碳中毒; 认知障碍

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长沙市医保 FRG 模式下基于 ICF-RS 的综合评估系统评价脑梗死恢复期患者的康复疗效

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目的: 应用基于 ICF-RS 的综合量表, 评估长沙市医保 FRG 模式下的脑梗死恢复期入组患者功能障碍情况, 判断入组患者的康复疗效。**方法:** 回顾性分析 2022 年 6 月~2023 年 5 月在本院接受治疗的脑梗死型恢复期入组患者 90 例, 在入院 3 天内和出院时分别进行 ICF-RS、MMSE、BDAE、FMA、MAS 等评估, 进行治疗前后疗效分析。**结果:** 医保系统判断入组患者治疗前后差异具有统计学意义; 90 例患者的功能障碍不同程度改善; 根据 ICF-RS 限定值频数卡方检验, 共 15 个类目较治疗前比较均明显改善, 见图 1~3。**结论:** 长沙市医保 FRG 模式下, 基于 ICF-RS 的脑缺血性疾患-梗死型综合评估量表以及相关量表组成的综合评估系统, 可以在一定程度上判断脑梗死恢复期患者的康复疗效。

脑缺血性疾患-梗死型综合评估量表治疗前后评分比较 治疗前后功能障碍严重程度分级 脑梗死恢复期患者入、出院 ICF-RS 各类目限定值频率分布对比。

关键词: 国际功能、残疾和健康分类; 康复组合; 评估; 功能相关分类; 脑梗死; 恢复期

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团队合作康复模式对压力性损伤创面恢复的研究进展

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近年来, 团队模式的重要性在患者的治疗和康复的实施效果中已得到证实。“医护治一体化”的团队合作康复模式充分调动人员的工作积极性, 在团队会议中共享康复目标、康复措施, 提高医疗护理的服务质量。医护治成员通过早期的功能评估, 科学的康复干预, 为压力性损伤患者提供有针对性、个性化的创面治疗方案, 多学科合作, 满足不同分期的压力性损伤的治疗特点, 促进了创面的恢复或愈合, 给患者在专科专治同时实现“整体医疗”。随着科学技术的不断创新, 团队合作模式的方法越来越多, 但临床效果不一, 对此做如下综述。

关键字: 压力性损伤、医护治一体化、创面、团队合作

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脑卒中患者发病前头发中激素水平与功能预后的相关性

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脑卒中患者发病前头发中激素水平与功能预后的相关性

背景: 目前已有大量文献探索了头发皮质醇浓度对脑卒中患者功能预后的相关性^[1], 然而, 鲜有文章探索头发中其他激素与脑卒中预后的相关性。

目的: 探索发病前头发中下丘脑-垂体-肾上腺轴、下丘脑-垂体-性腺轴、褪黑素系统等激素水平与脑卒中功能预后的相关性。

方法: 使用 LC-MS/MS 质谱检测方法检测头发中激素水平。

结果: 脑卒中患者发病前头发中皮质醇、可的松、褪黑素、N-乙酰血清素与NIHSS、mRS等功能预后指标存在相关性。

结论: 未来联合头发中多种激素水平检测可提高对脑卒中功能预后判断。

关键字: 头发皮质醇浓度; 激素; 质谱检测

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心脏康复托起心衰患者的一片天

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引言

心脏康复对心脏移植术前患者作为 I B 类推荐。

病例报告

64 岁男性，确诊“非梗阻性肥厚型心肌病，全心扩大，终末期心力衰竭，短阵室性心动过速，慢性心房纤颤，病态窦房结综合征，起搏器术后”，2018 年由心内科转入心脏康复科，等待心脏移植。（心肺运动试验 见图）

病例讨论

体格检查时的关注点？

运动训练对心力衰竭的改善机制？

运动处方要点和依据？

更多心脏康复建议？

心肺运动试验（图略）	入院时 (177cm/83kg)	心脏康复 3 月后 (177cm/89kg)
峰值运动时： VO ₂ (ml/kg/min), 功率(watt), HR(beat)	10.5 (41%), 67, 92 (56%)	12.1 (50%), 90, 90 (54%)
VT1 时： VO ₂ (ml/kg/min), 功率(watt), HR(beat)	3.6, 13, 80	8.3, 24, 83
VT2 时： VO ₂ (ml/kg/min), 功率(watt), HR(beat)	7.9, 49, 86	10.6, 69, 84
VE/VCO ₂ slope	50	47

关键字：心力衰竭，心脏移植，运动，康复

参考文献：

2011 年法国成人心脏康复实践指南

基于改良 Delphi 法的 ICF 老年医学核心组合评定量化标准的研制

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目的: 研制国际功能、 残疾和健康分类 (ICF) 老年医学核心组合 (简明版) 评定量化标准, 用以评估老年人群的功能水平。 **方法:** 采用改良 Delphi 法对该组合中 17 个类目所拟定的量化标准开展专家调查, 采用 Likert 5 级评分法对各标准适合程度进行评级, 并结合专家讨论筛选出最终版本。 **结果:** 共完成两轮专家调查。 第二轮调查后 15 个类目所对应的 15 个量化标准均符合本研究的既定要求 (适合程度赋值均数 > 3.5 且变异系数 < 25%), 剩余两个类目结合专家讨论最终确定。 **结论:** 所研制的老年医学核心组合评定量化标准可为老年人群的功能评估提供基于 ICF 框架的辅助工具。

关键字: Delphi 法; ICF; 老年医学; 专家调查

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孤独症谱系障碍儿童评估工具介绍及评估现状分析

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目的：孤独症谱系障碍没有特异性生物学指标能够明确诊断孤独症， 对其进行诊断时， 往往需要借助各类评估工具。 方法：收集各类评估工具、 量表的相关资料结合本中心目前已使用的评估工具情况进行整理、 分析， 深度挖掘比较各类评估工具的内容和实施方式， 系统地总结和归纳。 结果：国内外主流评估工具具有各自不同的特点与侧重点。 结论：揭示孤独症群体在评估工具选择中的现状， 尤其是大龄孤独症儿童， 由于没有相应的满足其年龄与各项应具备的能力之间的常模数据库， 而导致的尴尬的境地。

关键字：[关键词]孤独症； 评估； PEP-3;VB-MAPP； 新型评估工具

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肌纤维痛患者老龄化健康问题的研究进展

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目的: 探讨国内外对改善肌纤维痛患者老龄化健康问题相关性研究的最新进展。

方法: 基于相关参考文献对肌纤维痛患者老龄化健康问题相关性研究进展进行归纳总结。

结果: 面对老龄化社会, 老年人各器官功能随年龄增长逐步衰弱, 机体调节能力下降, 患有肌纤维痛概率增高, 现有的康复训练方法无法综合性的治疗 FMS 患者的整体功能状态, 而传统运动疗法可能有效改善 FMS 患者疼痛、睡眠障碍等症状。

结论: 对于肌纤维痛老年患者, 在未来开发一种包含中国传统健身功法且适合、可吸引老年患者主动参与的新设备, 进行有效的综合性运动疗法临床上值得推广。

关键字: 肌纤维痛; 主动健康; 老龄化; 综述

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Others

其他

Oral Presentation





Application of Abdominal High Frequency Deep Vibration Therapy in Patients with Post-Stroke Constipation

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Object: To explore the effect of abdominal high frequency deep vibration therapy in patients with post-stroke constipation.

Methods: Sixty patients with post-stroke constipation were randomly assigned into study group and control group, with 30 cases in each group. Both groups received conventional intestinal rehabilitation nursing. Patients in the control group received abdominal manipulative massage while those in the study group received abdominal high-frequency deep vibration therapy. Constipation symptoms, stool property, constipation improvement rate, quality of life, and intestinal related complications were assessed at base-line and after four weeks.

Results The baseline assessment showed non-significant difference regarding all measured variables. The constipation clinical symptom score was (9.47 ± 2.13) lower than that (11.33 ± 3.48) in the control group; Stool traits score (Bristol stool classification) was (0.97 ± 0.56) lower than that (2.90 ± 1.09) in the control group; Overall effective rate of improvement in constipation after stroke was 88% higher than that (40%) in the control group; Patient assessment of constipation quality of life score (PAC-QOL) was (74.57 ± 23.03) higher than that (56.87 ± 16.61) in the control group; The incidence of intestinal related complications (drug dependence 6%, abdominal pain and bloating 0%, fecal leakage 0%) were lower than that (drug dependence 50%, abdominal pain and bloating 30%, fecal leakage 27%) in the control group (all $p < 0.05$).

Conclusion: Abdominal high frequency deep vibration therapy can effectively promote the recovery of intestinal function in patients with post-stroke constipation, reduce drug dependence, decrease intestinal-related complications, and improve quality of life.

Key Words: high frequency deep vibration therapy; stroke; post-stroke constipation; abdominal massage; quality of life.

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Attention Processing under Acute Psychosocial Stress: Beneficial Effects of Mindfulness Meditation

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Background Attention is a fundamental cognitive process crucial for all aspects of higher-order cognition and real-world activities. Younger generations confront myriad stressors and attentional challenges, including interviews, exams, presentations, and competitions, where proficient task completion is crucial for success. Furthermore, acute psychosocial stress exerts detrimental impacts on cognitive performance. Mind-body techniques offer potential cognitive benefits due to their attentional or mindfulness components, yet exploration in this area remains incomplete.

Objective This study intended to examine the effectiveness of mindfulness meditation (MM) training as a potential approach to enhance attention processing under acute psychosocial stress in meditation novices.

Methods This research applied a randomized controlled trial involving 48 college students, who were randomly assigned to either the mindfulness meditation (MM) training group ($n = 24$) or the sham mindfulness training group ($n = 24$). Event-related potentials (ERPs) linked to a modified mental arithmetic task were employed to assess attention-related responses. Additionally, a pre-test and post-test were conducted before and after the eight-week intervention, utilizing the intra-individual response variability (IIRV).

Results Analyses of covariance revealed the MM training group had significantly lower IIRV ($p = .030$), greater N1 amplitude ($p = .037$), and N2 amplitude ($p = .037$) during the modified mental arithmetic task compared to that of the control group.

Conclusion The findings indicate that mindfulness meditation training can modify cognitive resource allocation efficiency, enhancing self-regulation of attention and attention processing during acute psychosocial stress. This approach holds potential for benefiting the mental health of young adults through well-established means.



Key Words: mindfulness meditation; attention; acute psychosocial stress; ERP;

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Factors Influencing Body Function, Activity and Participation Recovery in Post-Stroke Patients: Multiple Linear Regression Analysis Based on Icf-Rs

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Objective To explore the related factors affecting motor function in stroke patients after three months by ICF-RS assessment. **Methods** A retrospective investigation and analysis were conducted on patients with stroke treated at Dalian Port Hospital from January 1st, 2023, to March 31st, 2023. ICF-RS assessment was applied to analyze the physical function, activity and participation of stroke patients three months later. Meanwhile, Logistic regression analysis was performed for disease-related factors. **Results** A total of 138 stroke patients were included. (1) Age ($\beta=0.475$, $P=0.000$), pneumonia ($\beta=-11.970$, $P=0.003$), venous thrombosis ($\beta=-7.378$, $P=0.027$), APTT ($\beta=1.543$, $P=0.004$) and interventional therapy ($\beta=-7.718$, $P=0.017$) was an independent factor affecting the physical function of stroke patients. (2) Age ($\beta=0.704$, $P=0.000$), sex ($\beta=13.173$, $P=0.006$), pneumonia ($\beta=-18.393$, $P=0.001$), APTT ($\beta=3.312$, $P=0.000$) and number of disease sites ($\beta=9.866$, $P=0.023$) was an independent factor influencing the activity of stroke patients. (3) Age ($\beta=0.426$, $P=0.006$), pneumonia ($\beta=-12.609$, $P=0.018$), venous thrombosis ($\beta=-8.253$, $P=0.070$), APTT ($\beta=2.637$, $P=0.001$) and number of disease sites ($\beta=8.211$, $P=0.037$) was an independent factor influencing the participation ability of stroke patients. **Conclusion** In male patients with single stroke who did not develop pneumonia and venous thrombosis within three months after the onset of the disease, the lower the activation time of partial thromboplastin, the better the recovery of motor function.



	0	1	2	3	4	8	9
b134 Sleep functions	46(33.33%)	36(26.09%)	28(20.29%)	19(13.77%)	6(4.35%)	10(7.2%)	2(1.45%)
b152 Emotional functions	34(24.49%)	40(28.99%)	31(22.46%)	19(13.77%)	7(5.07%)	2(1.45%)	5(3.62%)
b180 Sensation of pain	42(30.43%)	34(24.49%)	26(18.84%)	22(15.94%)	8(5.89%)	3(2.17%)	3(2.17%)
b640 Sexual functions	27(19.57%)	12(8.70%)	6(4.35%)	8(5.89%)	13(9.42%)	18(13.04%)	54(39.13%)
b620 Urination functions	94(68.57%)	30(21.74%)	5(3.62%)	5(3.62%)	2(1.45%)	0(0.0)	0(0.0)
b130 Energy and drive functions	17(12.32%)	33(23.91%)	32(23.19%)	39(28.26%)	16(11.59%)	10(7.2%)	0(0.0)
d340 Handling stress and other psychological demands	22(15.94%)	29(21.01%)	43(31.16%)	18(13.04%)	9(6.52%)	16(11.59%)	1(0.72%)
b710 Mobility of joint functions	25(18.12%)	44(31.88%)	40(28.99%)	14(10.14%)	14(10.14%)	10(7.2%)	0(0.0)
b730 Muscle power functions	19(13.77%)	31(22.46%)	33(23.91%)	32(23.19%)	23(16.67%)	0(0.0)	0(0.0)
b455 Exercise tolerance functions	2(2.17%)	13(9.42%)	38(27.54%)	53(38.41%)	31(22.46%)	0(0.0)	0(0.0)
d410 Changing basic body position	18(13.04%)	22(15.94%)	29(21.01%)	42(30.43%)	27(19.57%)	0(0.0)	0(0.0)
d415 Maintaining a body position	22(15.94%)	26(18.84%)	33(23.91%)	31(22.46%)	25(18.12%)	1(0.72)	0(0.0)
d420 Transferring oneself	35(25.36%)	24(17.39%)	13(9.42%)	26(18.84%)	39(28.26%)	10(7.2%)	0(0.0)
d450 Walking	43(31.16%)	24(17.39%)	10(7.25%)	18(13.04%)	42(30.43%)	10(7.2%)	0(0.0)
d465 Moving around with equipment	41(29.71%)	21(15.22%)	5(3.62%)	27(19.57%)	43(31.16%)	10(7.2%)	0(0.0)
d455 Moving around	9(6.25%)	3(2.17%)	11(7.97%)	19(13.77%)	95(68.94%)	10(7.2%)	0(0.0)
d510 Walking oneself	20(14.49%)	16(11.59%)	24(17.39%)	29(21.01%)	49(35.51%)	0(0.0)	0(0.0)
d520 Caring for body parts	34(24.49%)	10(7.25%)	21(15.22%)	29(21.01%)	42(30.43%)	10(7.2%)	1(0.72%)
d530 Tailoring	33(23.91%)	21(15.22%)	15(10.87%)	27(19.57%)	40(28.99%)	10(7.2%)	1(0.72%)
d540 Dressing	29(21.01%)	24(17.39%)	12(8.70%)	25(18.12%)	42(30.43%)	10(7.2%)	1(0.72%)
d550 Fixing	43(31.16%)	34(24.49%)	19(13.77%)	18(13.04%)	23(16.67%)	10(7.2%)	0(0.0)
d640 Doing housework	15(10.87%)	9(6.52%)	10(7.25%)	24(17.39%)	70(50.52%)	2(1.45%)	0(0.0)
d230 Carrying out daily routine	21(15.22%)	18(13.04%)	17(12.32%)	23(16.67%)	57(41.30%)	2(1.45%)	0(0.0)
d470 Using transportation	10(7.25%)	20(14.49%)	17(12.32%)	22(15.94%)	67(48.59%)	2(1.45%)	0(0.0)
d570 Looking after one's health	14(10.14%)	26(18.84%)	16(11.59%)	25(18.12%)	56(40.59%)	10(7.2%)	0(0.0)
d660 Assisting others	10(7.25%)	11(7.97%)	16(11.59%)	34(24.49%)	64(46.30%)	2(1.45%)	1(0.72%)
d710 Basic interpersonal interactions	9(6.52%)	62(44.93%)	38(27.54%)	12(8.70%)	10(7.25%)	3(2.17%)	5(3.62%)
d770 Intimate relationships	47(34.55%)	22(15.94%)	15(10.87%)	6(4.35%)	10(7.25%)	6(4.35%)	12(8.70%)
d850 Rejuvenation employment	34(24.49%)	5(3.62%)	6(4.35%)	16(11.59%)	33(23.91%)	2(1.45%)	40(28.99%)
d920 Recreation and leisure	12(8.70%)	18(13.04%)	18(13.04%)	26(18.84%)	58(42.03%)	2(1.45%)	4(2.9%)

	n (%)	ICF-RS score	T	P
Sex				
male	92(66.6)	49.92±25.42		
female	46(34.4)	59.18±22.49	2.359	0.020
Stroke type				
Cerebral hemorrhage	35(25.3)	56.67±26.18		
Cerebral infarction	103(74.7)	51.77±24.31	-0.146	0.884
Age	64.52±12.09	53.01±24.79	3.782	0.000
Smoking history	Active/passive smoking			
Active/passive smoking	42(30.4)	48.32±27.02		
Never/have quit smoking	96(69.6)	55.06±23.61	0.096	0.924
Drink alcohol	occasionally/often			
occasionally/often	40(28.9)	52.98±25.66		
Never/stopped drinking	98(71.1)	53.02±24.56	-1.921	0.057
Hypertension	Yes			
Yes	105(77.8)	52.97 ± 24.56		
No	30(22.2)	54.08 ± 25.01	-0.141	0.888
Diabetes	Yes			
Yes	60(45.1)	49.79 ± 24.66		
No	73(54.9)	56.39 ± 24.02	1.771	0.079
Pneumonia	Yes			
Yes	26(18.8)	69.61 ± 23.35		
No	112(81.2)	49.16 ± 13.59	-2.842	0.005
Pressure ulcer	Yes			
Yes	0(0.0)			
No	138(100)	53.01 ± 24.79	-	-
Brain imaging	Cortical			
Cortical	18(13.5)	51.11 ± 16.20		
Subcortical	54(40.6)	56.36 ± 27.19	0.686	0.494
Basal ganglia	30(22.5)	54.35 ± 24.08	0.899	0.370
Basal ganglia& Cortical	31(23.4)	49.78 ± 26.35	-1.320	0.189
Lesion sites	Single			
Single	70(52.6)	48.80 ± 25.04		
multiple	63(47.4)	24.49 ± 24.49	2.188	0.030
Intravascular intervention	Yes			
Yes	38(27.9)	52.63 ± 27.59		
No	98(72.1)	53.19 ± 23.60	1.428	0.156
Insomnia	Yes			
Yes	34(28.3)	51.64 ± 23.98		
No	86(71.6)	51.96 ± 25.43	-0.010	0.992
Sensory disturbances	Yes			
Yes	120(90.2)	53.50 ± 24.83		
No	13(9.80)	53.50 ± 24.80	0.321	0.749
Duration of rehabilitation				

Table 2-1. Demographic information and univariate analysis

Variable	β	SE	Standard β	T	P
constant	-49.881	23.265	-	-2.144	0.034
APTT	2.694	0.672	0.301	4.010	0.000
Age	0.579	0.153	0.282	3.782	0.000
Sex	9.167	3.886	0.175	2.359	0.020
Lesion sites	7.431	3.645	0.150	2.039	0.030
Venous thrombosis	-7.023	4.136	-0.133	-1.698	0.032
Pneumonia	-13.635	4.797	-0.216	-2.842	0.005

Table 3. Coefficients of Multiple linear regression

Key Words: Stroke; ICF-RS; Multiple linear regression

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运动训练对 PCOS 患者孕产的临床报道

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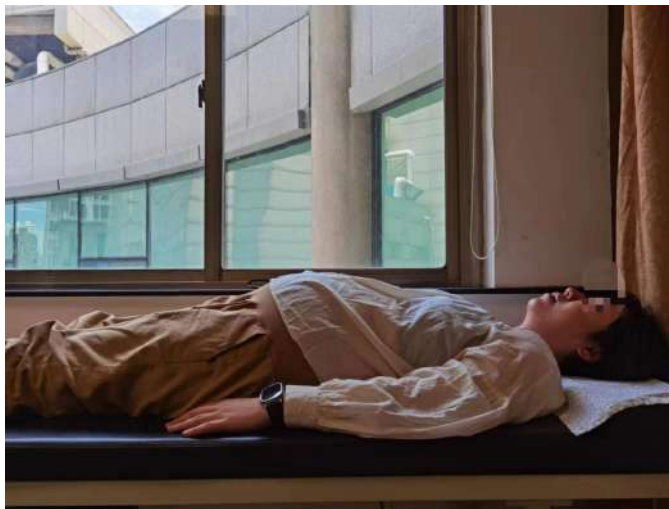
背景：提高 PCOS 患者的生殖能力可提升社会的生育率。促排卵药物促排成功率低，影响生育。跳绳干预 PCOS 后，改善排卵障碍并提高孕育率。

方法：通过 PCOS 患者纳入微信群，使用金山文档管理。每天据患者记录的打卡数据，调整运动处方。妊娠后，训练盆底核心康复操，链接：<https://mp.weixin.qq.com/s/8Osz0nlvcKcQIKaOcpqJTg>。

结果：运动疗法使 PCOS 患者顺利妊娠并分娩。

结论：跳绳使 40 岁高龄 PCOS 患者成功妊娠并分娩。盆底康复的介入有助于患者经阴道分娩。

PCO 患者妊娠 38w+ 盆底核心操训练



关键字：PCOS 生育率 跳绳 运动训练 盆底核心康复操

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颈椎病手术患者睡眠障碍非药物预防及管理最佳证据总结

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目的：筛选、提取并归纳颈椎病手术患者睡眠障碍非药物预防及管理的相关最佳证据，为临床医护人员对颈椎病患者进行睡眠管理提供相关实践依据。

方法：检索临床指南、专家共识、系统评价、临床决策以及证据总结。

结果：本研究最后共计纳入文献 10 篇，归纳证据共计 25 条，5 个维度，分别为围术期评估、环境管理、非药物预防及管理、睡眠卫生健康教育。

结论：本研究所纳入的最佳证据为颈椎病手术患者进行睡眠管理提供相关实践依据，医护人员可将证据与临床实际相结合，为患者制定系统化、全面化、个体化的睡眠管理方案。

关键字：颈椎病；睡眠障碍；非药物预防及管理

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30 天明目功锻炼对大学生视疲劳症状的 RCT 研究并因子分析

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方法 2021年9月至2022年10月期间,多中心收集在校视频久视视疲劳大学生共计101例,随机分成观察组(明目功锻炼)51例和对照组(室外步行)50例,30天后评估两组的裸眼视力、视疲劳相关症状、睡眠生理周期时长、注意力水平。采用非参数检验,并用多元线性回归模型分析关联因素的权重,并对视疲劳的影响因素进行因子分析。**结果与结论** 明目功锻炼可以减轻锻炼者的视觉障碍、眼周不适及身心不适的3个维度的视疲劳症状群,同时明显优化了锻炼者的睡眠生理质量的重要构成和时长,并提高了锻炼者的注意力水平,安全有效。视疲劳(CISS)总分与左眼屈光度呈负相关,CISS量表的信度与效度均较高,值得推广。**引言,对象、方法,结果,讨论** (jpg)

关键字: 大学生; 视疲劳症状; 明目功; 睡眠生理; 随机对照; 因子分析

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成都一市级三甲医院康复科 2022 年度康复专业医疗质量管理控制情况调查

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目的：通过调取成都市第一人民医院康复科 2022 年度收治患者的病历，分析市级三甲医院康复科专业医疗质量建设情况。

方法：通过分析成都市第一人民医院康复科 2022 年度收治的在科患者及会诊患者的病历，通过人工阅读病历的方式，提取科室一年内收治骨折与运动损伤术后、脊髓损伤、脑卒中、脑外伤、脊柱关节退行性疾病五大重点病种的住院患者人次，医嘱离院情况，平均住院日，ADL 改善率，住院费用等相关指标，评估康复科专科建设体系的科学性。

结论：通过分析可以看出，康复科收治患者难度系数偏低，住院周期较长，专科评估率及康复早期介入率均有待进一步提高。

2022 年康复科住院患者病种住院构成比 2022 年康复科住院患者的平均住院天数 2022 年康复科住院患者发生并发症的种类和例数

关键字: Rehabilitation Major, Medical Quality, Clinic Data

参考文献:

Non

护理干预在 ICU 肠内营养患者高血糖中的研究进展

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受手术、感染、外伤等原因的影响，很容易导致 ICU 危重症患者有明显应激反应出现，导致患者机体处于高分解代谢及负氮平衡状态，促使机体脂肪和蛋白质消耗增加。肠内营养支持是 ICU 危重症患者治疗期间非常重要的手段[1]。在进行肠内营养护理时，护理人员必须对重症患者的血糖变化进行严密监控，以防患者血糖值偏高或者偏低，这样才能确保患者的血糖水平不易发生异常现象。本文主要对护理干预在 ICU 肠内营养患者高血糖中的研究进展进行综述。

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基于任务态功能磁共振研究正念冥想的负性情绪调节机制

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目的: 观察八周正念冥想训练前后受试者在负性情绪任务时脑区激活程度的差异, 及其与情绪调节能力之间的关系。

方法: 将符合入选条件并签署知情同意书的 48 名健康受试者按照随机数字表法分为两组, 在训练前后参与者进行两种情绪(负性与中性)诱发任务时获得功能性脑图像。最终正念冥想组 24 例和假正念冥想组 22 例完成评估。

结果: 相较假正念冥想组, 正念冥想组训练后的情绪调节能力更高, 且与情绪处理脑区激活的减少有关, 如左侧海马旁回、左侧背外侧额上回、左侧颞中回、左侧额中回和左侧楔前叶。

结论: 本研究为阐明正念冥想调节负性情绪的神经机制提供了新线索。

关键字: 正念冥想; 情绪调节; 任务态功能磁共振。

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基于结构磁共振探究针刺促进卒中后偏瘫康复的脑效应机制研究

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引言

偏瘫是卒中后最常见的功能障碍，针刺疗法在偏瘫康复治疗中独具优势，但其调控白质微观结构的效应机制尚不明确。

方法

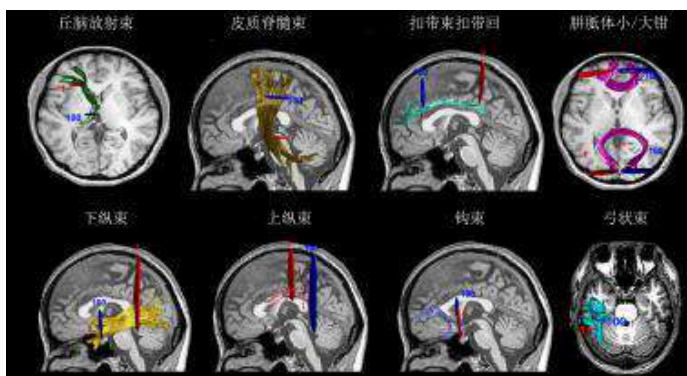
采用随机对照表将患者分为手足十二针组（36例）和非经非穴组（17例），疗程为2周，治疗前后进行临床量表评价及结构磁共振扫描。

结果

纤维束自动定量分析表明，治疗后手足十二针组皮质脊髓束等多条纤维节点FA值升高，且与运动功能恢复程度呈正相关，非经非穴组则未见上述结果。

讨论与结论

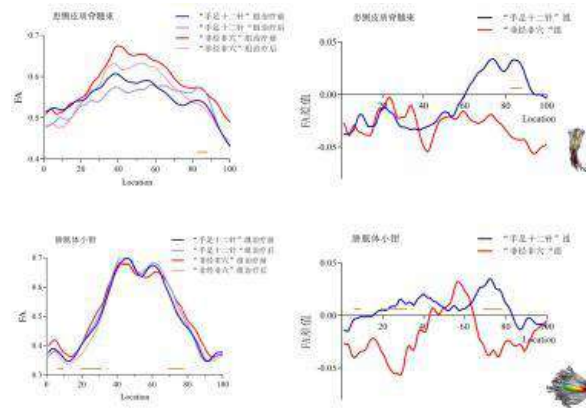
手足十二针治疗能促进卒中偏瘫患者大脑部分白质纤维的节段性修复，经穴刺激在延缓部分白质纤维变性中可能更具优势。



纤维束节点方向示意图



针刺穴位示意图



手足十二针组与非经非穴组治疗前后差异纤维束的节点 FA 值变化

关键字：手足十二针；卒中；偏瘫；纤维束自动定量；结构磁共振

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癌症预康复理念在超重或肥胖乳腺癌放疗患者中的临床应用研究

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目的 探究癌症预康复 (cancer prehabilitation, CP) 理念对超重或肥胖乳腺癌 (breast cancer, BC) 患者辅助放疗期间营养状态、血脂代谢及并发症的影响。

方法 采用回顾性研究将符合入组标准的 118 例分为预康复组 (n=63) 和对照组 (n=55), 比较两组营养指标、疲劳状态和睡眠质量评估指标、放疗皮肤毒性反应及疼痛程度。

结果 预康复组 ALB 较对照组维持更好 (0.28 ± 3.26 vs. -1.29 ± 4.57 , $P = 0.03$), TG 升高幅度更小 (0.35 ± 1.17 vs. 0.93 ± 1.76 , $P = 0.04$), 而两组 TC、HDL-C 和 LDL-C 变化无统计学意义 ($P > 0.05$); 预康复组 FACIT-F 评分 (2.37 ± 2.50 vs. 5.18 ± 2.61 , $P < 0.01$)、JSEQ 评分 (-3.17 ± 1.62 vs. -1.64 ± 1.98 , $P < 0.01$)、皮肤毒性反应程度 ($P = 0.04$) 以及疼痛 VAS 评分 (2.95 ± 0.97 vs. 3.82 ± 1.12 , $P < 0.01$) 均优于对照组。

结论 在超重或肥胖 BC 患者辅助放疗中, CP 策略不仅有助于维持营养状态, 改善血脂代谢, 还有助于改善 BC 患者相关并发症。

表 1 患者基本信息 ($\bar{x} \pm s$)

项目	对照组 (n=55)	预康复组 (n=63)	χ^2 值	P 值
年龄 (岁)	46.13±8.18	47.87±8.21	-1.15	0.25
婚姻 (例)				
已婚	49	61	1.69	0.19
未婚	6	2		
身高 (cm)	159.96±5.03	158.28±4.44	1.92	0.06
体重 (kg)	66.17±5.53	64.71±4.89	1.51	0.13
BMI (kg/m ²)				
24.0-27.9	48	53	0.24	0.63
≥28.0	7	10		
教育 (例)				
高中以下	34	44	0.84	0.36
高中及以上	21	19		
疾病分期 (例)				
I+II	38	45	0.08	0.78
III+IV	17	18		
ER (例)				
阴性	18	25	0.61	0.43
阳性	37	38		
PR (例)				
阴性	20	27	0.52	0.47
阳性	35	36		
HER2 (例)				
阴性	46	50	0.35	0.55
阳性	9	13		
手术方式 (例)				
保乳手术	48	52	0.51	0.48
乳房根治术	7	11		

注: BMI, body mass index, 体质指数; ER, estrogen receptor, 雌激素受体; PR, progesterone receptor, 孕激素受体; HER2, human epidermal growth factor receptor 2, 人表皮生长因子受体 2。

图 1 基线情况

表2 两组血液学营养指标比较 ($\bar{x} \pm s$)

项目	对照组 (n=55)	预康复组 (n=63)	t 值	P 值
HB (g/L)				
治疗前	118.64±11.49	121.46±10.05	-1.42	0.16
治疗后	112.76±10.52	115.92±12.30	-1.48	0.14
差值	-5.87±12.32	-5.54±8.21	0.17	0.86
ALB (g/L)				
治疗前	39.61±3.41	39.07±2.72	0.95	0.34
治疗后	38.32±3.45	39.34±2.51	-1.82	0.07
差值	-1.29±4.57	0.28±3.26	-2.16	0.03

注: HB, hemoglobin, 血红蛋白; ALB, albumin, 血清白蛋白。差值=治疗后数值减去治疗前数值。

表3 两组血脂指标比较 ($\bar{x} \pm s$)

项目	对照组 (n=55)	预康复组 (n=63)	t 值	P 值
TG (mmol/L)				
治疗前	1.69±1.05	1.62±0.89	0.41	0.69
治疗后	2.61±1.81	1.97±1.38	2.21	0.03
差值	0.93±1.76	0.35±1.17	2.06	0.04
TC (mmol/L)				
治疗前	4.37±0.85	4.74±2.79	-0.92	0.36
治疗后	4.46±0.87	4.69±0.93	-1.37	0.17
差值	0.08±0.94	-0.05±2.91	0.33	0.74
HDL-C (mmol/L)				
治疗前	1.28±0.23	1.23±0.29	1.05	0.30
治疗后	1.28±0.31	1.26±0.29	0.38	0.71
差值	0.00±0.31	0.02±0.22	-0.59	0.56
LDL-C (mmol/L)				
治疗前	2.50±0.69	2.71±0.79	-1.51	0.13
治疗后	2.58±0.66	2.76±0.81	-1.33	0.19
差值	0.07±0.83	0.04±0.48	0.21	0.83

注: TG, triglyceride, 甘油三酯; TC, total cholesterol, 胆固醇; HDL-C, high-density lipoprotein cholesterol, 高密度脂蛋白; LDL-C, low-density lipoprotein cholesterol, 低密度脂蛋白。

图2 营养和血脂指标

表4 两组疲劳感和睡眠质量评估 ($\bar{x} \pm s$)

项目	对照组 (n=55)	预康复组 (n=63)	t 值	P 值
FACIT-F 评分				
治疗前	21.42±2.07	22.03±1.51	-1.82	0.07
治疗后	26.60±2.05	24.40±2.64	5.00	0.00
差值	5.18±2.61	2.37±2.50	5.98	0.00
JSEQ 评分				
治疗前	12.18±2.21	11.81±2.02	0.96	0.34
治疗后	10.55±1.65	8.63±1.69	6.19	0.00
差值	-1.64±1.98	-3.17±1.62	4.58	0.00

注: FACIT-F, functional assessment of chronic illness therapy fatigue scale, 慢性病治疗功能评估-疲劳量表; JSEQ, Jenkins sleep evaluation questionnaire, Jenkins 睡眠评估问卷。

表5 两组皮肤损伤程度和疼痛 VAS 评分 (RTOG 标准)

项目	对照组 (n=55)	预康复组 (n=63)	t/χ ² 值	P 值
皮肤损伤程度 (%)				
1 级	25.5% (14/55)	47.6% (30/63)	6.67	0.04
2 级	50.9% (28/55)	39.7% (25/63)		
3 级	23.6% (13/55)	12.7% (8/63)		
VAS 评分 ($\bar{x} \pm s$)				
治疗前	1.29±0.60	1.22±0.66	0.59	0.56
治疗后	5.11±1.03	4.17±0.87	5.34	0.00
差值	3.82±1.12	2.95±0.97	4.48	0.00

注: RTOG, Radiation Therapy Oncology Group, 为美国放射治疗协作组; VAS, visual analogue scale, 疼痛视觉模拟评分量表。

图3 疲劳、睡眠评估及并发症指标

关键字：癌症预康复；乳腺癌；放射治疗；血脂代谢；并发症

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Basic Science in Rehabilitation

康复基础科学

Poster Presentation



The Importance of Etiologic Factors on Development of Stiff Shoulder

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The prevalence of adhesive capsulitis(AC) was estimated to be between 2% and 5% of the general population. The cause of frozen shoulder was not clearly understood. Therefore, the purpose of this study was to analyze the risk factors that cause stiffness in patients with shoulder pain.

This study is a retrospective study that analyzed 409 patients who visited the Department of Rehabilitation Medicine due to shoulder pain from January 2010, to December 2022. The outcome variable was shoulder stiffness. The definition of stiff shoulder was a global reduction in the range of motion and equality in passive and active ranges of motion. Independent variables that affect stiff shoulder included sex, age, diabetes, obesity, dyslipidemia, thyroid disease, joint immobilization after surgery, rotator cuff tear, impingement syndrome, osteoarthritis, and cervical disease. We estimated the effects of the independent factors on stiff shoulder after adjusting for confounding variables using multivariate regression analysis.

Among the 409 patients with shoulder pain, 176 patients (43. 0%) had shoulder stiffness. In the multivariate logistic regression analysis, age, diabetes, dyslipidemia, and cervical disease significantly affected stiff shoulder in patients with shoulder pain.



Diabetes patients had a significantly higher risk ($P = 0.001$) and patients with cervical disease was also higher than in those without disease ($P < 0.000$).

Among patients with shoulder pain, age, diabetes, dyslipidemia, and cervical disease had significant effects on shoulder stiffness. Therefore, it was necessary to provide proper education and rehabilitation to prevent stiffness along with the treatment of the underlying disease.

