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脑卒中後单侧忽略的评估與治療

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感知能力障碍

- 知觉是指大脑将感觉信号在感觉通路中经过复杂的加工处理后传到中枢神经，最终引起知觉，包括对各种感觉刺激的分析及对不同刺激的辨别能力
- 感知是指大脑将感觉信息综合为有含义的认识能力，一般可分为三大类：
 - 视觉感知失调(Visual Perceptual Disorders)
 - 失认症(Agnosia)
 - 失用症(Apraxia)

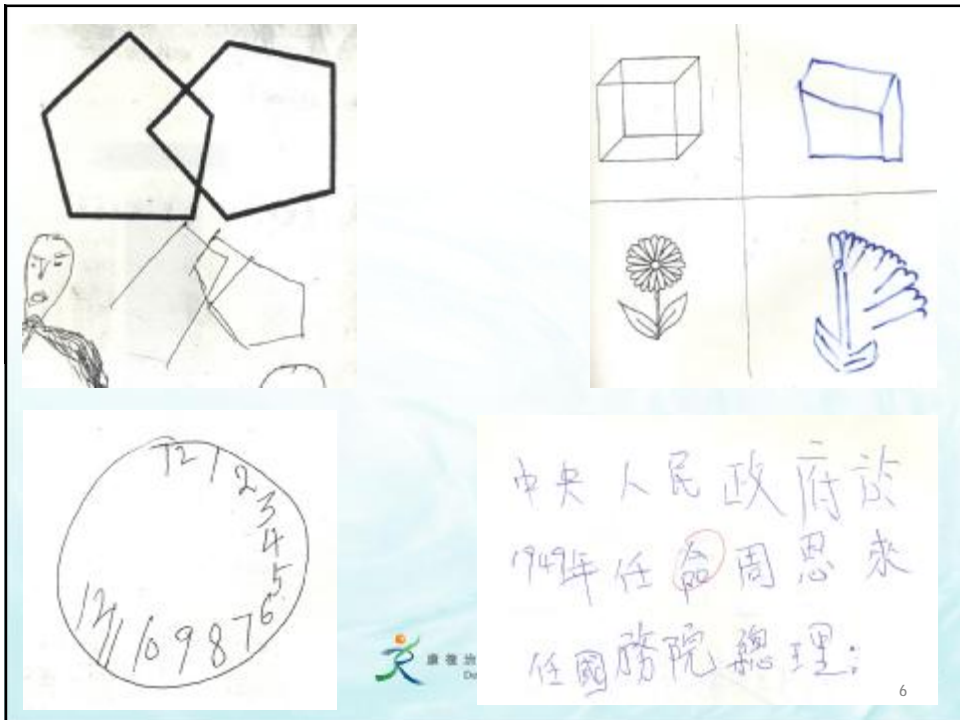
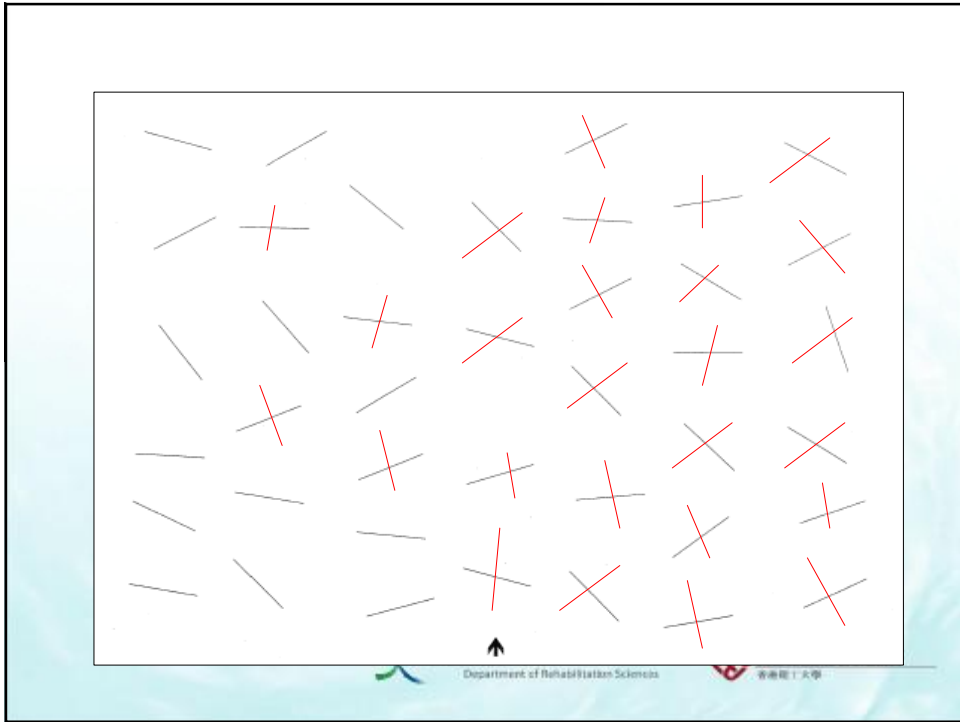


失认症


- 失认症是指患者不能认识经由某一感觉（如视觉、听觉和触觉）辨察的事物，是由于脑部受损使患者对经由视觉、听觉和触觉等途径获得的信息丧失了正确的分析和识别能力，即感觉皮质整合功能发生了障碍。
- (1) 单侧忽略(Unilateral Neglect)
- (2) 躯体失认症(Anosognosia)
- (3) Gerstmann综合症
- (4) 视觉失认症
- (5) 触觉失认症(实体丧失)

单侧忽略(Unilateral Neglect) (UN)

- 又称半侧忽略或 Spatial neglect, Hemi-inattention, Spatial inattention, Motor neglect, Body neglect
- 偏瘫的常见现象, 由简单的偏侧视觉忽略到躯体失认或目光不注意, 或者头部不到中线。
- 占脑卒中左侧偏瘫患者13% to 81%不等, 示乎筛选标准而定(Pierce & Buxbaum, 2002)。
- 左脑卒中47%右脑卒中72%(脑卒中后三天)。
- 左脑卒中26%-52%右脑卒中20%-0%(脑卒中后两月)。
- 会伴随其他感知能力障碍。



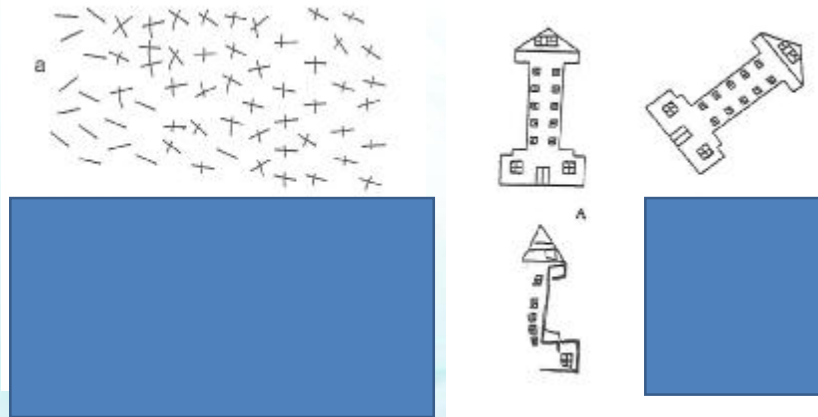
臨床篩選10項問題

- 
- (1) 可否從行為觀察查出患者有单側忽略?
 - (2) 可否從桌面測驗查出患者有单側忽略?
 - (3) 患者有沒有偏盲 (hemianopia)?
 - (4) 患者有沒有兩側同步感覺消失 (extinction)?
 - (5) 患者有沒有軀體失認症 (anosognosia)?
 - (6) 患者有沒有其他感知障礙 (視覺感知, 失用症等)?
 - (7) 患者有沒有認知障礙 (cognition)?
 - (8) 患者有沒有嚴重偏癱 (severe hemiplegia)?
 - (9) 患者有沒有健側推倒症候群 (pusher syndrome)?
 - (10) 患者日常生活受到多少影響?

軀體失認症 (anosognosia)

- 患者不承認自己癱瘓的手和腳
- 病人者常常誤以為是他人身體一部份或不承認是自己肢體的一部份

本體或物體坐標 (Egocentric or allocentric frame of reference)



本體坐標為本 (Egocentric)

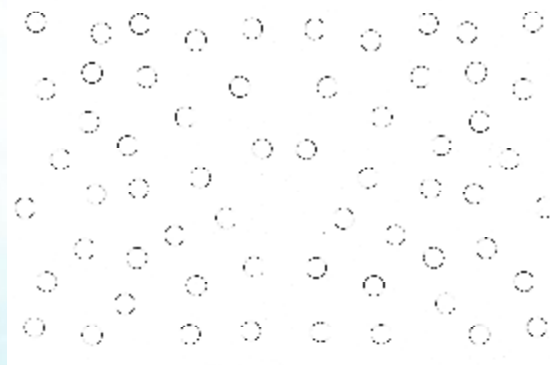
- 眼球為本 (Retinocentric), 頭部為本 (Cephalocentric), 身體為本 (Somatocentric):
 - (1) 眼球及頭部向右傾斜30度
 - (2) 遮眼 (blindfolded)
 - (3) 身體向患側轉身
 - (4) 躺臥床上 (supine position)

物體坐標為本(Allocentric)



Gap Detection Test (GDT) (Ota et al., 2001)

- 分辨本體/物體坐標
- 圓形及三角形刪圖測試
- 圈出完整圖形，刪去不完整圖形



腦部損傷位置



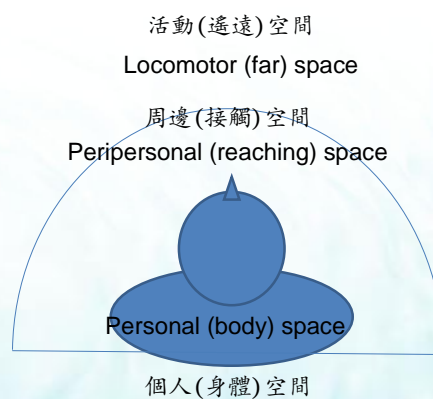
Figure 2: Cortical right hemisphere brain regions that have been associated with neglect include the angular (ang) and supramarginal (smg) gyri of the inferior parietal lobe (IPL), the temporo-parietal junction (TPJ), the superior temporal gyrus (STG), and the inferior (IFG) and middle frontal (MFG) gyri.