Table 1. Comparison of independent variables according to the stiff shoulder

		Non-Stiff shoulder		Stiff shoulder		P
		N	%	N	%	
Sex	Female	120	51.50	102	57.95	0.195
	Male	113	48.50	74	42.05	
Age (Mean ± SD)		57±6.4		54.8±6.0		0.000*
Diabetes	Non-diabetes	212	90.99	133	78.41	0.000*
	Diabetes	21	9.01	38	21.59	
Obesity	Non-obesity	148	63.52	125	71.02	0.111
	Obesity	85	36.48	51	28.98	
Dyslipidemia	Non-dyslipidemia	182	78.11	150	85.23	0.068
	Dyslipidemia	51	21.89	26	14.77	
Thyroid disease	Non-thyroid disease	219	93.99	162	92.05	0.440
	Thyroid disease	14	6.01	14	7.95	
Rotator cuff tear	Non-rotator cuff tear	149	63.95	124	70.45	0.167
	Rotator cuff tear	84	36.05	52	29.55	
Subacromial spur	Non-subacromial spur	99	42.49	63	35.80	0.171
	Subacromial spur	134	57.51	113	64.20	
Osteoarthritis	Non-osteoarthritis	193	82.83	149	84.66	0.621
	Osteoarthritis	40	17.17	27	15.34	
Cervical disease	Non-cervical disease	206	88.41	122	69.32	0.000*
	Cervical disease	27	11.59	54	30.68	

N, number; SD, standard deviation; p, p-value, * $p < 0.05$

Table 1. Comparison of independent variables according to the stiff shoulder

Table 2. Results of the influence of factors on the stiff shoulder

	OR (95% CI)	p
Diabetes	3.03 (1.55 – 5.91)	0.001*
Obesity	0.62 (0.39 – 1.00)	0.054
Dyslipidemia	0.55 (0.31 – 0.98)	0.044*
Thyroid disease	0.97 (0.39 – 2.39)	0.950
Rotator cuff tear	0.72 (0.45 – 1.14)	0.169
Subacromial spur	1.48 (0.94 – 2.33)	0.086
Osteoarthritis	0.86 (0.47 – 1.58)	0.648
Cervical disease	3.03 (1.75 – 5.25)	0.000*

OR (95% CI): odds ratio (95% confidence interval); p, p-value, * $p < 0.05$

Table 2. Results of the influence of factors on the stiff shoulder

Key Words: Rotator Cuff Injuries, Radiculopathy, Shoulder Pain

A Comparative Study of before and after THRA Surgery according to Frailty : A Pilot Study

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With the aging population, the demand for Total Hip Arthroplasty (THRA) surgery stands as a key therapeutic approach to improve the quality of life for patients experiencing chronic joint pain and functional impairment. Recent research has focused on assessing the functional status of patients prior to surgery, with particular attention to the concepts of frailty and pre-frailty. Frailty is defined as a condition characterized by decreased function, reduced resilience, and physical and cognitive impairment, which can affect the development of postoperative complications and rehabilitation outcomes. This study is designed to compare the outcomes before and after THRA surgery between pre-frailty and frailty groups.

Table 1. Comparison of characters between groups

		Pre-frailty	Frailty	p-value
n		21	11	
Age		55.38 ± 13.42	57.45 ± 19.89	0.728
Sex	Male	9	3	0.403
	Female	12	8	
Body weight		64.29 ± 9.76	64.87 ± 12.00	0.882
Height		161.61 ± 8.94	160.51 ± 8.66	0.739
BMI		24.58 ± 2.85	25.23 ± 4.92	0.693
Surgical side	Left	8	7	
	Right	9	1	
	Both	4	3	

n, number; Values are presented as means of absolute values ± standard deviation. Asterisk means statistically significance (p<0.05).

Comparison of characters between groups



Table 2. The difference of pain, WOMAC and muscle strength between pre-frailty and frailty groups

		Pre-frailty		Frailty		Time	Group	Time x Group
		pre	post 1m	pre	post 1m			
WOMAC	Pain	14.10 ± 3.11	10.05 ± 3.410	21.00 ± 2.57	13.00 ± 3.19	0.000*	0.000*	0.037*
	Function	52.24 ± 7.37	45.10 ± 11.72	70.45 ± 8.98	50.82 ± 9.30	0.000*	0.000*	0.014*
	Stiffness	6.14 ± 1.20	4.81 ± 1.80	8.09 ± 1.14	5.18 ± 1.66	0.003*	0.003*	0.049*
	Total	72.48 ± 9.26	59.95 ± 14.96	99.55 ± 11.98	69.00 ± 12.47	0.000*	0.000*	0.011*
Pain	VAS	5.81 ± 1.78	2.81 ± 1.72	8.91 ± 0.94	3.64 ± 2.25	0.000*	0.000*	0.025*
Hip flexion	Peak torque Uninvolved	48.87 ± 27.61	54.39 ± 24.97	37.16 ± 27.45	43.48 ± 25.23	0.137	0.219	0.918
	Peak torque Involved	32.20 ± 20.44	33.97 ± 23.21	16.75 ± 19.77	25.60 ± 17.15	0.235	0.072	0.425
Hip extension	Peak torque Uninvolved	60.94 ± 35.42	61.58 ± 34.70	31.28 ± 26.23	39.15 ± 27.39	0.384	0.026*	0.458
	Peak torque Involved	36.20 ± 22.93	38.90 ± 32.79	9.92 ± 12.14	16.28 ± 18.02	0.340	0.004*	0.698

VAS, visual analogue scale. Values are expressed as the mean ± standard deviation. Asterisk means statistically significance ($p < 0.05$).

The difference of pain, WOMAC and muscle strength between pre-frailty and frailty groups

Key Words: THRA, Total Hip Arthroplasty, Surgery, Frailty

Effects of Pulmonary Rehabilitation on Systemic Inflammation in Chronic Obstructive Pulmonary Disease: A Meta-Analysis

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Chronic obstructive pulmonary disease (COPD) is characterized by both pulmonary and systemic manifestations, including chronic inflammation. Despite pulmonary rehabilitation (PR) being a key intervention for COPD, its impacts on systemic inflammation remain uncertain. This meta-analysis aimed to investigate the effects of PR on circulating inflammatory markers in COPD patients. Systematic searches of PubMed, EMBASE, Web of Science, and other databases were conducted to find randomized controlled trials and observational studies exploring the effects of PR on systemic inflammation in COPD patients. Mean differences (MD) in inflammatory markers pre- and post-PR were combined using a random-effects model, and risk of bias was evaluated with validated tools. Six studies (4 RCTs, 2 observational) totaling 147 COPD patients were included. The meta-analysis showed significant rises in IL-6 (MD 0.44, 95% CI 0.17-0.70, $p=0.001$), CRP (MD 0.56, 95% CI 0.31-0.81, $p<0.00001$), and TNF-alpha (MD 0.41, 95% CI 0.12-0.70, $p=0.005$) post-PR. Yet, a sensitivity analysis revealed the study by El-Kader et al. as a strong influencer of these results. Excluding this study made the increases non-significant. In conclusion, the meta-analysis detected an unforeseen rise in inflammatory markers after PR in COPD patients, challenging the anti-inflammatory effects hypotheses.



Table 1. Characteristics of Studies Included in the Meta-Analysis of Pulmonary Rehabilitation Effects on Inflammatory Markers^{1,2}

Study ¹	Study Design ¹	Sample Size (Pre/Post-PR) ^{1,2}	Age ¹	PR Program Description ¹	PR Program (Duration, Frequency, Length) ^{1,2}	Inflammatory Biomarkers Measured ¹	Outcome Measure ¹
Nascimento et al, 2015 ¹	Longitudinal observational study ²	14/14 ¹	64.8±5.1	Warm up, aerobic walking, upper limb resistance exercises, stretching, relaxation ¹	N/A, 3x a week, 8 weeks ¹	IL-6, IL-8 ¹	IL-6: No significant difference; ^{1,2} CRP: Not assessed; ^{1,2} TNF-α: no significant difference ^{1,2}
El-Kader et al, 2016 ¹	RCT ²	58/40 ¹	36.14±4.79 ¹	Treadmill aerobic exercise; and resistance exercises on gym machines ¹	N/A, 3x a week, 12 weeks ¹	TNF-α, IL-2, IL-4, IL-6, CRP ^{1,2}	IL-6: significant difference; ^{1,2} CRP: Significant difference; ^{1,2} TNF-α: significant decrease ^{1,2}
Greulich et al, 2014 ¹	RCT ²	61/20 ¹	64.61±9.02 ¹	Gym-based individualized exercise training including endurance, strength, breathing exercises ¹	1 session per week for 12 weeks ¹	CRP, WBC, IL-6, IL-8, TNF-alpha, PGC-1α, irisin ^{1,2}	IL-6: No significant difference; ^{1,2} CRP: No significant difference; ^{1,2} TNF-α: No

Table 1. Characteristics of Studies Included in the Meta-Analysis of Pulmonary Rehabilitation Effects on Inflammatory Markers

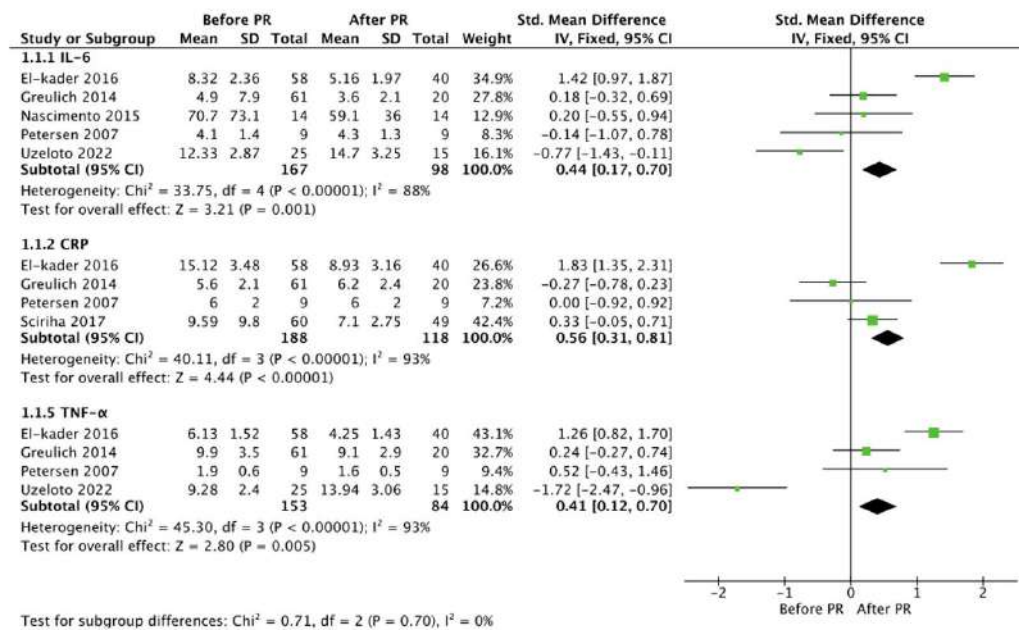


Figure 3. Forest plot of the standardized mean differences in inflammatory markers (IL-6, CRP, TNF-α) following pulmonary rehabilitation in COPD patients.

Key Words: Pulmonary rehabilitation (PR), inflammatory markers, COPD, meta-analysis, systemic inflammation, IL-6, CRP, TNF- α , exercise, protocol variability, clinical implications, future research directions.

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Interbrain Neural Synchronization During Social Interaction in Preschool Children with and without Autism Spectrum Disorder

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Objective: To explore the brain neural mechanisms in real-time social interactions between preschool-aged children with autism spectrum disorder (ASD) and their parents in a natural environment.

Methods: A total of 32 preschool children aged between 4 and 8 years old, together with their parents, eventually participated in the study. fNIRS was used to measure the cerebral hemodynamic changes in the region of interest of the children and their parents during the social task. In addition, the role of the prefrontal cortex in the different social interaction tasks was analyzed and compared and the correlation between social interaction behavior and interbrain neural synchronization of both sides of interaction.

Results: (1) In the social imitation task, the results of behavioral performance showed that there were significant differences in the completion rate and correct rate of the three tasks between the ASD parent-child group and the TD parent-child group ($p < 0.05$). (2) Correlation analysis between task behaviour and IBS showed that ASD parent-child pairs showed a significant correlation between IBS values for channel 7 and task correctness in dynamic imitation task.

Conclusion: In social interactions, prefrontal brain regions of children with ASD exhibited less interbrain neural synchronization with parents than TD peers, especially in the dynamic imitation task. There is a potential neurological correlation between the performance of interbrain synchrony in medial prefrontal (mPFC) brain regions and social interactions in children with ASD, which may be potential indicators for the assessment and prognosis of social interaction in children with ASD.

Key Words: Interbrain neural synchronization; Brain mechanism of social interaction; fNIRS; ASD; hyperscanning

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Abnormal Aqp4 Protein Expression in a Maternal Immune Activation Model of Autism

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Maternal immune activation (MIA) during late gestation is closely related to the onset of autism-like behaviours in offspring, but the mechanism remains unclear. Increasing evidence suggests a role of glymphatic system dysfunctions in the development of autism. Astroglial aquaporin-AQP4 mediated cerebral spinal fluid and interstitial fluid exchange in the glymphatic system. We report that a single intrauterine exposure of double-stranded RNA analogue polyinosinic: polycytidylic acid (poly I: C) to pregnant mice at gestational day 17 induced the MIA animal model for autism. We explored the behavioural changes and AQP4 protein expression in the offspring of the MIA model (Poly I: C group) on postnatal day 42 with both sexes. Both male and female mice in the Poly I: C group had delayed developmental milestones indicated by the low body weights on postnatal day 7, 14, 21, and 42, respectively. Mice with both sexes in Poly I: C group present anxiety-like behaviours in the open field test, disrupted memory in the novel object recognition test and social interaction detriments in the three-chamber test. The western-blot test and immunofluorescence staining found the lower AQP4 protein expression and distribution of AQP4 in the prefrontal cortex and hippocampus of the mice in the Poly I: C group with both sexes. This study confirmed the behavioural deficits and abnormal AQP4 protein expression in the offspring of poly I: C MIA models related to autism with both sexes, which suggested the dysfunction of the glymphatic system in the Poly I: C MIA model.

Key Words: Glymphatic system; Aquaporin 4; Autism.

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Electroacupuncture Attenuates Ferroptosis and Promotes Functional Recovery in Ischemic Stroke by Promoting Nrf2 Nuclear Translocation and Activating Nrf2/Slc7A11/Gpx4 Pathway

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Objective: Ischemic stroke involves multiple pathological processes, and ferroptosis has been shown to play a key role in the injury process. We wanted to explore whether electroacupuncture(EA) could play a neuroprotective role by promoting Nrf2 nuclear translocation and inhibiting ferroptosis.

Methods: The Longa method was used to establish a middle cerebral artery occlusion/reperfusion(MCAO/R) model. The Neurologic severity score(NSS), Garcia score, Foot-fault Test, Rotarod Test, TTC staining and immunofluorescence analysis were used to study the protective effect of EA on neurons in the cerebral cortex and the recovery of motor function. The levels of Fe²⁺, ROS, SOD and MDA were measured by corresponding kits, the expression of the Total Nrf2, p-Nrf2, Nuclear Nrf2 and Cytoplasmic Nrf2, and the essential ferroptosis proteins, including GPX4, SLC7A11 and FTH1, were assessed by Western blotting, the specifics of Nrf2 nuclear translocation were observed by confocal microscopy, and the changes in mitochondria were confirmed by transmission electron microscopy(TEM).

Results: EA improved neurological deficits in rats model of MCAO/R, decrease the brain infarct volume, and inhibited the Fe²⁺, ROS and MDA accumulation, increased SOD levels, promoted the expression of GPX4, SLC7A11 and FTH1, especially, up-regulated the expression of Total Nrf2, p-Nrf2 and Nuclear Nrf2 and suppressed the expression of Cytoplasmic Nrf2. EA also rescued injured mitochondria, however, Nrf2 inhibitor Brusatol reversed the neuroprotective effect of EA.

Conclusion: The findings imply that EA may be to inhibit ferroptosis for the protection of neuronal damage via promoting Nrf2 nuclear translocation and activating Nrf2/SLC7A11/GPX4 pathway in ischemic stroke.

Key Words: electroacupuncture, ischemic stroke, ferroptosis, Nrf2, oxidative stress



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Effect of Electroacupuncture Treatment on Articular Cartilage-Subchondral Bone and Macrophage Polarization in Aged Rats

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Aims:

To investigate the effects of articular cartilage and subchondral bone polarization-related protein expression in aged rats after receiving electroacupuncture.

Methods:

Sixteen 24-month SD rats were divided into 3 groups. The operated group were treated by electroacupuncture. Other 2 groups received sham operation. Detect CTX-II, the microstructure of bone and the morphology by safranin-O-stained, and assessed the modified Mankin's score. Detect the expression of MMP-1, MMP-3, MMP-13, TNF- α , IL-1 β , MMR, Arg1.

Results:

The aged group had increased CTX-II; the operated group had decreased CTX-II. Safranin-O-stained of rats in the aged group showed an increase in the Mankin's score. The saffron-solid green staining of the electroacupuncture group showed a decreased Mankin's score. The aged group showed elevated expression of MMP-1, MMP-3, MMP-13, TNF- α , IL-1 β , and reduced expression of MMR, Arg1.

Conclusion

Electroacupuncture alleviates cartilage degradation and inhibits subchondral bone osteoporosis, which process is achieved by modulating macrophage M1/M2 polarization.

Key Words: electroacupuncture; macrophage; polarization; osteoporosis

References:

none.

Characteristics of Reticulospinal Tract Facilitation and Its Preliminary Application in Stroke

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Background and purpose: The role of reticulospinal tract (RST), which is dominated by the ipsilateral innervation, in motor recovery after stroke has been increasingly recognized, but little is known about the central and peripheral characteristics during RST facilitation.

Methods: With the help of near-infrared functional imaging and surface electromyography, our team recruited normal people and stroke patients, and studied the cortical activation and peripheral motor performance during RST facilitation based on arm reaching paradigm initiated by acoustic startle stimuli.

Results: Trails that experienced explicit RST facilitation showed significant higher activation of right dorsolateral prefrontal cortex than normal trials. The premotor reaction time of the anterior deltoid was significantly shortened during the same process. The feedforward contraction response time and amplitude of the trapezius and latissimus dorsi were significantly increased in all subjects after startle. In addition, these myoelectric performance of stroke patients on the affected side was significant weaker than that of unaffected side or normal people.

Conclusion: The facilitation of the reticulospinal tract triggers early motor initiation, which may involve cortical circuits with the frontoparietal network as the high-level regulatory center. It is significantly involved in the regulation of feedforward muscle contraction, and can lead to the strengthening of feedforward muscle contraction of paralyzed muscles after stroke, which may have potential rehabilitation value.

Key words: reticulospinal tract; startle; stroke; Rehabilitation

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Systematic Evaluation and Meta-analysis of The Therapeutic Effect of Exercise Therapy on Adult Flexible Flatfoot

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Objective: This study conducted a net meta-analysis of RCTs on the efficacy of different exercise therapies in treating patients with flexible flatfoot, and systematically evaluated and ranked their therapeutic effects, providing evidence-based medical evidence for the exercise therapy of flexible flatfoot. **Method:** A comprehensive search was conducted on Cochrane, EMBASE, PubMed, Web of Science, and CNKI, with a search time limit from database establishment until December 1, 2022. We selected RCTs using exercise therapy for adult flexible flatfoot, evaluated the quality of the literature, and performed a net meta-analysis using RStudio. Finally to rank the efficacy using mean difference (MD) and 95% confidence interval as efficacy indicators. **Result:** A total of 24 articles were ultimately included for qualitative comprehensive research, while 11 articles were subjected to quantitative comprehensive research. The height difference of the patient's navicular descent test, foot posture index, and foot function index were used as observation indicators to obtain the probability ranking of the effects of various exercise therapies. **Conclusion:** Current evidence suggests that strengthening the posterior tibial and plantar muscles in combination with gluteus muscle strengthening, neuromuscular movements centered around the buttocks, and PNF are effective in improving the arch shape of flexible flatfoot patients, while posterior tibial muscle centrifugal training is effective in improving their foot function. The results of this article still need to be further validated by high-quality clinical studies such as large sample and three blind randomized controlled trials.

Key Words: Flexible Flatfoot; Exercise Therapy; Systematic Review; Meta-analysis

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Effectiveness of Blood Flow Restriction Training in Neurological Rehabilitation: A Systematic Review and Meta-Analysis.

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Background: The augmentation of low-load resistance training with blood flow restriction training (BFRT) emerges as a viable method in neurological disorders rehabilitation. However, due to the lack of definitive evidence, it remains conservative for therapists to apply BFRT in clinical settings. The aim of the systematic review and meta-analysis was to confirm the efficacy and safety of BFRT for the application in neurological disorders, and to provide synthetic evidence to facilitate further clinical applications.

Methods: The systematic review and meta-analysis was conducted in accordance with the PRISMA guidelines. Meanchange and SDchange in outcomes related to physiological adaptation and physical function from baseline to postintervention were calculated following Cochrane handbook guideline. All analyses were conducted using a random effects model to account for measurement variability and heterogeneity among the studies.

Results: 4 studies (N=69) were eligible in Meta-analysis. Our results revealed that compared with traditional strength training, the addition of BFRT elicits significant greater circumference and muscle hypertrophy with pooled effect sizes (ES) of 1.34 (95%CI 0.66 to 2.03) and 1.54 (95%CI 0.03 to 3.05) respectively. Other results showed an effect in favor of the BFRT group, but it was not significant between the groups.

Conclusion: The systematic review and meta-analysis reveals that BFRT produces benefits similar, but not significantly superior, to those from traditional method for improving physical capacity in patients with neurological disorders. The generation of



high-quality evidence is crucial for further investigation into the effectiveness and optimal protocol of BFRT, given its initial feasibility has been demonstrated.

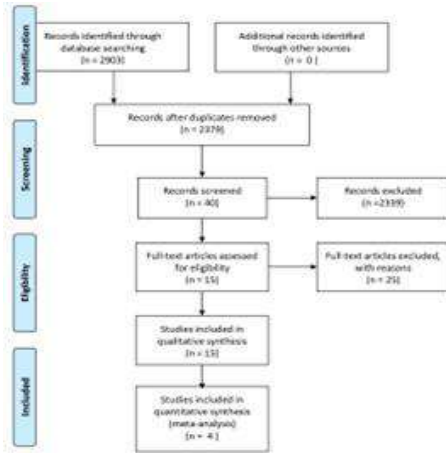


Figure 1 Flow chart

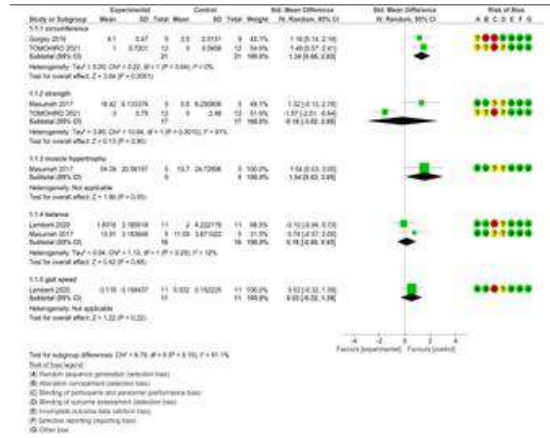


Figure 2 Forest plot

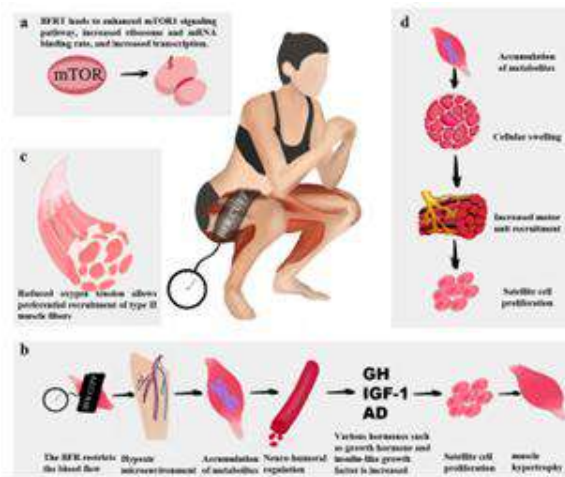


Figure 3 Hypothesis of BFRT mechanism

Key words: Blood flow restriction training; neurological disorders; limb function; systematic review; Meta-analysis

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The Impact of Asymmetrical Cross-Sectional Area of the Paraspinal Muscles on Spinal Deformities

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Purpose: To investigate the impact of asymmetrical transverse area of paraspinal muscles on spinal deformity in patients with scoliosis.

Methods: Twenty patients with scoliosis, aged 13.15 ± 0.73 years, were selected. Full-spine X-rays were taken to measure the degree of spinal rotation and Cobb angle of the scoliosis. Muscle-bone ultrasonography was used to measure the transverse area of paraspinal muscles on both sides, including the longissimus muscle and iliocostalis muscle at the T8 level, as well as the longissimus muscle, iliocostalis muscle, and multifidus muscle at the L3 level. The absolute value of the difference between the two sides was calculated.

Results: The difference in transverse area of the multifidus muscle on both sides was significantly correlated with the degree of thoracic and thoracolumbar spinal rotation, with correlation coefficients of 0.55 ($P < 0.05$) and -0.48 ($P < 0.05$), respectively. It was also correlated with the degree of thoracic spinal curvature, with a correlation coefficient of 0.42 ($P < 0.05$).

Conclusion: Asymmetrical transverse area of the multifidus muscle is associated with thoracic spinal rotation and curvature. Other muscles also exhibit significant asymmetry, but no correlation with spinal deformity was found.

Key Words: Key words: paravertebral muscle; scoliosis; spinal rotation; multifidus muscle

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Effect of Repetitive Transcranial Magnetic Stimulation Combined with Cognitive Rehabilitation Training on Cognitive Impairment in Patients with Traumatic Brain Injury

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Objective: To observe the therapeutic effect of high-frequency repetitive transcranial magnetic stimulation (rTMS) combined with cognitive rehabilitation training on cognitive impairment in patients with traumatic brain injury. **Methods:** 43 patients with traumatic brain injury were randomly divided into treatment group (19 cases) and control group (24 cases). Based on the basic medication treatment, the control group received computer-assisted cognitive training, and the treatment group received computer-assisted cognitive training combined with rTMS. Before and after 4 weeks of treatment, the cognitive function and daily living ability in both groups were evaluated using Mini-mental State Examination (MMSE) and Modified Barthel Index (MBI). **Results:** There were no statistically significant difference in MMSE and MBI scores between the two groups before treatment ($P>0.05$). 4 weeks later, the MMSE and MBI scores in the treatment group were significantly higher than those in the control group ($P<0.05$). **Conclusion:** Computer-assisted cognitive training combined with rTMS can improve cognitive function and daily living ability more effectively in patients with traumatic brain injury.

Key words: traumatic brain injury; rTMS; cognitive impairment

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Effects of Closed-Loop-Based Transcutaneous Electrical Acupoint Stimulation Combined with Steppedmotor Imagery Training in Upper Limb and Hand Function Rehabilitation after Stroke

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Objective To explore the effects of transcutaneous electrical acupoint stimulation (TEAS) combined with motor imagery-based training on paralytic hand and upper limb function in stroke patients. **Methods** From January 2021 to April 2023, 80 stroke patients from Shanghai Third Rehabilitation Hospital and 3 community health service centers were randomly divided into experimental group (n=40) and control group (n=40). Both groups received conventional rehabilitation. The experimental group received additional TEAS combined with stepped motor imagery training, while the control group received TEAS attention-placebo control intervention for 4 weeks. Before and after the treatment, the patients in both groups were assessed with the Fugl-Meyer upper limb assessment scale (FMA-UE), wooden box handicap Test (BBT), modified Ashworth score (MAS) and modified Barthel index (MBI). The hand mental rotation test (HMRT) was used to evaluate the patient's motor imagery ability before intervention. **Results** After 4 weeks of treatment, the FMA-UE, BBT, and MBI scores in both groups were significantly improved ($t > 3.545$, $P < 0.001$). The total FMA-UE score and proximal and distal subscores in the experimental group were significantly better than those in the control group ($t > 2.187$, $P < 0.05$). Correlation analysis showed a significant negative correlation ($r = -0.676$, $P < 0.001$) between the distal subscores of FMA-UE in the experimental group and the pre-treatment reaction time during HMRT. **Conclusion** TEAS combined with stepped motor imagery training can effectively improve the upper limb and hand motor function after stroke, and its efficacy is related to the patient's baseline motor imagery ability.



Key Words: stroke; transcutaneous electrical acupoint stimulation; stepped motorimagerytraining; upper extremity; hand function

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A Case Report on The Effect of Late Physical Rehabilitation Therapy for Acute Disseminated Encephalomyelitis

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Abstract: encephalomyelitis (ADEM) in late stage. Methods: 1 patient with ADEM in our hospital was selected for comprehensive rehabilitation treatment. 1. Low frequency pulse functional electrical stimulation once daily; 2. Ultrasound combined with drug therapy; 3. Tongnao-activating collaterals acupuncture combined with eye needle combined with elongated needle once daily; 4. TCM directional drug penetration therapy once daily; 5. Embedding acupuncture treatment once daily; 6. Low frequency pulse neuromuscular electrical stimulation treatment once daily; 7. Medium frequency pulse electrotherapy once daily; 8. Comprehensive training of quadriplegic limbs once daily; 9. Eeg therapy once daily. Report: The consciousness and motor function were significantly improved, and the range of abnormal brain MRI signal was significantly reduced. Discussion: Comprehensive physical rehabilitation therapy has a certain therapeutic effect on ADEM patients in the later stage.

Key Words: acute disseminated encephalomyelitis (ADEM); later period; synthetic rehabilitation;

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老年脑卒中如何康复护理

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脑卒中既是我们常说的中风，该疾病的发生会对患者的脑组织造成严重损害，具有较高的致残率和致死率，严重威胁患者的身体健康。为此，本文便针对老年脑卒中患者如何进行康复护理的相关健康知识进行简单的科普，现报道如下。

关键词：老年脑卒中患者的康复护理

参考文献：

综上所述，优质的院内和院外康复护理对于老年脑卒中患者而言十分重要，可有效促进患者的康复。



脉冲电磁场对老年大鼠软骨衰老及骨关节炎的影响

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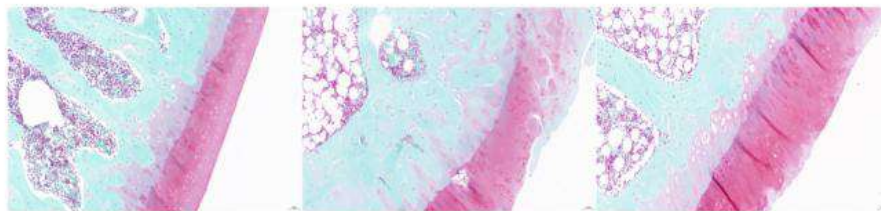
背景骨关节炎的治疗方法众多，脉冲电磁场是一种重要的物理治疗方法，疗效确切，但作用机制尚未完全明确。

目的 观察脉冲电磁场对衰老标志物 P53、P21 表达及骨关节炎的影响。

方法 将大鼠分为青年组、老年组和脉冲电磁场组。脉冲电磁场组行脉冲电磁干预 8 周，另两组不做处理。8 周后处死，进行血 CTX-II 检测、番红-固绿染色、显微 CT 检测骨微结构及衰老相关因子 mRNA 及蛋白表达水平检测。

结果 与老年组相比，脉冲电磁场组大鼠 CTX-II、Tb.sp、MMP1/13、P53/21 的 mRNA 和蛋白表达降低(P<0.05)；BV/TV、BMD、Tb.N 升高(P<0.05)；番红-固绿染色显示软骨表面平整，红染均匀，细胞形态结构改善。

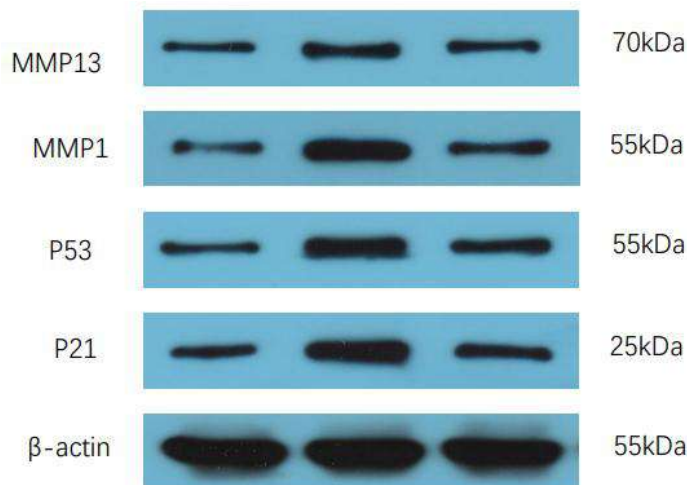
结论 脉冲电磁场可能通过抑制 P53/P21 的表达抑制软骨细胞衰老，改善骨关节炎。



青年组

老年组

脉冲电磁场组



青年组

老年组

脉冲电磁场组

关键字：脉冲电磁场；老年大鼠；膝骨关节炎；P53；P21

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脉冲电磁场对膝骨关节炎大鼠滑膜巨噬细胞极化的影响

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背景: 骨关节炎(OA)是一种以关节软骨退行性变的慢性疾病。巨噬细胞经极化调控软骨细胞外基质的微环境影响OA的发生发展。脉冲电磁场治疗骨关节炎作用机制尚不明确。

目的: 探讨脉冲电磁场对膝骨关节炎大鼠滑膜巨噬细胞极化的影响。

方法: 将24只大鼠随机均分为对照组、模型组、干预组(PEMF组)。检测血清炎症因子的浓度; 病理学形态观察膝关节软骨组织; 免疫组化技术检测巨噬细胞极化相关蛋白的表达。

结果: PEMF组血清炎症因子的浓度低于干预组, 软骨细胞形态基本正常, M2极化相关蛋白高于干预组。

结论: 脉冲电磁场可能通过调节膝骨关节炎大鼠的滑膜巨噬细胞向M2极化缓解骨关节炎。

关键字: 脉冲电磁场; 膝骨关节炎; 巨噬细胞; 极化

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基于代谢组学技术的经颅直流电刺激（tDCS）对脑卒中患者运动及平衡功能的改善及 fMRI 评价研究

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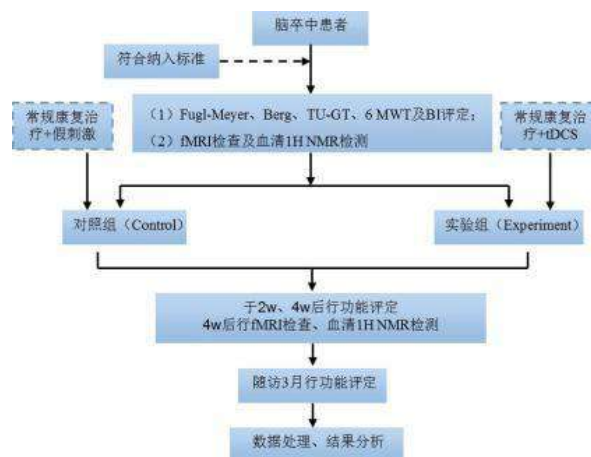
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背景和目的：通过 fMRI 及 ¹H NMR 技术，揭示 tDCS 在治疗脑卒中运动和平衡障碍的脑可塑性机制，探寻相关的脑可塑性神经影像及代谢规律；为卒中神经康复提供新思路。

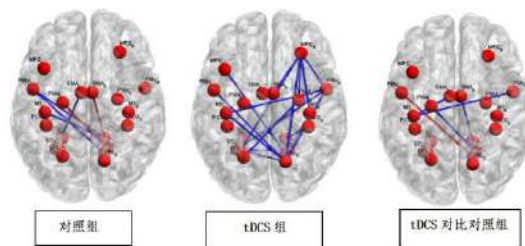
方法：通过对照组和实验组，分别在治疗前后进行评估，观察运动、平衡功能的变化；通过 fMRI 扫描，对照观察 tDCS 治疗前后大脑皮层运动相关网络的改变；通过血清 ¹H NMR 检查，对照观察代谢组学的变化规律和差异性。

结果：tDCS 能改善脑卒中后运动及平衡功能；阐明相关脑网络机制；明确代谢组学的变化规律和差异性代谢产物；

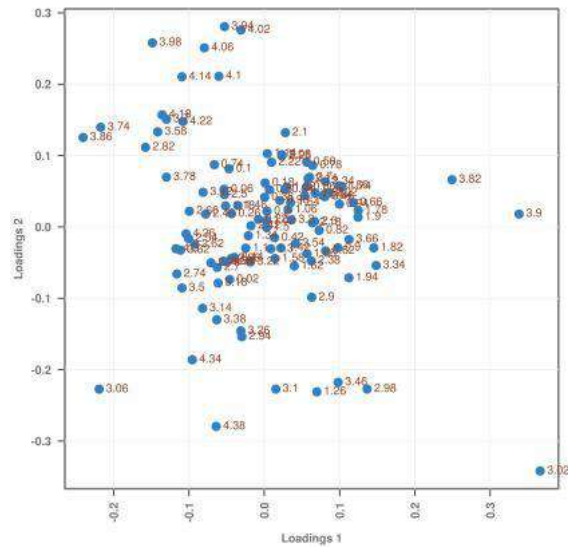
结论：基于代谢组学技术和 fMRI 评价，tDCS 对脑卒中患者运动及平衡功能的改善有统计学差异。



tDCS 和对照组在一些脑功能连接上存在显著差异



tDCS 和对照组在一些脑功能连接上存在显著差异



PLS-DA 载荷图

关键字： tDCS fMRI 1H NMR brain function

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一例异体骨髓移植术后伴慢性移植物抗宿主病患者的康复疗效观察

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引言: 慢性移植物抗宿主病(cGVHD)是骨髓移植后患者晚期死亡的重要原因, 严重影响其生活质量 [1]。

病例报告:患者, 女, 41岁。异体骨髓移植术后伴 cGVHD, 患者频发咳嗽、气喘, 夜间不能平卧, 持续1年。CT示肺部炎症伴纤维化, 心肺功能下降, 步行3-5米即有明显气喘。采取呼吸训练、分级运动、认知行为干预7天, 咳嗽、气喘明显好转, 可平卧入睡。14天可步行40米, 耐受20min踩车。后一周患者因感冒、腹泻, 运动能力提升不明显, 但静态肺功能持续改善。

病例讨论:综合康复治疗可显著缓解 cGVHD 患者肺部症状, 但需控制训练强度, 并注意训练环境相对洁净 [2, 3]。

关键字: 造血干细胞移植, 慢性移植物抗宿主病, 心肺功能, 肺功能

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基于功能性近红外光谱评估慢性腰痛患者皮质变化的研究进展

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近年来, 功能性近红外光谱技术 (fNIRS) 在探究慢性腰痛患者大脑皮质变化方面得到广泛应用。该技术通过测量脑皮质血氧水平和血流量, 揭示了与疼痛感知、情绪调节等相关大脑活动变化。本文共检索 PubMed 数据库、Web of Science 数据库 31 篇相关文献, 总结 5 篇研究成果。研究发现, 慢性腰痛患者在不同任务下, 大脑前额叶和中央后回皮质活动降低, 特定脑区激活减弱。站立平衡任务中, 前额叶皮质活动增强, 可能与认知负荷升高有关。一些研究结合 fNIRS 与其他技术, 如肌电图、脑电图, 深入探究慢性腰痛患者大脑与肌肉协调性。fNIRS 技术有望成为研究慢性腰痛机制和治疗评估的工具, 但由于研究限制, 尚需更多高质量研究进一步验证。

关键词: 慢性腰痛 功能性近红外光谱技术 大脑皮层 疼痛

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不同自体移植物选择对前交叉韧带重建术后下肢供区和整体功能影响的研究

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目的: 观察采用腓骨长肌腱 (PLT) 重建 ACL 术后对供区踝关节和下肢功能的影响。

方法: 纳入 2021.6-2022.8 月在东南大学附属中大医院和常州市体育医院就诊采用 PLT 移植患者 23 例 (PLT 组), 对照组招募腓绳肌腱移植患者 23 例。两组患者一般资料无差异 ($P>0.05$), 分别比较手术 6 个月后 PLT 组患侧与同组健侧、对照组之间踝关节和下肢运动功能情况。

结果: 与同组健侧和对照组相比, PLT 组患侧 VAS、AOFAS、ROM 等无统计学差异 ($P>0.05$), 但踝外翻力矩、内外翻比值 (I/E)、平衡摆幅和轨迹长恶化 (均 $P<0.05$); 与对照组相比, PLT 组单足跳和对称指数 (LSI) 相对更好 ($P<0.05$)。

结论: PLT 和腓绳肌腱移植重建 ACL 均有较好预后, 其 PLT 组在下肢整体运动功能相对更优, 但供区踝外翻肌力、I/E 值和平衡功能有下降。

关键词: 前交叉韧带 腓骨长肌腱 腓绳肌肌腱 足踝功能 平衡 康复

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**Clinical Physical and Rehabilitation
Medicine Sciences**

临床物理医学与康复医学科学

Poster Presentation





Clinical Therapy of Leukocyte-Poor Platelet-Rich Plasma Injections Versus Intra-Articular Hyaluronic Acid Injections for Knee Osteoarthritis: A Systematic Review and Meta-analysis of 12 Randomized Controlled Trials

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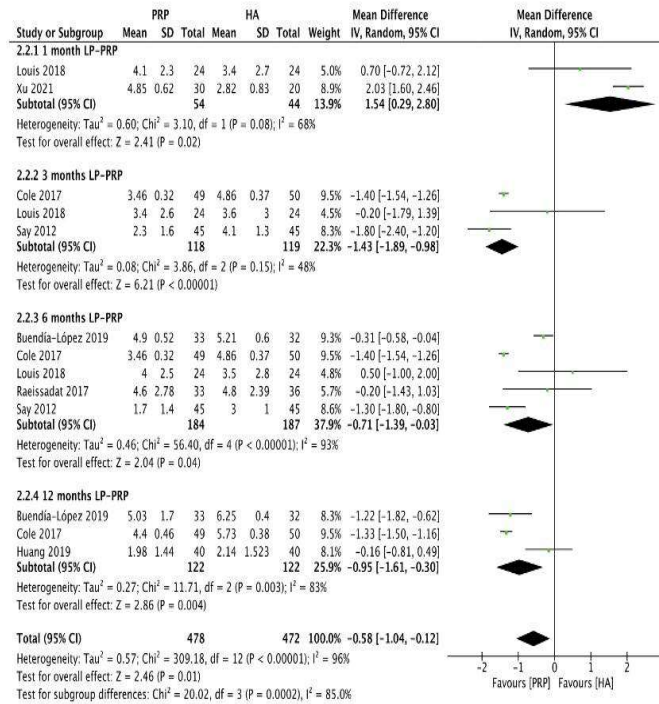
E-mail address: carlchendr@gmail.com

Introduction and Objectives: To evaluate the efficacy of intra-articular leukocyte-poor platelet-rich plasma (LP-PRP) injection compared to hyaluronic acid (HA) injection in knee osteoarthritis patients.

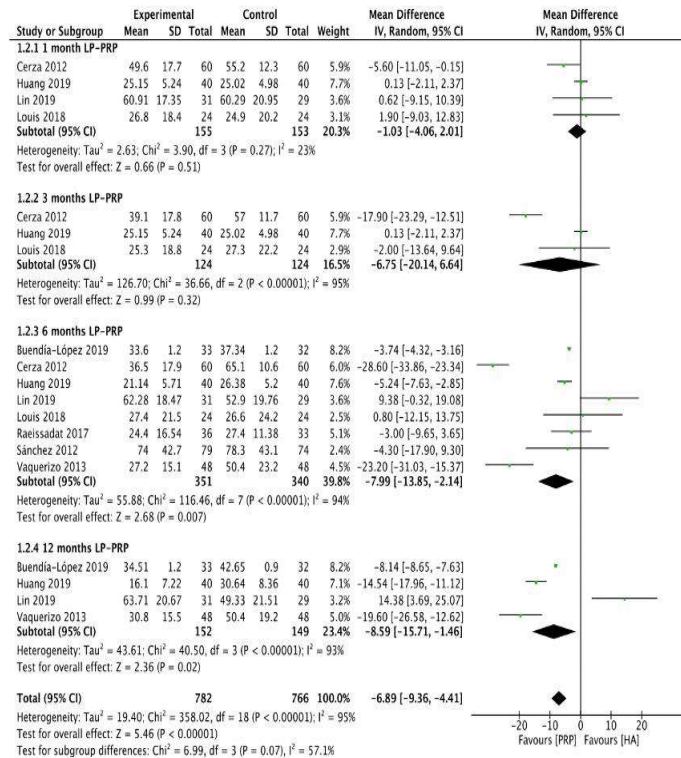
Methods: Two authors independently reviewed databases including PubMed, Web of Science and the Cochrane Library. We used the keywords: knee osteoarthritis, leukocyte-poor platelet-rich plasma, hyaluronic acid, and HA. Only randomized controlled trials (RCTs) were included. Western Ontario and McMaster Universities Arthritis Index (WOMAC) scores (WOMAC total, pain, stiffness scores); Visual Analog Scale (VAS) scores, International Knee Documentation Committee (IKDC) scores, and adverse events were used as measurements to evaluating the efficacy of LP-PRP and HA treatment.

Results: After screening 377 articles, 12 RCTs were enrolled in this meta-analysis, and were published from 2012 to 2021. The LP-PRP group's WOMAC total scores (Figure 1) were better than those of the HA group at 6 and 12 months. VAS scores of the LP-PRP group were better than those of the HA group at 3, 6, and 12 months (Figure 2). The LP-PRP group have a better outcome of IKDC scores than the HA group at 6 months. There was no significant difference in adverse events between the two groups.

Discussion and Conclusion: Intra-articular injections of LP-PRP showed better overall outcomes, such as WOMAC total scores and IKDC scores, compared to HA for knee osteoarthritis patients at short-term and long-term follow-up periods. Also, LP-PRP showed better short-term and long-term pain relief compared to HA. Intra-articular LP-PRP is proven to improve pain relief and overall outcomes in knee osteoarthritis patients.



WOMAC total scores



VAS score

Key Words: leukocyte-poor platelet-rich plasma, hyaluronic acid, knee osteoarthritis, intra-articular injection



The Role of Diagnostic Sonography for Stroke Patients: A Meta-Analysis

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Objective: Poststroke shoulder pain is a serious challenge for stroke survivors. In this meta-analysis, we reviewed the literature to confirm information on structural changes in post-stroke shoulders detected by ultrasound examination.

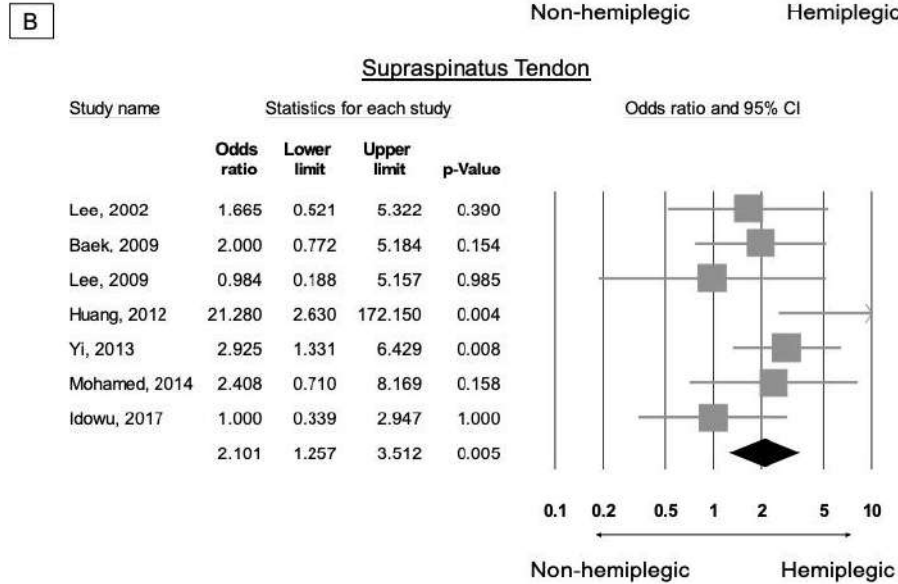
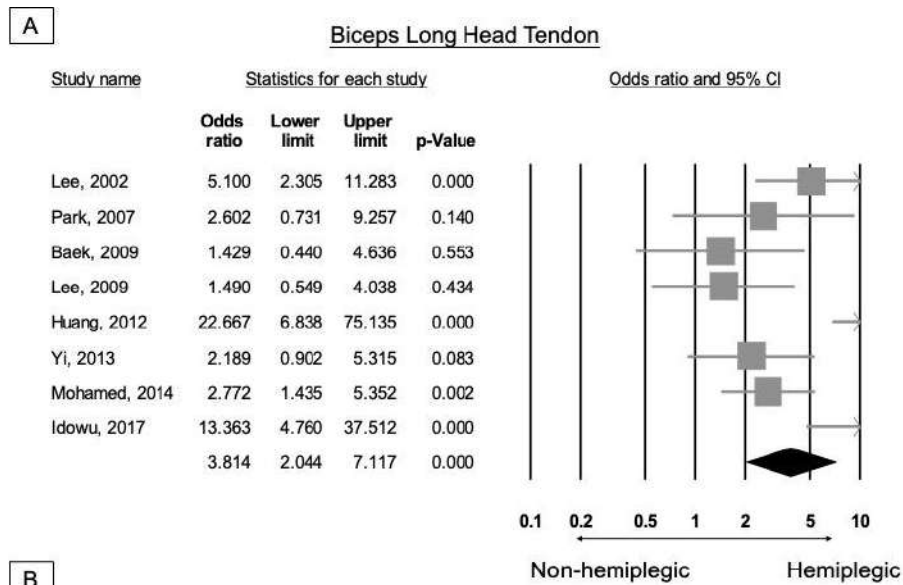
Methods: PubMed, Embase, Web of Science, and ClinicalTrials. gov were searched until December 7, 2022, for studies describing shoulder sonographic findings in stroke patients. Two independent authors selected the studies, extracted the data, and performed the critical appraisal.

Results: A total of 23 clinical studies were included. The most prevalent pathologies in hemiplegic shoulders pertained to the biceps long head tendon (41. 4%), followed by the supraspinatus tendon (33. 2%), subdeltoid bursa (29. 3%), acromioclavicular joint (15. 0%), and subscapularis tendon (9. 2%). The common pathological findings encompassed bicipital peritendinous effusion (39. 2%), biceps tendinopathy (35. 5%), subdeltoid bursitis (29. 3%) and supraspinatus tendinopathy (24. 6%). Biceps long head tendon and supraspinatus tendon abnormalities were observed significantly more in the hemiplegic (vs. contralateral) shoulders, with odds ratios of 3. 814 (95% confidence interval [CI], 2. 044 to 7. 117) and 2. 101 (95% CI, 1. 257 to 3. 512), respectively. No correlation was observed between motor function and shoulder pathology.

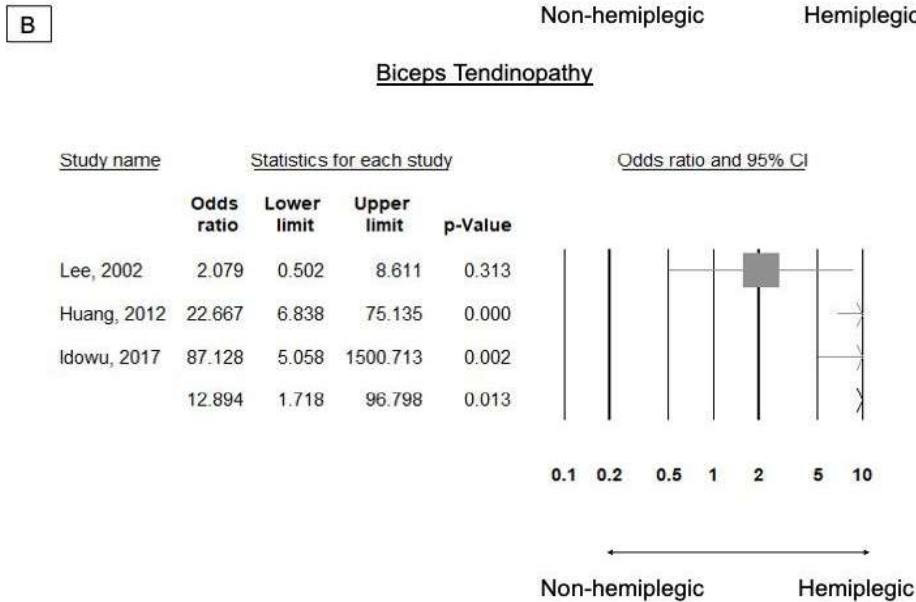
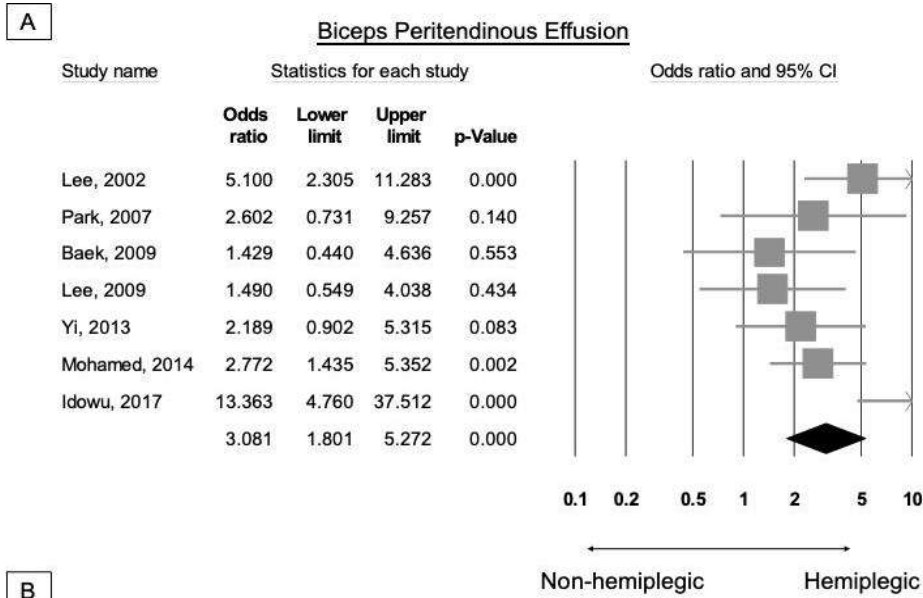
Conclusion: Ultrasonography enabled the identification of common shoulder pathologies after stroke. Future research is needed to establish the association between these changes and the clinical course of stroke patients.

Conflicts of interest: None.

Comparison of the prevalence of pathologies as regards (A) the biceps long head and (B) supraspinatus tendons (hemiplegic vs. non-hemiplegic sides). Comparison of the prevalence as regards biceps (A) peritendinous effusion and (B) tendinopathy (hemiplegic vs. non-hemiplegic sides).



Comparison of the prevalence of pathologies as regards (A) the biceps long head and (B) supraspinatus tendons (hemiplegic vs. non-hemiplegic sides).



Comparison of the prevalence as regards biceps (A) peritendinous effusion and (B) tendinopathy (hemiplegic vs. non-hemiplegic sides).

Key Words: Hemiplegia, rotator cuff, pain, ultrasonography, rehabilitation

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Clinical Impairments and Rotator Cuff Tendon Pathology in Primary and Intrinsic Secondary Adhesive Capsulitis

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Objective:

This study was conducted to compare the differences in clinical impairments between patients with primary and intrinsic secondary adhesive capsulitis and confirm rotator cuff tendon pathology in intrinsic secondary adhesive capsulitis.

Design:

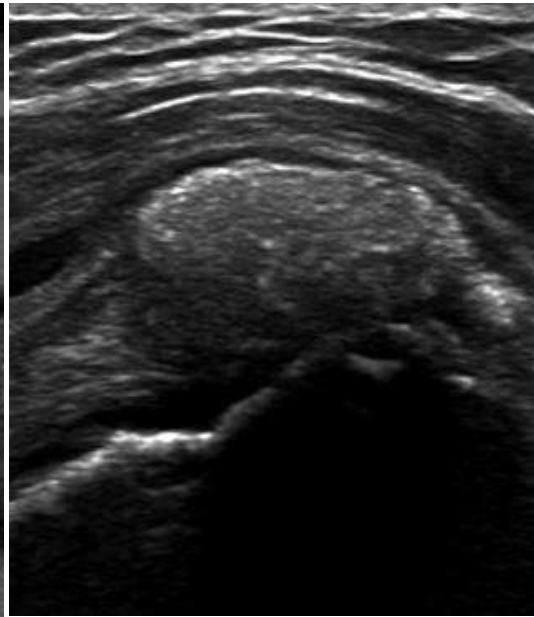
This study included 130 patients with clinical diagnosis of unilateral adhesive capsulitis in the freezing and frozen stages. Clinical impairment was evaluated using the visual analogue scale score, shoulder passive range of motion, Cyriax stage, and the Constant-Murley score. Imaging studies, including radiography, ultrasonography, single-contrast arthrography, and intravenous gadolinium-enhanced magnetic resonance imaging were performed in all patients.

Results:

Among 130 patients with adhesive capsulitis, 77 (59.2%) patients were diagnosed with primary adhesive capsulitis and 53 (40.8%) patients with intrinsic secondary adhesive capsulitis. Among those with intrinsic secondary adhesive capsulitis, rotator cuff tendon tears were detected in 44 (42 partial-thickness tear, 2 full-thickness tear), calcific tendinitis in 6, and rotator cuff tendon tears with calcific tendinitis in 3 patients. No significant intergroup difference was observed in all clinical parameters, including shoulder passive range of motion, the visual analogue scale score, Cyriax stage, and the Constant-Murley score. The prevalence of subacromial subdeltoid bursitis was significantly higher in the intrinsic secondary adhesive capsulitis (69.1%) than in the primary adhesive capsulitis (48.1%).

Conclusion: There was no significant difference in all clinical parameters investigated between patients with primary and intrinsic secondary adhesive capsulitis caused by rotator cuff tendon pathology. The rotator cuff tendon pathologies were mostly

confirmed as partial-thickness tear, followed by calcific tendinitis and full-thickness tear.



Focal defect showing high signal intensity (arrow) in the articular surface of distal portion of supraspinatus tendon on proton density T2 weighted MRI, compatible with partial-thickness tear of supraspinatus tendon

Hyperechoic calcification without shadowing (nodular type) (arrow) in supraspinatus tendon on longitudinal ultrasonography

Key Words: Adhesive capsulitis, Clinical impairment, Rotator cuff tendon tear, Calcific tendinitis

Home-Based Pulmonary Rehabilitation for a Patient with Herpes Zoster-Induced Phrenic Nerve Palsy

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Here, we report the case of a 62-year-old man with herpes zoster-related phrenic nerve palsy, which was evident in clinical, radiological, and electrodiagnostic studies. To aid clinical recovery and preserve pulmonary function, we designed a home-based pulmonary rehabilitation program consisting of air-stacking exercises using ambu-bagging, respiratory muscle training to improve the strength and endurance of inspiratory and expiratory muscles, and aerobic and resistance exercises of the upper and lower limbs to improve and prevent the decline of cardiorespiratory fitness. The patient was monitored, and the exercises were adjusted through regular outpatient follow-up. During the overall follow-up period of 26 months, pulmonary rehabilitation led to an increase in forced vital capacity from 2,020 to 3,160 mL, and improved the diaphragmatic height index from -4.46 to 0.28. Clinical symptoms also showed notable improvement, as the Borg Rating of Perceived Exertion scale score decreased from 17 to 7. We found that a home-based, self-performed pulmonary rehabilitation program could promote recovery from herpes zoster-related phrenic nerve palsy. Not only is this important for the rapid restoration of respiratory function and symptomatic relief, it can also protect patients from respiratory complications.

Key Words: Phrenic nerve palsy, pulmonary rehabilitation, diaphragmatic height index



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Diagnostic Accuracy of Deep Learning for Prediction of Osteoporosis Using Plain X-Rays: A Meta-Analysis

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Introduction: Osteoporosis is a common clinical problem in older adults and a major public health issue

worldwide. Despite being the gold standard for osteoporosis diagnosis, DXA has not been adequately applied in osteoporosis screening because of its low availability and high cost. Given the low rates of DXA screening, opportunistic screening using deep learning applied to radiographs presents an intriguing solution, because it utilizes images obtained for other indications and does not require additional costs, radiation exposure, or patient time. The purpose of this meta-analysis is to assess the diagnostic accuracy of deep learning model-based osteoporosis prediction using plain X-ray images.

Methods: We searched PubMed, Web of Science, SCOPUS, and Google Scholar from no set beginning date to February 28, 2023, for eligible studies that applied deep learning methods for diagnosing osteoporosis using X- ray images.

Results Seven studies were included; the pooled AUROC, sensitivity, and specificity were 0. 87 (95% confidence interval [CI] 0. 84-0. 90), 0. 81 (95% CI 0. 78-0. 84), and 0. 86 (95% CI 0. 78-0. 91), respectively, indicating good performance. Moderate heterogeneity was observed. Meta-regression and subgroup analyses were not performed due to the limited number of studies included.

Conclusion: Deep learning methods effectively extract bone density information from plain radiographs, highlighting their potential for opportunistic screening. Nevertheless, additional prospective multicenter studies involving diverse patient populations are required to confirm the applicability of this novel technique.

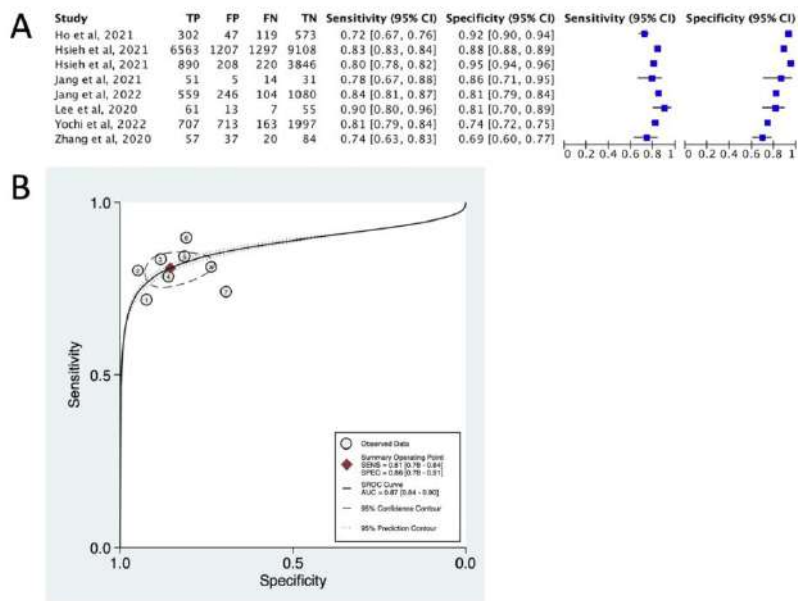


Fig. 1 The Forest plot and Hierarchical summary receiver operating characteristic (HSROC) curve of included studies (A) Sensitivity and specificity (B) HSROC curve of deep learning methods for detecting osteoporosis from X-ray images.

Figure 1. The Forest plot and Hierarchical summary receiver operating characteristic (HSROC) curve of included studies

Table 1. Characteristics of included studies

Study ID	Image number	Training/Validation/Test/External dataset	TP	FP	FN	TN	Sensitivity	Specificity	AUC
Lee et al. [14]	680	544(4:1)/ 544(4:1)/136/0	61	13	7	55	0.897	0.809	0.858
Zhang et al. [22]	1255	808/102/0/198	57	37	20	84	0.740	0.694	0.767
Ho et al. [18]	5027	3972/1041/0/0	302	47	119	573	0.717	0.924	NA
Hsieh et al. [19]	10328	5633/0/5164/2060	890	208	220	3846	0.802	0.949	0.97
	25482	7307/0/18175/3346	6563	1207	1297	9108	0.835	0.883	0.92
Jang et al. [34]	1001	800/100/101/117	51	5	14	31	0.785	0.861	0.7
Jang et al. [16]	14115	9825/1212/1989/1089	559	246	104	1080	0.843	0.815	0.91
Sato et al. [35]	17899	12529/1790/3580/0	707	713	163	1997	0.813	0.737	0.84

Note: TP, true positive; FP, false positive; FN, false negative; TN, true negative.

Table 1. Characteristics of included studies

Key Words: Osteoporosis, Osteopenia, Bone mineral density, Convolutional neural network, Deep learning, X- ray



Sensory Processing Dysfunction on Language-Related Functions in Children with Developmental Language Disorder

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Introduction: Little is known about the status of sensory dysfunction in children with developmental language disorder (DLD), nor did we know the effect of sensory processing dysfunction (SPD) on language-related functions in this population. Thus, the purpose of this study was to explore the prevalence of SPD and its impact on language-related functions in DLD children.

Methods: A total of 114 DLD children aged 1. 5-6. 5 years old were collected from the Children's Hospital of Soochow University between July 2021 to May 2023. Demographic and clinical information were recorded according to the hospital system. We used the children's Sensory Integration Scale to evaluate SPD and used the Children Neuropsychological and Behavioral Scale-Revision 2016 to assess language-related functions (including language, social behavior and adaptability domains). Statistical analyses used independent sample t test, Mann-Whitney U test and multiple linear regression analysis.

Results: Of the whole population, 59. 6% DLD children demonstrated some degree of SPD. Univariate analysis showed that SPD affected children's mental age (MA, months) and developmental quotient (DQ) of language and social behavior domains, and MA of adaptability domain ($P \leq 0. 003$). After adjusting for children's general and clinical information, SPD was associated with lower MA and DQ in all language-related domains and was an independent factor on language-related functions in children with DLD ($P \leq 0. 023$).

Discussion and Conclusions: More than half of the children showed impaired sensory processing, and SPD was an independent factor affecting language-related functions in DLD children.

Key Words: developmental language disorder, sensory processing dysfunction, language, social behavior, adaptability

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Introduction of the China Nanjing Consciousness Recovery Scale-Trial Version

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In February 2023, the sixth revision meeting of the Chinese Nanjing persistent vegetative state scale (CNPVSS) was held in Nanjing. According to the latest international and domestic research progress on the definition, classification and evaluation of disorders of consciousness, the experts at the meeting unanimously agreed to revise the CNPVSS to the China Nanjing consciousness recovery scale (CNCRS). The CNCRS consists of five sub items: Auditory response, Visual response, Limb response, Feeding response and Emotional response. The minimum score is 0 and the maximum score is 4 for each sub item, and the total score is a maximum of 20. The new scale can cover the evaluation of consciousness on the gradual process from coma to awareness, The trail version of CNCRS is hereby released as reference for further multi-center validation research and clinical application.

Key Words: China Nanjing consciousness recovery scale; Coma; Unresponsive wakefulness syndrome; Minimally consciousness state

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Clinical Application of Chinese Nanjing Persistent Vegetative State Scale in Patients with Acute Disorders of Consciousness

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Objective To explore the reliability and validity of the Chinese Nanjing persistent vegetative state scale (CNPVSS) in evaluating patients with acute disorders of consciousness (DoC). **Methods** 253 hospitalized DoC patients with a course of less than 28 days were selected and scored using the Glasgow Coma Scale (GCS) and CNPVSS, respectively. The correlation between GCS and CNPVSS scores of patients was calculated, and the reliability and validity of the two scales were compared and analyzed. **Results** The scores of the two scales were significantly correlated ($P < 0.001$). The reliability index of CNPVSS, the Cronbach's alpha coefficient (0.905 for males and 0.882 for females) were higher than GCS (0.580 for males and 0.665 for females); The KMO value of the validity indicator (0.846 for male, 0.834 for female) was also higher than GCS (0.559 for male, 0.593 for female). **Conclusion** CNPVSS can be used for the evaluation of acute DoC patients and has good reliability and validity.

Key Words: Chinese Nanjing persistent vegetative state scale; Acute disorders of consciousness; Scale rating; Reliability; Validity

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The Effect of Coloured Filters on Individuals with Reading Disabilities: A Meta-Analysis and Systematic Review

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Background: Reading disabilities deciphering disabilities are characterised by difficulty deciphering words or comprehending what is read. Multiple studies have demonstrated that coloured filters can alleviate the bothersome visual symptoms that hinder the reading ability of many children. The purpose of this article was to examine the design and effects of coloured filters on reading performance in children with reading difficulties.

Method: We searched eight electronic databases (PubMed, ERIC, Medline, Embase, PsycINFO, Cochrane Library, CNKI, and Wanfang) for pertinent studies published prior to June 1, 2023. Randomised controlled trials were eligible if the intervention for children with reading difficulties or dyslexia was based on coloured filters.

Result: 14 published studies comparing reading performance between reading difficulties and control samples and calculating effect sizes. The difference in reading speed between the intervention group and the control group was statistically significant (SMD=4. 28; 95% CI: 1. 13 to 7. 42; P<0. 05). In comparison to the control group, the intervention group demonstrated a statistically significant improvement in reading comprehension (SMD = 3. 06, 95% CI: 2. 05 4. 07, P <0. 05). The influence of number of symptoms was not statistically significant (SMD = -0. 55, 95% CI: -1. 15 to 0. 05, P > 0. 05).

Conclusion: This review demonstrates the efficacy of coloured filters for children with reading difficulties. however, it is imperative that future research investigates other dimensions, such as visual processing. By incorporating a wider variety of outcome measures and taking individual differences into account, we can obtain a more complete understanding of the impact of coloured filters.

Key Words: Reading difficulties, Coloured filters, Dyslexia, Developmental dyslexia



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The Change of Muscle Thickness and Pelvic Morphological Parameters in Postpartum Patients with Pelvic Girdle Pain

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Background:

Pelvic girdle pain (PGP) is defined as pain experienced area between the posterior iliac crest and the gluteal fold, particularly near the sacroiliac joints^[1]. Data displayed that 13% of postpartum women experience moderate pain and 7% experience severe pain^[2], leading to significant functional limitations. It was reported that an association between reduced muscle function and altered pelvic symmetry in postpartum women and the development of PGP^[3, 4].

Aims:

This study aims to investigate the change in muscle thickness and pelvic morphological parameters in postpartum PGP.

Method:

Twenty-eight postpartum women with PGP and 28 symptomatic individuals participated in this study. Real-time ultrasonography was used to assess the thickness of pelvic girdle stabilizing muscle during different states (rest, maximum contraction)^[5]. X-ray imaging was used to acquire both anteroposterior and lateral views of the pelvic^[6-8]. The resulting images were analyzed by ImageJ software to evaluate pelvic symmetry.

Result:

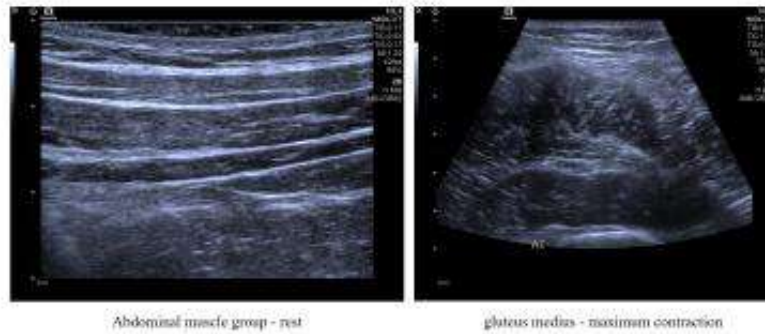
The muscle thickness of multifidus, gluteus medius, gluteus maximus ($P < 0.001$) and erector spinalis ($P = 0.02$) in rest and maximum contraction were reduced significantly among PGP group. It also showed that the thickness of pelvic floor muscle in maximum contraction was reduced significantly in PGP ($P = 0.01$). Meanwhile the sacrum obliquity ($P < 0.001$) and sacral slope angle ($P = 0.02$) were significantly increased in the PGP group.

Conclusion:

The reduced muscle thickness in posterior pelvic and increased angle of the sacrum in the coronal and sagittal planes were associated with postpartum PGP. These results



indicate the strengthening on posterior muscles to decrease pelvic anterior tilt may help postpartum-related posterior PGP.



Examples of musculoskeletal ultrasound of abdominal muscles and gluteus medius



Examples of X-ray of pelvic in anteroposterior and lateral views

Table 1. The comparison in muscle thickness between the two groups.

Muscle thickness(cm)	PGP group	Control group	tZ	P
Multifidus -R	1.58±0.27	2.14±0.38	6.44	<0.001*
Multifidus -MC	1.81(1.59, 1.99)	2.21(2.10, 2.43)	8.94	<0.001*
erector spinae -R	1.69(1.65, 1.73)	1.68(1.14, 2.93)	2.33	0.02*
erector spinae -MC	1.43(1.11, 1.73)	1.73(2.13, 1.60)	2.33	0.02*
gluteus medius -R	1.82±0.38	2.11±0.43	6.14	0.001*
gluteus medius -MC	2.14±0.17	2.61±0.42	9.73	<0.001*
gluteus maximus -R	1.73±0.43	2.42±0.58	3.45	<0.001*
gluteus maximus -MC	2.88±0.73	3.24±0.58	2.73	0.007*
quadratus lumborum	1.37(1.14, 1.60)	1.29(1.05, 1.43)	1.18	0.24
Pelvic floor muscle -R	1.32±0.18	1.85±0.48	1.18	0.24
Pelvic floor muscle -MC	1.57±0.12	1.81±0.34	2.64	0.01*

R, rest; MC, maximum contraction

Table 2. The comparison in pelvic morphological parameters between the two groups.

morphological parameters(°)	PGP group	Control group	tZ	P
PI	144(140, 127)	157(165, 138)	8.39	1.00
SI	144(159, 133)	146(169, 134)	2.97	0.00*
IP	173(169, 175)	149(156, 139)	1.11	0.26
SS	6.75(1.57)	10.66(1.17)	2.47	0.02*
IT	138(135, 179)	139(135, 160)	0.48	0.63
IT	49.38(16.6)	48.47(16.7)	0.66	0.51
α	13.66(1.1)	13.47(1.0)	0.13	0.90
SAVO	17.05(1.1)	18.59(1.1)	1.24	0.22

Some results of the abstract

Key Words: pelvic girdle pain ; muscle thickness; pelvic morphological; X-ray ; Musculoskeletal ultrasound

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Combination of Chinese and Western Rehabilitation Therapy in the Treatment of Acute Guillain-Barre Syndrome: A Case Report

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Introduction: Guillain-Barre syndrome (GBS) is an immune response-mediated polyradiculopathy in which patients often present with symmetrical bradykinesia of the extremities. In this paper, we review the case of a male patient with acute GBS whose cranial nerves were affected in addition to the typical symptoms, which is not common in the clinic.