空間表徵 (Spatial representation)

(Rozzolatti & Camarda)

- Spatial neglect syndrome can be differentiated as neglect of:
 - 個人(身體)空間
Personal (body) space,
 - 周邊(接觸)空間
Peripersonal (reaching) space,
 - 活動(遙遠)空間
Locomotor (far) space



大脑中动脉(上端)

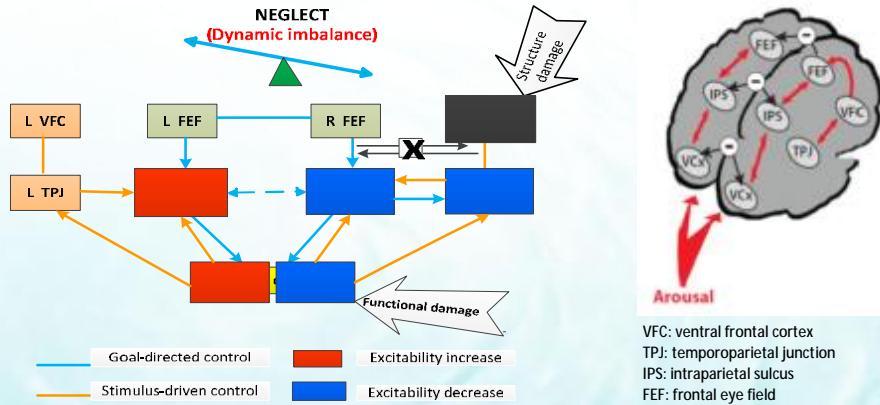
影响区域: 额叶和顶叶的外侧面

- 意念性失用症
- 缺乏判断能力
- 病理性重复行为
- 领域从属性
- 削弱行为的组织能力
- 沮丧
- 情绪不稳定
- 失控
- 神情漠然
- **右半球机能失调**
- 左边单侧身体忽略
- 左边单侧视觉忽略
- 躯体失认症
- 视觉空间关系失调
- 左边单侧意念性运动失用症
- **左半球机能失调**
- 双边意念性运动失用症
- 表达失语症
- 挫折耐力低

单侧忽略

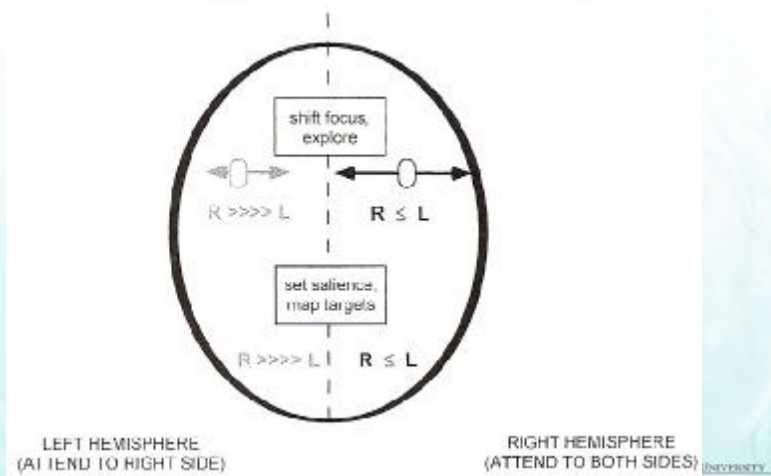
- 可能原因:
- 一. 损害部位对侧一半的视觉不注意 (Hemi-attention)
- 二. 不能辨认对侧一半的空间注意 (Impaired spatial inattention)
- 三. 两侧身体感觉不对称 (Extinction)

Model of the dorsal (DAN) and ventral (VAN) attention networks in UN



Transcallosal inhibition

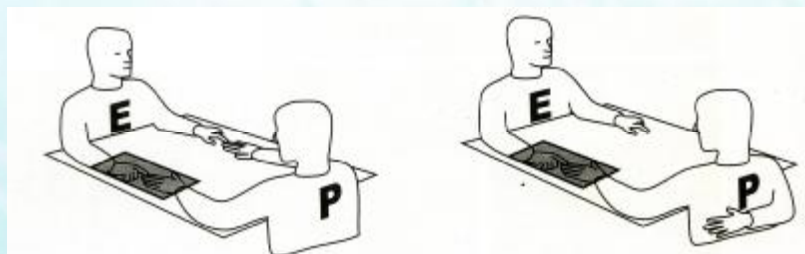
对侧空间注意不对称理論 Competition theory between R & L spatial sectors



两侧身体感觉不对称 (extinction)



Figure 1. Using tapping device to measure stroke extinction.



单侧忽略临床观察



偏身忽略測試 Behavioral Inattention Test (BIT): 香港版信度/靠度研究 研究(1)



RELIABILITY AND VALIDITY OF THE CHINESE BEHAVIOURAL INATTENTION TEST-HONG KONG VERSION (CBIT-HK) FOR PATIENTS WITH STROKE AND UNILATERAL NEGLECT

Waiwan N. Tang¹, Marko C. Chiu², Bill H. Chan³, Yipso P. Au¹, Ho Lay Ping⁴, Ho P. M. Tsang⁵ and Eddy P. C. Chen¹

Objective: This investigation for the first time in the region evaluated the reliability and validity of the newly developed Chinese Behavioral Inattention Test-Hong Kong version (CBIT-HK) for stroke patients, stroke patients with stroke and hemiparesis (the Hong Kong Behavioral Inattention Test-Hong Kong version) and stroke patients with stroke and unilateral neglect (the Hong Kong Behavioral Inattention Test-Hong Kong version) in stroke patients.

Methods: The reliability and validity of the CBIT-HK were evaluated in stroke patients with stroke and unilateral neglect (the Hong Kong Behavioral Inattention Test-Hong Kong version) and stroke patients with stroke and hemiparesis (the Hong Kong Behavioral Inattention Test-Hong Kong version) in stroke patients.

Results: The reliability and validity of the CBIT-HK were evaluated in stroke patients with stroke and unilateral neglect (the Hong Kong Behavioral Inattention Test-Hong Kong version) and stroke patients with stroke and hemiparesis (the Hong Kong Behavioral Inattention Test-Hong Kong version) in stroke patients.

Conclusion: The reliability and validity of the CBIT-HK were evaluated in stroke patients with stroke and unilateral neglect (the Hong Kong Behavioral Inattention Test-Hong Kong version) and stroke patients with stroke and hemiparesis (the Hong Kong Behavioral Inattention Test-Hong Kong version) in stroke patients.

KEY WORDS: Chinese Behavioral Inattention Test (Chinese Behavioral Inattention Test)

Introduction

Unilateral neglect is a common observation in patients with stroke. It is a disorder of attention that results in the individual ignoring or overlooking the left side of the body or the environment.

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RELIABILITY AND VALIDITY OF THE CHINESE BEHAVIOURAL INATTENTION TEST-HONG KONG VERSION (CBIT-HK) FOR PATIENTS WITH STROKE AND UNILATERAL NEGLECT

姓名: _____ 年齡: _____

性別: _____ 教育程度: _____

職業: _____ 居住地址: _____

電話: _____ 郵政編碼: _____

研究編號: _____

知情同意: _____

研究人員: _____

日期: _____

項目	得分	總分
1. 偏身忽略	10	10
2. 偏身忽略	10	20
3. 偏身忽略	10	30
4. 偏身忽略	10	40
5. 偏身忽略	10	50
6. 偏身忽略	10	60
7. 偏身忽略	10	70
8. 偏身忽略	10	80
9. 偏身忽略	10	90
10. 偏身忽略	10	100

0-100分 信賴度/效度分析表

得分: _____ 總分: _____

1. 測驗

2. 測驗

3. 測驗

4. 測驗

5. 測驗

6. 測驗

7. 測驗

8. 測驗

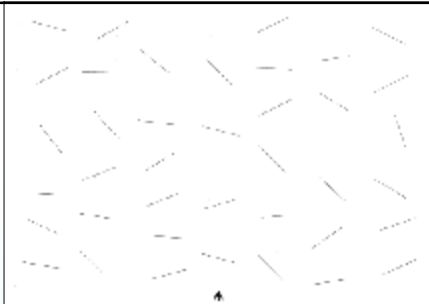
9. 測驗

10. 測驗

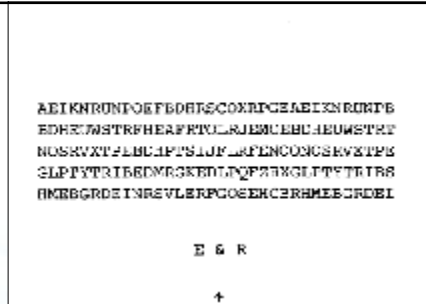


B部分 測驗結果

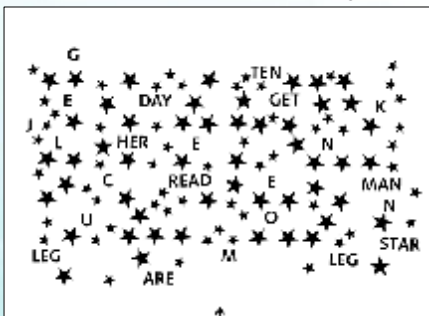
截填測試結果	積分	分界點	結論	行為測試結果	積分	分界點	結論
1、劃線	736	34	合格/不合格	1、瀏覽圖片	79	5	合格/不合格
2、刪字母	740	32	合格/不合格	2、打電話	79	7	合格/不合格
3、刪單星	754	51	合格/不合格	3、讀菜單	79	8	合格/不合格
4、抄寫圖形和線條	74	3	合格/不合格	4、閱讀文章	79	5	合格/不合格
5、二分線段	79	7	合格/不合格	5、報時和設置時間	79	8	合格/不合格
6、代表性細圖	73	2	合格/不合格	6、整理鑰匙	79	8	合格/不合格
總分	7146	129	合格/不合格	7、抄寫地址和句子	79	4	合格/不合格
				8、找地圖	79	8	合格/不合格
				9、整理卡片	79	8	合格/不合格
				總分	81	61	合格/不合格