Case report: In this article, we report a 21-year-old male patient with GBS who presented with diarrhea and fever 3 days before the onset of the disease, followed by a decrease in muscle strength and a rapid worsening of symptoms with dysphagia and dysarthria with respiratory distress. The patient underwent a cranial CT examination, but no significant abnormalities were found. Based on EMG and cerebrospinal fluid findings, we diagnosed him with acute GBS. Initially, the patient received supportive therapy such as electrolyte supplementation, neurotrophic nutrition, and Plasmapheresis, and he was assisted with ventilation through a noninvasive ventilator due to dyspnea. As his condition stabilized, we used acupuncture, moxibustion, traditional Chinese medicine exercise therapy, respiratory training, swallowing, and speech therapy. Eventually, the patient's function improved significantly and he was discharged 3 months later, returning to his family and school.

Case discussion: This patient had multiple dysfunctions and a complex condition. After a comprehensive and precise evaluation of the patient, our team carried out individualized rehabilitation treatment with a combination of traditional Chinese and Western medicine, and finally achieved a relatively satisfactory clinical outcome. This case report may provide lessons for future related research.



Rehabilitation of GBS

Key Words: Guillain-Barré syndrome; combination of Chinese and Western rehabilitation therapy; case report

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Effects of Exercise Therapy on Body Composition of Patients with Breast Cancer: Systematic Evaluation and Meta-Analysis of a Randomized Controlled Trial

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Purpose:

This study used systematic evaluation and meta-analysis to determine the impact of exercise on body composition of breast cancer patients.

Method:

Search the following databases Cochrane Library, PubMed, EMBASE, and Web of science (from the start date of the database to June 9, 2023) to evaluate the effect of exercise on body composition of breast cancer patients. Evaluate the risk of bias using RevMan software and analyze the research results.

Result:

A total of 14 studies were included, with 1241 participants. Twelve studies can be used for meta-analysis. The results show that exercise can reduce the body fat rate (MD, - 0. 33; 95% CI, - 0. 37 to - 0. 29; P<0. 00001), fat mass (MD, - 0. 02; 95% CI, - 0. 32 to 0. 27; P=0. 87), and lean body weight (MD, 0. 42; 95% CI, 0. 34 to 0. 49; P<0. 00001) of patients with breast cancer. Further analysis shows that resistance training can significantly increase lean weight and reduce body fat and fat mass compared to only engaging in aerobic exercise and combining aerobic exercise with resistance exercise.

Conclusion:

Compared to only engaging in aerobic exercise, combining aerobic exercise with resistance exercise, resistance training can significantly increase lean weight, reduce body fat and fat mass, and thus significantly improve body composition. In view of the fact that changes in body composition have an important impact on the recurrence and prognosis of breast cancer patients. Therefore, clinicians encourage patients to

carry out resistance exercise training and provide more optimized exercise prescriptions for breast cancer patients.

Key Words: Breast cancer; exercise; body composition; meta-analysis

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Factor Associated with Post-Surgery Aspiration in Tongue Cancer Patient with Chronic Dysphagia: An Oral Function Point of View

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Objective

This study aimed to investigate the severity of chronic dysphagia among the survivors of tongue cancer (TC) after surgical treatment and to identify the potential controllable functional factors that may contribute to chronic aspiration.

Methods

Retrospective chart reviews were performed for primary TC diagnosis between January 2012 and December 2022. Eighty-five patients who had chronic dysphagia and had completed the videofluoroscopic swallowing study were enrolled. Swallowing performance, status and factors related to aspiration were analysis.

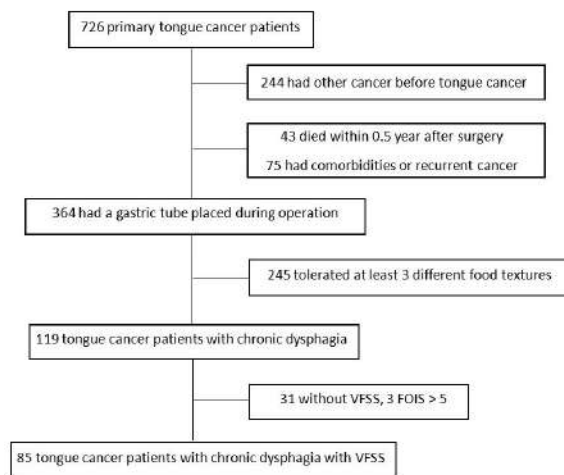
Results

Thirty-eight (42. 7%) patients in this study were at high risk for aspiration. Seventeen (20%) patients had lip-closure defects (LCD), 94. 3% had trismus. Complete tongue mobility loss (TML) was observed in 34 patients (40%). Patients who underwent total glossectomy had a significantly higher incidence of aspiration ($P = 0. 049$). In the analysis of functional performance, FTD, LCD, TML, and PR in VFSS were all significantly associated with aspiration ($P < 0. 001, 0. 002, 0. 0011, \text{ and } 0. 037$, respectively). In multivariate analysis, the most important factors associated with aspiration were LCD and TML.

Conclusions

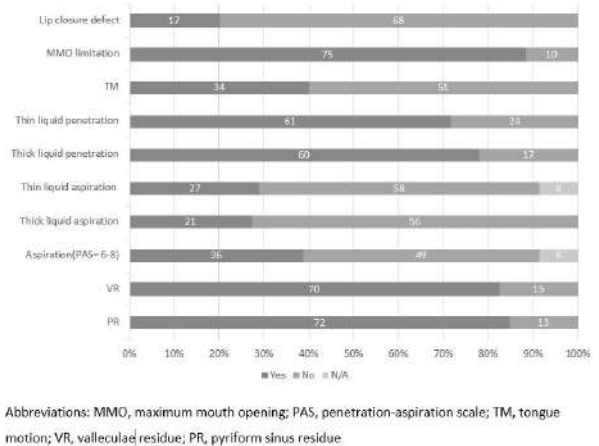
Loss of lips and tongue function was considered the major cause of aspiration in TC patients with persistent severe dysphagia post-surgery. Further studies on suitable oral rehabilitation are needed to rebuild oral function and reduce long-term swallowing disability.

Figure 1. Flowchart of patient enrollment



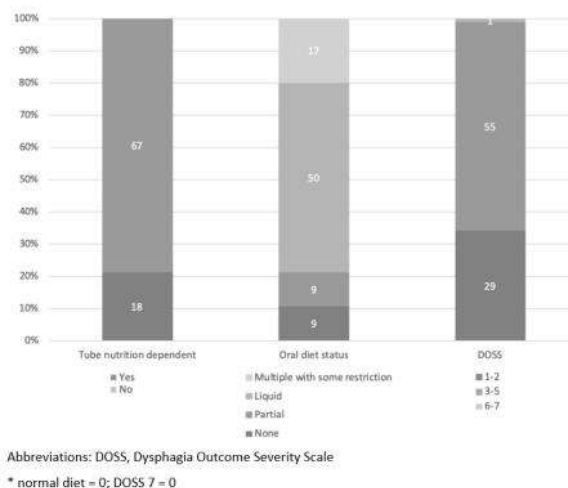
Flowchart of patient enrollment

Figure 2. Swallowing status of patients



Swallowing status of patients

Figure 3. The functional swallowing outcome of patients



The functional swallowing outcome of patients

Key Words: Dysphagia, Glossectomy, Tongue cancer, Tongue mobility, Trismus

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Effect of Combined Music Therapy on Patient with Disorder of Consciousness after Embolization of Cerebral Arteriovenous Malformations

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Objective To evaluate the rehabilitation effect of combined music therapy (MT) on patient with disorder of consciousness (DOC) after embolization of cerebral arteriovenous malformations. **Methods** A patient with DOC after embolization of cerebral arteriovenous malformation in our hospital was selected, and MT was added on the basis of routine rehabilitation treatment. The state of consciousness, Glasgow Coma Scale (GCS), Nanjing Persistent Plant State Scale (CNPVSS), Simple mental state Test (MMSE), self-care ability of daily living (ADL), International Classification of Functioning, Disability and Health (ICF) and imaging changes before and after 1 month of treatment were compared. **Results** After 1 month of treatment, the conscious state of the patient changed from MCS+ to wakefulness, the scores of GCS, CNPVS, MMSE and ADL increased significantly, the scores of ICF decreased remarkably, and the range of abnormal brain lesions had obviously contracted. **Conclusion** Combined with MT has a certain stimulating effect on patients with DOC after embolization of cerebral arteriovenous malformations.

Key Words: music therapy; cerebral arteriovenous malformation; embolization; awakening

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Decoding the Mystical Motor and Cognitive Conundrums in A Patient with Fahr Disease: A Case Report

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Fahr disease is characterized by motor and cognitive deficits with primary basal ganglia calcifications, but without a known etiology. On the other hand, Fahr syndrome is a rare, inherited, autosomal dominant, neurological disorder with a known underlying cause, characterized by abnormal calcified deposits in the basal ganglia, cerebral cortex, cerebellum, thalamus, and hypothalamus, which are areas of the brain which control movement and cognition. Symptoms of the disorder may include deterioration of motor function, movement disorders, such as athetosis, chorea, and dystonia, tremor, spasticity, rigidity, hypomimia, hypokinesia, dysarthria, eye impairments, dementia, behavioral impairments, including depression, seizures, and headache. There is neither a cure, nor a standard course of treatment for Fahr disease and Fahr syndrome. Treatment is primarily symptomatic. There is a dearth in literature in reporting Fahr disease and Fahr syndrome. To bridge the gap, this case report evaluates the Physical and Rehabilitation Medicine (PRM) clinical assessment of findings of a physiatrist regarding a 65-year-old, female, Filipino patient diagnosed with Fahr disease by history and physical examination and corroborated with a cranial Computed Tomography scan. Psychiatric history and physical examination of the patient revealed a gradual onset of quadriparesis, facial and trunk weakness, hypomimia, hypokinesia, and behavioral disorder, particularly depressed mood. However, she does not present with dementia, seizure, headache, tremor, sensory deficits, spasticity, rigidity, and eye impairments. The physiatrist prescribed physical, occupational, speech and language pathology therapy, and fabrication of ankle-foot orthosis.

Key Words: Fahr disease, Fahr syndrome, motor deficits, cognitive deficits, dementia

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Traumatic Brain Injury and Rtms-Erps: Case Report and Literature Review

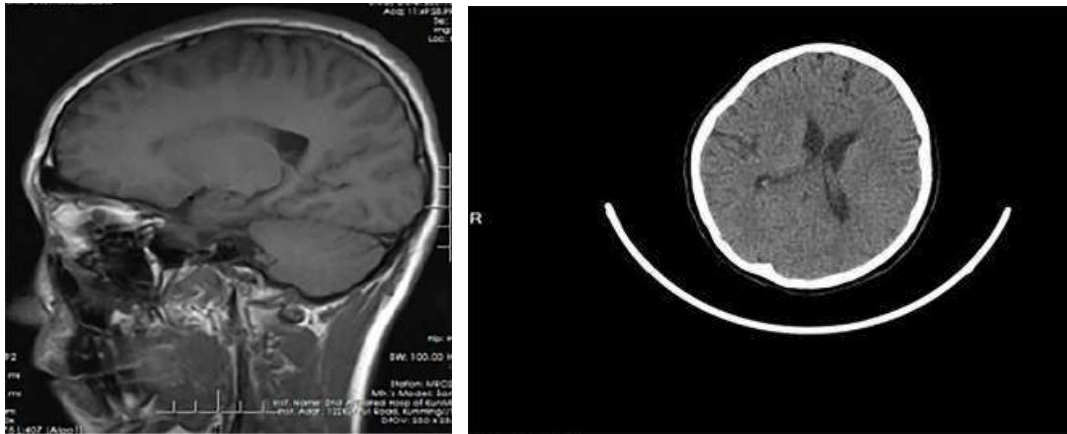
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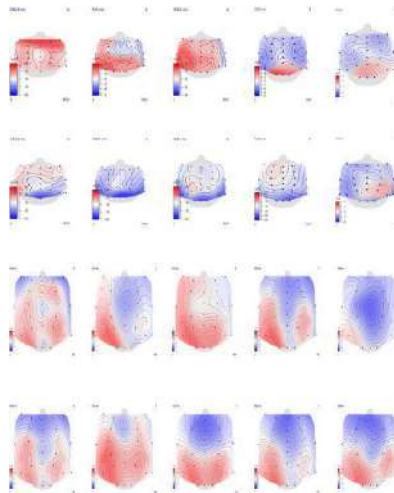
Abstract There are no cases of targeted, individualized rTMS treatment based on ERPs results showing the activation of functional brain regions. The identification and treatment of mild cognitive impairment after traumatic brain injury are challenging. rTMS has shown unique advantages in previous studies, with positive effects on noninvasive modulation and neuroplasticity after brain injury. The selection of the rTMS parameters and targets remains controversial. ERPs indicate the cortical activity involved in cognitive processing in patients. Therefore, this study proposes that ERPs can be used as biomarkers of cognitive recovery. The results of this study will guide the development of rTMS protocols for patient treatment. We conducted a relevant literature review and discussion, detailing the therapeutic mechanisms of the combination of ERPs and rTMS.

Discussion Patients with TBI will have hidden cognitive dysfunction; brain injury leads to an abnormal cognitive process; and ERPs can be used as cognitive biomarkers, supplementing the shortcomings of insufficient sensitivity to clinical scales, because even patients with a full MOCA score will show abnormal cognitive processing. According to the ERP results, targeted rTMS treatment was carried out on the patient in this case, which can effectively improve the inhibition ability, reaction speed, and plasticity changes in the brains of patients with brain trauma. Changes in perceptual processing in patients with TBI are unclear. Three to six months of follow-up revealed a decrease in inhibitory capacity and overall cognitive function, and a brain topographic map showed a narrower range of activation in the P300 and GO/NOGO brain regions.



MRI

CT



ERP results

Key Words: transcranial magnetic stimulation, event-related potentials, rehabilitation, cognition, latency, amplitude, P300

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Outcomes in Functional Independence and Sensorium in A Patient with Encephalitis under the Early Rehabilitation in the Intensive Care Unit Program: A Case Report

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Encephalitis is a diffuse inflammation of the brain parenchyma that results to significant impact on functional independence and sensorium. Studies show that patients with encephalitis who undergo in-patient rehabilitation gain improvements in functional independence¹. For patients admitted in the intensive care unit (ICU), potential benefits of participating in early rehabilitation in the intensive care unit (ERICU) include improved physical function and sensorium and reduced hospital length of stay². This is seen in a 53-year-old, Filipino, male, managed as a case of encephalitis and was admitted at the ICU. After meeting the criteria for ERICU, he was referred to Physical Medicine and Rehabilitation (PM&R). A comprehensive assessment was then performed by a physiatrist, who created an individualized rehabilitation program with in-patient physical therapy and occupational therapy. Upon referral, Functional Independence Measure (FIM) scores, and Richmond Agitation Sedation Scale (RASS) scores were taken. After 6 days of rehabilitation, the patient showed improvements in FIM and RASS scores upon discharge by the 10th hospital day. Encephalitis management guidelines state that once stabilized, referral to brain rehabilitation specialists is beneficial to functional recovery³. However, currently there is a lack of studies on the impact of early rehabilitation within the realm of an ERICU program, that is managed by a physiatrist, on functional independence and sensorium of patients with encephalitis. Hence, the purpose of this report is to discuss a patient with encephalitis managed by a physiatrist, who showed improvements in functional independence and sensorium after undergoing an ERICU program.

Key Words: Keywords: Viral Encephalitis, Encephalitis virus, Infectious Encephalitis



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Electroacupuncture Modulates Macrophage Polarization in Rat Articular Cartilage-Subchondral Bone after Anterior Cruciate Ligament Rupture

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Aim

To investigate the changes in macrophage polarization-associated protein expression in articular cartilage and subchondral bone in ACLT rats after treated with electroacupuncture.

Methods

3 month SD rats were divided into 3 groups. The model and the operation group were operated by anterior cruciate ligament transection. The operation group received electroacupuncture at 4 acupoints. Take samples after 2 weeks intervention then detect the expression of IL-1 β , arginase 1, and MMP-13.

Results

The level of IL-1 β in the operation group was reduced. The expression of IL-1 β , Arg-1, and MMP-13 in cartilage of the model group was decreased. The expression of IL-1 β , Arg-1, and MMP-13 in the cartilage of the operation group were elevated, and the results were all statistically significant.

Conclusion

Electroacupuncture modulate macrophage M1/M2 polarization and alleviate the inflammatory response of joints in a rat model of anterior cruciate ligament transection through effects on this process.

Key Words: electroacupuncture; ACLT; macrophage; polarization

References: none.



The Experience of Rehabilitation Treatment for a Child with Destructive Injury of Lower Limb

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Introduction: The experience of rehabilitation for a child with severely damaged lower limb injury. **Case report:** An 8-year-old girl suffered from extensive skin and soft tissue damage of the right lower limb with fracture of the distal femur of the ipsilateral limb due to a traffic accident. She underwent multiple skin grafting and wound closed drainage operations. After operation, the range of motion of the knee and ankle joints was significantly limited due to scar contracture, meanwhile, the uneven medial and lateral scars of the knee lead to progressive valgus. Rehabilitation included skin management, scar release, joint movement, PNF core stability training, limb muscle strength training, brace-assisted walking training, ADL training, psychological counseling. After treatment, the girl returned to school. **Discussion:** In this case, in addition to the conventional measures of improving the joint range of motion, it is necessary to use the PNF core stabilization technique to prevent spinal deformity caused by poor walking posture. When customizing a valgus knee orthosis, the height of the insole needs to take into account both gait and scoliosis risk. In addition, children who have suffered major trauma often have serious psychological disorders, so psychological intervention is also an important means to increase the efficacy of rehabilitation.

Key Words: Destructive injury of lower extremity, rehabilitation, case report

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Functional and Structural Alterations of Precuneus in the Spectrum of Pre-Clinical Alzheimer's Disease

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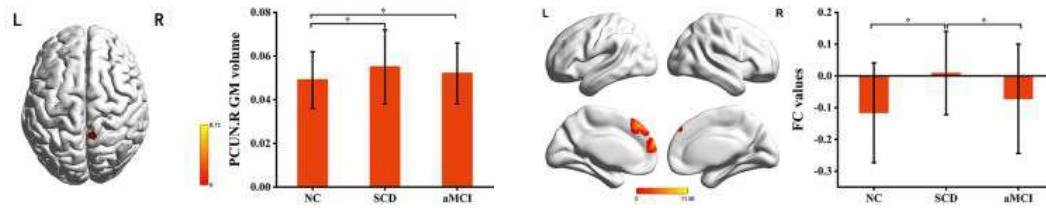
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Background: Subjective cognitive decline (SCD) and amnesic mild cognitive impairment (aMCI) are considered part of the early progression continuum of Alzheimer's disease (AD). The precuneus, a hub of episodic memory in the brain, plays an essential role in AD pathophysiology. In the present study, we aimed to systematically identify changes in the functional connectivity (FC) of precuneus in patients with SCD and aMCI and evaluate the association of these changes with episodic memory function.

Methods: Functional connectivity (FC) analysis of precuneus was performed among 56 patients with SCD, 61 patients with aMCI, and 74 normal controls (NC). Correlation analyses were performed to examine the relationship between FC of altered precuneus and episodic memory function.

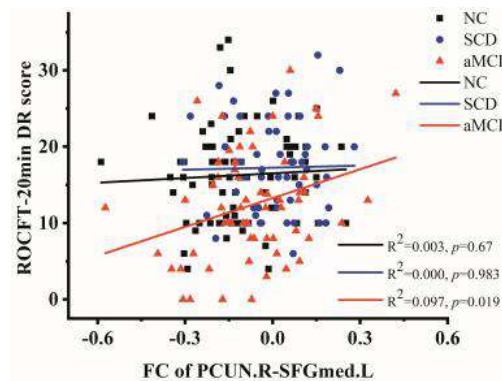
Results: There was significant difference in gray matter volume in the right precuneus (MNI spatial coordinates: +6, -51, +79) among aMCI, SCD and CN. With the right precuneus as the region of interest, the FC analysis showed that FC of the right precuneus and left medial superior frontal gyrus differed among the three groups. In addition, FC values were significantly correlated with episodic memory function in aMCI.

Conclusions: SCD and aMCI, part of the spectrum of pre-clinical AD, share some convergent and divergent altered gray matter volume and FC of the right precuneus. These results may serve as neuroimaging biomarkers of the preclinical phase of AD and provide new insights into the design of preclinical interventions.



Comparison of gray matter volume among aMCI, SCD and CN

Comparison of functional connectivity (FC) of with the right precuneus as the region of interest among aMCI, SCD and CN



Correlation of ROCFT-20min DR score with FC of PCUN.R-SFGmed.L in the aMCI

Key Words: precuneus; functional connectivity; mild cognitive impairment; subjective cognitive decline

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Abnormalities in Anticipatory Muscle Activation of Scapular Stabilizers in Adolescents with Idiopathic Scoliosis

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Objective:

To investigate the abnormal anticipatory muscle activations (AMAs) of scapular stabilizer muscles in adolescence idiopathic scoliosis (AIS).

Method:

17 AIS subjects with right thoracic/left lumbar curvature and 19 age-matched healthy teen volunteers were recruited. Surface electromyography was used to collect signals from the upper arm and scapula area when the subject completed the reaching tasks with the left or right arms respectively. The AMA information is obtained through conversion processing. The corresponding motor reaction time, the onset latencies and amplitudes of AMAs of the ipsilateral/contralateral infraspinatus (IS), upper trapezius (UT), lower trapezius (LT), and serratus anterior (SA) muscles were calculated for comparative analysis.

Results:

The results revealed early AMA onset latency of the ipsilateral UT muscle ($F=8.264$, $P<0.01$, $\eta^2 p = 0.015$) and delayed AMA onset latency in the LT on the contralateral side ($F=6.534$, $P<0.05$, $\eta^2 p = 0.006$). Moreover, decreased AMAs amplitudes of was observed in all ipsilateral scapular stabilizer muscles in AIS ($P<0.05$).

Discussion:

The abnormal AMAs in scapular stabilizer muscles among AIS indicates a disturbance in the initiation of shoulder movement control. This may be attributed to neuro-muscular adaptations resulting from prolonged spinal deformity. Reinforcement of these abnormal patterns could potentially contribute to the progression of spinal curvature. Consequently, future AIS treatments may emphasize the regulation of scapular stabilizer muscle control.

TABLE 1 | Proportion of anticipatory muscle activations (AMAs) of subjects

	Valid trial numbers	Proportion of AMAs in valid trials (%)							
		iUT	cUT	iLT	cLT	iSA	cSA	iIS	cIS
AIS group mean (SD)	50.26 (1.53)	29.82(2.73)	57.98(2.25)	28.33(2.30)	55.70(2.49)	19.47(1.79)	37.63(2.91)	29.04(2.65)	55.70(2.49)
Healthy group mean (SD)	41.47 (2.47)	21.47(2.77)	49.22(3.74)	25.29(2.51)	45.59(4.16)	21.47(1.90)	40.49(4.07)	20.49(2.32)	52.25(4.66)
F-value	3.892	0.155	3.376	0.014	1.952	0.021	2.733	0.364	6.891
p-value	<0.01*	<0.05*	<0.05*	0.378	<0.05*	0.449	0.565	<0.05*	0.506

i/cUT, i/cLT, i/cSA, i/cIS represents ipsilateral/contralateral upper trapezius, ipsilateral/contralateral lower trapezius, ipsilateral/contralateral serratus anterior, ipsilateral/contralateral infraspinatus.*p-value<0.05.

Proportion of anticipatory muscle activations (AMAs) of subjects

Key Words: Adolescence Idiopathic Scoliosis, Anticipatory Muscle Activation, Scapular Stabilizers, Rehabilitation

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Induction of Primary Motor Cortex Plasticity in the Premotor-Contralateral Primary Motor Paired Neuronavigated Transcranial Magnetic Stimulation

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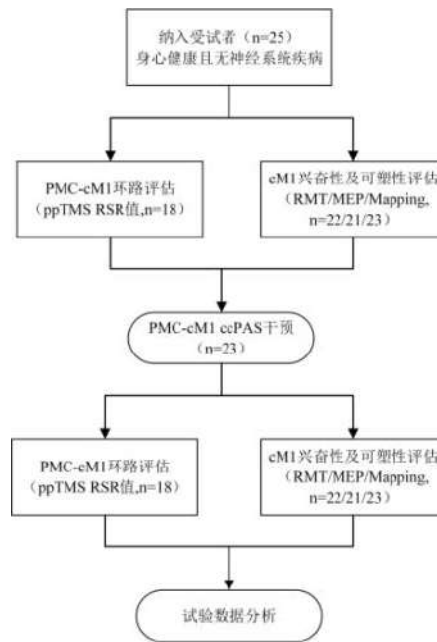
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Background: Neuronavigated transcranial magnetic stimulation is an emerging potential research tool for probing motor recovery mechanisms in brain injury. The premotor cortex (PMC) is an upstream node before the primary motor cortex in the motor control network. Moreover, previous evidence shows those brain areas are closely related to upper limb movement. However, the functional connectivity between PMC and the contralateral primary motor cortex (cM1) remains unclear. This study used paired dual coil neuronavigated transcranial magnetic stimulation to explore functional connectivity between PMC and cM1 and modulate the cM1 excitability.

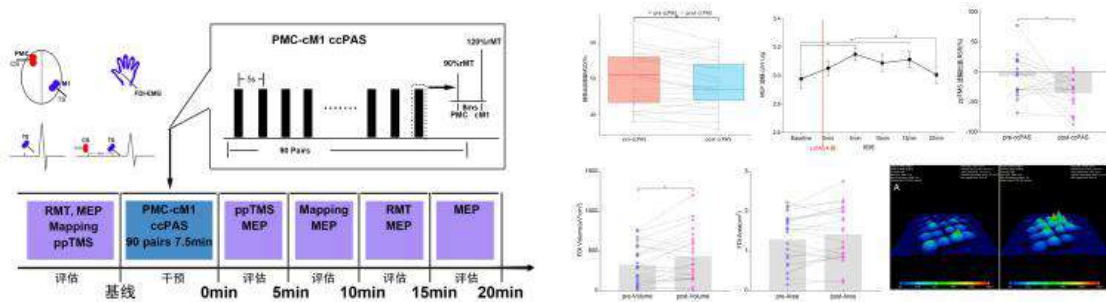
Method: 25 healthy adult subjects were recruited in a before-after study. Ninety pairs of paired dual coil cortical stimulation were delivered to PMC and cM1 at 0.2 Hz. The motor evoked potential and motor representation mapping parameters were used to evaluate the cM1 excitability and plasticity change. Meanwhile, the PMC-cM1 functional connectivity was evaluated by the interaction of PMC-cM1 paired dual coil cortical stimulation.

Result: The paired dual coil modulation strengthened the PMC-cM1 inhibition functional connectivity, increased the cM1 excitability, and exhibited plasticity change in cM1, lasting for 20 minutes.

Conclusion: PMC-cM1 paired-pulse modulation is a quick and valuable way to modulate the M1 excitability and plasticity, which might be used as an alternative to conventional rTMS to modulate cortical excitability and brain functional connectivity.



research flow chart



PMC-cM1 paired dual coil stimulation paradigm

research results

Key Words: Primary motor cortex, Premotor cortex, Plasticity, Transcranial magnetic stimulation

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Bridge Exercise Test in Elderly Stroke Patients

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Objective Bridge exercise is a kind of selective hip extension exercise, which has attracted wide attention in the field of rehabilitation medicine. To understand impairments in stroke patients' trunk control, and to guide and evaluate treatment interventions, standardized measurement tools that can be widely used in the clinics are indispensable. To provide a quick and convenient way to understand the impairment of trunk control in stroke patients and to guide and evaluate therapeutic interventions, a new assessment, bridge exercise test (BET). **Methods** BET uses a 7-level scale (range 0-5) generally reflecting zero (0), trace (1), poor (2), p+ (2+), fair (3), good (4), normal (5). Sixty-three patients over 60 years old without severe musculoskeletal diseases and who were diagnosed with hemiplegia caused by stroke were recruited. Participants' bridge exercise test, sitting balance grading, standing balance grading, and trunk control test (TCT) were assessed after enrollment. **Results** BET scores were correlated with sitting balance grading, standing balance grading, and TCT($P < 0.01$). **Conclusion** BET can not only assess trunk control but also provide a relatively accurate visual impression of balance in stroke patients, and is a direct guide to clinical training.

scale	Descriptor	Original Scale	Comments
0	Zero	No contraction.	Complete paralysis.
1	Trace	Flicker or trace of contraction.	No palpable muscle action.
2	Poor	Active movement with partial gravity.	Cannot reach half of the full range of movement with no resistance.
2 ⁺	P ⁺		Half of the full range of movement with no resistance.
3	Fair	Active movement against gravity.	Full range of movement with no resistance.
4	Good	Active movement against gravity and resistance.	Full range of movement with hands on umbilicus.
5	Normal	Normal strength.	Examiner cannot overcome.



Key Words: bridge exercise test, trunk control, stroke

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肝素雾化用于急性呼吸窘迫综合征患者的疗效研究

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目的 为研究纤维蛋白沉积为靶点的雾肝素是否改善肺损伤，而促进 ARDS 恢复 方法 对 2020 年—2022 年收治的 84 例急性呼吸窘迫综合征患者进行对照研究 结果 研究组患者氧合指数、中心静脉血氧饱和度高于对照组，研究组患者肺损伤评分、B 线计数低于对照组差异具有统计学意义 (p 均 <0.05)。两组患者在 28 天死亡率、28 天内器官功能障碍发生率、应用肾替代治疗率上差异无统计学意义 (p 均 >0.05)，研究组患者在 28 天内脱离呼吸机时间长于对照组，ICU 住院时间短于对照组患者 (p 均 <0.05) 结论 此项研究能改善 ARDS 患者肺部氧合情况，缩短 ICU 住院时间及机械通气时间，值得推广。

关键字： 肝素雾化；急性呼吸窘迫综合征；氧合指数

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创伤性脑损伤康复远景

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介绍：创伤性脑损伤（TBI）这个常见的全球性严重疾病，造成高昂的社会经济成本及致残危害，也给社会和家庭带来不可估量的严重后果。在心脑血管疾病高发、交通意外频发的步入老年社会的中国，怎样早期干预及康复，最大化减轻后遗症和残疾，值得我们思考和探索.....

报告：TBI 所致的疼痛、意识水平改变及认知、运动功能障碍，是我们关注的重点及治疗靶点。传统手术治疗、康复转归理念需要创新前行。

讨论：术后的四维、五感早期评估是早期干预治疗的第一步。高压氧及三氧疗法的时机尤为重要，树突再生新技术为我们带来了曙光。

关键字：创伤性脑损伤 四维五感评估 高压氧 三氧疗法 树突再生

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远程康复训练对肩峰下撞击综合征患者的干预效果：病例研究

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一名 30 岁男性在打羽毛球时有 6 个月右肩疼痛史，反复发作，接受了本研究的远程康复训练。干预前，疼痛在视觉模拟评分（VAS）中为 6/10。肩部活动范围（ROM）仅限于屈曲（130°）、外展（110°）和内旋（80°）。肩部功能结果通过肩部疼痛和残疾指数（SPADI）进行评估。为期 8 周的远程康复训练包括肌肉能量技术、肩袖肌群力量强化、感觉运动锻炼和功能锻炼。结果：在进行肌肉能量技术后即刻患者疼痛减轻了 3 分（VAS 评分从 6 分到 3 分），8 周物理治疗干预降低了 VAS 疼痛（2/10），改善了肩外展关节的活动范围（30°）和 SPADI 肩部评分（从 43 分到 18 分）。经过治疗，病人完全恢复了羽毛球运动。结论：8 周的远程康复训练可有效改善该名肩峰下撞击综合征患者的疼痛和功能情况。

关键字：远程康复，肩峰下撞击综合征

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口腔感觉训练技术对 PICU 进食困难儿童经口进食能力的改善研究

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目的 观察口腔感觉技术对 PICU 一例经口进食困难儿童进食能力的改善。

方法 对于 PICU 一例格林巴利综合征鼻饲管喂养儿童作用口腔感觉训练技术，一天一次，一次二十分钟，改善经口进食能力。口腔感觉训练技术，是针对口腔期吞咽障碍患者的口腔浅深感觉、反射异常设计的训练技术，包括冷刺激训练、嗅觉刺激、K 点刺激、震动训练、气脉冲感觉刺激训练等口腔感觉训练方法。

结果 经过一个疗程训练，患儿成功拔除鼻饲管，完全经口进食食物。

关键字： PICU 口腔感觉技术 经口进食 吞咽障碍

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局部肌肉振动治疗联合推拿手法对脑卒中后恢复期患者跖屈肌痉挛状态的疗效研究

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目的: 研究局部肌肉振动治疗联合推拿手法对脑卒中后恢复期患者跖屈肌痉挛状态的改善情况。方法: 选取2021年7月至2022年9月华山医院收治的32例卒中后恢复期跖屈肌痉挛患者作为研究对象。随机分为两组, 每组16例。对照组采用局部肌肉振动治疗, 观察组采用局部肌肉振动治疗联合推拿手法治疗。统计分析两组治疗前后MAS缓解率、FAC提高率及患侧下肢踝关节主动活动度(AROM)。结果: 治疗后, 观察组MAS改善率、FAC提高率及患侧下肢踝关节AROM改善程度明显高于对照组, 差异有统计学意义($P < 0.05$)。结论: 局部肌肉振动治疗联合推拿手法能够有效改善脑卒中后恢复期患者的跖屈肌痉挛状态, 且有利于患者步行功能恢复。

关键字: 脑卒中 痉挛 局部肌肉振动 推拿手法

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交叉训练对前交叉韧带重建后股四头肌加速反应时间的影响

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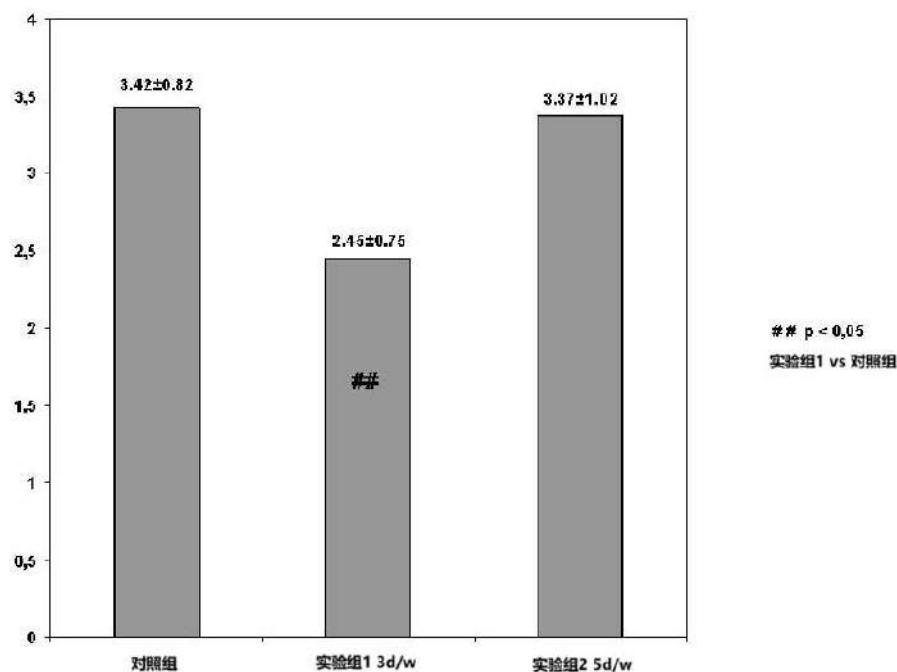
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目的: 研究交叉离心运动 (cross eccentric exercise, CEE) 作为前交叉韧带 (ACL) 重建早期康复治疗的补充对膝屈曲 45°、60°、90°角处的股四头肌功能表现, 即加速反应时间 (accelerated reaction time, ART) 的影响。

方法: 42 名接受 ACL 重建的患者随机分为 3 组, 两个实验组和一个对照组。两个实验组在常规康复基础上接受了 8 周末受伤膝的 CEE; 分别进行 3d/w 和 5d/w 的运动。术前和术后九周在膝屈曲 45°、60°、90°角处用等速肌力测试仪测量了股四头肌 ART。

结果: 双因素方差分析显示, 三组间膝屈曲 90°角的 ART 存在显著差异 ($F=4.29$, $p=0.02$, $p<0.05$)。事后 HSD 分析确定, 与对照组相比, 第一实验组产生显著结果 ($D=-0.83$, $p=0.01$)。膝屈曲 45°和 60°角未显示显著差异。

讨论与结论: ACL 重建患者膝关节屈曲 90°角处的股四头肌 ART 在 3d/w 的交叉训练后得到改善。



实验组 1 较对照组 90°ART 有显著差别 (Tukey HSD, Post hoc 分析)



关键字：交叉离心运动；加速反应时间；等速肌力测试；前交叉韧带重建

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环境激发干预对老年脑卒中偏瘫病人下肢运动功能的影响

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目的：探讨环境激发干预训练对老年脑卒中偏瘫病人下肢运动功能的影响。

方法：将 60 例符合入组标准的老年脑卒中后偏瘫病人按照随机数字表法分为观察组 30 例和对照组 30 例。对照组进行常规运动康复训练，观察组进行以个性化治疗环境设计为特征的环境激发干预训练。分别于治疗 4 周前后使用 FMA-L、10MWT、MBI、步态分析系统进行评估。

结果：治疗后，2 组 FMA-L、10MWT、MBI、步速、健侧步长、患侧步长、患侧支撑相时间均较治疗前改善 ($P < 0.05$)，且观察组 10MWT、MBI、步速、健侧步长、患侧步长、患侧支撑相时间较对照组治疗后改善更为显著 ($P < 0.05$)。结论：环境激发干预能有效改善偏瘫病人下肢运动功能和日常生活活动能力。

关键字：环境激发；老年；卒中；下肢运动功能

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太极拳训练联合音乐疗法对肺癌患者术后身心功能的改善作用研究

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引言

肺癌是我国及世界范围内最常见的恶性肿瘤之一，发病率和死亡率均高于世界平均水平，其中非小细胞肺癌占 80%-85%，肺癌患者身心问题是临床康复亟需解决的问题。

方法

本研究为多中心、前瞻性、非盲、随机对照、平行试验，选取江苏省人民医院和江苏省肿瘤医院住院的肺癌术后患者，分为试验组（常规护理+太极联合音乐疗法）和对照组（常规护理），每组 70 人，训练周期为 12 周。

· 结果

两组 6MWD 以及 FACT-L 评分 ($P < 0.05$)，患者 HADM 评分 ($P < 0.05$)，生化指标 5 羟色胺及 BDNF ($P > 0.05$)，实验组 kp 曲线更长。

结论

积极推广该模式有助于促进患者身心功能改善，临床具有实用性。由于干预时间不够，生化改善不显著。后续实验时，扩大样本量，增加干预时间。

关键字：肺癌；太极训练；音乐疗法；生化指标；生存周期

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膝关节本体感觉与足底触觉训练对早期 ACLR 术后高运动需求患者 康复效果研究

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目的: 前交叉韧带重建术是恢复膝关节功能结构的有效治疗手段[1]。 ACLR 术后膝关节本体感觉下降, 关节位置觉减退。良好的本体感觉功能有助于维持膝关节的稳定性, 是 ACL 重建术后获得良好功能的主要影响因素, 是重返运动的关键因素[2]。足底触觉训练对于早期 ACLR 术后人群的重返运动更有意义[2]。现对 20 名 ACL 术后患者介入本体感觉与足底触觉训练, 研究其康复效果。

方法: 招募 20 名 ACLR 术后 1-6 个月的高运动需求者, 根据不同康复方案, 分为常规康复组以及在常规康复方案下外加本体感觉与足底触觉训练组, 观察其康复效果。以膝关节桑迪运动恢复测试作为康复效果评估指标, 研究不同方案下 ACLR 术后的康复效果。

关键字: 前交叉韧带重建; 重返运动; 本体感觉; 足底触觉; 康复方案

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2 例主动脉腔内修复术后脊髓缺血损伤的康复

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脊髓缺血损伤是主动脉腔内手术后严重并发症，发病率低但致残率高。因此术前和术中需积极神经保护预防脊髓缺血。案例 1 患者主动脉弓动脉瘤腔内修复术后出现双下肢不完全截瘫，康复治疗预后良好。案例 2 患者主动脉夹层术后出现双下肢完全性截瘫，康复治疗预后不佳。主动脉腔内修复术后一旦发生脊髓缺血损伤，要早发现、早处理，尽快进行脑脊液引流，升高平均动脉压，同时予以抗氧自由基、营养神经、抗凝、扩血管药物等对症支持治疗，必要时行肋间动脉和锁骨下动脉重建。病情稳定后尽早开始康复治疗，通过功能训练帮助患者早日回归家庭和社会。



图 1: 胸髓 MRI: (A) 矢状位 T2WI 像黄色箭头示胸髓无病灶. (B) 矢状位 T1WI 像黄色箭头示胸髓无病灶. (C) 轴位 T2WI 像黄色箭头示 Th8/9 椎间隙水平胸髓无病灶。

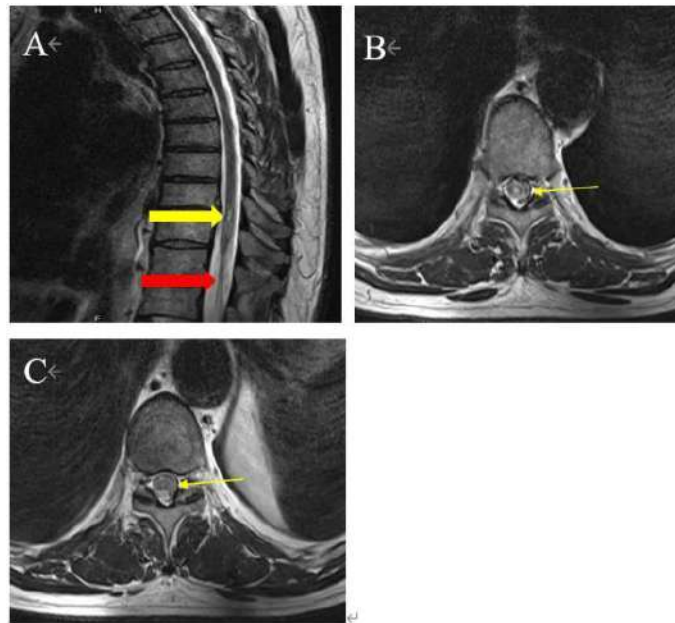


图 2: 胸髓 MRI: (A) 矢状位 T2WI 像黄色箭头示 Th9/10 椎间隙水平脊髓空洞症; 红色箭头示 Th10-12 椎体水平脊髓异常信号改变. (B) 轴位 T2WI 像黄色箭头示 Th9/10 椎间隙水平脊髓空洞症. (C) 轴位 T2WI 像黄色箭头示 T11 椎体水平脊髓异常信号改变

关键字: 主动脉腔内修复术; 根动脉; 脊髓缺血损伤; 康复

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心肺运动试验在食管癌患者术后并发症预测中的应用

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目的: 探讨心肺运动试验 (CPET) 结合相关临床指标在食管癌患者围手术期风险评估中的应用, 找出对术后并发症的发生具有预测意义的指标。

方法: 本研究共纳入 109 例食管癌根治术, 且完成 CPET 检查的患者, 以患者术后有无出现并发症, 将其分为两组。收集两组患者的临床资料和术前 CPET 相关数据, 进行 Logistics 多因素分析。

结果: 纳入 109 例食管癌根治术的患者, 多因素分析结果: BMI、peak VO₂/kg、VO₂/kg@AT、VE/VCO₂ slope 是食管癌根治术后并发症发生的相关指标。使用 ROC 曲线进行分析, 该模型的曲线下面积 (AUC) 为 0.849, 能够对术后并发症进行有效预测。

结论: 本研究提示 BMI、peak VO₂/kg、VO₂/kg@AT、VE/VCO₂ slope 可作为对食管癌术后并发症有预测意义的指标筛选出高危患者。

关键字: 食管癌术后 风险预测 心肺运动试验

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性别与年龄对颈肩腰腿疼痛患者 ICF-RS 功能影响的研究

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背景目的: 运用 ICF-RS 评估颈肩腰腿疼痛患者功能障碍情况, 分析颈肩腰腿疼痛患者功能障碍在性别和年龄方面的差异。

方法: 来自襄阳市中心医院康复医学科门诊的颈肩腰腿疼痛患者。采用 χ^2 检验、多变量有序 Logistic 回归模型分析性别、年龄对慢性疼痛患者 ICF-RS 功能水平的影响。

结果: 女性在情感功能、到处移动方面的功能障碍显著高于男性 ($p < 0.01$); 在排尿功能、运动耐受能力、关节活动能力、肌肉力量功能、照顾个人健康、利用交通工具方面, 年龄越大功能障碍越明显 ($p < 0.01$)。

结论: 性别、年龄是颈肩腰腿疼痛患者 ICF-RS 功能水平的影响因素。

表 1-1 ICF 功能等级性别类目情况

ICF 类目	男性[% (n)]		女性[% (n)]		χ^2 检验	
	正常	异常	正常	异常	χ^2 值	P 值
能量和驱动功能	24.4 (11)	75.6 (34)	12.9 (15)	87.1 (101)	3.174	0.075
睡眠功能	40.0 (18)	60.0 (27)	28.4 (33)	71.6 (83)	1.999	0.157
情感功能	62.2 (28)	37.8 (17)	51.7 (60)	48.3 (56)	7.265	0.007
痛觉	6.7 (3)	93.3 (42)	9.5 (11)	90.5 (105)	0.324	0.569
排尿功能	86.7 (39)	13.3 (6)	94.8 (110)	5.2 (6)	3.130	0.077
性功能	92.3 (36)	7.7 (3)	90.0 (99)	10.0 (11)	0.180	0.671
运动和耐受能力	37.8 (17)	62.2 (28)	23.3 (27)	76.7 (89)	3.433	0.064
关节活动能力	60.0 (27)	40.0 (18)	60.3 (70)	39.7 (46)	0.002	0.968
肌肉力量功能	75.6 (34)	24.4 (11)	73.3 (85)	26.7 (31)	0.087	0.768
改变身体基本姿势	93.3 (42)	6.7 (3)	91.4 (106)	8.6 (10)	0.167	0.683
保持一种身体姿势	100 (45)	0 (0)	89.7 (104)	10.3 (12)	5.030	0.025
移动自身	100 (45)	0 (0)	98.3 (114)	1.7 (2)	0.786	0.375
步行	100 (45)	0 (0)	97.4 (113)	2.6 (3)	1.186	0.276
利用设备到处移动	97.8 (44)	2.2 (1)	98.3 (114)	1.7 (2)	0.044	0.834
到处移动	64.4 (29)	35.6 (16)	37.9 (44)	62.1 (72)	9.196	0.002
盥洗自身	100 (45)	0 (0)	97.4 (113)	2.6 (3)	1.186	0.276
护理身体各部	100 (45)	0 (0)	96.6 (112)	3.4 (4)	1.591	0.207
如厕	100 (45)	0 (0)	98.3 (114)	1.7 (2)	0.786	0.375
穿着	100 (45)	0 (0)	99.1 (115)	0.9 (1)	0.390	0.532
进食	100 (45)	0 (0)	98.3 (114)	1.7 (2)	0.786	0.375
做家务	97.8 (44)	2.2 (1)	87.9 (102)	12.1 (14)	3.721	0.054
照顾个人健康	91.1 (41)	8.9 (4)	75.0 (87)	25.0 (29)	5.164	0.023
控制应激和其他心理需求	35.6 (16)	64.4 (29)	27.0 (31)	73.0 (84)	1.153	0.283
进行日常事务	95.6 (43)	4.4 (2)	93.2 (109)	6.8 (8)	0.321	0.571
亲密关系	89.5 (34)	10.5 (4)	84.3 (86)	15.7 (16)	0.602	0.438
利用交通工具	75.6 (34)	24.4 (11)	76.7 (89)	23.3 (27)	0.025	0.875
帮助别人	28.9 (13)	71.1 (32)	24.1 (28)	75.9 (88)	0.386	0.535
基本的人际交往	31.1 (14)	68.9 (31)	19.8 (23)	80.2 (93)	2.332	0.127
有报酬的就业	38.6 (17)	61.4 (27)	42.1 (48)	57.9 (66)	0.158	0.691
娱乐和休闲	37.8 (17)	62.2 (28)	49.1 (57)	50.9 (59)	1.685	0.194

表 1-1 ICF 功能等级性别类目情况

表 1-2 ICF 功能等级年龄类目情况

ICF 类目	18-44岁 [% (n)]		45-59岁 [% (n)]		60-75岁 [% (n)]		76岁及以上 [% (n)]		z 检验	p 值
	正常	异常	正常	异常	正常	异常	正常	异常		
知觉和定向功能	7.1% (5)	32.5% (62)	24.2% (16)	31.8% (55)	17.5% (5)	82.8% (24)	0 (0)	100% (4)	9.327	0.028
睡眠功能	36.8% (26)	53.7% (42)	27.9% (17)	32.3% (54)	24.1% (9)	75.9% (22)	15.6% (3)	75.0% (3)	2.820	0.415
情绪功能	41.5% (29)	58.7% (38)	43.9% (30)	38.3% (22)	58.6% (27)	41.4% (12)	75.6% (11)	25.0% (1)	6.467	0.091
痛觉	7.2% (5)	42.5% (62)	8.2% (5)	31.8% (56)	10.3% (3)	89.7% (28)	75.6% (11)	25.0% (1)	1.380	0.865
记忆功能	88.5% (63)	1.8% (1)	95.4% (67)	4.6% (3)	86.5% (28)	13.5% (4)	95.4% (11)	95.0% (1)	31.670	0.000
性功能	35.4% (22)	4.8% (3)	51.4% (33)	8.6% (5)	76.9% (20)	23.1% (6)			7.501	0.023
运动和耐力	38.8% (28)	41.2% (42)	24.2% (16)	37.8% (65)	6.3% (2)	93.7% (27)	0 (0)	100% (4)	11.001	0.007
定向活动能力	74.6% (50)	25.4% (17)	53.8% (31)	46.2% (30)	41.4% (12)	58.6% (17)	100% (4)	0 (0)	14.958	0.002
肌肉力量/速度	86.6% (58)	13.4% (9)	80.5% (58)	17.4% (22)	63.5% (19)	36.5% (11)	100% (4)	0 (0)	11.906	0.006
全身身体基本姿势	91.0% (65)	3.0% (2)	88.2% (55)	8.8% (6)	82.8% (24)	17.2% (5)	100% (4)	0 (0)	6.338	0.011
保持一种身体姿势	93.0% (65)	3.0% (2)	94.2% (55)	1.8% (1)	88.2% (26)	11.8% (4)	100% (4)	0 (0)	4.450	0.216
移动身体	100% (67)	0 (0)	98.4% (60)	1.6% (1)	96.6% (28)	3.4% (1)	100% (4)	0 (0)	2.322	0.127
步行	100% (67)	0 (0)	96.7% (59)	3.3% (2)	96.6% (28)	3.4% (1)	100% (4)	0 (0)	2.415	0.191
利用肢体转移移动	100% (67)	0 (0)	98.7% (59)	1.3% (1)	96.6% (28)	3.4% (1)	100% (4)	0 (0)	2.412	0.191
旋转移动	41.2% (28)	41.8% (27)	34.1% (22)	41.8% (58)	20.7% (6)	79.3% (21)	100% (4)	0 (0)	21.423	0.000
搬运身体	100% (67)	0 (0)	98.7% (59)	1.3% (1)	96.6% (28)	3.4% (1)	100% (4)	0 (0)	2.415	0.191
护理身体各部分	100% (67)	0 (0)	95.1% (58)	4.9% (3)	98.8% (28)	1.2% (1)	100% (4)	0 (0)	8.411	0.012
洗澡	100% (67)	0 (0)	94.4% (50)	5.6% (3)	96.6% (28)	3.4% (1)	100% (4)	0 (0)	2.322	0.147
穿鞋	100% (67)	0 (0)	98.4% (60)	1.6% (1)	100% (28)	0 (0)	100% (4)	0 (0)	1.806	0.388
进食	100% (67)	0 (0)	96.7% (59)	3.3% (2)	100% (28)	0 (0)	100% (4)	0 (0)	3.320	0.185
做家务	95.5% (64)	4.5% (3)	98.2% (55)	1.8% (1)	78.5% (23)	21.5% (6)	100% (4)	0 (0)	6.727	0.081
照顾个人健康	91.8% (62)	7.8% (6)	77.0% (47)	23.0% (14)	85.3% (26)	14.7% (4)	95.4% (11)	95.0% (1)	17.798	0.000
控制饮食和其他心理需求	25.8% (17)	74.2% (48)	37.7% (23)	42.3% (36)	24.1% (7)	75.9% (22)	0 (0)	100% (4)	4.104	0.112
进行日常事务	98.5% (66)	1.5% (1)	95.4% (57)	4.6% (3)	81.3% (23)	18.7% (5)	100% (4)	0 (0)	8.917	0.008
乘坐汽车	88.5% (60)	11.5% (7)	86.7% (52)	13.3% (8)	76.0% (22)	24.0% (6)	100% (4)	0 (0)	3.782	0.425
使用交通工具	100% (67)	0 (0)	75.4% (46)	24.6% (15)	22.0% (6)	78.0% (21)	25.0% (1)	75.0% (1)	51.688	0.000
照顾别人	41.8% (28)	48.2% (34)	24.0% (14)	76.0% (47)	20.5% (6)	79.5% (21)	0 (0)	100% (4)	4.188	0.071
参与的人际关系	21.0% (14)	79.0% (51)	21.0% (14)	77.0% (47)	20.7% (6)	79.3% (21)	25.0% (1)	75.0% (1)	0.326	0.869
有意识的休息	41.5% (29)	58.5% (38)	43.9% (30)	38.3% (22)	58.6% (27)	41.4% (12)	75.6% (11)	25.0% (1)	1.821	0.396
休息和休闲	41.8% (29)	58.2% (37)	52.5% (37)	47.5% (29)	37.9% (11)	62.1% (18)	75.6% (11)	75.0% (1)	2.335	0.189

表 1-2ICF 功能等级年龄类目情况

关键字：ICF-RS；颈肩腰腿痛；性别；年龄

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颈肩腰腿疼痛患者 ICF-RS 功能水平与影响因素探究

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背景和目的: 颈肩腰腿疼痛严重影响患者身体功能、日常活动及社会参与, 但其危险因素并不清楚。因此本研究旨在使用探索影响该种患者上述功能的危险因素。

方法: 收集 162 例符合要求患者的基本人口学资料、生活习惯、既往病史及服用止疼药情况和 ICF-RS, 采用二元 logistic 回归和广义线性模型探讨影响患者 ICF-RS 评分的独立危险因素。

结果: 18-44 岁颈肩腰腿疼痛患者睡眠功能受到的影响显著高于 76 岁以上患者 ($\beta=3.734, 95\% CI=0.040-7.428, P=0.048$), 未服用止疼药物对慢性疼痛患者身体功能维度中的睡眠功能影响显著高于服药患者 ($\beta=1.410, 95\% CI=0.180-2.640, P=0.025$)。表 1。

结论: 年龄及是否服用止疼药物是颈肩腰腿疼痛患者 ICF-RS 身体功能维度的影响因素。

变量	β	SE	95%CI	Wald χ^2	P
女性	0.195	0.494	-0.773-1.165	0.156	0.693
年龄					
18-44 岁	3.734	1.885	0.040-7.428	3.925	0.048
45-59 岁	3.488	1.857	-0.151-7.128	3.529	0.060
60-75 岁	3.405	1.864	-0.250-7.056	3.334	0.068
≥76 岁	0				
文化程度					
小学及以下	0.697	0.815	-0.599-2.593	1.498	0.221
初中	-0.908	0.537	-2.000-0.184	2.653	0.103
高中及中专	-0.439	0.615	-1.645-0.766	0.510	0.475
大专及以上	0				
无医保	0.632	0.605	-0.553-1.818	1.092	0.296
未服用止疼药物	1.410	0.628	0.180-2.640	5.050	0.025
无高血压	-0.416	0.617	-1.625-0.792	0.456	0.499
无高血脂	-0.475	0.764	-1.972-1.022	0.387	0.534
无高血糖	-0.095	0.824	-0.711-1.520	0.013	0.908
不吸烟	-0.946	0.977	-2.860-0.969	0.937	0.333
不饮酒	0.784	0.577	-0.347-1.916	1.846	0.174
BMI 指数					
<18.5	1.436	1.170	-0.858-3.730	1.506	0.220
18.5≤BMI<24	-0.836	0.866	-2.561-0.835	0.993	0.319
24≤BMI<27.9	-0.650	0.917	-2.447-1.146	0.503	0.478
≥28	0				

表 1 影响患者睡眠功能的广义线性模型分析



关键字：关键词 颈肩腰腿痛 康复组合 维度 危险因素 模型

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颈肩腰腿痛患者不同 BMI 水平对 ICF-RS 的影响

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目的 探讨不同 BMI 水平的颈肩腰腿痛患者对 ICF-RS 各类目的影响。

方法 招募符合纳排标准的 162 例颈肩腰腿痛患者，并采集基于 ICF 康复组合（ICF-RS）30 条设计的普查问卷，采用 χ^2 检验分析颈肩腰腿痛患者不同 BMI 水平在 ICF 具体类目中的影响。

结果 偏瘦和正常体质人群做家务与疼痛有显著影响（ $p < 0.01$ ）；正常体质与超重体质人群，在帮助别人情况下与疼痛有显著性差异（ $p < 0.01$ ）；偏瘦体质人群和正常体质人群在基本的人际交往中与疼痛有显著影响（ $p < 0.01$ ）。

结论 偏瘦者可适当减少做家务，超重者可在帮助他人时注意自身肌肉骨骼的保护，有助于缓解慢性颈肩腰腿痛。

关键字： BMI;ICF-RS；疼痛

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文化程度以及医疗费用来源对颈肩腰腿痛患者 ICF-RS 的影响

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背景和目的: 颈肩腰腿疼痛是全球发病率最高的职业病，职业属性与文化程度、医疗费用来源有关。本研究旨在探讨文化程度及医疗费用来源对颈肩腰腿痛患者 ICF-RS 的影响。

方法: 选取 162 例符合标准的颈肩腰腿痛患者，收集患者文化程度和医疗费用来源信息并评估其 ICF-RS 功能状态。应用 χ^2 及二元多变量 logistic 回归进行统计学分析。

结果: 较之低文化水平，高文化水平对患者痛觉的影响增高，而对排尿、性功能、肌肉力量、利用交通工具方面的影响降低；有医保患者睡眠情况显著好于无医保者，而在运动耐力方面显著低于无医保者 ($p < 0.05$)。

结论: 文化程度以及医疗费用来源对慢性疼痛患者 ICF-RS 有影响。

表 1 颈肩腰腿痛患者不同文化程度及不同医疗费用来源 ICF-RS 对比

ICF-RS 类别	低文化水平	高文化水平	无医保	有医保
躯体功能
心理功能
社会参与
疼痛
睡眠
运动耐力
肌肉力量
利用交通工具
排尿
性功能

表 2 二元多变量 logistic 回归变量及赋值

变量名称	赋值情况
因变量	1: ICF-RS 疼痛亚型, 0: 其他 ICF-RS 亚型
自变量	1: 小学及以下, 2: 初中, 3: 高中/中专/大专, 4: 本科及以上
文化程度	0: 无医保, 1: 有医保
医疗费用来源	1: 职工医保, 2: 城乡居民医保, 3: 自费

表 3 ICF-RS 类目的二元多变量 logistic 回归分析

ICF-RS 类别	变量	OR	95% CI	P
躯体功能	文化程度	...	...	...
	医疗费用来源	...	...	...
	疼痛	...	...	...
	睡眠	...	...	...
	运动耐力	...	...	...
心理功能	文化程度	...	...	...
	医疗费用来源	...	...	...
	疼痛	...	...	...
	睡眠	...	...	...
	运动耐力	...	...	...
社会参与	文化程度	...	...	...
	医疗费用来源	...	...	...
	疼痛	...	...	...
	睡眠	...	...	...
	运动耐力	...	...	...

表 1 颈肩腰腿痛患者不同文化程度及不同医疗费用来源 ICF-RS 对比

表 2 二元多变量 logistic 回归变量及赋值

表 3 ICF-RS 类目的二元多变量 logistic 回归分析

关键字：ICF-RS；慢性疼痛；文化程度；医疗费用

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Therapeutics and Modalities

治疗学与物理因子治疗

Poster Presentation



Effects of Alternating Between Focus & Radial Eswt on Pain and Disability in Post-Herpetic Neuralgia

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Purpose: This study aimed to investigate the effects of alternating between focus and radial type extracorporeal shockwave therapy (ESWT), a noninvasive modality, on pain reduction and disability in a patient with post-herpetic neuralgia (PHN).

Subject: A fifty-five-year-old male presented with left flank and back pain persisting for three months following a herpes zoster outbreak. The patient received antiviral treatment, infrared therapy for rash absorption, and pregabalin, but subsequently developed PHN in the same dermatome.

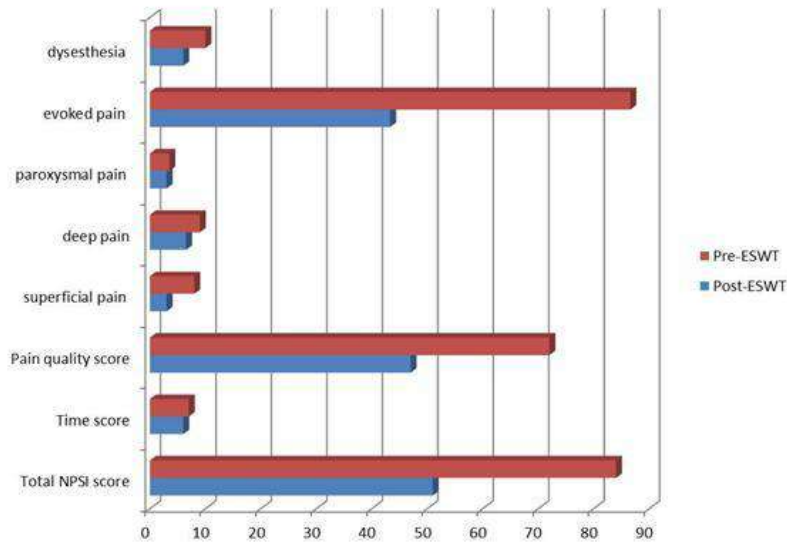
Methods: The study employed both focused and radial shockwave therapy using a device capable of generating both types of shockwaves. Alternating focus and radial ESWT were administered once a week, totaling six sessions over six weeks. The focused shockwave was applied at 4 Hz and 0.12 mJ/mm², while radial shockwave treatment was applied at 8 Hz and 2.4 bar, with 2000 impulses per session, moving the applicator along the nerve.

The primary outcome measure was pain, assessed using the neuropathic pain symptom inventory (NPSI). Secondary outcomes included thoracolumbar active range of motion (AROM), disability measured by the Oswestry disability index (ODI) and Roland-Morris disability questionnaire (RMDQ), and depression quantified by the Beck depression inventory (BDI).

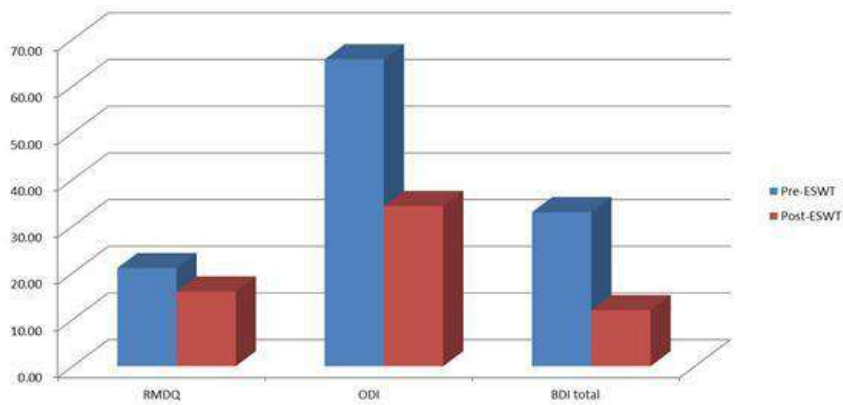
Results: ESWT treatment led to improvements in thoracolumbar AROM and NPSI scores. Moreover, disability scores measured by ODI and RMDQ demonstrated substantial reductions, along with marked improvement in the patient's depression levels as indicated by the BDI.



Conclusions: Alternating between focus and radial type ESWT, combined with conventional treatment, effectively reduced neuropathic pain and disability in the patient with PHN.



Neuropathic pain symptom inventory



Disability and depression scale

KeyWords: Extracorporeal Shockwave Therapy, post-herpetic neuralgia, neuropathic pain, functional disability, case report

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Evaluation of Work Related Physical Risk Factors (Neck, Shoulder and Back/Low Back Pain) among School Teachers.

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Objective: To determine the work related physical risk factors for neck/ shoulder and low back pain among school teachers in rural settings in Pakistan.

Methods: This Cross-sectional study was conducted at the Primary and Secondary schools of Nawabshah and Mirpurkhas Sindh Pakistan, and comprised of Primary and Secondary school teachers. Modified Dutch Musculoskeletal Questionnaire was used as a data collection tool which specifically modified and designed to assess work related physical risk factors among school teachers. Data was entered in Microsoft Excel sheets and SPSS v20 was used for data analysis.

Results: Of the 250 questionnaires, 238 (95. 2%) were return dully filled in. The prevalence of neck/ shoulder and low back pain among school teachers in the last twelve months were 52. 1% and 52. 9% respectively. The major contributing work related physical risk factors for neck/shoulder were blackboard writing (7. 9%) and marking (7. 4%). While prolonged standing was the major contributing factor (74. 4%) in low back pain.

Conclusion: This study analysed the high prevalence of Neck/Shoulder and low back pain and identified common work- related physical risk factors among school teachers and showed that these problems may prevent teachers from doing their jobs, resulting in work absenteeism and may decrease their work productivity.

Demographic variable	Subcategory	n	%
Gender	Female	151	63.4
	Male	87	36.6
Marital status	Married	153	64.3
	Un-married	76	31.9
	Divorced/widowed	9	3.8
Education level	Intermediate	35	14.7
	Bachelor	86	36.1
	Master	117	49.2
School level	Primary Private	25	10.5
	Secondary Private	61	25.6
	Primary Government	42	17.6
	Secondary Government	110	46.2
Length of Employment	<10years	113	47.5
	10-20years	31	13.0
	>20years	94	39.5
Dominant Hand	Right-Handed	224	94.1
	Left-Handed	14	5.9
Demographic Variable		Mean	St. Deviation
Age		38.97	11.81
Physical Exercise (hours/week)		3.77	5.91

Aggravating factors	Neck and shoulder pain		Low back pain	
	n	%	n	%
Blackboard writing	121	7.9	79	5.1
Marking	113	7.4	107	7.0
Computer work	63	4.1	67	4.4
Reaching overhead	101	6.6	109	7.1
Standing	67	4.4	125	8.1
Sitting	104	6.8	81	5.3
Carrying of books	109	7.1	113	7.4
Other	45	2.9	5	1.9

General characteristics of participants

Aggravating factors for neck, shoulder and low back pain

Key Words: School teachers, Modified Dutch Musculoskeletal Questionnaire, Neck pain, Shoulder pain, Low back pain, Risk factors.

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Pain Relief Therapy Results of High-Intensity Laser with Robotic System

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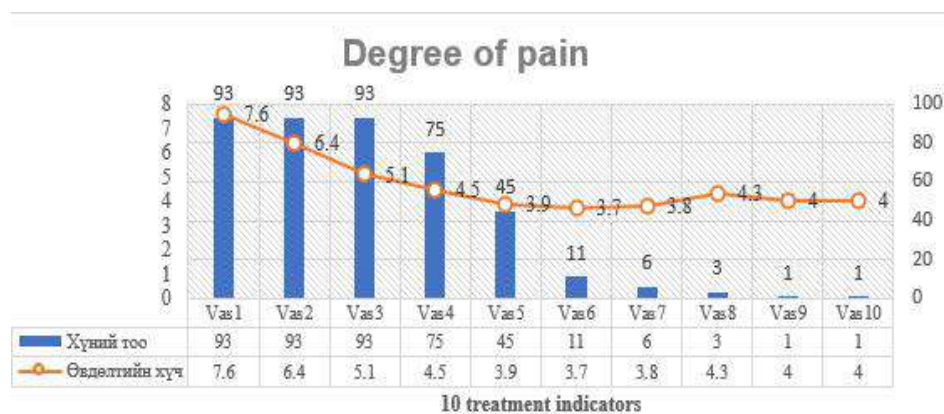
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Background: Pain is an unpleasant sensory and emotional experience associated with actual or potential injury of some part of the body. Laser therapy is a painless and non-invasive treatment that can be used in the treatment of different clinical conditions. Recently high-intensity laser with robotic system has been introduced in the field of physical medicine. HILT is considered to be a non-invasive and painless modality because of its high intensity and specific wavelength. Purpose: Analyzing the pain relief therapy results of high-intensity laser with robotic system. Methods: we evaluated the pain relief of 93 patients from department of Rehabilitation patients of Mungunguur Hospital, whose pains were intense, were treated with high-intensity laser with robotic system between 2021. 11-2022. 11 3-10 days. Results: high-intensity laser with robotic system brings best results to dorsalgia, sciatic nerve compression syndrome, plantar fasciitis, shoulder pain, knee pain, ankle pain such as acute pain. It was to common to diagnose sciatic nerve compression syndrome. Conclusion: high-intensity laser with robotic system reliefs the pain of musculoskeletal in short time rapidly with good results. high-intensity laser with robotic system brings good results when it handles dorsalgia, sciatic nerve compression syndrome, plantar fasciitis, shoulder pain, knee pain, ankle pain.

Treated diagnosis							
	Dorsalgia n=50	Sciatic nerve compression syndrome n=24	Plantar fasciitis n=7	Shoulder pain n=3	Others n=9	Total n=93	P ytra
Age	44±14	47.9±17.5	55±9	49±11	52.8±18	47.12±15.2	0.3
Gender (men/women)	19/31	8/16	2/5	2/1	3/6	34/59 (37%/63%)	0.8
VAS/before	7.7±1.8	7.6±1.7	7.2±2.4	5.6±1	8.2±2.4	7.6±2	0.3

Table 1: General characteristics of treatments. The average age of the 94 people who participated in our study was 47, they consist of 36,5% male and 63.4% female patients. Categorizing by diagnoses, 50 people were having dorsalgia, 24 people with sciatic nerve compression syndrome, 7 people with plantar fasciitis, 3 people with shoulder pain and for other diagnoses 9 people.



Graphic 5: The number of patients treated and the severity of pain. From the graphic 5, it can be seen that the average pain feeling of 93 people was 7.6 балл and after the 3 times of treatment it reduced to 3-5 score. On the 5th day of the treatment, 45 of 93 people can to the treatment and the average the power of pain was 3.9 score, meaning that 5 days of High intensity laser with robotic system therapy gas reduced the patients number by 48.38 and the power of pain by 51,31%.



	Vas/before	Vas/next	P value
Dorsalgia (n=50)	7.7±1.8	4±2	0.00
Sciatic nerve compression syndrome (n=24)	7.6±1.7	3,9±1	0.00*
Plantar fasciitis (n=7)	7.2±2.4	5±1,8	0.00
Shoulder pain (n=3)	5.6±1	4±1	0.01
Others (n=9)	8.2±2.4	5,8±2,4	0.00
Total (n=93)	7.6±2	3,9±2	0.00*

Table 2: Result of the study. High-intensity laser with robotic system therapy brings positive results to the dorsalgia, sciatic nerve compression syndrome, plantar fasciitis shoulder pain, knee pain, ankle pain. Especially, the patients with high power of pain and restriction on ability to do daily tasks showed best results by the decreasing of the power of pain from 7.6±1.7 to 3,9±1. The P parameter was 0.00, also statistical importance is different, meaning it shows better results.

Key Words: High-intensity laser with robotic system, Pain, Physical Agent Modalities, Musculoskeletal disorders

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Short Term Effect of EMSELLA Chair For Erectile Dysfunction : A Case Report

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Introduction

Varicocele can lead to erectile dysfunction (ED) with a prevalence of 38. 6% caused by associated hypogonadism and low testosterone. 1, 2, 3 Varicolectomy may not increase serum testosterone level. 4 High-Intensity Focused Electromagnetic (HIFEM) utilizes rapidly changing magnetic fields that depolarizes motor neurons, initiating muscle contractions, that boosts the strength of bulbocavernosus, ischiocavernosus and pelvic floor muscles. 5 We hypothesize that HIFEM targets at the pudendal nerve (Figure 1) and all branches and the perineal fascia that contribute to external genitalia, control somatic muscles involved in penile erection and in ejaculation in males. 5, 6, 7 Weekly HIFEM for 4 weeks is suggested for best outcome⁵; current literature were unable to elucidate the effects of HIFEM on ED. 5

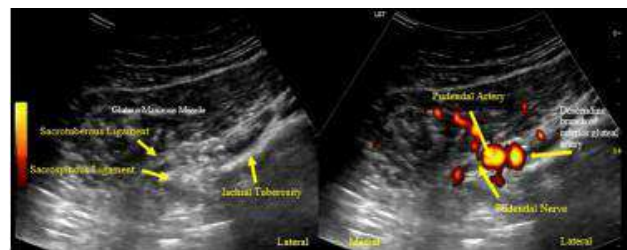
Case Report

A 42-year-old male had ED for 4. 5 years following varicocele. He underwent varicolectomy 4 years ago which failed to improve his ED. He received HIFEM using the BTL EMSELLA Chair (Figure 2) protocol U2 for 28 minutes. Treatment

was done twice, one-week apart, using the same protocol. After one session, patient's Sexual Health Inventory Scale (SHIM) score (Figure 3) improved from 21/25 (Mild ED) to 25/25 (no ED) and Erection Hardness Score (EHS) (Figure 3) enhanced from grade 3 (suboptimal erection) to 4 (optimal erection). Erection increased from 10 minutes to 30 minutes. SHIM and EHS scores maintained after the second treatment and at two-month follow-up.