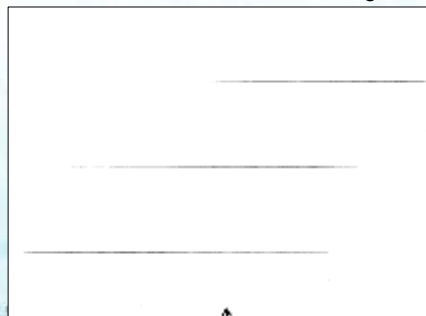
Conventional - line crossing 劃線



Conventional - Letter crossing 刪字母



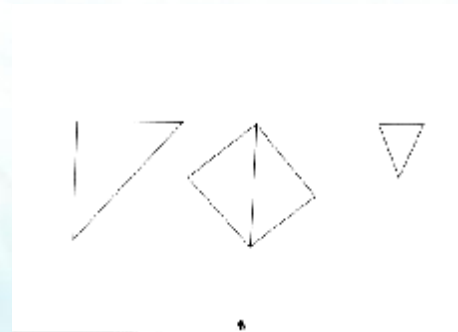
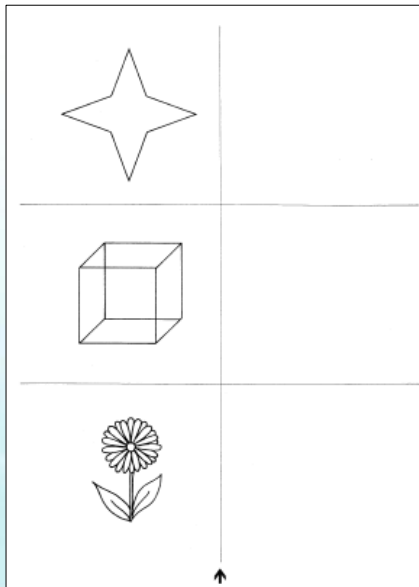
Conventional - star cancellation 刪星星



Conventional - line bisection 二分線段

Conventional subtest- figure copying

图形抄写



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行为测试- 图片浏览



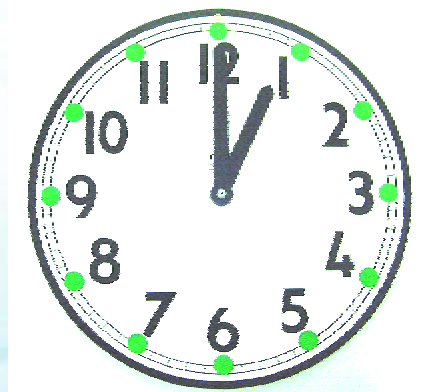
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Behavioral subtest 行為測試

Telephone Dial 打電話

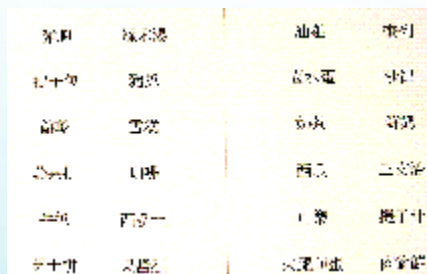


Set The Clock 報時和設置時間



Behavioral subtest 行為測試

Menu Reading 讀菜譜

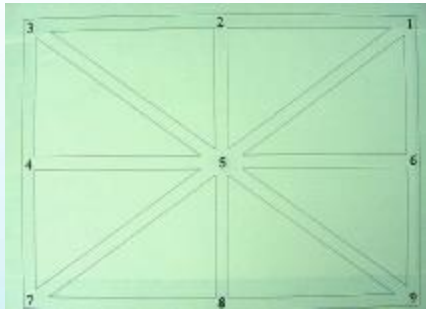


Coin Sorting 整理硬幣



Behavioral subtest 行為測試

Map Navigation 找地圖



Card Sorting 整理卡片



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辦公室租金

自去年以來，許多城市的辦公室租金下降了。據近日公布的一項調查，倫敦和東京是全球辦公室租金最貴的城市，巴黎、莫斯科等城市

進入了最貴的前 10 名之列，隨著大量閒置辦公室返回市場，美國可利用的辦公室顯著增加了，紐約和舊金山的辦公室

市場受打擊最厲害，不過，華盛頓的市場卻改善了。在亞太地區，中國大陸和泰國是在一辦公室租金上升的國家。

Behavioral subtest 行為測試
- Article Reading 閱讀文章



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陳 華

Behavioral subtest 行為測試
- Address Copying 抄寫地址和句子

中 央 人 民 政 府 於
1949 年 任 命 周 恩 來
任 國 務 院 總 理。

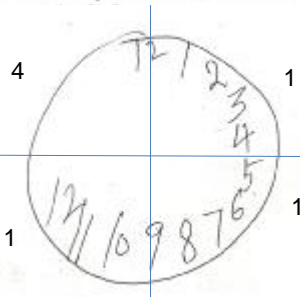
央人民政府於
因來

Behavioral subtest 行為測試
- Address Copying 抄寫地址和句子

劃鐘面測試 (Watson's Clock Drawing Test)

Table 2. Watson Scoring System for Clock Drawing

Step	Description
1	Divide the circle into 4 equal quadrants by drawing one line through the center of the circle and the number 12 (or the mark that best represents 12), and a second line perpendicular to and bisecting the first.
2	Count the number of digits in each quadrant in the clockwise direction, beginning with the digit corresponding to number 12. Each digit is counted only once. If a digit falls on one of the reference lines, it is included in the quadrant that is clockwise to the line. Any three digits in a quadrant is considered to be correct.
3	For any error in the number of digits in the first, second, or third quadrants, assign a score of 1. For any error in the number of digits in the fourth, assign a score of 4. Scores



Brief Cognitive Screening of Right Hemisphere Stroke: Relation to Functional Outcome

ANN A. TAN, PhD, Zhen Guo, PhD

OBJECTIVE: To evaluate the brief cognitive screening of right hemisphere stroke patients on admission to acute stroke units in Hong Kong. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

DESIGN: A cross-sectional study. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

SETTING: The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

developed as a result of stroke of the right hemisphere. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital. The study was conducted in a tertiary care hospital.

Montreal Cognitive Assessment (MoCA)

Montreal Cognitive Assessment Hong Kong version (HK-MoCA)

蒙特利爾認知評估香港版本

姓名: _____ 年齡: _____ 性別: _____

教育程度: _____

MoCA Score: _____

MoCA-15 Score: _____

MoCA-25 Score: _____

MoCA-35 Score: _____

MoCA-45 Score: _____

MoCA-55 Score: _____

MoCA-65 Score: _____

MoCA-75 Score: _____

MoCA-85 Score: _____

MoCA-95 Score: _____

MoCA-105 Score: _____

MoCA-115 Score: _____

MoCA-125 Score: _____

MoCA-135 Score: _____

MoCA-145 Score: _____

MoCA-155 Score: _____

MoCA-165 Score: _____

MoCA-175 Score: _____

MoCA-185 Score: _____

MoCA-195 Score: _____

MoCA-205 Score: _____

MoCA-215 Score: _____

MoCA-225 Score: _____

MoCA-235 Score: _____

MoCA-245 Score: _____

MoCA-255 Score: _____

MoCA-265 Score: _____

MoCA-275 Score: _____

MoCA-285 Score: _____

MoCA-295 Score: _____

MoCA-305 Score: _____

MoCA-315 Score: _____

MoCA-325 Score: _____

MoCA-335 Score: _____

MoCA-345 Score: _____

MoCA-355 Score: _____

MoCA-365 Score: _____

MoCA-375 Score: _____

MoCA-385 Score: _____

MoCA-395 Score: _____

MoCA-405 Score: _____

MoCA-415 Score: _____

MoCA-425 Score: _____

MoCA-435 Score: _____

MoCA-445 Score: _____

MoCA-455 Score: _____

MoCA-465 Score: _____

MoCA-475 Score: _____

MoCA-485 Score: _____

MoCA-495 Score: _____

MoCA-505 Score: _____

MoCA-515 Score: _____

MoCA-525 Score: _____

MoCA-535 Score: _____

MoCA-545 Score: _____

MoCA-555 Score: _____

MoCA-565 Score: _____

MoCA-575 Score: _____

MoCA-585 Score: _____

MoCA-595 Score: _____

MoCA-605 Score: _____

MoCA-615 Score: _____

MoCA-625 Score: _____

MoCA-635 Score: _____

MoCA-645 Score: _____

MoCA-655 Score: _____

MoCA-665 Score: _____

MoCA-675 Score: _____

MoCA-685 Score: _____

MoCA-695 Score: _____

MoCA-705 Score: _____

MoCA-715 Score: _____

MoCA-725 Score: _____

MoCA-735 Score: _____

MoCA-745 Score: _____

MoCA-755 Score: _____

MoCA-765 Score: _____

MoCA-775 Score: _____

MoCA-785 Score: _____

MoCA-795 Score: _____

MoCA-805 Score: _____

MoCA-815 Score: _____

MoCA-825 Score: _____

MoCA-835 Score: _____

MoCA-845 Score: _____

MoCA-855 Score: _____

MoCA-865 Score: _____

MoCA-875 Score: _____

MoCA-885 Score: _____

MoCA-895 Score: _____

MoCA-905 Score: _____

MoCA-915 Score: _____

MoCA-925 Score: _____

MoCA-935 Score: _____

MoCA-945 Score: _____

MoCA-955 Score: _____

MoCA-965 Score: _____

MoCA-975 Score: _____

MoCA-985 Score: _____

MoCA-995 Score: _____

MoCA-1005 Score: _____

Montreal Cognitive Assessment (MoCA) English version

蒙特利爾認知評估英文版本

姓名: _____ 年齡: _____ 性別: _____

教育程度: _____

MoCA Score: _____

MoCA-15 Score: _____

MoCA-25 Score: _____

MoCA-35 Score: _____

MoCA-45 Score: _____

MoCA-55 Score: _____

MoCA-65 Score: _____

MoCA-75 Score: _____

MoCA-85 Score: _____

MoCA-95 Score: _____

MoCA-105 Score: _____

MoCA-115 Score: _____

MoCA-125 Score: _____

MoCA-135 Score: _____

MoCA-145 Score: _____

MoCA-155 Score: _____

MoCA-165 Score: _____

MoCA-175 Score: _____

MoCA-185 Score: _____

MoCA-195 Score: _____

MoCA-205 Score: _____

MoCA-215 Score: _____

MoCA-225 Score: _____

MoCA-235 Score: _____

MoCA-245 Score: _____

MoCA-255 Score: _____

MoCA-265 Score: _____

MoCA-275 Score: _____

MoCA-285 Score: _____

MoCA-295 Score: _____

MoCA-305 Score: _____

MoCA-315 Score: _____

MoCA-325 Score: _____

MoCA-335 Score: _____

MoCA-345 Score: _____

MoCA-355 Score: _____

MoCA-365 Score: _____

MoCA-375 Score: _____

MoCA-385 Score: _____

MoCA-395 Score: _____

MoCA-405 Score: _____

MoCA-415 Score: _____

MoCA-425 Score: _____

MoCA-435 Score: _____

MoCA-445 Score: _____

MoCA-455 Score: _____

MoCA-465 Score: _____

MoCA-475 Score: _____

MoCA-485 Score: _____

MoCA-495 Score: _____

MoCA-505 Score: _____

MoCA-515 Score: _____

MoCA-525 Score: _____

MoCA-535 Score: _____

MoCA-545 Score: _____

MoCA-555 Score: _____

MoCA-565 Score: _____

MoCA-575 Score: _____

MoCA-585 Score: _____

MoCA-595 Score: _____

MoCA-605 Score: _____

MoCA-615 Score: _____

MoCA-625 Score: _____

MoCA-635 Score: _____

MoCA-645 Score: _____

MoCA-655 Score: _____

MoCA-665 Score: _____

MoCA-675 Score: _____

MoCA-685 Score: _____

MoCA-695 Score: _____

MoCA-705 Score: _____

MoCA-715 Score: _____

MoCA-725 Score: _____

MoCA-735 Score: _____

MoCA-745 Score: _____

MoCA-755 Score: _____

MoCA-765 Score: _____

MoCA-775 Score: _____

MoCA-785 Score: _____

MoCA-795 Score: _____

MoCA-805 Score: _____

MoCA-815 Score: _____

MoCA-825 Score: _____

MoCA-835 Score: _____

MoCA-845 Score: _____

MoCA-855 Score: _____

MoCA-865 Score: _____

MoCA-875 Score: _____

MoCA-885 Score: _____

MoCA-895 Score: _____

MoCA-905 Score: _____

MoCA-915 Score: _____

MoCA-925 Score: _____

MoCA-935 Score: _____

MoCA-945 Score: _____

MoCA-955 Score: _____

MoCA-965 Score: _____

MoCA-975 Score: _____

MoCA-985 Score: _____

MoCA-995 Score: _____

MoCA-1005 Score: _____

功能活动行为观察

- 方法是观察病人者做一些基本的自我照顾活动时的专注力、瞬时/短期记忆能力和长期记忆能力、方向感、学习能力、应变及判断能力。
- 治疗师更可利用日常生活问卷的辅助来向家属取得更多资料。
- A-ONE功能活动行为观察 - 主要从四项活动-移位、梳洗、进食、穿脱衣物去观察脑创伤病人者其感知障碍。

AONE 神經行動分析 – Neurobehavioral Evaluation

- By Arnadottir, G. (1998)
- 4 main activities:
Grooming, feeding,
dressing, transfer



A-ONE Part I
Functional Independence Measure
Neurobehavioral Specific Impairment Subscale
Occupational Therapy Department, Essbase Hospital

Name: _____
 Subtest No: _____
 Reason: _____

NEUROBEHAVIORAL SUBSCALE (NBS)
 1 = No or few or no impairments observed
 2 = Moderate to severe impairments observed
 3 = Severe to total loss of impairment observed

IMPAIREDNESS SUBSCALE (IP)	NR SCORE	COMMENTS AND REASONING
1 = Independent and able to complete all activities of daily living	0	
2 = Needs help with some activities	1	
3 = Needs help with most activities	2	
4 = Total dependence	3	

LIST HELPING AIDS USED: _____

PRIMARY AID ACTIVITY	IP SCORE	COMMENTS AND REASONING
Washing and hygiene	4	2 1 0
Feeding	4	2 1 0
Dressing	4	2 1 0
Transfer	4	2 1 0
Walking	4	2 1 0

NR IMPAIRMENT	NR SCORE	COMMENTS AND REASONING
Neurospecific	0	1 2 3 4
Medical specific	0	1 2 3 4
Functional specific	0	1 2 3 4
Transfer	0	1 2 3 4
Walking	0	1 2 3 4
Feeding	0	1 2 3 4
Dressing	0	1 2 3 4
Washing and hygiene	0	1 2 3 4
Bladder control	0	1 2 3 4
Bowel control	0	1 2 3 4
Communication	0	1 2 3 4
Transfer	0	1 2 3 4
Walking	0	1 2 3 4
Feeding	0	1 2 3 4
Dressing	0	1 2 3 4
Washing and hygiene	0	1 2 3 4

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Catherine Bergego Scale (CBS)

CBS 行為觀察量表

Functional Consequences and Awareness of Unilateral Neglect: Study of an Evaluation Scale

F. Azouvi¹, F. Marichal², C. Samadri³, L. Morin⁴, C. Ranaivo¹, A. Louis-Dreyfus¹, C. Bakir¹, L. Weil¹, F. Pradat-Dubé¹, G. Doleck¹, and C. Bergego¹

¹Service de Médecine Neurologique, Hôpital Raymond Poincaré, Boulogne-Billancourt, France
²Service de Rééducation Neurologique, Hôpital de la Salpêtrière, Paris, France
³Service de Rééducation, Centre Hospitalier, Antananarivo, Madagascar
⁴Service de Rééducation, Hôpital Pellegrin, Bordeaux, France

Unilateral neglect is a major predictor of poor outcome after right hemisphere stroke. However, conventional tests of neglect do not predict, precisely enough, difficulties. We propose a functional scale consisting of 30 items related to neglect in everyday life such as dressing, washing, eating, communicating, exploratory activities, and moving around. The Catherine Bergego scale (CBS), measuring reliability has previously been found acceptable. The validity of neglect was assessed in 50 patients by an experimental design in real life situations and across the study time in a prospective study. The CBS score seems to be a valid index of neglect, and with the Berlin Index. Awareness of neglect was predicted by considering the patient's ability to differentiate in the 10 items of the CBS 10 items of nonneglect tasks by 10-item differences between the items on the scale and the patient's self-perception. This score partly was well correlated with the severity of neglect. We conclude that this scale is simple and useful to evaluate the functional consequences of unilateral neglect in real life situations and longitudinally.

Keywords: stroke, neglect, awareness, unilateral neglect, functional consequences.

We are indebted to B. Pélissier, J. Izard, H. Maguel, J. Pélissier, F. Tardieu, and M. Verhaeghe for their help in collecting data. We would like to acknowledge the help of V. Courcier, F. Fournier, A. Hanne, and M. Van der Linden, who participated in the evaluation of different versions of the scale. We are grateful to A. F. Johnson for improving the English of the manuscript.

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Catherine Bergego Scale	/30	
洗滌是忘記清理一邊	/3	左右
穿脫一邊袖子有困難	/3	左右
飲食忘記吃一边的食物	/3	左右
一边口腔经常有食物残留	/3	左右
很少向一边看	/3	左右
將一侧肢体落在一旁	/3	左右
很难关注来自一侧的声音和事件	/3	左右
一侧肢体经常碰到物件	/3	左右
对于左转或右转的路线经常走错	/3	左右
经常找不到放在一边的东西	/3	左右

2015 中风患者单侧忽略的流行病学调查
(香港理工大学康复治疗科学系, 四川大学灾后重建与管理学院)

	Total (N=103)
Gender, n (%)	
Male	79 (76.7)
Female	24 (23.3)
Education	
No formal education	6 (5.8)
Primary	17 (16.5)
Low secondary	26 (25.2)
High secondary	29 (28.2)
College/ University	21 (20.4)
Post-graduate	4 (3.9)
Time to first stroke	
< 1 week	5 (4.9)
1-2 weeks	10 (9.7)
2-4 weeks	13 (12.6)
1-3 months	33 (32.0)
3-6 months	21 (20.4)
> 6 months	21 (20.4)
Type of stroke	
Haemorrhage	40 (38.8)
Infarction	63 (61.2)
Hemiplegic side	
Left	72 (69.9)
Right	31 (30.1)
Incidence of neglect (by total BIT)	
Yes	44 (42.7)
No	59 (57.3)

Handedness Questionnaire

(強手能力問卷)

The screenshot shows a digital questionnaire titled 'Handedness Questionnaire'. It includes instructions: 'For each of the activities below, please indicate: Which hand you prefer for that activity? (If you can use the other hand for the activity)'. Below this, there are 15 activities with radio buttons for 'Left' and 'Right' hand preference. The activities include: 'Writing', 'Drawing', 'Using a calculator', 'Using a computer mouse', 'Using a pen or pencil', 'Using a screwdriver', 'Using a hammer', 'Using a saw', 'Using a wrench', 'Using a pliers', 'Using a pair of scissors', 'Using a pair of tweezers', 'Using a pair of forceps', 'Using a pair of pliers', and 'Using a pair of shears'. The 'Right' hand is selected for all activities.

The bar chart displays the frequency of responses for 'Hand preference (right)'. The x-axis ranges from 1 to 10, and the y-axis ranges from 0 to 40. The distribution is as follows:

Hand preference (right)	Frequency
1	1
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

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香港理工大学

2015 中风患者单侧忽略的流行病学调查
(香港理工大学康复治疗科学系, 四川大学灾后重建与管理学院)

Incidence of neglect (by total BIT)	All (N=103)	Left hemiplegia (N=72)	Right hemiplegia (N=31)
Yes	44 (42.7)	34 (47.2)	10 (32.3)
No	59 (57.3)	38 (52.8)	21 (67.7)

N (%)	Incidence of neglect
BIT – Line crossing	30 (29.1%)
BIT – Letter cancellation	44 (42.7%)
BIT – Star cancellation	46 (44.7%)
BIT – Figure and shape copying	55 (53.4%)
BIT – Line bisection	41 (39.8%)
BIT – Representative drawing	58 (56.3%)
BIT conventional subtests total score	44 (42.7%)
Clock drawing test (CDT)	42 (40.8%)
Catherine Bergego Scale (CBS)	27 (26.2%)
Ota test (Egocentric)	32 (31.1%)
Ota test (Allocentric)	17 (16.5%)
Ota test (Egocentric + Allocentric – overlapping)	38 (36.9%)

2015 中风患者单侧忽略的流行病学调查
(香港理工大学康复治疗科学系, 四川大学灾后重建与管理学院)

Ota test - Allocentric left neglect			
Ota test - Egocentric left neglect	No	Yes	Total
No	77 (74.7%)	2 (1.9%)	79 (76.7%)
Yes	14 (13.6%)	10 (9.7%)	24 (23.3%)
Total	91 (88.3%)	12 (11.7%)	103

Ota test - Allocentric right neglect			
Ota test - Egocentric right neglect	No	Yes	Total
No	91 (88.4%)	4 (3.9%)	95 (92.2%)
Yes	7 (6.8%)	1 (1.0%)	8 (7.8%)
Total	98 (95.1%)	5 (4.9%)	103

Cochrane Library

偏身忽略的治疗方法

Cognitive rehabilitation for spatial neglect following stroke: (Review)

Pierce & Buxbaum



THE COCHRANE COLLABORATION®

557240, April 17

Treatments of Unilateral Neglect: A Review

Deakin F, Taylor AJ, Taylor A, Johnston JB, O

Abstract: Review of treatments for unilateral neglect following stroke. The review is available in the Cochrane Library. See: <http://dx.doi.org/10.1002/14651406.CD004402>

Unilateral neglect is a common complication of stroke, affecting up to 25% of stroke survivors. It is a disorder of attention, in which the patient fails to attend to one side of the environment. This review examines the effectiveness of various treatments for unilateral neglect.