Conclusion

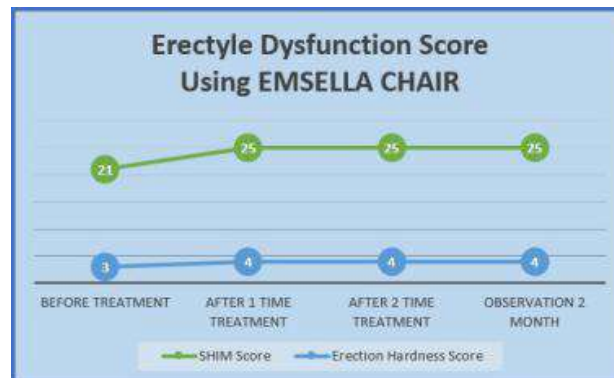
HIFEM provides satisfactory outcomes to this patient with ED even post-varicocelelectomy. Further large-scale studies in patients with ED, with different etiology, treated with HIFEM and longer followed-up are necessitated.



Pudendal nerve ultrasound Pudendal nerve lies between sacrotuberous ligament and sacrospinous ligament at the level of ischial tuberosity. Pudendal nerve controlling somatic muscles involved in penile and clitoral erection and in ejaculation in male. 6



High-Intensity Focused Electromagnetic (HIFEM) using BTL EMSELLA Chair. Patient with erectile dysfunction received HIFEM using the BTL EMSELLA Chair protocol U2 for 28 minutes. There are two protocols in EMSELLA Chair setting. Protocol 1 (U1) is used for urinary incontinence and protocol 2 (U2) is used once urinary incontinence is under control to improve sexual health and function. During the treatment, patient was seated on the centre of the chair, fully clothed.



The Sexual Health Inventory Score (SHIM) showed improvement from score 21/25 (Mild Erectile Dysfunction) before treatment to 25/25 (No Erectile Dysfunction) after the first treatment, and maintained on second treatment and two-month follow-up.

Erection Hardness Score (EHS) showed improvement from score 3 (suboptimal erection) before treatment to score 4 (optimal erection) after treatment first treatment, second treatment and two-month follow-up.

Key Words: HIFEM, Erectile dysfunction, Emsella Chair, Pudendal Nerve

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Platelet Rich Plasma as an Orthobiologic in a Patient with Adhesive Capsulitis and Supraspinatus Tendon Tear: A Case Report

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Adhesive capsulitis, also known as frozen shoulder, is a debilitating condition characterized by pain, and limited joint range of motion¹ in the shoulder commonly managed with physiotherapy, anti-inflammatory medications, and corticosteroid injections². The concomitant presence of a rotator cuff tear further complicates management, since surgery is typically recommended³. However, orthobiologics such as platelet-rich plasma (PRP) injections are currently used for adhesive capsulitis and rotator cuff tendon tear. ^{4, 5} PRP is a therapeutic option for musculoskeletal injuries due to its regenerative properties on tissue repair and tendon healing. ^{4, 5} Thus, we present a patient with adhesive capsulitis and supraspinatus tendon tear successfully treated with 3 doses of PRP in 2 weeks interval. The outcome measures used were joint imaging using musculoskeletal ultrasound (MSKUS); pain using Visual Analog Scale (VAS); shoulder joint range of motion using a goniometer; and functional outcome using the Shoulder Pain and Disability Index (SPADI), and University of California Los Angeles (UCLA) Shoulder Scale. Post-PRP, the patient showed resolution of supraspinatus tendon tear through MSKUS; decreased pain in VAS; increased left shoulder joint range of motion; and increased scores in the SPADI and UCLA Shoulder Scale for functional outcome. However, there is a scarcity of international research regarding the use of PRP on adhesive capsulitis with a concomitant supraspinatus tendon tear. Currently, there is no local evidence of PRP as an orthobiologic in a patient with adhesive capsulitis and supraspinatus tendon tear hence, this case report was conducted.

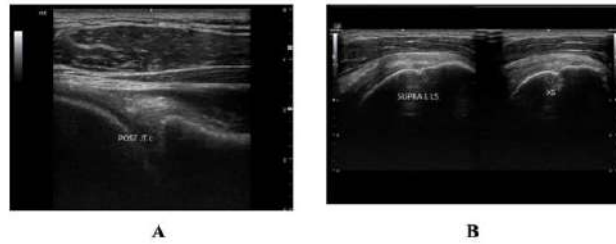
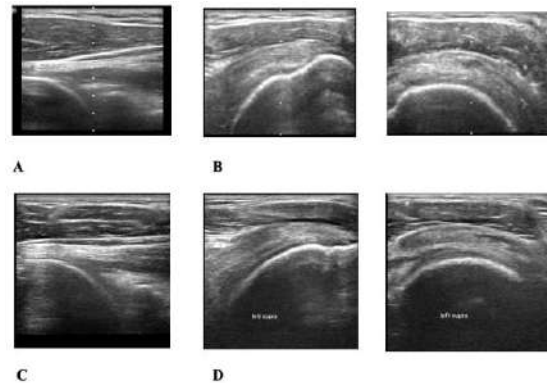


Figure 1. Initial Musculoskeletal Ultrasound of the Left Shoulder A. Posterior Joint B. Supraspinatus in Long Axis and Short Axis Views



Musculoskeletal Ultrasound of the Left Shoulder after PRP A. Posterior Joint post 2nd PRP B. Supraspinatus in Long Axis and Short Axis Views post 2nd PRP C. Posterior Joint pre 3rd PRP D. Supraspinatus in Long Axis and Short Axis Views pre 3rd PRP.

Key Words: adhesive capsulitis, frozen shoulder, supraspinatus tear, platelet-rich plasma, PRP injection

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Best Evidence Summary for Pelvic Floor Rehabilitation in Women with Stress Urinary Incontinence

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Introduction: Stress urinary incontinence is the involuntary leakage of urine from the urethra that occurs when abdominal pressure increases and pelvic floor rehabilitation is an effective means of improving this dysfunction. This paper summarizes the best evidence for pelvic floor rehabilitation in female patients with stress urinary incontinence to inform clinical rehabilitation practice.

Methods: The PIPOST method was used to establish evidence-based questions and to search the literature related to pelvic floor rehabilitation therapy for female stress urinary incontinence in 16 Chinese and English databases such as Up To Date, including guidelines, evidence summaries, best practices, expert consensus, systematic reviews, and Meta-analyses. The search was conducted from the time of database construction to July 2023. Quality assessment was performed by 2 researchers trained in evidence-based medicine, and evidence was extracted and summarized for literature that met quality criteria.

Results: A total of 15 publications were included, including 6 guidelines, 1 expert consensus, 5 systematic reviews, and 3 Meta-analyses. The evidence was finally summarized in 6 areas, including assessment and diagnosis, pelvic floor muscle training, pelvic floor electrical stimulation, pelvic floor magnetic stimulation, bladder function training, and health education, resulting in 23 pieces of best evidence.

Conclusion: This study summarizes the best evidence for pelvic floor rehabilitation in female stress urinary incontinence patients, which provides a reference basis for clinical rehabilitation practice. Healthcare professionals should reasonably select the best evidence for localized and individualized applications and continuously update the best evidence to standardize the rehabilitation practice.

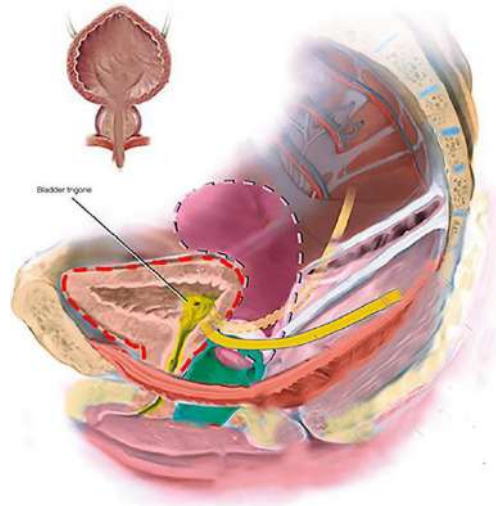


Fig 1.Female stress urinary incontinence

Key Words: female stress urinary incontinence; pelvic floor rehabilitation; best evidence summary

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Meta-analysis of High-Intensity Interval Training for Improving Cognitive Function

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Currently, treatment options for improving cognitive function are relatively limited. High-intensity interval training (HIIT) has been demonstrated to have a certain effect on enhancing cognitive function in some studies. However, there is a lack of high-quality evidence to support its efficacy in the improvement of cognitive behaviors. PubMed, Embase, and Cochrane Library databases were searched for articles published up until February 6, 2023. A total of 18 articles were included in this meta-analysis. We compared the test results of HIIT, moderate-intensity continuous training (MICT), and control across various cognitive assessment tests. In the Stroop test, HIIT showed a significant effect on reducing neural response time (SMD = -0.8, 95%CI: -1.5 to -0.1) compared to MICT. In the TMT test, HIIT demonstrated a significant effect (SMD = -0.6, 95%CI: -1.2 to -0.0) compared to MICT. Moreover, in the MOST test, the HIIT group exhibited significant improvement compared to the control group (SMD = -1.4, 95%CI: -2.1 to -0.6). However, HIIT did not demonstrate significant effects in other cognitive assessment tests such as TMT-A, Montreal Cognitive Assessment (MoCA), Digit Span Test (DST), and Delayed Matching-to-Sample Test (DMST). Overall, our study supports the effectiveness of HIIT in enhancing specific cognitive functions, particularly cognitive flexibility, working memory, task switching ability, attention control, and inhibitory control.

Key Words: High-intensity interval training, cognitive function, moderate-intensity continuous training, exercise, cognitive flexibility, attention.

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Effects of Cognitive-Motor Dual Task Training on Executive Function, Anxiety and Depression in Patients with Post-Stroke Cognitive Impairment

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Effects of cognitive-motor dual task training on executive function, anxiety and depression in patients with post-stroke cognitive impairment

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Introduction: Poststroke cognitive impairment (PSCI) is a common complication of stroke and the main cause of disability in patients. It not only affects cognitive function, but also leads to anxiety and depression in patients. Motor cognitive dual task (MCDT) training refers to the simultaneous execution of two or more cognitive motor tasks. In this study, we aim to explore the effects of cognitive motor dual task training on executive function, anxiety, and depression in PSCI patients.

Method: Fifty PSCI and anxiety depression patients who met the inclusion criteria were selected and divided into a control group and an intervention group. The control group received routine rehabilitation treatment, while the intervention group received MCDT for a total of 4 weeks. Each group completed relevant data collection before and after treatment.

Result: Compared with the control group, the MOCA score of the intervention group increased, while the HAMA and HAMD scores significantly decreased. The results showed that patients improved in visual space and executive function, naming and attention, and relieved anxiety and depression.

Conclusion: Through 4-week rehabilitation training, both the control group and the intervention group can improve the executive function of PSCI patients and alleviate their anxiety and depression to varying degrees. Compared with the control group's routine rehabilitation training, the intervention group's MCDT significantly improves the patient's executive function and anxiety and depression symptoms.

Effects of cognitive-motor dual task training on executive function, anxiety and depression in patients with post-stroke cognitive impairment



Key Words: Post stroke cognitive impairment ; Execution function ; Anxiety and depression; Motor-cognitive dual-task

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气道廓清技术联合摄食训练对脑卒中后吞咽障碍临床研究

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目的: 气道廓清技术联合摄食训练对气管切开后吞咽障碍疗效的分析。**方法:** 选取我院 52 例脑卒中后气管切开存在吞咽障碍的患者, 按随机数字表法分为对照组、观察组各 26 例, 对照组给予常规吞咽训练和摄食训练, 观察组在对照组基础上给予气道廓清技术(循环呼吸技术、振动正压呼气技术、高频胸壁压迫震荡技术)。比较治疗前后渗漏-误吸分级(PAS)、功能性经口摄食评估(FIOS)、气管套管与鼻饲管拔管成功率。**结果:** 4 周后, 观察组 PAS 分级、FIOS 分级、气管套管与鼻饲管拔管成功率优于对照组, 差异有统计学意义 ($P<0.05$)。**结论:** 气道廓清技术联合摄食训练能有效改善患者吞咽功能, 提高拔管成功率, 促进患者康复。

关键词: 气道廓清技术; 摄食训练; 气管切开; 吞咽障碍

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改良八段锦“前三势”对神经根型颈椎病患者的疗效探究

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目的 观察改良八段锦“前三势”对 CSR 患者生活质量的疗效。**方法** 选取 CSR 患者 72 例, 采用随机分组软件将其分为对照组和试验组。对照组接受常规康复治疗, 试验组在对照组基础上接受八段锦“前三势”锻炼, 3 次/周, 连续习练 12 周。于治疗前及治疗后 4、8、12 周, 分别采用田中靖久颈椎病症状量表 20 分法、SAS、VAS、SF-36 对患者的整体症状进行评估。**结果** 干预前, 两组各评分差异无统计学意义 ($P>0.05$); 治疗后, 两组田中靖久 20 分法和 SF-36 评分均有提高, 但试验组较对照组提高明显; 两组 SAS 和 VAS 评分均有下降, 但试验组明显低于对照组, 差异有统计学意义 ($P<0.05$)。**结论** 改良八段锦“前三势”对改善 CSR 患者的诸多症状疗效确切, 值得推广。

组别	例数	性别 (男/女)	年龄 ($\bar{x}\pm s$, 岁)	病程 (M (P25, P75), 月)
改良八段锦组	30	9/21	41.1±10.9	3.00 (2.00, 12.00)
常规康复组	30	10/20	41.3±10.1	4.50 (1.00, 23.25)
检验统计量值		$\chi^2=0.077$	$t=0.049$	-0.178
P 值		0.781	0.961	0.859

两组 CSR 患者的基线资料比较

组别	例数	治疗前	治疗后 4 周	治疗后 8 周	治疗后 12 周
常规康复组	30	11.63±3.23	14.57±2.69a	15.1±2.78a	13.9±2.72a
改良八段锦组	30	10.67±3.65	16.37±1.81ab	17.7±1.64ab	17.9±1.3ab
F 值		F 交互=11.862, F 时间=109.882, F 组间=11.772			
P 值		P 交互<0.05, P 时间<0.05, P 组间<0.05			

两组患者治疗前后不同时间点田中靖久 20 分法评分比较 ($\bar{x}\pm s$, 分)

组别	例数	治疗前	治疗后 4 周	治疗后 8 周	治疗后 12 周
常规康复组	30	46.37±9.66	43.36±7.43a	42.34±8.12a	44.86±5.72a
改良八段锦组	30	44.72±8.76	35.48±7.34ab	32.54±9.04ab	29.87±6.63ab
F 值		F 交互=23.395, F 时间=19.131, F 组间=21.884			
P 值		P 交互<0.05, P 时间<0.05, P 组间<0.05			

两组患者治疗前后不同时间点 SAS 评分比较 ($\bar{x}\pm s$, 分)

关键词：改良八段锦；神经根型颈椎病；焦虑；生活质量；田中靖久 20 分法；
康复延续

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绳带疗法对偏瘫患者步态康复的个案报道

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目的: 探讨绳带疗法在康复治疗中改善偏瘫患者步态的疗效。**方法:** 一例左侧基底节出血的患者, 间断接受常规康复 5 个月, 效果不理想。运用常规康复结合绳带疗法进行 4 周康复, 采用下肢运动功能评定、Holden 步行功能分级、威斯康星步态量表、6 分钟步行测试、Berg 平衡量表等进行评估。**结果:** 治疗后, 患者偏瘫下肢功能提高, 步态及平衡较前改善, 步行效率提高。**结论:** 在常规康复中加入绳带疗法对改善偏瘫患者的异常步态, 提高患者步行能力有一定疗效。

关键词: 偏瘫 绳带疗法 步态

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非特異性下背痛使用肌內效貼紮合併常規復健治療之臨床效益：個案系列

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肌內效貼紮是常應用的非特異性下背痛輔助療法，提供簡單方便治療¹。本研究探討肌內效貼紮結合常規復健治療下背痛的臨床效益。

本研究 2 位非特異性下背痛患者，接受常規復健治療搭配肌內效貼紮。兩位病人在肌內效貼紮治療前後立即接受視覺類比量表(Visual analogical scale)、患者特異性功能量表(Patient-Specific Functional Scale)、歐氏失能量表(Oswestry Disability Index)、腰椎前彎活動度(Range of motion)、總穩定指數(Overall stability index)評估。

二位個案分別為 77 與 58 歲男性。肌內效貼紮與復健治療後，患者特異性功能量表皆有顯著提升。其中，Case 2 歐氏失能量表亦改善。

雖研究個案少，追蹤時間短，但可發現復健治療搭配肌內效貼紮對於下背痛病人有立即療效。

Table 1. Case 1 evaluation result

Case 1	Before treatment	After treatment	Difference
VAS (cm)	4	3	-1
PSFS	3.33	6.66	3.33*
ODI	35.56	26.67	-8.89
ROM	19	20.2	1.2
OSI	0.4	0.4	0

Abbreviations: VAS: Visual analog scale; PSFS: Patient-Specific Functional Scale; ODI: Oswestry Disability Index; ROM: Range of motion; OSI: Overall stability index
*Larger than the MCID (Minimum clinically important difference); MCID of each scale^{2,3}: VAS: -1.4cm; PSFS: 1.3; ODI: -12

Table 1. Case 1 evaluation result

Table 2. Case 2 evaluation result

Case 2	Before treatment	After treatment	Difference
VAS	3	2	-1
PSFS	5	7	2*
ODI	26	6	-20*
ROM	20	20.5	0.5
OSI	0.5	0.3	-0.2

Abbreviations: VAS: Visual analog scale; PSFS: Patient-Specific Functional Scale; ODI: Oswestry Disability Index; ROM: Range of motion; OSI: Overall stability index
*Larger than the MCID (Minimum clinically important difference); MCID of each scale^{2,3}: VAS: -1.4cm; PSFS: 1.3; ODI: -12

Table 2. Case 2 evaluation result



肌内效贴紮方式

关键字：肌内效贴紮

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脑卒中偏瘫患者平衡及步行能力的物理治疗概述

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脑卒中是神经内科常见病，致残率高达 70%—80%[1]。目前针对偏瘫患者下肢运动及步行功能障碍，常规的康复训练主要通过循序渐进的训练方式让患者逐渐恢复运动功能。下肢智能反馈训练系统是一种新兴的智能运动训练系统，其特点是在普通电动起立床的基础上增加了减重支持训练系统和下肢主被动踏步训练，偏瘫早期即可开始模拟站立步行训练[2]。下肢康复机器人是一种自动化的康复训练设备[3]，能为患者提供包括站立训练、行走训练和平衡训练等生理训练模式。本文对目前临床常规训练方法及近年来新兴的智能训练系统及器械治疗方法进行概述。

关键字：脑卒中偏瘫；步行能力；物理治疗

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你也可以闪闪发光——一例命名性失语伴中度认知障碍患者的特色治疗

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认知障碍是患者重返岗位重返生活的高危因素¹。患者男，26岁，颈内动脉瘤术后，大面积脑梗死，病程两年。曾是建筑设计师，学习绘画多年，想开蛋糕店。因无法恢复工作能力，抗拒绘画，交流障碍，转入我院。评估结果为右手协调障碍，失语症评估(WAB)：命名性失语，MoCA：16分，中度认知障碍²。我科让患者描述蛋糕的制作过程，提升记忆力、执行力。使用键盘输入数字、字母、文字等，提升反应速度、认字⁴。让患者教治疗师绘画，提升绘画能力、交流能力。经过治疗后，患者恢复绘画能力，社会参与明显提高。改善认知的方法因人而异，结合患者的爱好、性格可以更有效的让患者重返生活。但正常回归工作仍需要长时间康复。



2023年6月17日，左侧为患者绘画，明显结构不好
2023年6月30日，绘画已经有神韵



2023年7月26日，患者原创治疗师肖像画

关键字：认知障碍；康复；治疗；社会参与

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探究体外冲击波联合手法治疗加超声波治疗对手外伤后肌腱粘连病人的影响

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目的: 探究体外冲击波联合手法治疗加超声波治疗对手外伤后肌腱粘连病人的影响。方法: 选取我院 2021—2023 门诊手外伤后屈及伸肌腱粘连的病人共 20 例, 病程>3 个月, 随机将病人分为对照组和观察组各 10 例。治疗共 2 个月, 对照组采用手法治疗, 包括关节松动, 牵伸, 肌力, 耐力等训练, 30min, 每周 3-5 次, 及水下法超声波治疗, 10min, 每周 3-5 次; 观察组在此基础上加用体外冲击波治疗, 每次给予 2000-4000 次冲击, 每周 1-2 次, 不连续。结果: 观察组的 TAM 及握力明显高于对照组。结论: 体外冲击波抑制了肌腱外源性愈合, 促进了肌腱内源性愈合。因此在手法治疗加超声波治疗的基础上再加用体外冲击波治疗, 可以更好的松解肌腱粘连, 改善手指关节活动度。



超声波水下法, 型号 BTL-SLM, 超声波参数: 频率 3MHz, 占空比 100%, 强度 0.8-1.0w/cm², 方法: 采用水下法, 使用煮沸过的水, 将手部肌腱粘连区域和声头完全浸入水中, 声头距离患处 5cm, 做缓慢往返移动,



冲击波治疗，型 BTL-6000 型发散式体外冲击波

关键字：体外冲击波 超声波治疗 手法治疗 手外伤后肌腱粘连

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探讨外骨骼机器人训练联合 rTMS 对帕金森病患者步态及平衡功能的疗效观察

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引言：探讨外骨骼机器人训练联合 rTMS 对帕金森病患者步态及平衡功能的疗效观察

方法：2021年1月-2023年1月收治帕金森病患者60例，随机分为三组，各20例。3组均给予常规药物及康复训练，机器人组 rTMS 伪刺激配合外骨骼康复机器人训练，联合组 rTMS 配合外骨骼康复机器人训练。比较三组治疗前后计时起立-行走测试（TUGT）、Berg 平衡量表（BBS）评分和意大利 Walkerview 数字化跑台对髋、膝和踝关节的 ROM 评定。

结果：各组患者治疗后 TUGT、BBS 及髋、膝和踝关节 ROM 均较组内治疗前有所改善，且高于对照组（ $P < 0.05$ ）；联合组治疗后 TUGT、BBS 及髋、膝和踝关节 ROM 优于机器人组，差异有统计学意义（ $P < 0.05$ ）。

结论：外骨骼机器人训练联合 rTMS，可改善帕金森病患者步态及平衡功能。

关键字：帕金森 rTMS 治疗 外骨骼康复机器人 步态运动参数 平衡功能 康复训练

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悬吊训练对不完全性脊髓损伤患者平衡功能的影响

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目的: 探讨悬吊训练对不完全性脊髓损伤 (ISCI) 患者平衡功能的影响。

方法: 36 例 ISCI 患者随机分为对照组和实验组。对照组采用常规平衡训练, 实验组应用悬吊进行平衡训练。治疗前后用 Berg 平衡量表 (BBS)、Pro-kin 平衡测试仪评估平衡功能。

结果: 治疗后两组 BBS 评分均显著增加, 实验组显著高于对照组 ($P < 0.05$)。

Pro-kin 平衡测试仪评估: 治疗后, 坐位下稳定极限两组均显著提高, 实验组显著高于对照组 ($P < 0.05$); 双足站位下睁闭眼的运动轨迹长度、椭圆面积, Romberg 测试值均显著减小, 实验组均显著优于对照组 ($P < 0.05$)。

结论: 悬吊训练能显著改善 ISCI 患者平衡功能。

关键字: 脊髓损伤, 悬吊训练, 平衡功能

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1 例说话瓣膜对基底节脑出血伴气切患者呼吸、吞咽和言语的影响报道

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引言：患者男，42岁，因言语障碍、吞咽功能障碍、肢体运动功能障碍、气管切开、带鼻饲管，于2023-05-16住院行康复治疗。病例报告：入院后评估[1]提示呼吸、吞咽功能差，发声困难。予呼吸、口腔内刺激、舌运动等康复训练，治疗一周后尝试半堵管，患者因氧饱低不耐受，言语评估提示痉挛型构音障碍，加用佩戴 Passy-Muir 说话瓣膜继续康复治疗，20天后拔除胃管、气切管，构音障碍改善。结论：说话瓣膜不仅能帮助发声，还可以改善气切患者的吞咽能力、呼吸能力，减少肺部感染风险、提高肺功能以及对气道分泌物的清除能力，缓解其对发声肌群的刺激，对存在痉挛型构音障碍患者言语功能有一定帮助作用。

关键字：说话瓣膜，言语，吞咽，呼吸

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Biomedical Rehabilitation Sciences and Engineering

生物医学康复科学与工程

Poster Presentation



康复机器人手套对脑卒中患者功能恢复影响的 meta 分析

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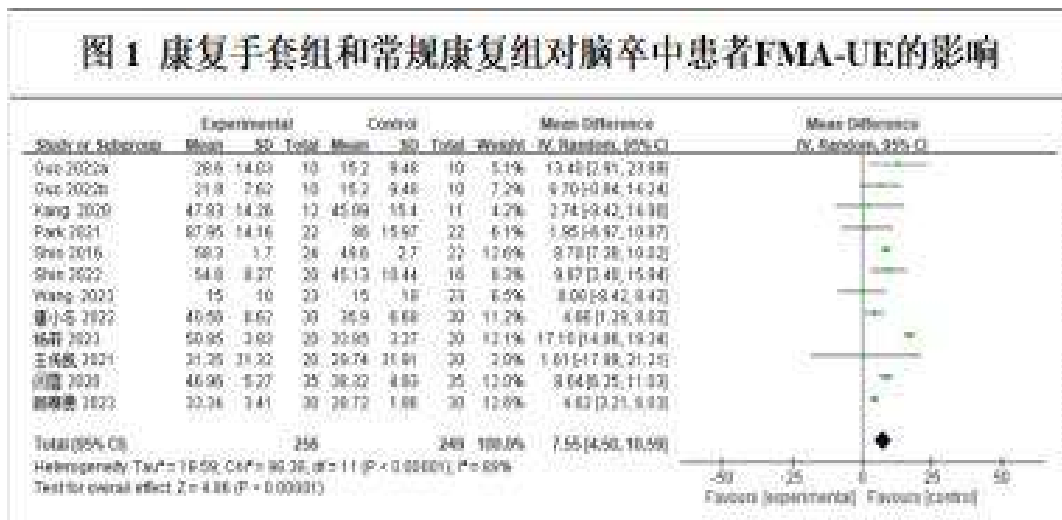
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目的：探讨康复机器人手套对脑卒中患者上肢-手运动功能和日常生活活动能力的干预疗效。方法：检索中英文数据库中关于康复机器人手套治疗脑卒中偏瘫患者的随机对照试验，统计学分析运用 RevMan5.4 软件。纳入 13 项研究，共计 653 例脑卒中患者。观察组采用康复机器人手套联合常规康复治疗，对照组采用常规康复治疗。结果：Meta 分析结果显示，与对照组相比，观察组上肢-手运动功能：Fugl-Meyer 评定量表（FMA-UE）（MD=7.55，95%CI（4.50-10.59）， $P<0.00001$ ）、Wolf 运动功能评定（WMFT）（MD=8.39，95%CI（6.99-9.78）， $P<0.00001$ ）、上肢动作研究量表（ARAT）（MD=11.18，95%CI（9.10-13.26）， $P<0.00001$ ）和日常生活活动能力（MD=9.91，95%CI（2.65-17.17）， $P=0.007$ ）均有显著提高，具有统计学意义（ $P<0.05$ ）。结论：康复机器人手套治疗对于脑卒中患者上肢-手运动功能和日常生活活动能力的恢复均具有积极作用。

图 1 康复手套组和常规康复组对脑卒中患者 FMA-UE 的影响



康复手套组和常规康复组对脑卒中患者 FMA-UE 的影响



图2 康复手套组和常规康复组对脑卒中患者WMFT的影响

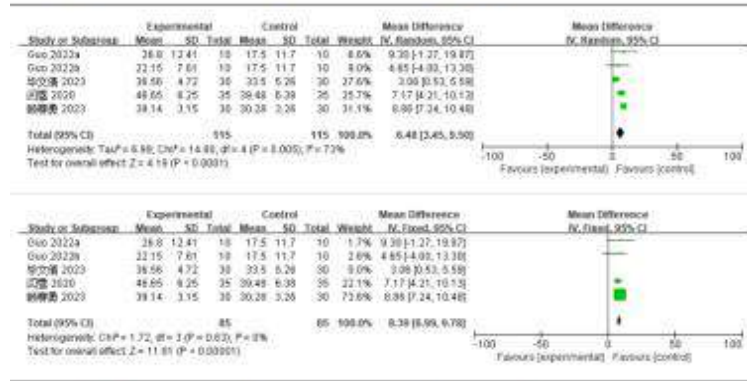
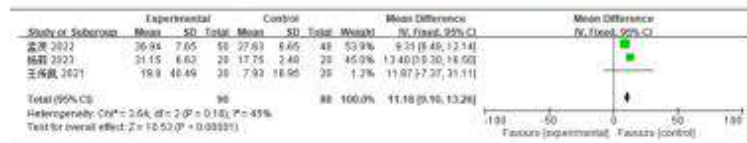
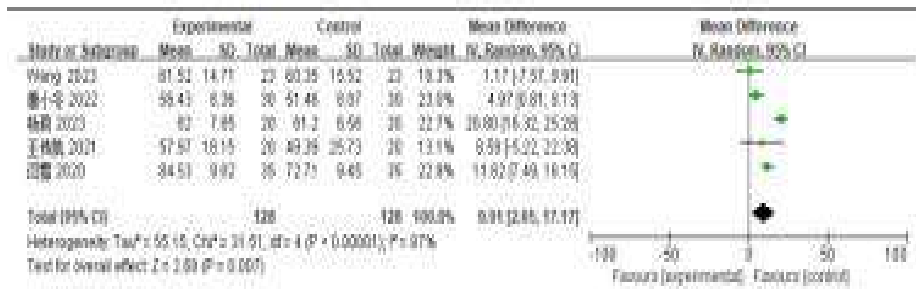


图3 康复手套组和常规康复组对脑卒中患者ARAT的影响



康复手套组和常规康复组对脑卒中患者 WMFT、ARAT 的影响

图4 康复手套组和常规康复组对脑卒中患者MBI的影响



康复手套组和常规康复组对脑卒中患者 MBI 的影响

关键字： Meta 分析、 康复机器人手套、 脑卒中、 运动功能、 日常生活活动能力

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慢性踝关节不稳患者踝关节位置觉评估：范围综述

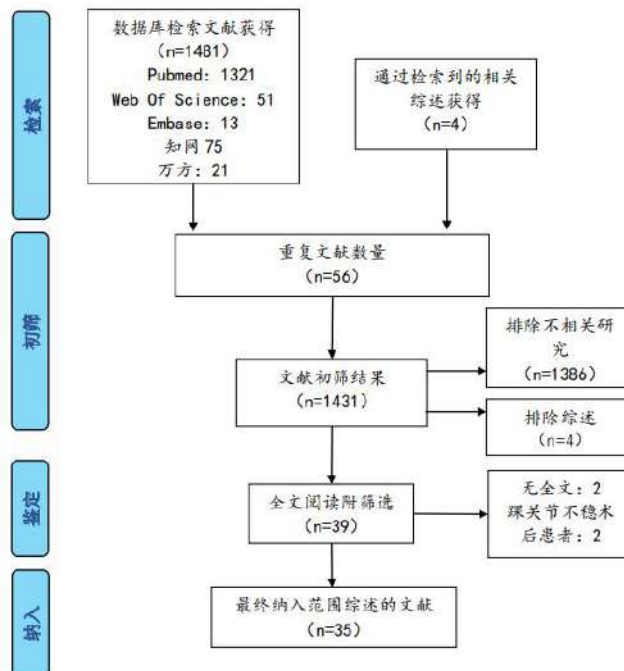
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目的：本体感觉减退导致的功能下降被证明与位置觉有关。本文以总结慢性踝关节不稳（Chronic ankle instability, CAI）采用的踝关节位置觉评估方法为目的进行了范围综述。方法：检索了 PubMed、Web of Science、Embase、知网及万方数据库 2018 年 1 月至 2023 年 6 月 5 日发表的研究类文献。对评估方式、评估设备、评估的相关变量进行分类及整理。结果：共检索出 1485 篇文献，最终纳入 35 篇。最常用的评估方法是关节位置再现法（66%），最常用的评估设备是等速肌力测试系统，最常用主动复位（69%）、内翻 15°（31%）评估，使用最多的起始角度是中立位（43%），角速度是 5°/s（17%），记忆时间是 10s（46%）。结论：建议对主动运动范围识别测试（AMEDA）进行改良，将目标角度设为内翻 15°，起始角度为中立位，角速度为 5°/s，记忆时间为 10s。



关键字：慢性踝关节不稳；本体感觉；评估；范围综述

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Epidemiology, Health policy and systems

流行病学、卫生政策和系统

Poster Presentation



Investigation and Analysis of Psychological Status of Nursing Staff after Open Management of Novel Coronavirus Infection

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Objective To analyze the psychological status of nursing staff after open management of novel coronavirus infection. **Methods** From December 16, 2022 to January 2, 2023, a total of 208 nurses were investigated by using the general information questionnaire, Generalized Anxiety Scale (GAD-7), Athens Insomnia Scale (AIS), Self-Rating Depression Scale (SDS), 12 - item General Health Questionnaire (GHQ-12) and 10-item Connor-Davidson Resilience Scale (CD-RISC-10). **Results** Nursing staff generally had mild generalized anxiety and insomnia, and 51.5 % of them had depression. The overall mental health level and psychological resilience level of nursing staff were moderate. Among them, having or being infected with novel coronavirus is the influencing factor of sleep disorder, depression and mental resilience of nursing staff ($P < 0.05$) . Family members having or being infected with novel coronavirus is the influencing factor of depression of nursing staff ($P < 0.05$) . Having anti-epidemic support experience, having or being infected with novel coronavirus, and having physical exercise are the influencing factors to improve the mental health level of nursing staff ($P < 0.05$) . The higher the education level and having anti-epidemic support experience are the influencing factors to improve the mental resilience level of nursing staff ($P < 0.05$) . **Conclusion** After the open management of novel coronavirus infection, the psychological state of nursing staff is poor, and the hospital should give full support to create a good working environment for medical staff. Nursing staff should also learn to relieve psychological pressure and have a healthy psychology in order to effectively respond to emergencies.



Table 3 Scores of mood, sleep and psychological status of nursing staff after open management of COVID-19 infection (n=198)

	Min	Max	Score (Score, $\bar{x} \pm s$)
GAD-7	0.00	21.00	5.79±5.75
AIS	0.00	24.00	7.25±5.05
SDS	25.00	90.00	52.39±11.73
GHQ-12	12.00	42.00	25.32±6.16
CD-RISC-10	0.00	40.00	24.85±9.27

Scores of mood, sleep and psychological status of nursing staff after open management of COVID-19 infection (n=198)

Key Words: Novel coronavirus infection;Nursing staff;Psychological;Questionnaires

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Tea Consumption and Psychological Resilience: Variations Across Disease Contexts

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Objectives: To investigate the association between tea consumption and psychological resilience (PR) in various disease contexts.

Methods: In total, 26,454 community adults aged 60 years or older with information of tea consumption and PR were recruited. Tea consumption and PR were evaluated by drinking frequency and a validated scoring scale, respectively. Clustering analysis was used to determine multimorbidity clusters based on ten chronic conditions. Regression analysis was used to investigate the association between tea consumption and PR. Several sensitivity analyses were conducted to assess the robustness of the main findings.

Results: The sample had an average of 85.6 years, with 55.7% being female. The mean PR score was 19. Ten exclusive multimorbidity clusters were identified from ten chronic diseases. Daily tea drinking associated with better PR (odds ratio [OR]=1.174, 95% confidence interval [CI]: 1.089-1.266) and experienced greater PR improvement (OR=1.176, 95% CI: 1.043-1.327) compared to non-drinking. Female (OR=1.362, 95% CI: 1.124-1.649) and the younger-old (< 85 years) (OR=1.243, 95% CI: 1.075-1.436) participants were more likely to experience this benefit. This positive association remained significant in participants with multimorbidity (OR=1.437, 95% CI: 1.116-1.850), but not in those robust or with single chronic disease. Particularly, the OR reached its peak within the multimorbidity cluster characterized by cardiometabolic conditions (OR=3.902, 95% CI: 1.081-14.084). These results remained consistent across numerous sensitivity analyses.

Conclusions: Daily tea consumption is positively associated with PR among older adults, especially in those with cardiometabolic multimorbidity. Enhancing PR may require personalized strategies for community older adults with different disease context.



Key Words: tea consumption, psychological resilience, multimorbidity, disease cluster

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Quality of Life and Social Factors Affecting the Self-Perceived Family Burden of Disabled Adults after Traffic Accidents

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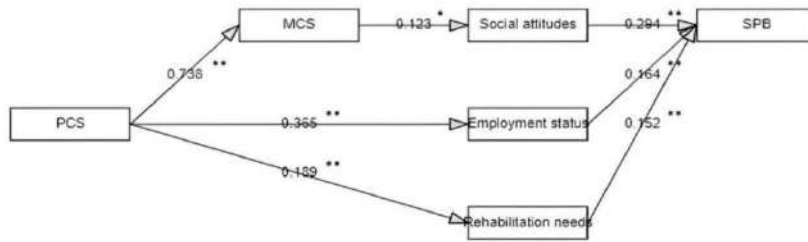
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Background: Traffic accidents cause serious disability with long-term effects on health and life quality. Whether and how health-related quality of life, social attitudes, employment status and rehabilitation needs affect self-perceptions of burdening the family among adults physically disabled after a road accident has rarely been studied.

Methods: A questionnaire survey of 266 adults disabled in a road accident was conducted. Health-related quality of life was quantified using the short form 36. Pairwise comparisons, categorical regression and pathway analysis were conducted.