The review included 11 studies involving 100 patients. The most common treatment was constraint-induced therapy (CIT), which involves forcing the patient to use the neglected hand. Other treatments included eye patching, auditory neglect alert devices, and computer-based visual scanning. The review found that CIT was the most effective treatment, followed by eye patching and auditory neglect alert devices. Computer-based visual scanning was also found to be effective.

The review also found that the effectiveness of treatment depends on the severity of the neglect. Patients with severe neglect may benefit more from CIT and eye patching, while patients with mild neglect may benefit more from auditory neglect alert devices and computer-based visual scanning.

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This is a Cochrane Review, which is a type of systematic review. It is a summary of the results of a search for and analysis of all the relevant studies on a particular topic. The review is based on the best available evidence and is intended to help healthcare professionals and patients make decisions about the best treatment for a particular condition.

The review is available in the Cochrane Library, which is a free online database of systematic reviews and clinical trial protocols. The review is also available in print form. For more information, see the Cochrane Library website at <http://www.cochrane.org>.

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Department of Rehabilitation Sciences



CUHK
香港中文大學

偏身忽略的治疗方法

(Pierce & Buxbaum, 2002)

空间关系失调的治疗方法

- 偏瘫上肢活動 Limbs activation of hemiplegic side (Robertson, 1999)
- 局限诱发动作治疗 Constraint-induced therapy (Pierce & Buxbaum, 2002)
- 眼睛半边遮蔽 Eye patching on the ipsilesional hemifields (Beis et al., 1999)
- 自主转身 Voluntary trunk rotation (Wiar et al., 1997)

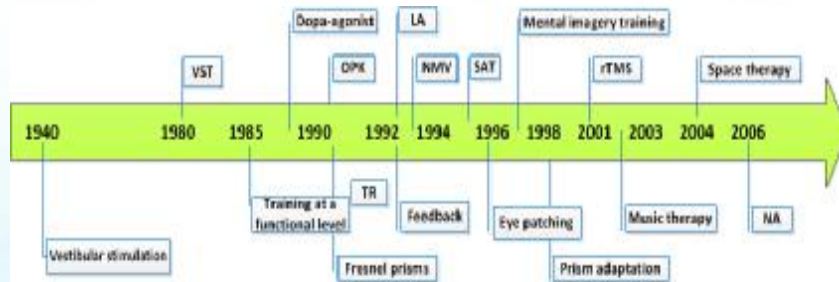
空间注意力不足的治疗方法

提示装置 Auditory neglect alert device (Robertson et al., 1992)

注意力不对称的治疗方法

電腦視覺素描 Computer-based visual scanning to the neglected hemisphere (Gordon et al., 1985)

BACKGROUND-Rehabilitation



VST: visual scanning training; LA: limb activation; rTMS: repetitive transcranial magnetic stimulation; SAT: sustained attention training; OPK: optokinetic; NMV: neck muscle vibration; TR: trunk rotation; NA: noradrenergic agonist.

- ✓ More than 18 methods have been put into practice with varying results based on a large number of outcome measures

Adapted from (Luauté, Halligan et al. 2006)

Classifications of intervention design

(Saevarsson, Halsband & Kristjansson, 2011)

- (1) 被動式 Passive VS 主動式 Active
- (2) 恢復式 Restorative VS 補償式 Compensatory
- (3) 由上而下 Top-down VS 由下而上 Bottom-up

想像治疗 Imagery (由上而下 Top-down approach)



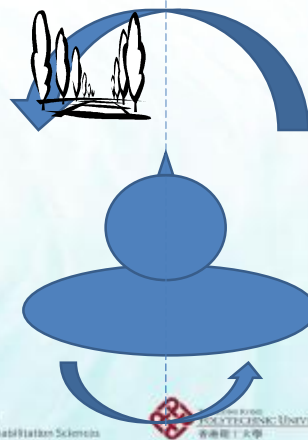
Figure 8.6 Where is the thickest rod?

Ref: Yekutieli, M. (2000). Sensory re-education of the hand after stroke. London: Whurr Publishers Ltd.

視覺運動促進

Optokinetic stimulation (OKS)

- The perception of our body in space is influenced by visual motion information
- If we look at a large visual display that fills our field of vision and moves to the left, we have an impression that our body rotates toward the right
- We try to compensate for this perceived rotation to the right by re-orienting ourselves to the left, and will counteract the rightward-orientation-bias in neglect.
- Pizzamiglio et al. (1990); Keller et al. (2009); Kerkhoff et al. (2008); Kerkhoff (2012)



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頸部震動 Neck vibration (NV)

- Vibration over the left neck muscles induces lengthening of the stimulated muscles, which induces an illusion of a continuous, constant movement to one side
- The illusion is present as long as the vibration stimulus is applied
- Not only the head is feeling toward the right but also that the trunk is rotated toward the left relatively
- Karnath et al. (1993; 1996); Karnath (1995); Kamada et al. (2011)

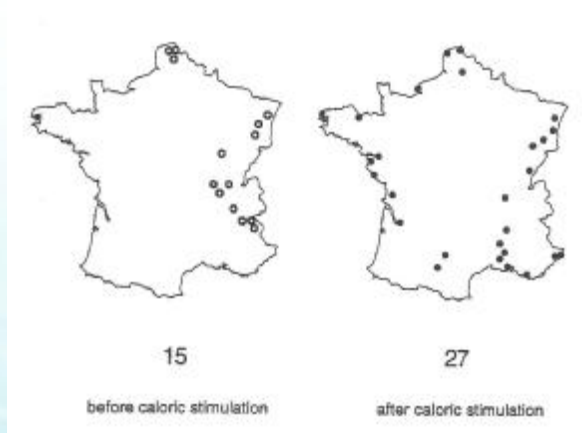


冷水前庭刺激

Caloric vestibular stimulation (CVS)

- Cold water (caloric) vestibular stimulation (CVS) of the contralesional ear or warm water stimulation of the ipsilesional ear, e.g. 10-15 mins, stimulates the horizontal ear canal of the vestibular system and induces a vestibular nystagmus (i.e. reflexive, rhythmical oscillations of the eyeballs, “Schlageld” of the nystagmus)
- Rode et al. (1992; 1998); Karnath (1994); Vallar et al. (1997; 2003)

冷水前庭刺激 Caloric vestibular stimulation (CVS)

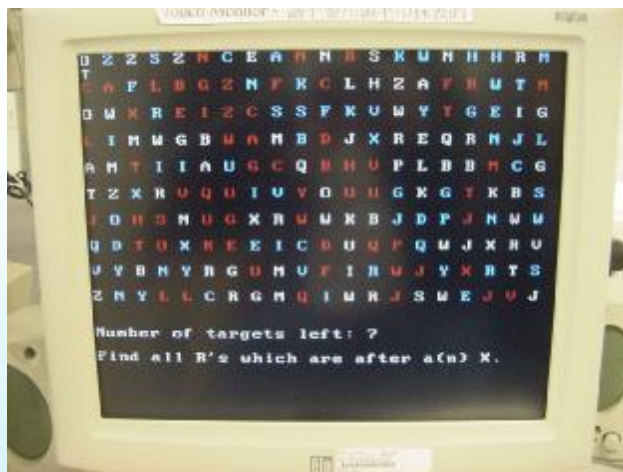


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視覺素描治療 Visual Scanning



Captain' s Log (Scanning Location/Time)

Department of Rehabilitation Sciences



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右眼睛半边遮蔽治疗: 随机对照临床研究 Eye patching (EP)[Tsang, Sze, Fong (2009)]

研究(2)

Abstract

Objective: To evaluate the effectiveness of eye patching for patients with unilateral visual field defects.

Design: Randomized controlled trial.

Setting: Eye clinic.

Participants: 20 patients with unilateral visual field defects.

Interventions: Eye patching.

Measurements and Main Results: The mean visual field area increased significantly in the patched eye compared with the control eye.

Conclusion: Eye patching is an effective treatment for unilateral visual field defects.



Ipsilateral
Right
half-field
eye patching

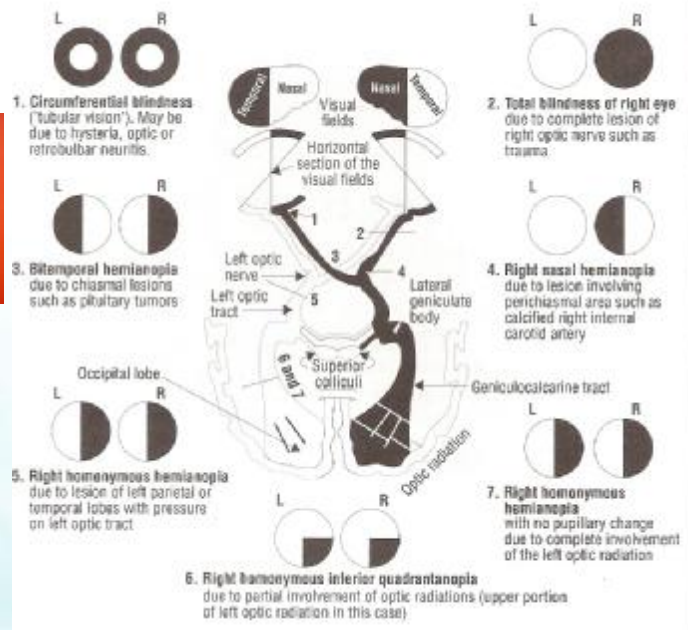


Figure 3.1 Visual field deficits and associated lesion sites. Reproduced with permission.