Results: Forty-seven percent of those surveyed reported feeling that they were a burden to their family. Such self-perceptions were not, however, significantly correlated with health-related quality of life. Instead, health-related quality of life was found to influence the self-perception mediated by social factors such as social attitudes, employment status, and rehabilitation needs. Together, health-related quality of life (15.1%) and those three social factors (61.0%) explained 76.1% of the variance in burden self-perceptions.

Conclusions: The findings suggest that addressing psychosocial factors in addition to purely medical needs is important for alleviating self-perceptions of family burden when an adult is physically disabled in a traffic accident. Enhanced social support and multidisciplinary intervention are called for.



Standardized coefficients between factors for the final integrated model of predicting burden self-perceptions. Note: PCS = Physical component summary, MCS = Mental component summary

KeyWords: quality of life, self-perceptions, family burden, social attitudes, rehabilitation needs, employment status, adults with a physical disability, road traffic injuries

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A Survey of Spinal Curvature in Primary School Students during the Transition to Junior High School in Zhangjiagang City

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Purpose: To investigate the prevalence of positive cases of spinal curvature in the transitional stage between primary and secondary school in Zhangjiagang City, and analyze its association with abnormal posture, in order to provide evidence for the prevention of adolescent spinal curvature.

Methods: A census method was used to screen students in the transitional stage between primary and secondary school in Zhangjiagang City from September to October 2022, following the screening criteria outlined in “Screening for Abnormal Spinal Curvature in Children and Adolescents.” The patients’ abnormal postures were evaluated using the “Posture Assessment Scale.”

Results: A total of 14,706 individuals were screened, with a city-wide coverage rate of 97.15%. The positive rate of spinal curvature in students in the transitional stage between primary and secondary school was 6.88%, with rates of 5.74% for males and 7.69% for females. The positive rates for spinal curvature in the thoracic, thoracolumbar, and lumbar segments were 2.24%, 2.10%, and 2.51%, respectively. Multivariate logistic regression analysis showed that head tilt, uneven shoulders, and hunched back were risk factors for positive cases of thoracic spinal curvature, while head tilt and uneven shoulders were risk factors for positive cases of thoracolumbar and lumbar spinal curvature.

Conclusion: The positive rate of spinal curvature in the transitional stage between primary and secondary school in Zhangjiagang City is 6.88%. Head tilt and uneven shoulders are risk factors for spinal curvature in various segments, and Flatback is a risk factor for thoracic spinal curvature.

Key Words: Scoliosis; screening; primary and secondary school students; abnormal posture



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新冠病毒防控期间康复医学科床旁康复治疗的临床规范化管理及实践探讨

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目的: 探讨康复医学科床旁康复治疗在新冠病毒防控期间的临床规范化管理及实践。

方法: 结合防疫期间的临床管理实践, 落实其对策及处理方案, 包括科室紧急预案的制定、风险管理的实施、核心工作制度的建设、消毒隔离操作的实施、治疗记录的书写、病患线上随访的完善、康复科普线上宣传等, 实现院内资源共享; 实行治疗师理论与操作技能考核双管齐下; 在资源整合中降低前移康复治疗工作风险, 满足临床患者康复需求。

结果: 强化床旁康复治疗工作的管理在病毒防疫期间尤为重要。

结论: 在新冠病毒感染防疫期间良好的基础环境中开展床旁康复治疗, 风险与挑战并存。

关键词: 新冠病毒、规范化、管理、实践

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县域医共体模式下脑卒中规范化康复治疗技术分级推广应用

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背景：在中国县域基层，脑卒中的三级康复能力需要进一步提高。

目的：主要探讨医共体模式下县域医共体康复规范化诊疗技术的推广运行和管理模式。

方法：选取医共体内就诊的脑卒中患者分成对照组和观察组，观察组在对照组基础上实施县域医共体内三级综合康复管理模式，管理后4个月评价两组医疗质量和患者康复效果和两组患者对康复管理模式的满意度。

结果：观察组患者各项评价明显优于对照组，差异有统计学意义（ $P < 0.05$ ）。

结论：县域医共体内三级综合康复管理模式不仅可提升县域医院管理质量，同时还可提高患者康复效果。

关键字：县域 脑卒中 三级康复 规范 分级

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既往病史与不良生活习惯对慢性疼痛患者 ICF-RS 不同维度的影响

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目的 探讨采用 ICF-RS 研究既往史及生活习惯对慢性疼痛患者功能状态影响。

方法 采用问卷调查慢性疼痛患者生活习惯、既往史及 ICF-RS 评分, 采用 χ^2 检验、二元 Logistic 回归模型分析既往病史及生活习惯对慢性疼痛患者 ICF-RS 功能水平的影响。

结果 高血压、糖尿病、高血脂、吸烟、饮酒对身体功能、高血压对社会参与及糖尿病对日常活动维度影响, 差异有统计学意义; 在排尿功能、利用交通工具方面, 高血压患者功能障碍更明显; 在性功能方面, 高脂血症患者功能障碍更明显。

结论 既往病史及生活习惯影响慢性疼痛患者功能状态, 有高血压、高血脂病史的慢性疼痛患者更需关注身体功能与社会参与能力。

ICF 功能等级既往病史或生活习惯有统计学意义类目情况 影响慢性疼痛患者 ICF-RS 类目的二元 Logistic 回归分析

关键字: 慢性疼痛; ICF-RS; 既往病史; 不良生活习惯

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Rehabilitation Practice and Perspective

康复实践与展望

Poster Presentation



Using a Robotic Exoskeleton Device for Return to Bowling: A Case Report Study

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Background and Aim:

Supporting patients to realize their goals is an important aspect of rehabilitation. Robotic exoskeleton devices are increasingly used in clinical settings for functional and gait training. However, their applicability in return to sport rehabilitation lacks evidence. This study examined a lower-limb robotic exoskeleton device's potential effect on trunk and lower limb coordination during bowling in a patient with pyogenic spondylitis.

Methods:

The subject (male, 70s) started home rehabilitation after discharge from a 3-month hospitalization due to pyogenic spondylitis. He presented left gluteus maximus and gluteus medius muscle weakness (Manual Muscle Test of 4). His Timed-Up-and-Go test was 7 seconds, and his Berg Balance Scale result was 55 points. He could walk with T-cane independently outdoors.

A robotic exoskeleton device was used for this subject. We evaluated the subject's bowling movement before (Off-robot) and while (On-robot) wearing the device. We assessed pitching motion stability, reproducibility, and trunk and lower limb coordination via video recordings. Additionally, the subject completed a self-efficacy questionnaire consisting of 5 items rated on a 5-point scale, before and after the trial.

Results:

Off-robot: insufficient support of the left leg and unstable pitching movement were observed. [Figer1]

On-robot: the left leg and overall movement pattern appeared more stable. [Figer2]



The average score of the questionnaire indicated increased in self-efficacy.

[Conclusion]

The robotic exoskeleton device improved movement stability and coordination during bowling. Our results indicate the possibility of using robotic aids for enhance user's self-efficacy for return to sporting activities.



[Figer1]



[Figer2]

Key Words: robotic exoskeleton, sport rehabilitation, sport activity, bowling

A Scoping Review on Upper Extremity Prostheses: Satisfaction, Barriers, and their Implications in Resource-Limited Countries

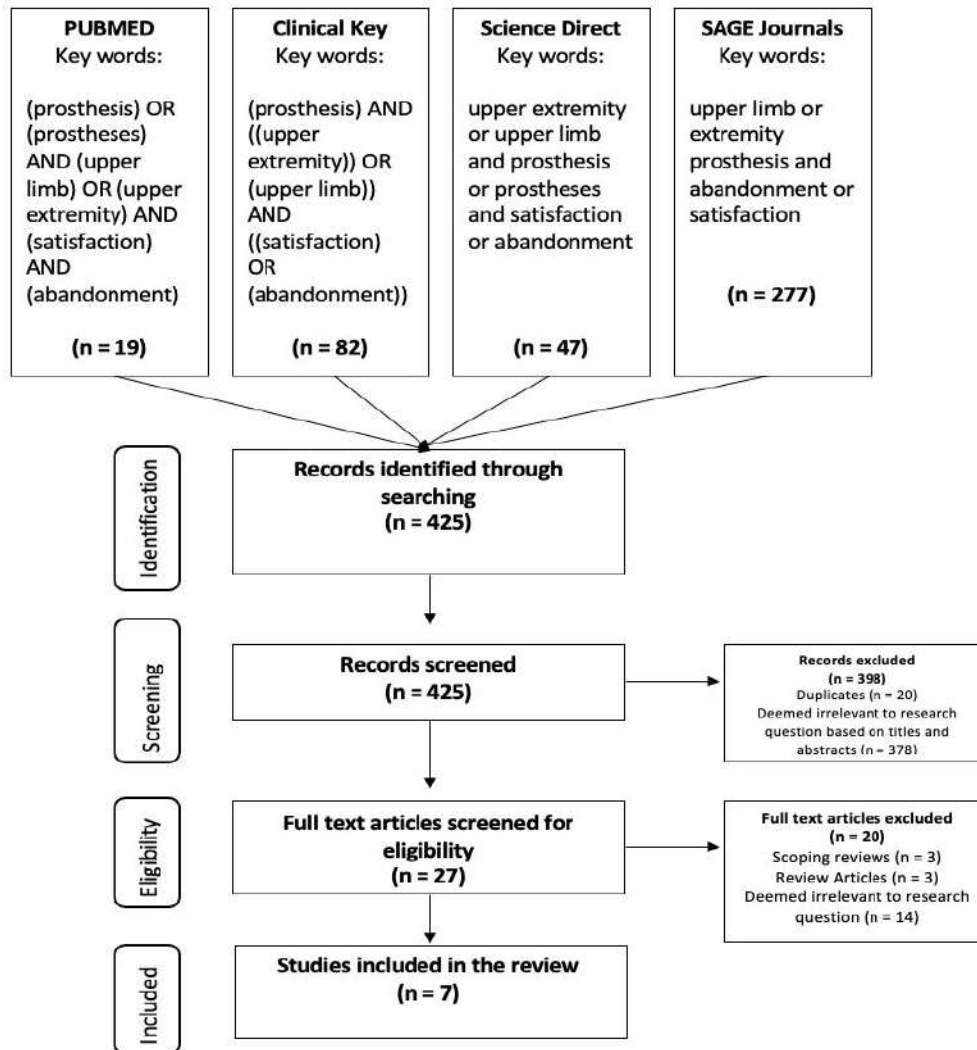
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The rates of prosthetic abandonment are significantly high, and the reasons for so are not extensively understood especially in resource-limited countries. A scoping review was conducted to examine the literature on the satisfaction with and barriers to using specifically upper limb prostheses. A systematic search of the literature identified 425 studies. After reviewing the articles using predetermined inclusion and exclusion criteria, seven cross-sectional studies were included in the final review. Barriers to the use of upper limb prostheses include the characteristics of the prosthesis (type, comfort, weight, functionality, price, and availability) and individual patient factors (recent prosthetic user, level of amputation, congenital and accidental limb loss, pain, and duration between amputation and prosthetic fitting). Considering tailored prosthetic design and funding may result in improved prosthetic adherence.



PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) diagram

Lead author, year of publication and country site,	Outcome Measures	Factors leading to satisfaction with prosthesis use	Reasons for prosthetic device abandonment
<i>Sosteric, 2020, Slovenia</i>	Trinity Amputation and Prosthesis Experience Scales - Revised (TAPES - R)	Longer time for adaptation to a prosthesis, more distal amputation due to higher functional satisfaction, Use of passive/cosmetic prostheses	Recent user of prosthesis, more proximal amputation (above-elbow amputees) due to activity restriction
<i>McFarland, 2010, USA</i>	Survey for Prosthetic Use	More distal amputation, early fitting of the device	More proximal amputation, pain, heavy weight of the device, short residual limbs which could not support device, inability to control the device, lack of comfort and poor fit
<i>Biddiss, 2011, Canada</i>	Questionnaire and study methodology were approved by the science and ethics review boards at the Holland Bloorview Kids Rehabilitation Hospital and the University of Toronto	Better fundings, better healthcare coverage, better affordability	Expensive price and lack of availability, lengthy time delays during which the prosthesis is not available, poor and delayed fitting, fear of damage, discomfort, delays in repair
<i>Biddiss, 2007, Canada</i>	Six part, self – administered questionnaire approved by Bloorview Kids Rehab and the University of Toronto	Being involved in prosthesis selection, more distal upper limb loss, early fitting of prosthesis	Proximal level of limb loss, congenital limb absence compared to acquired, residual limb and phantom limb pain, skin irritation, blisters, upper body pain, function, poor control, cost, lack of sensory feedback, excessive weight
<i>Resnik, 2022, USA</i>	Modified Orthotics and Prosthetics User Survey (OPUS) Client Satisfaction with Device (CSD) instrument	Pain-free to wear, comfortable throughout the day, manageable weigh	Lack of comfort, unacceptable appearance and poor utility (hold and grab objects but not able to complete activities that are important)
<i>Moradi-Hades, 2019, Iran</i>	Trinity Amputation and Prosthesis Experience Scales (TAPES)	The study suggested that the kind of prosthesis does not affect prosthesis satisfaction rates, but there may be advantages in one over the other. Mechanical prosthesis is better functionally. Cosmetic prosthesis has better social activity, better appearance.	Phantom pain, residual limb pain, limited functional activity, poor social acceptance, heavy weight of prosthesis
<i>Kyberd, 2007, UK</i>	Original questionnaire	Lighter prosthesis, more natural size and color, increased speed of movements, more natural looking movements, more durable and longer lasting material	Heavy weight, poor fit of socket, poor appearance, limited movement and grip function, poor sensory feedback, easily damaged

Studies relevant to the factors affecting the use of upper extremity prostheses. (N = 7).



Key Words: upper extremity amputation, prosthesis, abandonment, satisfaction, resource-limited country

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Exercise Training for Post Covid-19 Patients: A Feasibility Study

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Introduction

SARS-CoV-2 infection may lead to varying degrees of physical, psychological and multi-system dysfunction. Those with persistent dyspnoea and fatigue experiences decreased functional capacity and quality of life. These symptoms may be improved with exercise training. This study aimed to assess the feasibility of an outpatient pulmonary exercise training programme (OPETP) and evaluate its effects on physical endurance, dyspnoea, quality of life and functional sequelae.

Methods

All eligible symptomatic patients referred from a multi-disciplinary COVID-19 clinic were recruited into a 10-week OPETP. Primary objective was to assess the feasibility of OPETP in terms of the recruitment rate (turn-up, show-up and no-show), adherence and tolerability. Secondary objectives were to evaluate changes on exercise capacity (Six-Minute Walk Test [6MWT]), dyspnoea (Baseline Dyspnoea Index/Transition Dyspnoea Index [BDI/TDI] and Modified Medical Research Council Dyspnoea Scale [mMRC]), quality of life (Short Form Chronic Respiratory Disease Questionnaire [SF-CRQ]) and functional sequelae (Post COVID-19 Functional Status scale [PCFS]).

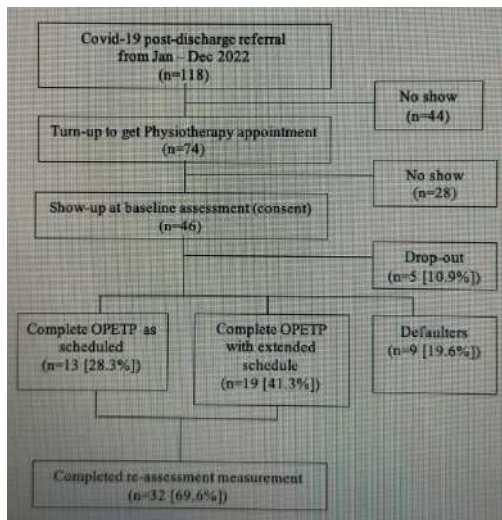
Results

Between January and December 2022, 118 post-COVID-19 patients were referred for OPETP, but only 74 (63%) turned-up for an appointment. Of this, 46 (62%) attended baseline assessment, 13 (28%) completed the OPETP within 3 months, 19 (41%) completed OPETP over an extended duration, and 14 (30%) dropped out. 27 subjects

(66%) tolerated the pre-planned training regimen. Those who completed OPETP (n=32), Wilcoxon signed-rank tests showed significant changes in 6MWT, mMRC dyspnoea scale, SF-CRQ and PCFS (all $p < 0.05$).

Conclusion

OPETP is feasible in symptomatic post-COVID-19 patients. It also improves symptoms, quality of life and functional capability.



	n = 32	Mean±SD	N (%)	Range
Age, years		55±14.8		(25 - 80)
Gender, female (%)				
Female (%)			19 (59%)	
Male (%)			13 (41%)	
Ethnicity, n (%)				
Malay			23 (72%)	
Chinese			3 (9.4%)	
Indian			5 (15.6%)	
Others			1 (3%)	
Category COVID- disease severity, n (%)				
1 (None)			0	
2 (Mild)			10 (31.3%)	
3 (Moderate)			1 (3.1%)	
4 (Severe)			17 (53.1%)	
5 (Critical)			4 (12.5%)	
		Pre (Mean±SD)	Post (Mean±SD)	
6MWD				
6MWD%pred		369±114	439±122	
mMRC		1.5±0.7	0.6±0.6	
TDI index		4±5	3±4	
SF-CRQ		39.5±10.6	47±7	
PCFS		2±1	0.8±0.75	

Flow-chart of patient recruitment. Defaulters are those who attended < 70% of the total exercise session even after extended schedule. Flow chart showing patient recruitment and adherence - feasibility 1 and 2 (Primary objective) Out-patient Pulmonary Exercise Training Program (OPETP)

Details of the study participants (n=32): Data is presented as Mean±SD, n (%) or (range). Abbreviations: n = number; 6MWD = six-minute walk distance, mMRC = Modified Medical Research Council) Dyspnoea Scale, TDI = Transition Dyspnoea Index, SF-CRQ = Short Form-Chronic Respiratory Questionnaire, PCFS = Post-COVID-19 Functional Status Scale.

Key Words: SARS-CoV-2 Infection, strength training, aerobic exercise, feasibility studies

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Influence of Osteoarthritis on Quality of Life Among Elderly Population in Lahore, Pakistan

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Introduction Osteoarthritis (OA) of the knee is age related joint condition, resulting from wearing and tearing with cartilage. Functional disability, discomfort, and a lower quality of life are its defining characteristics. It was traditionally understood as a “wear-and-tear” of the articular cartilage illness, latest research has modified the initial definition.

Objective; to determine the effects of knee osteoarthritis on quality of life among elder population in Lahore

Methodology; A cross sectional study conducted for 184 knee osteoarthritis patients to investigate quality of life deterioration. Data was taken from knee OA patients 60 years or above in govt. and private hospitals in Lahore. SF 36 was used to determine the health related quality of life and KOOS questionnaire was used to determine the knee related quality of life. Both male and female were included in this study. (SPSS) version 21 was used for analysis.

Results; the main finding of the study was related to the association of demographic data with health related quality of life in SF 36 domains. Age, lifestyle and current health status showed significant value ($P < .05$) with General health status. Age and current health status showed significant value ($P > < .05$) with Functional limitations, Physical health problems and emotional health problems. This study shows that quality of life deteriorates in elder population with knee osteoarthritis.

Conclusion; KOA had worsen quality of life in elder population. Health related Quality of life was associated with age, general health status, functional limitations, emotional aspects, pain and mental health.



		ADL's LIMITATIONS				CHI SQUARE VALUE	DF	p value
		mild	moderate	severe	extreme			
GENDER	female	16	55	57	3	2.684*	3	.443
	male	4	27	22	0			
AGE	60-64	8	17	20	1	13.265*	12	.350
	65-69	6	24	20	0			
	70-74	2	20	18	0			
	75-79	3	11	10	2			
	80&above	1	10	11	0			
LIFESTYLE	active	12	46	43	2	2.214*	4	.697
LE	sedentary	4	26	26	1			
	Physical exercises	4	10	10	0			
CURRENT HEALTH STATUS	good	11	41	31	1	4.275*	6	.509
	average	8	30	40	2			
	poor	1	11	8	0			

Chi square result of KOOS (ADLs) Associated with demographic data

		SPORTS & RECREATIONAL ACTIVITIES LIMITATION				CHI SQUARE VALUE	DF	p value
		mild	moderate	severe	extreme			
GENDER	female	3	15	22	71	5.105*	3	.164
	male	4	11	5	33			
AGE	60-64	5	18	6	17	31.139*	12	.002
	65-69	2	16	10	22			
	70-74	0	8	5	27			
	75-79	0	3	3	20			
	80&above	0	1	3	18			
LIFESTYLE	active	7	30	16	50	19.048*	4	.004
	sedentary	0	6	8	43			
	Physical exercises	0	10	3	11			
CURRENT HEALTH STATUS	good	3	22	16	43	10.128*	6	.119
	average	4	23	9	44			
	poor	0	1	2	17			

Chi square result of KOOS (sports and recreational activity limitation) Associated with demographic data

		PAIN			CHI SQUARE VALUE	DF	p value
		mild	moderate	severe			
GENDER	female	8	99	24	6.040*	2	.049
	male	9	38	6			
AGE	60-64	1	36	9	17.345*	8	.027
	65-69	3	38	9			
	70-74	6	29	5			
	75-79	7	16	3			
	80&above	0	18	4			
LIFESTYLE	active	9	74	20	2.235*	4	.693
	sedentary	6	43	8			
	Physical exercises	2	20	2			
CURRENT HEALTH STATUS	good	7	61	16	3.573*	4	.467
	average	9	62	9			
	poor	1	14	5			

Chi square results of KOOS (PAIN) associated with demographic data

Key Words: osteoarthritis , Health related quality of life HRQoL, geriatrics, ADL (activities of daily living)

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Vestibular Rotation Training Can Temporarily Increase Muscle Strength in Adults.

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Objective: To investigate the effect of vestibular rotation training on muscle strength in adults.

Methods: 160 healthy adults with a mean age of 20.9 ± 0.94 years were enrolled in this study. Before the test, the grip strength of the left and right hands was measured, and then the stationary centripetal rotation was performed respectively (10 revolutions at $180^\circ/\text{s}$). The grip strength of the test side was measured again immediately after rotation, 2 minutes and 5 minutes, and the grip strength of the other side was tested after resting for 3 minutes.

Results: The repeated measurement variance analysis showed that the grip strength increased significantly after rotation, but decreased slightly with time. Left hand respectively 25.6 (24.2 26.9), 26.8 (25.4 28.2), 26.5 (25.2 27.7), 26.2 (24.9 27.5); Right hand was 27.3 (25.7 29.0), 29.7 (28.2 31.3), 28.5 (26.9 30.1), 27.9 (26.4 29.4); There were significant differences in all of them.

Conclusion: The centripetal vestibular rotation training can temporarily increase the muscle strength of unilateral limb, which provides a possible therapeutic idea for improving the unilateral muscle strength of early stroke. In the future, further tests are needed to explore the rule of muscle force after rotation and determine the best rotation training scheme.

Key Words: vestibular rehabilitation; centripetal rotation training; grip

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The Bibliometrics-based Genomics Studies on Prognosis of Ischemic Stroke

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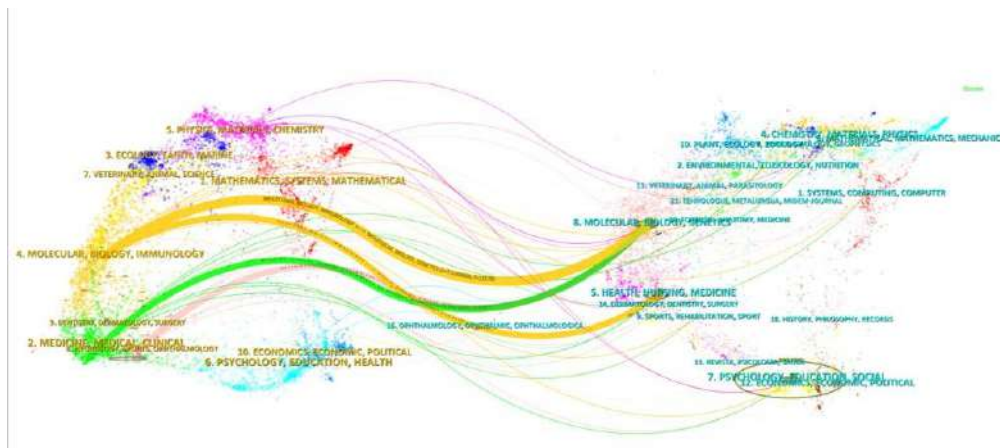
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Objective:To analyze the current research status, hotspots, and frontier fields of genomics studies on the prognosis of ischemic stroke from 2018 to 2022.

Methods:The related English literature of genomics in the field of ischemic stroke was retrieved in the Web of Science Core Collection (SCI-EXPANDED) from January 1, 2018 to December 30, 2022. CiteSpace software was used to analyze the cooperation network among the publishing countries, institutions and authors; the co-citation network of reference, first author of reference and journals; clustering results of references; the co-occurrence network of keywords and their clustering results. The results were presented by visual maps.

Results:A total of 353 papers were included in this study. China ranked the first in the world with 144 articles, but only with five countries with cooperation partnership. Capital Medical University was the most prolific institution, with 20 articles. Six of the top ten authors were from members of the International Stroke Genetics Consortium (ISGC), who were the main contributors and formed major cooperation clusters. Genome-wide association analysis (GWAS) and Mendelian randomization were the most commonly used research methods. In recent years, the hotspots focused on exploring the common genetic pathways of stroke prognosis, genetic variation affecting the efficacy of antiplatelet drugs, and the influence of inflammatory mechanism on prognosis.

Conclusions:The genomics studies of ischemic stroke prognosis, which explore the underlying mechanism to facilitate new drugs development, have gained the popularity year by year and formed several research hotspots.



Change of research content of genomics studies on prognosis of ischemic stroke

Key Words: Ischemic stroke; Prognosis; Genomics; Bibliometrics; CiteSpace

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Progress and Thinking on the Application of Acupuncture Combined with Transcranial Direct Current Stimulation in Poststroke Anxiety

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Post-stroke anxiety, as one of the severe complications following stroke, exerts significant negative impacts on patients' recovery process. Neurological function restoration plays a pivotal role in the treatment of post-stroke anxiety. Acupuncture, as a traditional Chinese therapeutic approach, and transcranial direct current stimulation (tDCS), as an emerging non-invasive brain stimulation technique, have both been proven effective in enhancing neurological function in post-stroke anxiety patients. Moreover, they possess the advantage of minimal adverse reactions, which makes them applicable in the treatment of post-stroke anxiety. However, there is limited research regarding the combined application of these two therapies for treating this condition. This article aims to explore the feasibility of their combined application by elucidating the pathogenesis of post-stroke anxiety, its clinical progression, the mechanisms by which acupuncture and tDCS therapy ameliorate post-stroke anxiety, and to provide novel therapeutic insights for the clinical treatment of post-stroke anxiety.

Key Words: Post-stroke anxiety, Acupuncture, Transcranial direct current stimulation, Progress

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Review of Hyperbaric Oxygen Therapy for Clinical Rehabilitation of Disorders of Consciousness

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The author searched Pubmed and other English databases to summarize the potential pathophysiological mechanism of HBOT, including increasing CMRO₂; reducing of nerve cell inflammation, improving cell metabolism and mitochondrial function, inhibiting membrane integrity; alleviating edema, reducing nerve cell apoptosis (mainly hippocampus); promoting the establishment of collateral circulation of intracranial blood vessels and intensify neuroplastic responses through promoting axonal sprouting and synapse remodeling. Molecular level regulation of the above mechanisms is based on the inducing of Bcl-2 and Bcl-xl, reducing Cas-3; inhibiting mPTP permeability and neutrophils' adhesion to endothelial cells; reducing IL-8, TNF- α , MMP-9; increasing IL 10; enhancing Nrf 2 and HO-1; inhibiting TLR 4 and NF- κ B expression; reducing endothelin and promoting hypoxia inducible factors and cAMP signaling. Treatment of acute TBI, the etiology of injury is more relevant to research than the chronic phase. For DOC caused by TBI, the time window of HBOT can be advanced to 24 hours after traumatic, A chamber pressure of 1.5~2.0 ATA, oxygen inhalation with constant pressure for 60 min/ day, once a day, a total of 40-120 treatments continuously in hyperbaric oxygen chambers; the time window of non-traumatic causes of DOC consider to be as better as early, the effect of 1.5-2.5 ATA, oxygen inhalation 60-90 minutes/day, 20-60 treatments continuously. we are convinced that HBOT combined with multiple arousal promoting treatments will make important progress in the years to come for DOC. The evaluation of effectiveness on HBOT focuses on behavioral scale assessment, neuroelectro-physiological assessment and functional imaging assessment.

Key Words: hyperbaric oxygen therapy, consciousness disorders, arousal promoting



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A Case Study of Core Vocabulary Method Combined with Dynamic Temporal and Tactile Cueing in Improving Speech Function of Childhood Apraxia of Speech.

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Objective: To explore the effect of core vocabulary method combined with dynamic temporal and tactile cueing on speech function of childhood apraxia of speech.

Methods: A case of childhood apraxia of speech, who is a boy of 2 years and 10 months, had no meaningful speech expression, and mostly used nasal hum instead of pronunciation. He was intervened by core vocabulary method combined with dynamic temporal and tactile cueing for 6 weeks. The motor speech evaluation standard of western countries、 evaluation method of speech apraxia in China Rehabilitation Research Center 、 apraxia of speech rating scale、 oral motor function evaluation and glossary of chinese phonetic ability assessment were used Is used to assess its condition.

Results: After the treatment of core vocabulary method combined with dynamic temporal and tactile cueing, the children's speech ability has been improved, the types of pronunciation have increased, and the oral motor function and phonetic ability of articulation have been improved.

Conclusion: Core vocabulary method combined with dynamic temporal and tactile cueing method is effective in improving children's speech ability of hildhood apraxia of speech.

Ke Words: speech apraxia、 core vocabulary method、 dynamic temporal and tactile cueing

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基于 ICF-RS 指导的多模态镇痛在下肢骨折围手术期患者的应用及疗效观察

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目的: 观察基于 ICF-RS 指导的多模态镇痛在下肢骨折围手术期患者的应用。**方法:** 将 60 例下肢骨折围手术期患者随机分为实验组、对照组, 每组 30 例。对照组采用常规临床镇痛方法, 实验组在 ICF-RS 指导下采用多模态镇痛方案, 比较两组 VAS 评分、Barthel 指数、Fugl-Meyer 运动功能量表(FMA)。**结果:** 实验组 VAS 评分低于对照组, Barthel 指数、FMA 评分均高于对照组, 差异有统计学意义 ($P < 0.05$)。**结论:** 基于 ICF-RS 指导的多模态镇痛模式疼痛改善效果确切, 有利于提高患者生存质量。

关键词: ICF-RS; 多模态镇痛

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一例发育性语言障碍（DLD）儿童基于 ICF 理念的康复治疗体会

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本次目的探究运用 ICF-CY 核心编码及限定值在语言障碍儿童的评估与干预中的指导作用，运用 ICF-CY 对 1 例语言障碍儿童进行功能评估与康复干预。从身体结构与功能、活动与参与层面进行康复干预，分析干预后语言功能改善情况。结果：该名儿童在进行基于 ICF 制定的康复干预后，其身体结构与功能、活动及参与层面的能力均有提升，运用编码进行限定值的评定，各项指标均有改善。结论：运用 ICF-CY 指导进行语言功能的评估能够细致、全面反映与语言能力相关功能情况，并可以作为制定康复计划有力支撑。

关键词：ICF—CY、语言障碍评估、语言障碍康复干预

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基于 4M 智慧体系结合 O2O 模式的 OBE 教学实践---以《康复医学》课程为例

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背景和目的: 为有效推动信息化教学在高校中的应用, 全面建设康复医学网络教育资源, 《康复医学》课程从战略层面响应健康中国—国家人才高质量发展战略。方法: 南华大学《康复医学》课程围绕传统课堂教与学的四大痛点, 信息化资源建设将对其一一击破。团队自主设计人体 (Map)、利用 (Platform), 架起线上线下 (O2O) 混合式教学的桥梁; 运用 (Dynamic), 通过 AI 交互 (human-computer interaction) 设备探索与实践。

结果: 本课程运用 4M 智慧教学体系, 深度融入教学过程, 最终完成了目标、执行、结果三效合一的 OBE 教学实践。

结论: 通过海量资源构建出“一地图、二平台、三动态、X 交互”的 4M 智慧体系, 是实现 O2O 混合式教学的战略基础和有力保障。

关键词: 智慧、康复、教学

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基于“健康中国”背景的高校康复医学融合思政教育高质量发展及提升研究

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目的: 以高校五年制临床医学人才改革为对象, 着力于改善康复医学与思政融合的教育发展及提升问题。

方法: 结合高校临床医学学生高质量发展目标, 借助“健康中国”背景, 紧密联系康复医学发展和教育改革的特点, 全面高质培养临床-康复人才。包括衍生创新性教育体系、依据思政元素合理设计教学情景、提升思政教育的亲和力、建立考核制度等。

结果: 高校借助“健康中国”背景, 一定程度上解决定位上的单一性发展问题、思路上的模糊性问题、措施上的空泛性问题。

结论: 高校康复医学融合思政教育高质量发展及提升研究的实施, 是全面的、系统的、深刻的医学教育教学改革。

关键词: 康复医学、思政教育、健康中国

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运用呼吸动力学原理治疗产后尿失禁的临床病例报告

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Case diagnosis: postpartum urinary incontinence

Case introduction: A 32-year-old postpartum mother of 5+ months came to the clinic due to urine leakage. At present, urine leakage when coughing and sneezing. 42 days postpartum reexamination showed: dynamic myoelectric activity of pelvic floor muscle decreased, fast muscle and slow muscle fiber scores were very low; Anterior vaginal wall bulge. She received 2 months of pelvic floor biofeedback electrical stimulation therapy and Kegel exercises. The score of pelvic floor myoelectric increased now, but the improvement of urine leakage not. Physical examination pelvic-anterior-tilt, flared ribs, low thoracic motion, hypopnea. Using respiratory dynamics to improve the range of thoracic motion, enhance the strength of the adductor, pronator and extensor muscles of the hips, promote the alignment of ribs and pelvis. She received therapy training 3 times a week. After 2 weeks, the leakage of urine was significantly reduced, and after 6 weeks, almost no.

Discussion: Most postpartum incontinence is stress incontinence, so reducing the pressure on the pelvic floor muscle is the key treatment. The objective pressure of the organs is unchangeable. In addition, many mothers perform the wrong Kegel exercises, which makes the result is not satisfactory. By enhancing the flexibility of the chest, activating the diaphragm, correcting the alignment between the pelvis and the ribs, the pelvic floor muscles rhythmically move with the diaphragm during every breath, naturally improve incontinence.

Conclusion: Improving the contrastive relationship between pelvis and chest and reducing the pressure of pelvic floor muscle are very helpful for stress incontinence.

Key Words: postpartum urinary incontinence, respiratory, Diaphragmatic



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远程康复模式在嗓音障碍职业用嗓者中的应用

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目的探讨远程康复模式对于嗓音障碍职业用嗓者嗓音恢复的临床疗效。方法选取2022年9月至2023年4月就诊且符合入选标准的20例嗓音障碍职业用嗓者为研究对象，分为远程组与对照组各10人。在治疗前、后均进行客观嗓音功能及VHI与VFI评估，验证远程康复模式对于嗓音障碍职业用嗓者嗓音恢复的作用。结果 治疗后两组的呼吸方式呈现极显著差异，MPT、cMCA、Jitter、最低声强、最高声强具有显著差异，Shimmer、CQP具有极显著差异，VHI与VFI差异不显著。结论远程嗓音可以作为一种可行的康复模式，显著改善嗓音障碍职业用嗓者的各项嗓音功能。

关键词：嗓音障碍职业用嗓者；远程康复；实时言语重读训练法；疗效

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以老年综合评估(CGA)为基础的作业治疗小组活动 对医养结合机构 中度失能失智老人的影响研究

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背景：失能、失智老人是医养结合机构的主要人群，对此人群的康复治疗缺少规范、值得推广的方案。

目的：探讨以CGA为基础的作业治疗小组活动对中度失智、失能患者的影响。

方法：按照随机数字表法分为两组，均接受常规治疗，治疗组增加以CGA为基础的作业治疗方案，两组均在干预3、6、12个月进行参与率、FIM、HAMA、MMSE、LSR的评估。

结果：1. 两组患者的认知、生活能力、满意度及焦虑缓解；

2. 治疗组与对照组比较均有统计学意义（ $P<0.05$ ），临床总有效率高于对照组（ $P<0.01$ ）。

结论：基于CGA为基础的作业治疗方案比常规更能提高中度失能、失智患者的认知、生活能力、满意度及焦虑状态改善。

关键字：老年综合评估(CGA)、作业治疗小组活动、中度失能失智

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视觉提示在孤独症谱系障碍儿童集体课中自我管理能力的疗效

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目的：视觉提示策略是指充分运用各种视觉学习材料，帮助儿童了解日常活动、环境的一种干预策略。本文主旨是探讨在集体课程中使用视觉提示对儿童自我管理能力的提升作用。

方法：选取3例孤独症患者，使用VB-MAPP中“集体技能和教室常规”进行评估。针对患儿问题，提供每人3张视觉提示卡，即“安静”、“举手发言”、“坐好”，记录儿童在未使用前-使用中-撤销后，三个阶段自我管理意识、行为的变化。

结果：3个儿童在使用中，自我管理意识有所提高，不良行为都有所下降。撤销后，不良行为有所增加。但都少于使用前。

结论：采用视觉提示对孤独症儿童自我管理能力有一定的增加。

关键字：孤独症谱系障碍；视觉提示；自我管理，

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静态牵伸对非特异性腰痛患者的影响研究

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静态牵伸是一种常见的康复治疗方法。 本研究的目的是评估静态牵伸对非特异性腰痛患者的影响。 方法: 共纳入 30 名非特异性腰痛患者, 随机分为两组, 每组 15 人。 实验组接受静态牵伸治疗, 每周 3 次, 共 2 周。 对照组不接受治疗。 治疗前后用视觉模拟量表评估疼痛程度, 用标尺评估腰椎活动。 组间使用独立样本 t 检验, 组内使用配对样本 t 检验。 结果: 实验组在疼痛和坐位体前屈等指标有显著改善 ($P < 0.05$), 实验组腰椎前屈和后伸活动等指标明显改善 ($P < 0.01$), 对照组各指标无显著差异 ($P > 0.05$)。 结论: 静态牵伸对非特异性腰痛患者疼痛和功能的改善有显著影响, 可广泛推广用于改善非特异性腰痛患者的症状和功能。



腰椎活动功能评估



静态牵伸 1



静态牵伸 2

关键字: 静态牵伸; 腰痛; 影响;

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Others

其他

Poster Presentation



Clinical Motion Analysis for Electric Wheelchair Battery-Charging Systems of People with Spinal Cord Injury Based on 2D Camera Methods

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•Background

The purpose of this study is to provide quantitative data by comparing the degree of inter-body-segment tilt through a 2D-camera-based pose estimation for the trunk movement between conventional charging the same battery vs exchanging the old discharged battery by the newly charged one for people with spinal cord injury.