稜鏡適應 Prism adaptation (PA)



Prism Adaptation Therapy Enhances Rehabilitation of Stroke Patients With Unilateral Spatial Neglect: A Randomized, Controlled Trial

Kuroki H, Mori G, MD^{1,2}, Tazawa T, MD, PhD,³
Izumi I, PhD, MD, PhD,¹ Endo Y, PhD, MD,¹ Kuroki H, MD, PhD,^{1,2}, and Mizoguchi T, PhD,^{1,2}

Abstract
Background: Unilateral spatial neglect is a common disorder after stroke, and prism adaptation (PA) therapy is a promising treatment for this disorder. However, the effectiveness of PA therapy for stroke patients with unilateral spatial neglect remains unclear. This study aimed to evaluate the effectiveness of PA therapy for stroke patients with unilateral spatial neglect. Methods: We conducted a randomized, controlled trial. Twenty stroke patients with unilateral spatial neglect were randomly assigned to either a PA group or a control group. The PA group received 10 sessions of PA therapy over 2 weeks. The control group received no specific treatment. The primary outcome was the change in the number of omissions on the D-KECSK test. Results: The PA group showed a significant improvement in the number of omissions compared to the control group. Conclusion: PA therapy is effective for stroke patients with unilateral spatial neglect.

Keywords:
Stroke, prism adaptation, unilateral spatial neglect, rehabilitation, randomized controlled trial.

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Effectiveness of Prism Adaptation in Neglect Rehabilitation A Controlled Trial Study

Anders S, PhD, Yoon S, PhD, Park S, PhD, and Rinkenauer M, PhD, Elizabeth T, PhD, Prof

Background and Purpose: This study was designed to evaluate the effectiveness of prism adaptation (PA) therapy for stroke patients with unilateral spatial neglect. Methods: We conducted a randomized, controlled trial. Twenty stroke patients with unilateral spatial neglect were randomly assigned to either a PA group or a control group. The PA group received 10 sessions of PA therapy over 2 weeks. The control group received no specific treatment. The primary outcome was the change in the number of omissions on the D-KECSK test. Results: The PA group showed a significant improvement in the number of omissions compared to the control group. Conclusion: PA therapy is effective for stroke patients with unilateral spatial neglect.

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Results: The PA group showed a significant improvement in the number of omissions compared to the control group.

Conclusion: PA therapy is effective for stroke patients with unilateral spatial neglect.

Keywords:
Stroke, prism adaptation, unilateral spatial neglect, rehabilitation, randomized controlled trial.

Ineffectiveness of Prism Adaptation on Spatial Neglect Signs

Maria Rodriguez, MD, PhD, Esther Domercq, PhD, Arnold Sij, PhD, Oskar Kozlowski, MD

Background and Purpose: This study was designed to evaluate the effectiveness of prism adaptation (PA) therapy for stroke patients with unilateral spatial neglect. Methods: We conducted a randomized, controlled trial. Twenty stroke patients with unilateral spatial neglect were randomly assigned to either a PA group or a control group. The PA group received 10 sessions of PA therapy over 2 weeks. The control group received no specific treatment. The primary outcome was the change in the number of omissions on the D-KECSK test. Results: The PA group showed no significant improvement in the number of omissions compared to the control group. Conclusion: PA therapy is ineffective for stroke patients with unilateral spatial neglect.

Methods: We conducted a randomized, controlled trial. Twenty stroke patients with unilateral spatial neglect were randomly assigned to either a PA group or a control group. The PA group received 10 sessions of PA therapy over 2 weeks. The control group received no specific treatment. The primary outcome was the change in the number of omissions on the D-KECSK test.

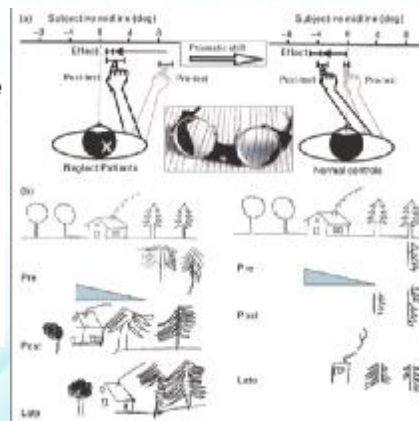
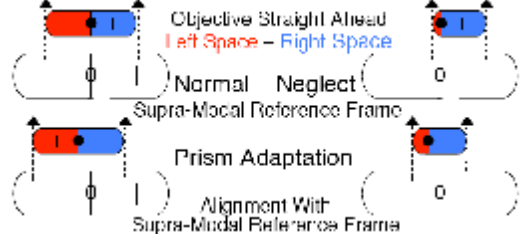
Results: The PA group showed no significant improvement in the number of omissions compared to the control group.

Conclusion: PA therapy is ineffective for stroke patients with unilateral spatial neglect.

Keywords:
Stroke, prism adaptation, unilateral spatial neglect, rehabilitation, randomized controlled trial.

稜鏡適應 Prism adaptation (PA)

Calibration (Selection and Positioning) of Task-Work Space



稜鏡適應 Prism adaptation (PA)

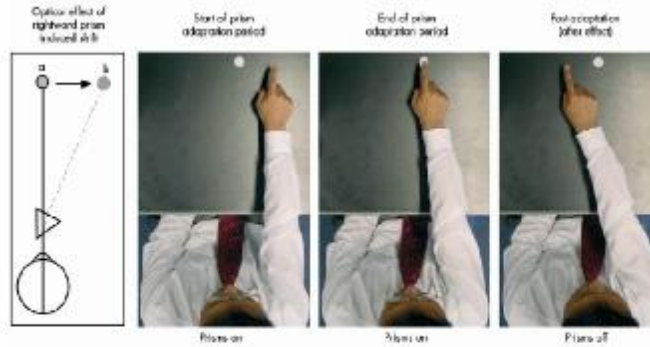


Figure 2. Adaptation to a rightward displacement in an observer's vision produced by a prism. When viewing a scene through the single prism, all points are displaced horizontally to the right with respect to the optical axis of the retina (first panel). Hence, an object at point "a" will appear to be located at point "a'". The adaptation process requires the observer to reach for targets repeatedly within the visual scene. At the start of the process (second panel), participants will miss reach to the right of the target, an error referred to as the direct effect. The error will quickly diminish and disappear entirely as the participant adapts to the visual shift (third panel). However, to enable the participant to adapt fully, approximately 50 repetitions should be completed. When the prism is no removed the participant will experience an aftereffect due to the visual shift fourth panel, an aftereffect results as the after effect. In normal observers this after effect will disappear after only a few minutes.

自主转身及遮蔽半边眼睛治疗： 随机对照临床研究

研究(3)

Clinical Rehabilitation 2021, 34, 179-181

The effect of voluntary trunk rotation and half-field eye-patching for patients with unilateral neglect in stroke: a randomized controlled trial

Manan M. Kong (Department of Rehabilitation Sciences, The Hong Kong Polytechnic University), **Shirley Y. Chan**, **Frankie W. Ho**, **Mai Wai Hung**, **Yanhe W. Zhou**, **Cherry M. Lee**, **Yasmine Sidi**, **Chun Yik Wai**, **Berni H. Chan**, **Yungchun H. Niu** (Department of Rehabilitation Sciences, The Hong Kong Polytechnic University), **Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong SAR**

Received 19 September 2020; accepted for revision 10 November 2020; revision accepted 12 December 2020

Objective: To investigate the effectiveness of voluntary trunk rotation and half-field eye-patching in stroke patients with unilateral neglect in stroke.

Design: Five-week, day 88 follow-up, single-blind randomized controlled trial.

Setting: Single-center specialist rehabilitation hospital.

Subjects: Sixty stroke patients with right hemisphere stroke having unilateral neglect within eight weeks post stroke consented to participate between November 2018 and July 2020. They were randomly assigned to three comparison groups.

Interventions: Treatment patients received daily experimental training in voluntary trunk rotation (TR) for 1 hour five times a week for 38 days. Twenty patients received the same kind of treatment together with half-field eye-patching (EP + TR). Fifteen patients in the control group received conventional training with the same control time.

Main outcome measures: Patients were assessed on Day 0, 30 and 88 using the Behavioural Inattention Test, the Clock Drawing Test, and the Functional Independence Measure.

Results: No significant differences between voluntary trunk rotation (TR), voluntary trunk rotation and half-field eye-patching (TR + EP) and controls were found in functional performance and neglect measures at Day 30 ($F(2, 6) = 0.06, 4.08$ and 0.06 , $p = 0.93, 0.02$ and 0.93) or Day 88 ($F(2, 6) = 0.06, 4.08$ and 0.06 , $p = 0.93, 0.02$ and 0.93) across Beckwith's correction.

Conclusion: The results of this study do not support the use of voluntary trunk rotation alone or with half-field eye-patching to improve functional performance or reduce unilateral neglect in stroke patients with neglect.

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E-mail: manan.kong@polyu.edu.hk
© 2021 Manan M. Kong, Shirley Y. Chan, Yanhe W. Zhou, Cherry M. Lee, Yasmine Sidi, Chun Yik Wai, Berni H. Chan, Yungchun H. Niu, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Kowloon Kowloon, Hong Kong. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

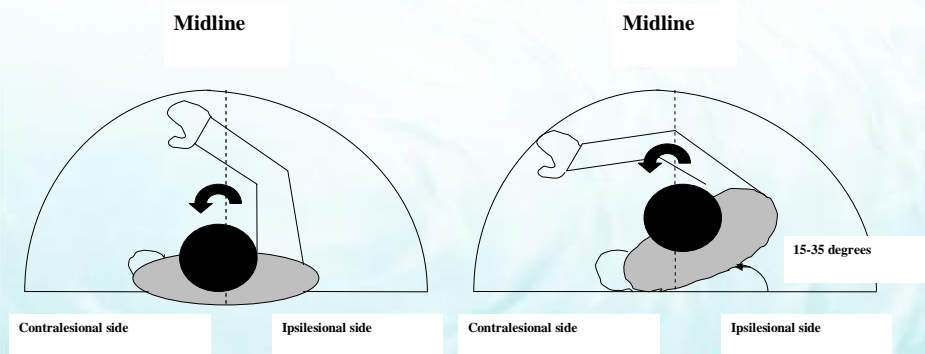
- 3 組：
- 自主向左转身 (Voluntary trunk rotation to hemiplegic side)
- 自主向左转身及右眼睛半边遮蔽 (Trunk rotation right half-field eye patching)
- 傳統治 (Conventional therapy)

治疗方法

每天一次一小时, 周日休息, 四周为一疗程, 另外有十五分钟日常生活训练。



TR as initiated by the ipsilesional UL toward the contralesional space



治疗方法



Supine Lying



Sitting



Standing 華基
Department of Rehabilitation Sciences



自主向左转身+右眼睛半边遮蔽



评定方法(单盲)

- 1) 偏身忽略测试-香港中文版(2003) (Behavioral Inattention Test) (CBIT-HK);
 - 2) 日常生活独立能力评分 (Functional Independence Measure) (FIM);
 - 3) 简短智能测验 (MMSE)
- 评定次数三次, 分别在:
 - 1) 入院时(干预前);
 - 2) 四周(干预后); 及
 - 3) 八周到两个月(跟进)。

结论

- 第1干预组在FIM的行动得分有明显差异有明
显的效果, 尤其在移位方面。
- 第1及2组(自愿躯干旋身及半边遮蔽)和第3
组(对照组)在减低忽略则没有明显分别。
- 结果证明自主转身治疗活动对改善半身忽
略病人的功能活动方面来说, 对比传统的
日常生活活动, 不是更为有效。

SCW-V2

Sensory Cueing Wristwatch
Version II

Remind to Use

A top-down approach.
Patient's mind is the watch.

REMIIND TO MOVE

《提醒治療法》

Original and developed in Hong Kong

康復治療科學系
Department of Rehabilitation Science

THE CHINESE UNIVERSITY OF HONG KONG
香港中文大學

星島副刊 FEATURES

感知提示手表 治偏癱新法

香港中文大學研究團隊研發的「感知提示手表」(SCW-V2)，可以幫助中風後半偏癱病人康復。該手表能發出聲音提示，提醒病人進行手部的動作。研究顯示，使用該手表的病人，其手部功能明顯改善。

感知提示手表 提醒半癱者運動

【本報專訊】「感知提示手表」(SCW-V2)可以幫助中風後半偏癱病人康復。該手表能發出聲音提示，提醒病人進行手部的動作。研究顯示，使用該手表的病人，其手部功能明顯改善。

中大研發 感知提示手表 助半身偏癱病人康復

中大研發的「感知提示手表」(SCW-V2)可以幫助中風後半偏癱病人康復。該手表能發出聲音提示，提醒病人進行手部的動作。研究顯示，使用該手表的病人，其手部功能明顯改善。

中大首創 優化傳統治療 手表提示儀 改善中風偏癱

中大首創的「手表提示儀」(SCW-V2)可以幫助中風後半偏癱病人康復。該手表能發出聲音提示，提醒病人進行手部的動作。研究顯示，使用該手表的病人，其手部功能明顯改善。

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Newspapers Reporting



改良式局限诱发动作治疗 (CIMT)

- 源於改良式局限诱发动作治疗 (Constraint-induced movement therapy, CIMT) 是其中一个针对中风上肢偏瘫之复康治疗法，此治疗之目的是以手套限制健侧手之动作，从而诱发及改善患侧上肢在日常生活中之使用。
- 也有用來改善半身忽略，但只用於輕度偏癱上肢患者，考慮到局限時間長，安全系數，及效果未証實，使用率不高

Randomized controlled trial in 2 hospitals

研究(4)

Abstract

Objective: To compare the effects of unilateral sensory cueing using vibrotactile devices with that of sham control in the treatment of unilateral neglect after stroke.

Design: A randomized, single-blind, sham-controlled pilot study.

Setting: Two rehabilitation hospitals.

Subjects: Forty subacute left hemiplegic stroke incidents with unilateral neglect.

Intervention: Participants were assigned randomly to 1 of 2 groups. The experimental group wore a vibrotactile cueing device over the neglected arm for three hours a day, five days per week, for three weeks, and also underwent conventional rehabilitation. Patients were encouraged to move their hemiplegic arm five consecutive times after each prompt. The sham group underwent the same rehabilitation protocol, except they wore a sham device.

Main measures: Neglect, arm motor performance, and overall functioning were assessed pre- and post-treatment, and at follow-up.

Results: There were no significant differences between groups in outcome measures except the neglect driving scale ($p = 0.024$), the mean post score from baseline to follow-up assessment was 5.2 (3.7) in the experimental group and 1.9 (1.6) in the sham group, across three time intervals. The experimental group showed greater improvement in arm motor performance than did the sham group.

Conclusion: The results do not confirm that sensory cueing, and less so tactile stimulation, is effective when compared with those receiving placebo to reduce unilateral neglect, but it might be useful for promoting hemiplegic arm performance in stroke patients.

Keywords: Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong; Institute for Stroke Management and Rehabilitation, Chinese University of Hong Kong; Department of Physical Therapy, The Hong Kong Polytechnic University, Kowloon, Hong Kong; Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Kowloon, Hong Kong; Email: mookling@polyu.edu.hk

- 3 hours per day, 5 days per week for 3 weeks
- Used with limb activation
- Compared with Sham group
- Reduced unilateral neglect and increase use of arm

Department of Rehabilitation Sciences



振动及声音提示器 放在患侧上肢(左侧)



科學顧問：神經科學及腦科學中心、香港康復中心

身體部給提示手錶的運作

1. 在右手的腕部配戴手錶的裝置，以顯示手錶時間。

2. 裝置會發出兩種地震動，以提醒病人時間或提醒病人完成某項活動。當病人完成該項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。

3. 病人可選擇裝置在左手或右手的腕部配戴。

4. 裝置可發出兩種地震動，以提醒病人完成某項活動。當病人完成該項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。

5. 病人可選擇裝置在左手或右手的腕部配戴。

6. 裝置可發出兩種地震動，以提醒病人完成某項活動。當病人完成該項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。

7. 當病人完成某項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。

8. 當病人完成某項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。

9. 當病人完成某項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。

10. 當病人完成某項活動時，裝置會發出另一種地震動，提醒病人完成該項活動。



治疗方法



评估工具

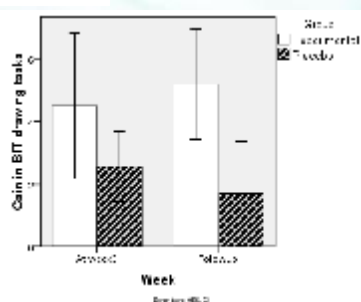
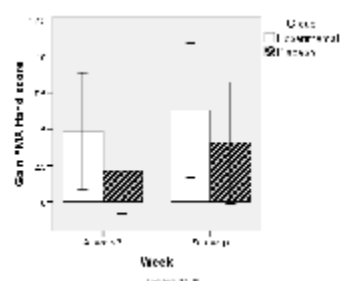
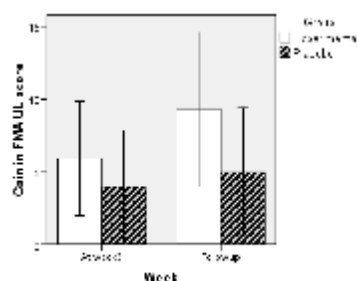
评估

- 在第1天, 21天 and 42天用以下工具测试:
- (1) 偏身忽略测试(BIT) - 常规测试 (Wilson et al., 1986);
- (2) 日常生活独立能力评分 - Motor Measure (FIM-MM) (UDSMR, 1994);
- (3) 简短智能测验 (CMSE) (Chi u et al., 1994);
- (4) 偏瘫上肢功能测试 (FTHUE-HK) (Fong et al., 2004);
- (5) Fugl-Meyer Assessment (FMA) (Fugl-Meyer & Jaasko, 1980);
- (6) 活动量 Motor activity profile from pedometers

结果

- 实验组较安慰组在繪圖得分在三段时间(入院, 三星期, 六星期)都有明显分别.
- 忽略组较安慰组使用提示器的患手活动量有明显增加及手功能有明显改善

Clinical Rehabilitation (2013)



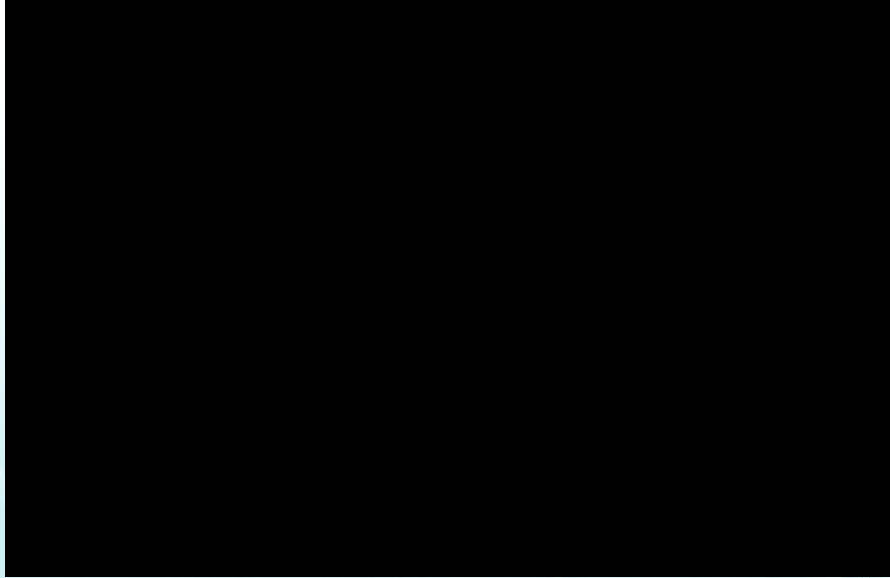
感知提示治疗仪器 - 第二代

- SCW-V2



- 美国专利US-2010-0160834-A1
- 中华人民共和国专利

感知提示治疗



REVIEW ARTICLE
 REVIEW ARTICLE
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Rehabilitation interventions for unilateral neglect after stroke: a systematic review from 1997 through 2012

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KEYWORDS: stroke, unilateral neglect, rehabilitation, behavioral inhibition test

INTRODUCTION: Unilateral neglect (UN) is a hemispheric perceptual alteration that often follows stroke, especially after right hemisphere lesions. Its most typical feature is failure to report or respond to stimuli presented from the contralateral space, including visual, auditory, and kinesthetic, among others. Patients may even fail to protect their own body parts (Dziadosz, 1995). The reported incidence ranges from 10 to 42% following right- and from 10 to 30% following left-hemisphere stroke (Christensen et al., 2001). Unlike selective attention, lesions into the sensory and timing of the assessment, and lack of attentional assessment methods are all applicable for the variability in their reported rates (Dixon et al., 1991; Cavonius et al., 2001). UN has a significant impact on the impact associated with functional recovery of stroke survivors (Christensen et al., 2001; Dixon et al., 2001).