•Method

In this study, 3 people with spinal cord injury (AIS-A) using electric wheelchairs were video-photographed with a 2D camera for movement between of the conventional vs the exchanging method. In order to confirm the difference in battery charging systems, the continuous tilt of neck-MiddleHip and neck-nose was analyzed through t-test after designating neck, MiddleHip, and nose among the joint points presented from image data.

•Results

The slope between joint points of the neck-MiddleHip was $67.18 \pm 9.29^\circ$ in the conventional method and $1.14 \pm 5.65^\circ$ in the exchanging method, showing a significant difference ($p < .05$). The neck-nose slope was $105.45 \pm 27.22^\circ$ in the conventional method and $51.08 \pm 9.29^\circ$ in the exchanging method, showing a significant difference ($p < .05$).

•Conclusion



It was found that the conventional method had a greater tilt in the forward direction than the exchanging method. Therefore, it is thought that the observed change from the conventional method to the exchanging method may lead to a benefit in the sitting stability during the electric-wheelchair battery management.

Acknowledgement: This study was supported by Korea Medical Device Development project (No. 202013C10) and by a grant from the Translational R&D Program on Smart Rehabilitation Exercises (TRSRE-IN14), Korea National Rehabilitation Center, Ministry of Health & Welfare, Korea.

Key Words: Electric Wheelchair Battery, Charging system, Pose estimation

Analysis of Factors Affecting Intention and Motivation to Use a 2D Camera Based Exercise Service Model for Spinal Cord Injury

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Background

The purpose of this study is to determine the effect of 2D camera-based AI posture estimation on the intention to use rehabilitation exercise services for spinal cord injury patients and to propose a complementary service model for community dissemination.

Method

This study aimed to propose a business service model in terms of motivation for exercise participation in the dissemination of the developed service model, firstly, the theoretical model of the rehabilitation exercise service model based on the theory of planned behavior and the practical application of the prototype development through semi-structured interviews to identify the problems of the service model.

Results

The results of the study confirmed that the user's information gap in terms of intention and motivation is a problem for the operation of the system model, and it is difficult to recognize the medical data information provided and use it as a motivation for exercise.

Conclusion

Elderly people with disabilities believe that providing personalized visual information will increase communication efficiency in addition to providing information, which will further activate their participation in exercise. It is necessary to gradually improve the business model by identifying priorities through satisfaction surveys on the importance of future service contents.

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Smart Rehabilitation Exercises (TRSRE-IN14), Korea National Rehabilitation Center,
Ministry of Health & Welfare, Korea.

Key Words: Factor analysis, 2D camera, Exercise service model

An Analysis of the Clinical Efficacy of Early Hyperbaric Oxygen Therapy in Mechanically Ventilated Patients Following Cardiopulmonary and Cerebral Resuscitation

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Objective: This study aims to evaluate the clinical efficacy of early Hyperbaric Oxygen Therapy (HBOT) in patients receiving mechanical ventilation following Cardiopulmonary Cerebral Resuscitation (CPCR). **Methods :** We selected 40 mechanically ventilated patients who were admitted to our hospital within 7 days of CPCR from August 2016 to May 2021. These patients underwent two courses of HBOT. Monitoring of Glasgow Coma Scale scores and changes in electroencephalogram (EEG) were performed before and after the treatment to assess the clinical efficacy. **Results:** Of the 40 patients, 26 underwent clinical treatment, with 11 cases deemed effective and 3 cases deemed unsuccessful. A comparison of the EEG findings during and after treatment showed a significant reduction in the proportion of mild, moderate, and severe abnormalities, a difference that carried substantial statistical significance. **Conclusions:** Early HBOT demonstrates a positive impact on patients following CPCR, significantly enhancing neurological function and prognosis. The clinical effectiveness of this approach is both noticeable and statistically significant.

Key Words: Cardiopulmonary Cerebral Resuscitation; Mechanically Ventilated, Hyperbaric Oxygen Therapy; EEG

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Self-Reported Daily Physical Activity and Aerobic Exercise Capacity in Obesity after Bariatric Surgery

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Introduction: Obesity is strongly associated with a sedentary lifestyle and lack of intense physical activity. Bariatric surgery itself can lead to a decrease in the first ventilator threshold (VT1) due to a decrease in lean mass. The aim of this study was to highlight which cognitive-behavioral parameter is related to the aerobic exercise capacity.

Methods: 29 candidates for bariatric surgery were compared to 29 matched healthy controls, among which 13 subjects repeated the following tests 6 months after surgery: dual energy X-ray absorptiometry, global physical activity questionnaire, short form 36 health survey and cardiopulmonary exercise testing were performed.

Results: Subjects with obesity displayed higher weekly sedentary time, but lower weekly moderate-to-vigorous physical activity, physical and mental component score (PCS and MCS) and relative value of VO₂peak. The moderate activity time, PCS and MCS, and relative value of VO₂peak were improved after surgery, but absolute value of VO₂peak unchanged accompanied with a decreased VT1. VO₂peak was positively associated with PCS and MCS in pre- and post-surgery state, and the changes in VT1 was negatively associated with the changes in sedentary time.

Conclusion: Surgical weight loss shows beneficial effects on weekly unstructured physical activities and quality of life. However, aerobic exercise capacity was more associated with quality of life and reduction of postoperative sedentary time is beneficial for VT1 improvement. This may first relate to moderate physical activity time increased, which cannot combat the negative effect on muscular aerobic capacity due to lean body mass loss.

Key Words: obesity, surgery, VO₂peak, physical activity, quality of life



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itbs Combined with Eeg Improves Symptoms in Patients with Cognitive and Emotional Disorders after Stroke

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Introduction: In this study, intermittent theta burst transcranial magnetic stimulation (iTBS) was used to treat patients with post-stroke cognitive and mood disorders, the functional connectivity of brain networks was measured with EEG to explore whether iTBS could be an effective treatment for improving symptoms.

Objective: Whether iTBS stimulate can improve symptoms and functional connectivity in patients with cognitive and emotional disorders after stroke.

Methods: The basic data and resting EEG data of patients (at admission and discharge) and healthy people were collected. Patients were divided into iTBS group and conventional treatment group. Calculate functional connectivity indicators and correlation analysis.

Results: There were significant differences in functional connectivity indicators between the healthy and iTBS groups in θ , α , β_1 , and β_2 bands, indicating that patients with cognitive and emotional disorders after stroke had reduced functional connectivity in the frontal parietal lobe compared with healthy individuals. Compared with the iTBS group before and after treatment, the increase in functional connectivity after treatment was significantly correlated with the improvement of cognition and mood. The functional connections between the normal treatment group and the healthy people were reduced, but there was no change before and after treatment.

Discussion and Conclusion: iTBS can improve the symptoms and functional connectivity of brain networks in patients with cognitive and emotional disorders after stroke.



Key Words: iTBS EEG post-stroke cognitive and mood disorders functional connectivity

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Summary of the Best Evidence for Postoperative Pain Management in Elderly Fracture Patients Under the Enhanced Recovery after Surgery

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Introduction: Postoperative pain in elderly patients with fractures affects the early recovery of patients, and the difficulty of controlling postoperative pain increases due to the poor compensatory capacity of the elderly body and the traumatic nature of fracture surgery. There is a lack of systematic pain management programs for elderly postoperative patients. To retrieve, evaluate, and integrate evidence related to postoperative pain management in elderly fracture patients at home and abroad, and to provide reference for clinical care.

Methods: A systematic search was conducted to retrieve relevant evidence on postoperative pain management in elderly fracture patients from relevant domestic and international guideline websites, PubMed, Web of Science, CNKI, and Wanfang databases. The timeframe for the search was from the construction of the database to May 2023, and the evidence was summarized after completing the quality assessment.

Results: A total of 14 articles were included in the literature, including 2 clinical decision-making articles, 1 evidence summary, 2 expert consensus articles, 4 guidelines, and 5 systematic evaluations. Twenty-three pieces of evidence were summarized in five areas: pain identification and assessment, barriers to pain management, pharmacological pain management strategies, non-pharmacological pain management strategies, and health education.

Conclusion: This study summarizes the best evidence for postoperative pain management in elderly fracture patients, which can provide an evidence-based basis for clinical healthcare professionals to help elderly fracture patients with postoperative pain management more scientifically and effectively.

Key Words: elderly fracture patients; postoperative; pain management; evidence summary

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Advancements in Rehabilitation Therapy Research for Post-Spinal Cord Injury Osteoporosis

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Secondary osteoporosis following spinal cord injury (SCI) is characterized by a high-turnover phenotype, primarily marked by an increased quantity of osteoclasts and heightened bone resorption, resulting in exceedingly rapid bone mineral loss[1]. Clinical management of osteoporosis (OP) in individuals with SCI typically includes foundational calcium and vitamin D supplementation, in addition to anti-osteoporotic medications such as bisphosphonates[2], estrogen[3], receptor activator of nuclear factor- κ B ligand (RANKL) inhibitors[4], and teriparatide[5].

The significant increase in bone resorption post-SCI disrupts bone metabolism. While the role of neurohormonal regulation cannot be underestimated, the reduction in mechanical stimulation remains a pivotal factor contributing to bone loss. Common exercise therapies designed to augment mechanical loading after SCI encompass weight-bearing training[6], exoskeleton-assisted ambulation[7], functional electrical stimulation combined with rowing exercises[8], functional electrical stimulation with cycling exercises[9], and vibration therapy[10]. Physical modalities of treatment encompass low-frequency pulsed electromagnetic fields[11], low-intensity pulsed ultrasound stimulation[12], and hyperbaric oxygen therapy[13]. Research also suggests that a warm environment-induced modulation of gut microbiota may offer a promising avenue to mitigate bone loss in SCI-induced osteoporosis, potentially representing a novel therapeutic approach[14]. Additionally, blood flow restriction training and extracorporeal shock wave therapy have shown promise in OP treatment, and their incorporation into the management of post-SCI osteoporosis could be considered in the future.

Key Words: spinal cord injury; osteoporosis; rehabilitation



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Application of Nutritional Prehabilitation in Elderly Patients undergoing Abdominal Tumor Surgery: A Prospective Cohort Study

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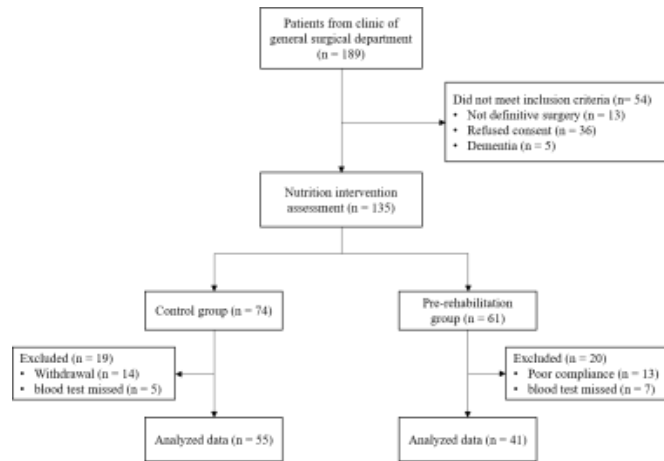
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Background: Objective To explore the effect of nutritional prehabilitation on the clinical prognosis of elderly patients undergoing abdominal tumor surgery.

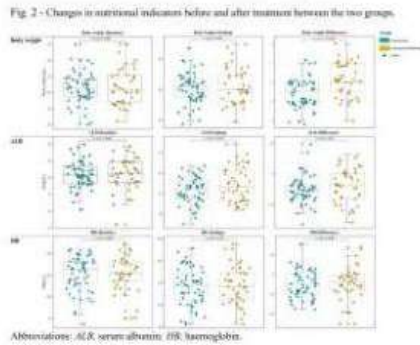
Methods A prospective cohort study was conducted. Participants were divided into two groups according to whether they received oral nutritional supplementation at the first outpatient visit. The nutritional prehabilitation group (n=41) adopted nutritional prehabilitation mode, while the control group (n=55) was treated with routine care-mode. All patients underwent laparoscopic surgery according to National Comprehensive Cancer Network (NCCN) guidelines. The changes of nutritional status, complications, psychological status, hospitalization days and expenditures were compared between the two groups.

Results Both of the weight of patients in two groups were decreased. The decline of body weight in prehabilitation group was less than control group (-1.87 vs. -2.55 kg, $P < 0.01$). The improvement of hospital anxiety scale score in the nutritional prehabilitation group was significant. (4.78 vs. 5.31, $P = 0.01$). The infection rate of nutritional prehabilitation group was lower than that of control group (17.07% vs. 36.36%, $P = 0.04$). At discharge, patients in the nutritional prehabilitation group had significantly fewer hospitalization days (14.29 vs. 17.11 d, $P = 0.03$).

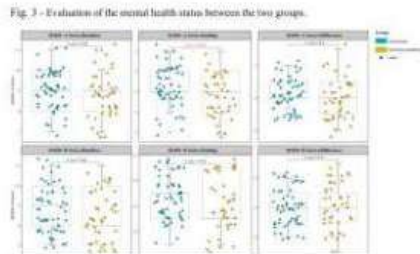
Conclusion In elderly patients undergoing abdominal tumor surgery, nutritional prehabilitation model may help maintain better physical and mental status, reducing infection rate and shorten hospitalization days.



Flow diagram of participants



Abbreviations: ALB, serum albumin; Hb, haemoglobin.



Abbreviations: HADS-A, Hospital Anxiety Scale; HADS-D, Hospital Depression Scale.

Table 1 Basic characteristics of the patients between the two groups (Mean ± SD)

Project	Control group (n=55)	Nutritional Prehabilitation group (n=41)	t / χ^2	P value
Age (years)	70.06±8.24	68.17±8.79	-1.83	0.07
Height (cm)	164.11±7.47	160.59±8.27	-1.56	0.12
NRS2002 (score)	3.73±0.68	3.48±0.68	-1.79	0.08
Gender				
Male	40(72.73%)	22(53.66%)	3.73	0.05
Female	15(27.27%)	19(46.34%)		
Diabetes				
Yes	10(18.18%)	7(17.07%)	0.02	0.88
No	45(81.82%)	34(82.93%)		
Hypertension				
Yes	28(50.91%)	26(63.41%)	0.64	0.44
No	27(49.09%)	15(36.59%)		
Tumor site				
Gastrointestinal	45(81.82%)	30(73.17%)	2.25	0.14
Other	10(18.18%)	11(26.83%)		
Clinical Staging				
Phase I-II	22(40.00%)	19(46.34%)	0.38	0.53
Phase III-IV	33(60.00%)	22(53.66%)		

Abbreviations: NRS2002, Nutrition risk screening-2002.

Table 2 Comparison of the incidence of complications of treatment between the two groups (Mean ± SD)

Project	Control group (n=55)	Nutritional Prehabilitation group (n=41)	t	P value
Intraoperative blood loss (ml)	143.82±137.61	131.46±134.88	-1.18	0.23
Infection rate (%; n)	36.36% (20/55)	27.07% (17/41)	4.32	0.04

Table 3 Hospitalization days and Total expenses between the two groups (Mean ± SD)

Project	Control group (n=55)	Nutritional Prehabilitation group (n=41)	t	P value
Hospitalization days (days)	17.11±7.05	16.20±4.84	-0.20	0.85
Total expenses (¥/N; years)	70326.18±72064.03	58016.81±17211.89	-1.40	0.16

Changes in nutritional indicators and evaluation of the mental health status between the two groups

Table legends



Key Words: Nutritional Prehabilitation, Elderly Patients, Abdominal Tumor, Psychological Healthy States, Clinical Prognosis

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Eeg Features Related with Upper Limb Impairment Severity in Stroke: A Machine Learning Study

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Background: Stroke rehabilitation now significantly focuses on addressing severe and chronic motor impairment that affects the upper limbs. However, the neurophysiological aspects underlying severe upper limb impairment (ULI) related with are still not fully understood. This study aims to investigate the neurophysiological associations between the severity of ULI and cortical activity using electroencephalography (EEG) spectral power and functional connectivity (FC) based on graph theory. Additionally, the study develops machine learning models that classify the severity of ULI based on resting-state EEG features.

Methods: EEG recordings were obtained from 34 patients with chronic stroke (post-stroke > 6 months) while they were at rest. The patients were divided into two groups based on their Fugl-Meyer assessment scores for upper extremity (FMA-UE): mild/moderate ULI (FMA-UE \geq 30; n = 19) and severe ULI (FMA-UE < 30; n = 15). Sixty EEG features from the affected (ipsilesional) and unaffected (contralesional) hemispheres were analyzed for six frequency bands (delta, theta, alpha, low beta, high beta, and gamma). Machine learning models were developed using logistic regression (LR) with regularizations (L1, L2, and Elastic Net) to classify the severity of ULI. Age was included as a covariate in all models due to its variation between the groups.

Results: A total of sixteen resting-state EEG features were selected, and LR with L2 regularization outperformed other models in identifying the severity of ULI, achieving a cross-validated accuracy of 75.9% (L1 accuracy: 64.7%; Elastic Net accuracy: 72.3%). Notably, delta small-worldness (SW) in the contralesional hemisphere, which reflects the efficiency of FC, and theta path strength (STR) in the ipsilesional hemisphere, which represents the intensity of FC, along with clustering coefficient (CC) indicating interconnectivity during brain information processing, were positively associated with ULI. Conversely, alpha SW, high beta, and gamma path length (PL) in the contralesional hemisphere showed a negative correlation with severe ULI. In both hemispheres, theta, high beta, and gamma relative power (RP) were positively related to severe ULI. However, alpha RP and theta PL were found to have a negative impact on the severe ULI.

Conclusions: The present results confirmed that investigating the resting-state EEG features provide insights into the neural processes associated with the severity of ULI after a long-lasting stroke. This suggests that the resting-state EEG features have the potential to serve as meaningful indicators for monitoring the level of ULI in patients with chronic stroke. Such knowledge can provide valuable assistance to clinicians in planning effective rehabilitation strategies, including neuromodulation.

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Key Words: chronic stroke, upper limb impairment, electroencephalography, machine learning, biomarker



A Study on the Key Points of Clinical Rehabilitation Nursing for Emergency Hypertensive Patients with Cerebral Hemorrhage

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Objective: To explore the effect of clinical rehabilitation nursing on emergency hypertensive patients with cerebral hemorrhage. **Method:** A total of 67 emergency hypertensive patients with cerebral hemorrhage admitted to our hospital from January 2020 to October 2022 were selected as the study subjects. They were divided into two groups using a random number table method. The control group consisted of 34 patients who received routine emergency nursing care, while the observation group consisted of 33 patients who received clinical rehabilitation nursing intervention after receiving the same nursing care mode as the control group. The satisfaction of complications, quality of life, and nursing services between the two groups was compared. **Result:** The total incidence of complications in the observation group was 6.06%, which was lower than the control group's 23.539% ($P < 0.05$). Before intervention, there was no significant difference in the scores of quality of life indicators such as mental state and physical pain between the two groups ($P > 0.05$); After intervention, the observation group scored (95.84 ± 2.14 , 96.83 ± 2.16 , 93.43 ± 1.94) points, which were higher than the control group's (81.54 ± 1.61 , 85.65 ± 2.94 , 81.26 ± 2.83) points ($P < 0.05$). The satisfaction rate with nursing services in the observation group was 96.97%, which was higher than 73.53% in the control group ($P < 0.05$). **Conclusion:** Clinical rehabilitation nursing intervention can reduce the risk of complications and improve quality of life, which is highly.

关键字: 高血压合并脑出血; 临床康复护理; 精神状态; 躯体疼痛; 生活质量

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长疗程高压氧治疗特重型颅脑外伤病例报告

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Objective To explore the efficacy of prolonged hyperbaric oxygen (HBO) therapy on consciousness disorder of patient with severe traumatic brain injury. **Materials and Methods** The 28 years old patient suffered from severe craniocerebral injury for 3 months after a car accident. GCS score was 3 points and electroencephalogram (EEG) showed severe abnormality at the time of the patient was admitted to the hospital. During hospitalization for 14 months, the patient received accepted HBO therapy for 271 times (2.0ATA, once a day). The GCS score and EEG were measured every 3 months. **Results** 14months later, the patient was clear in consciousness, GCS score improved to 13 points and EEG showed mild abnormality. **Conclusion** The prolonged HBO therapy can effectively improve EEG activity, increase GCS score of patient with severe craniocerebral injury , and promote consciousness awakening.

Ke Words: prolonged HBO therapy; severe craniocerebral injury; consciousness disorder

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工娱疗法对老年痴呆患者激越行为的影响分析

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目的: 分析工娱疗法对老年痴呆患者激越行为的影响。

方法: 选取本组 100 例老年痴呆患者作为观察对象, 随机分组, 分为对照组和观察组, 各 50 例, 比较应用效果。

结果: 观察组躯体攻击行为、激越行为等总分均低于对照组, 有明显统计学意义; 观察组MMSE评分高于对照组, 有统计学意义; 观察组各维度SF-36 评分高于对照组, 两组对比, 有统计学意义; 观察组跌倒、坠床、走失、非计划性拔管、自伤等意外事件发生率低于对照组, 统计学意义显著。

结论: 与常规疗法相比, 工娱疗法应用在老年痴呆患者中康复效果更好, 可减轻患者的激越行为, 改善认知能力与生存质量, 减少坠床等意外事件的发生, 可推广。

关键字: 工娱疗法; 老年痴呆; 激越行为; 意外事件; 认知能力; 生存质量

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“双高”背景下高职院校康复专业“儿童康复+”模式的实践研究

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目的：我院康复专业积极提升康复教育的内涵建设。方法：“儿童康复+方向班”，以校企合作的儿童康复特色化方向班进行人才培养。②“儿童康复+技能大赛”，以赛代练、以赛促建。③在“儿童康复+师生科创”，推动师生成长和科研转化。在“儿童康复+思政公益”，以“立德树人”为根本任务，以“公益事业”为手段，树立正确的价值观。结果：开展方向班已得到用人单位一致好评；技能大赛能够反哺教学、赛学共进；科创团队推动科研转化；思政公益教育完成对青海、四川阿坝多个地区的脑瘫儿童的走访、调研。结论：“儿童康复+”模式突破传统的康复教学，可以提高康复职业教育素质。

关键字：双高；儿童康复+；实践；子模块

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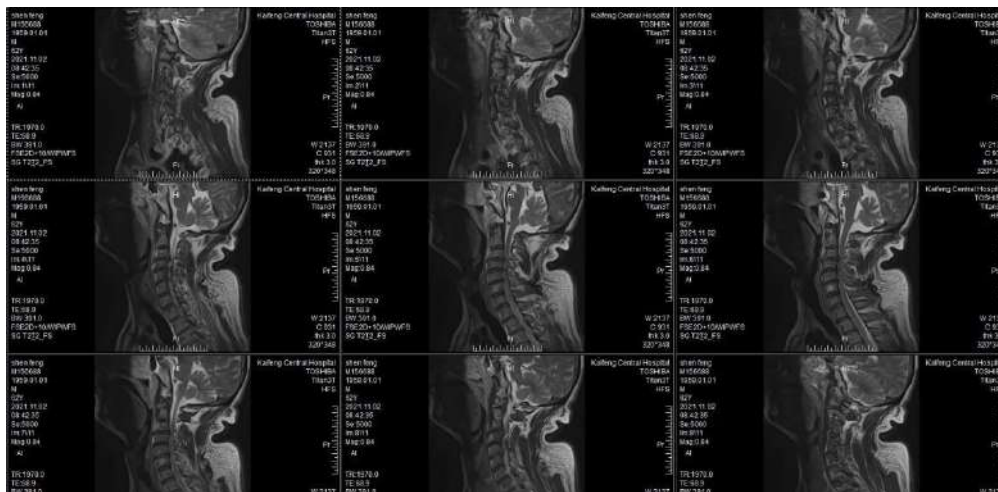
体位性低血压患者脑血流改变的个案报道：来自经颅多普勒的研究

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探讨一例颈髓损伤后无症状体位性低血压患者脑血流的自身调节机制。患者进行直立倾斜实验，测量肱动脉血压，使用经颅多普勒监测脑血流参数变化，并计算脑血管阻力（cerebral vascular resistance, CVR）。发现患者在平卧位时血压和右侧大脑中动脉（right middle cerebral artery, RMCA）收缩期峰流速(systolic peak velocity, Vs)、舒张末期血流速度(end-diastolic blood flow velocity, Vd)、平均血流速度(mean blood flow velocity, Vm)及搏动指数(pulsatility index, PI)及 CVR 正常，倾斜 30 度、60 度和 90 度时，血压、Vs、Vd、Vm 和 CVR 均降低，PI 均升高。推测患者在出现体位性低血压时，脑血管收缩，脑血流减少，但是还有不为所知的因素维持正常脑功能。



关键字：体位性低血压；颈髓损伤；经颅多普勒；脑血管；自身调节

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中枢性低通气综合征病例报告--延髓梗死后的罕见并发症

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目的 探讨延髓梗死合并中枢性低通气综合征（central hypoventilation syndrome, CHS）患者的特点。**方法** 对4例延髓梗死合并CHS患者的临床和磁共振特点进行总结。**结果** 这4例患者的梗死部位均在延髓背外侧靠近中线区域，有的病变范围更大，表现为清醒时呼吸频率正常或者异常，入睡后出现呼吸停止，甚至在清醒时出现呼吸停止。病变位置靠外者，预后相对好；病变靠内侧或者累及延髓双侧者，CHS的程度更严重，也容易合并血压异常，预后不佳。**结论** 凡是延髓梗死靠近内侧区域的，可能累及呼吸中枢，均应该警惕出现CHS。

关键字： 延髓梗死；呼吸中枢；中枢性低通气综合征

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肌间静脉血栓的临床一般相关因素分析

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目的：本研究探讨肌间静脉血栓形成的一般相关因素分析，建立简便实用的评估模型。

方法：本研究对2023年7月1日至8月12日在本院收住院的97例病患194条腿，其中53条腿因中风等各种病因所致下肢瘫痪行下肢肌间静脉血栓超声检查，用二元logistic回归分析便于临床应用的小腿肌间静脉形成相关因素，建立评估模型。

结果：性别、年龄、下肢有无自主运动及体质指数4个因素具有统计学意义，显著相关，可建立回归模型。

结论：依据联合性别、年龄、下肢有无自主运动及体质指数4个临床常用一般相关因素及其回归系数评估小腿肌间静脉血栓形成风险简便且较为准确，宜于临床操作。

► 块 1: 方法 = 输入

模型系数的 Omnibus 检验

步骤	模型	卡方	自由度	显著性
1	步 1	105.025	4	.000
	块	105.025	4	.000
	模型	105.025	4	.000

模型摘要

步骤	-2 对数似然	考克斯-斯奈尔 R 方	纳盖尔利 R 方
1	159.860 ^a	.418	.561

a. 由于参数估计值的变化不足 .001，因此估算在第 5 次迭代时终止。

霍斯默-莱梅肖检验

步骤	卡方	自由度	显著性
1	6.959	6	.325

分类表

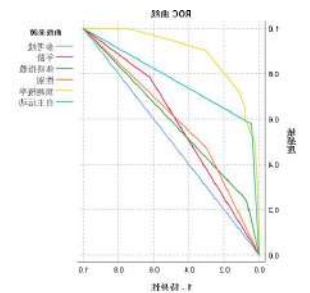
实际	预测		总计
	是	否	
是	102	9	111
否	29	54	83
总计	131	63	194

4. 总正确率为 50%

方程中的变量

	B	标准误差	标准化	非标准化	Exp(B)	非保护	保护
年龄 ^a	-.183	.432	-.0779	1	.018	.554	.152
性别	1.423	.515	.7645	1	.006	4.150	1.913
自主运动	1.770	.572	.43455	1	.000	43.381	14.141
体质指数	2.812	.427	.13300	1	.000	16.917	4.924
常数	-2.830	.555	-.1347	1	.000	.132	

a. 总正确率 = 输入或输出 = 预期 / 实际 / 总计 / 非保护 / 保护



预测模型输出

实际	预测
是	是
是	否
否	是
否	否

实际: 102 是, 29 否
 预测: 102 是, 9 否
 总计: 131 是, 63 否

分析结果 1

分析结果 2

ROC 分析结果

关键字：肌间静脉血栓 一般相关因素

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- 注: 肌间血栓 1: 有, 0 无; 性别 1: 男, 2 女; 年龄 1: ≥ 60 岁老年, 0 中青年; 自主运动 1: 相应下肢无, 0 有; 体质指数 1: >24 超重, ≤ 24 正常



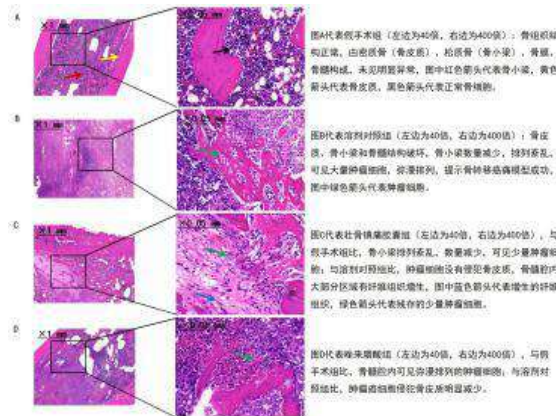
壮骨镇痛胶囊抑制破骨细胞活化治疗骨转移癌痛的实验研究

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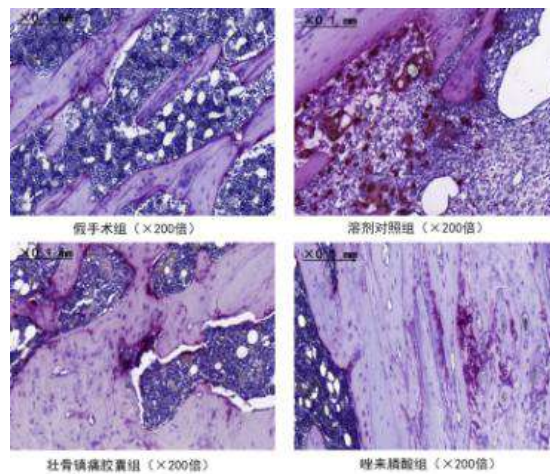
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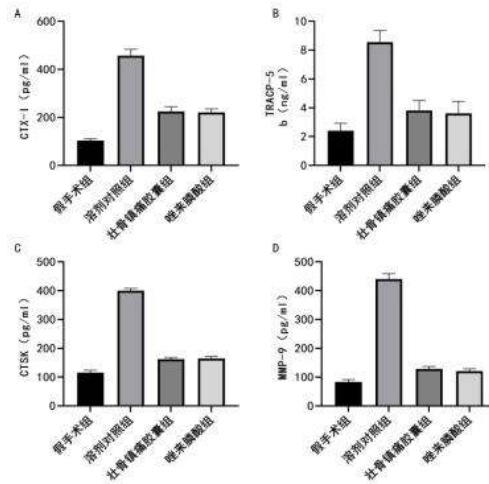
背景 骨转移癌痛是癌性疼痛中最常见的类型，严重影响患者的生活质量，目前缺少有效的治疗方法[1-2]。目的 探究壮骨镇痛胶囊对骨转移癌痛大鼠的疗效及其可能作用机制。方法 建立骨转移癌痛模型大鼠，进行疼痛行为学、HE、TRAP 染色和 ELisa 测定。结果 模型组大鼠疼痛行为学值降低，肿瘤细胞侵犯骨组织，骨质破坏严重，破骨细胞及其标志物数量明显增加，治疗组显示壮骨镇痛胶囊可改善骨转移癌痛大鼠的疼痛行为学，减轻肿瘤细胞对骨质的破坏，减少破骨细胞及其标志物的数量。结论 壮骨镇痛胶囊对骨转移癌痛大鼠有较好的疗效，其机制可能与抑制破骨细胞的活化有关。



各组大鼠胫骨组织病理变化（HE 染色）



各组大鼠破骨细胞染色（TRAP 染色）



各组大鼠破骨细胞相关基因的变化 (ELisa)

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如何控制呼吸机患者在高压氧康复治疗中 MDRO 的传播

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背景:MDRO 已成为世界待解决的热点与难点, 我院以重症康复为特色, MDRO 患者感染率高, 增加病死率。

目的: 降低医院感染发生率, 控制 MDRO 传播, 降低医疗费用, 促进患者康复。

方法: 根据微生物培养结果和监测数据, 分组进行统计学分析。

结果: 通过对 ICU(MDRO)患者管理、呼吸机管路使用消毒更换、转运过程中的防护、呼吸机病人高压氧舱内物理、行为屏障、抗菌药物合理使用、培训教育等有效干预, 措施覆盖带呼吸机患者高压氧治疗的全过程。

结论: 干预措施符合规范要求, 可操作性强, 有助于解决带呼吸机患者进入高压氧舱内治疗时 MDRO 传播, 有效减少抗菌药物的使用。

关键字: 感染率 重症康复 高压氧治疗 控制 MDRO 传播

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药敏试验判断标准: 2022 年版 CLSI 文件标准

医院隔离技术规范 WS/T311-2009

基层医学论坛

中外医疗

多学科团队干预模式对医养结合机构老年人功能性便秘的作用

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背景：医养结合机构老人便秘发病率极高，并发症多，危害大。

目的：拟研究医养结合机构老人功能性便秘的有效治疗及康复方法，提高便秘的治疗效果。

方法：2023年6月-2023年8月住院的122名功能性便秘老人为研究对象，随机分组，对照组接受常规药物治疗，观察组进行多学科团队模式干预行中药辩证治疗，腹部推拿按摩、电针、耳穴、灸法等便秘的治疗。

结果：1. 两组患者在基础疾病、年龄、ADL评分未见明显差异（ $P>0.05$ ）2. 与对照组相比，观察组便秘治疗有效率明显提高（ $P<0.05$ ）

结论：多学科团队干预模式有效缓解医养结合机构老人功能性便秘症状。

关键字：老年综合评估；多学科团队；便秘；医养结合机构

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膳食补充剂与慢性脑卒中康复的关系及其作用机制

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卒中是最常见、最严重的神经系统疾病之一，是世界范围内死亡和残疾的主要原因。卒中后及早开始积极的康复锻炼，能促进肌肉力量和改善肌肉蛋白合成，对患者身体机能的恢复非常重要，营养支持有助于提高卒中后的康复效果和运动能力。研究证明，多种膳食补充剂在卒中康复中起到积极作用，在抗阻或耐力运动后补充优质蛋白质能促进肌肉蛋白合成。益生菌能防止神经功能退化，也能促进卒中患者的运动康复。某些植物化学物也能减轻卒中后的氧化应激损伤，促进神经组织增殖。本文对卒中患者在康复期阶段的营养需求进行探讨，并对膳食补充剂与促进康复的关系及其作用机制进行综述。

关键字：慢性脑卒中；康复；膳食补充剂

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江苏省部分社区可能肌少症患病率的相关研究

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引言：可能肌少症定义为肌肉力量不足或身体机能低下，本研究对江苏省三个社区老年人群进行可能肌少症的筛查工作，确定各个社区可能肌少症人群的患病率，并进行比较研究，提高老年人群对可能肌少症的重视程度。

方法：按照 AWGS 2019 提出的可能肌少症的标准，对研究社区内共 3500 名 60 岁以上老年人群进行筛选，从而确定各个社区老年人群可能肌少症的患病率。

结果：确定三地社区可能肌少症患病率（南京江北某社区 25.7%，镇江句容某社区 29.1%，盐城射阳某社区 34.7%）

讨论与结论：可能肌少症的患病率与各地经济水平、生活方式、老年人群运动习惯等有关，须进一步推进危险因素及相关性研究。

关键字：社区，可能肌少症，患病率

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