Different treatment approaches and assessment tools have been developed to evaluate and address UN. The most recent literature describes rehabilitation can be classified under two types of behavioral approaches: restricting the hemiparesis limbs to reduce spatial partition for the ipsilateral space, or improving awareness of the contralateral space to promote general attention (Pearce and Matheson, 2002; Fox et al., 2003). More than 18 methods using these general approaches have been put into practice (Lisak et al., 2001) with varying results based on a large number of outcome measures. Although the reported quality is moderate for most of the RCTs in neglect rehabilitation (Fox et al., 2003), some interventions appear to be more promising. Outcome have also been made that the effects of treatment are often task-specific to transfer and cannot be generalized to daily functioning (Pearce and Matheson, 2002; Dixon et al., 2003). Due to a lack of evidence, it is also hard to report which approach is the optimal recommendation for clinical practice (Lisak et al., 2001) and interestingly, professional dementia care for these cognitively preserved individuals (Dixon et al., 2003).

More RCTs have employed "pencil-and-paper" tasks, including line bisection, cancellation, letter copying, and drawing, as treatment outcomes for UN. One of the commonest tasks, and one that facilitates most variability as an outcome measure for UN, is the Behavioral Inhibition Test (BIT) (Dixon et al., 1998, 2003). This is a patient-oriented test for UN or visual awareness in patients suffering from stroke or brain injuries, comparing two parts: the conventional and the behavioral inhibition (BIT) (Dixon et al., 2003). The conventional version includes six traditional paper-and-pencil tasks: line crossing, letter cancellation, star cancellation, figure copying, line bisection, and approximate drawing. The behavioral version consists of one standard daily living task: picture copying, telephone dialing, menu reading, article reading, writing and writing the time, address-writing, address and telephone copying, map navigation, and understanding. Study participants are asked separately to identify the impairment and function level assessments, and it has been recommended as a good predictor of

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2013 篩查文章

Frontiers in Neuroscience

研究(6)

- n PA and rTMS is better in immediate effect
- n rTMS is better in long-term effect
- n Studies on rTMS is not enough

華基
院 of Rehabilitation Sciences



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香港中文大學

(cerebrovascular accident OR stroke) and (neglect OR visuospatial neglect OR visual neglect OR unilateral neglect OR hemisphere neglect)
 The search was limited to RCTs for adults with age (19 years+)

PubMed/Medline, PsycINFO, PEDro, Science Direct, CINAHL, Cochrane (CENTRAL)

Inclusion Criteria

- RCTs published in English from 1997 to Jun 2012
- Adults stroke patients with right brain damage diagnosed with Neglect
- Interventions aimed at remedial symptom of UN and improving function
- Outcomes on BIT(BIT-C or BIT-B or BIT)

Exclusion Criteria

- observational studies, case reports as well as cross-over design studies
- Full text was not available
- sample size less than 5 in each group
- PEDro score in quality assessment less than 4

12 articles were included



Figure 2 Rehabilitation interventions versus any control, outcome: Immediate effects

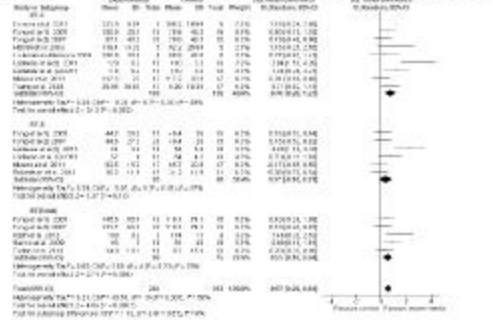
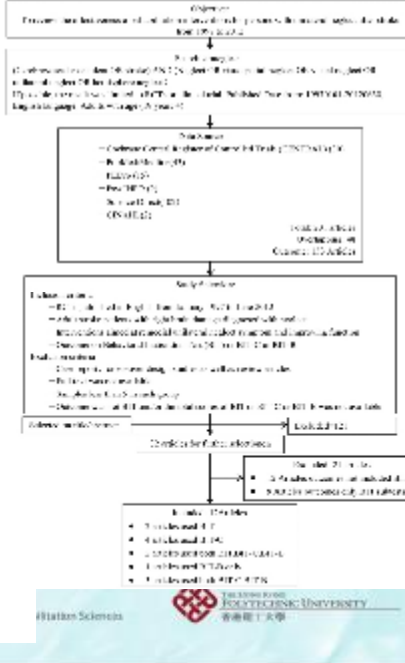
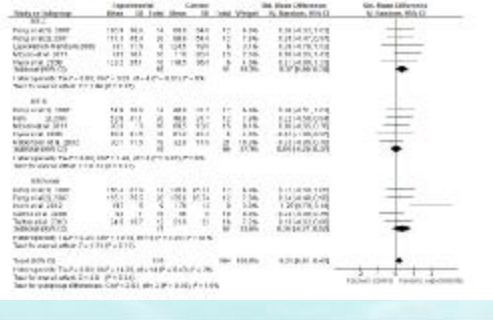
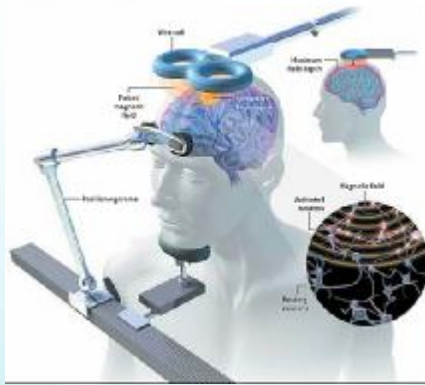


Figure 3 Rehabilitation interventions versus any control, outcome: Long-lasting effects



重复性跨顱磁性刺激 (rTMS)



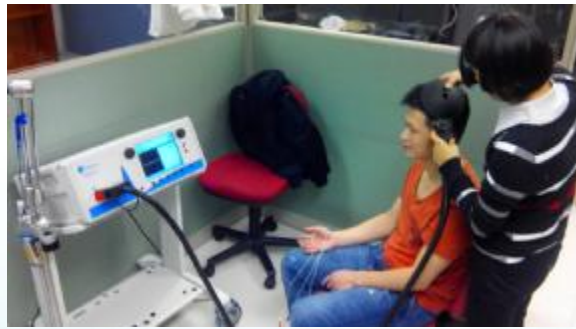
Journal of Clinical Neurophysiology, 2011, 32(10), 1785-1791

Treatment of hemispatial neglect by means of rTMS – a review

Chen, C., Li, C., Wang, J., Zhang, H., Li, X., & Chen, J. (2011). Treatment of hemispatial neglect by means of rTMS – a review. *Journal of Clinical Neurophysiology*, 32(10), 1785-1791.

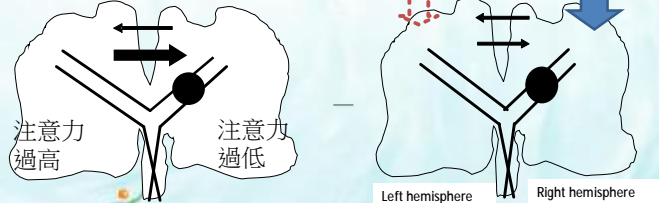
Abstract: Hemispatial neglect is a common disorder after stroke, which is characterized by a failure to respond to or attend to stimuli on the left side of the body. The pathophysiology of hemispatial neglect is still unclear, but it is generally believed that the nigrostriatal pathway plays a key role in the pathogenesis of hemispatial neglect. Repetitive transcranial magnetic stimulation (rTMS) is a non-invasive brain stimulation technique that has been widely used in the treatment of various neurological disorders. This review summarizes the current research on the treatment of hemispatial neglect by means of rTMS.

1. Introduction
Hemispatial neglect is a common disorder after stroke, which is characterized by a failure to respond to or attend to stimuli on the left side of the body. The pathophysiology of hemispatial neglect is still unclear, but it is generally believed that the nigrostriatal pathway plays a key role in the pathogenesis of hemispatial neglect. Repetitive transcranial magnetic stimulation (rTMS) is a non-invasive brain stimulation technique that has been widely used in the treatment of various neurological disorders. This review summarizes the current research on the treatment of hemispatial neglect by means of rTMS.



壓抑 興奮
Cortical Inhibitory Cortical Stimulation

Inter-hemispheric rivalry model



rTMS安全系數

- 大量研究证明按照指南使用是安全的治疗技术。主要是风险对象体内是否隐藏有外来金属物体，例如心脏起搏器，外科动脉瘤支架等等，和怀孕。
- 少数患者在治疗过程中或治疗结束后可能会出现暂时性紧张性头痛，休息后多能缓解，极少数患者会出现暂时性耳鸣，可以通过佩戴耳塞等预防。
- 有治疗诱发癫痫的个案报道，但严格控制治疗参数的情况下，极少发生。

低频 (Low-frequency) rTMS

研究(7)

- 4位患者
- 15分鐘，每週5天，共計2週，安全舒適的坐位，一個“8”字形的線圈將會放於頭部left posterior parietal cortex (PPC) (left P5)
- 密度 Intensity <90% 肌電幅度 (motor threshold, MT), 1Hz, total = 900 pulses



重复性短高频 (Theta burst stimulation, TBS)

- 間歇性-興奮 (iTBS) 或 連續性-壓抑(cTBS)
- 3次重复性短高频TMS (30–100Hz) 以 (theta-freq 4–7Hz)重复
- Koch et al. (2012)的研究只做了9位患者 - 3次高频50Hz,以200ms, 5Hz)重复, 密度80% 肌電幅度 (MT), 共 600 pulses

重复性短高频研究

研究(8)

- 20位患者分兩組, 高频組及安慰組 (SHAM)
- 參加者會接受每次44秒, 共四次的高频透顱磁刺激治療, 共2日
- X 15 min X 60 min X 75 min X
- cTBS 801 pulses (267 bursts X 3 pulses 6 Hz)

跨顱磁性刺激 rTMS

- Transcranial magnetic stimulation (TMS) is a safe and non-invasive procedure to detect or modulate brain activity by passing a strong brief electrical current through an insulated wired coil placed on the skull which generates a transient magnetic field in the brain (Hummel & Cohen, 2006).
- TBS is a kind of rTMS using a lower stimulation intensity and a shorter time of stimulation to induce long lasting effects in the cortex (Cárdenas-Morales et al., 2010).

单侧忽略的康复进程

- 常伴隨認知障礙，嚴重偏癱，健側推倒症候群 (pusher syndrome)
- 一般单侧忽略障碍的康复程度参差，部份单侧忽略会随时间自然改善，原因不明，部份原因可能是環境上或康復訓練刺激。
- 一部份忽略障碍是永久性，因此病者需要加强练习受影响之功能去克服残损 (Overlearning)，学会运用重复性的步骤或补偿技巧 (Compensation)

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问题讨论时间

谢谢!