



【校級神經醫學研究中心 109 年 5 月份月會】

會議紀錄

時間：109年5月20日(星期三) 12:10-13:30

地點：以視訊會議進行，只有講者、主持人及工作人員在現場協助
(醫綜大樓後棟15樓第二會議室)

主席：蔣永孝 主任

主持人：賴建宏 教授 (復健團隊召集人)

TMU Neuroscience Research Center Monthly Meeting Minutes

Chair: Director Y. C. Chiang (蔣永孝主任)

Recorded by: Professor J. Y. Wang,
Secretary C. N. Huang

Host: Prof. C. H. Lai (Neural Rehabilitation Team)

Time: 2020/5/20 (Wednesday) 12:10-13:30

Place: Net Meeting via Zoom, only speakers and NRC staffs at 2nd Conference room are at 15th Floor, United Medical Building (Back Building), Taipei Medical University (250, Wu-Xing St)

Meeting Agenda (議程) :

1. Opening by Director Chiang
2. Team progress report presented by the “Neural Rehabilitation” Team
 - 1) " Novel Assembled Sensorized Glove Platform for Comprehensive Hand Function Assessment by Using Inertial Sensors and Force Sensing Resistors" presented by Dr. I-Jung Lee (李怡蓉)
 - 2) " Design a Paired Associative Nerve Stimulation System and Treatment Strategy for Incomplete Spinal Cord Injury: A Preliminary Study " presented by Dr. Yin-Kai Huang (黃胤凱)

1. Opening by Director Chiang

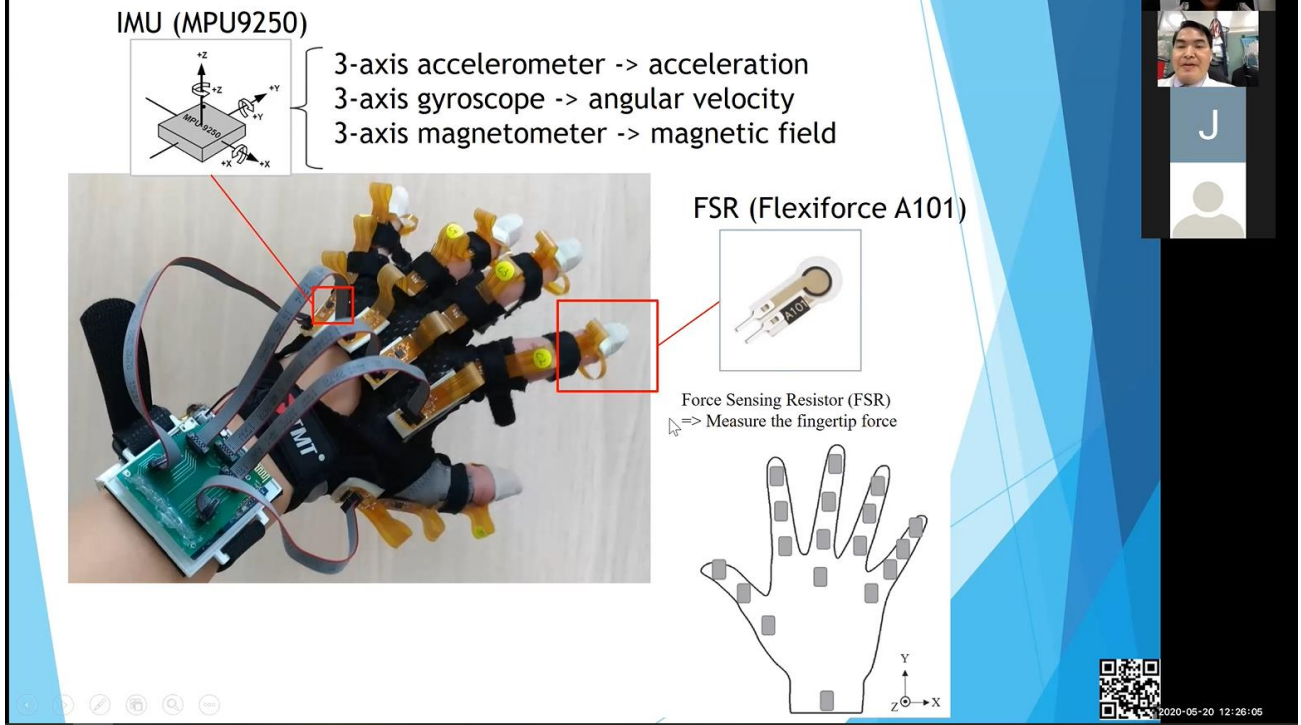
This monthly meeting, we invited the Neural Rehabilitation Team which led by Prof. C. H. Lai.
本中心五月份月會由神經復健團隊進行報告，賴建宏教授為團隊召集人。

2. Team progress report presented by the research team group of “Neural Rehabilitation”

- 1) " Novel Assembled Sensorized Glove Platform for Comprehensive Hand Function Assessment by Using Inertial Sensors and Force Sensing Resistors " presented by Dr. I-Jung Lee (李怡蓉)

Prof. Lai introduced the first speaker, Dr. I-Jung Lee (李怡蓉). Dr. Lee is a P.H. D. candidate in the Electrical Engineering and Computer Science in National Taipei University (NTPU). Her professor is Prof. Bor-Shing Lin (林伯星), the chairman of the Department of Computer Science and Information Engineering and the Vice Dean of College of Electrical Engineering and Computer Science of NTPU.

Prototype of the 9-axis sensorized glove



"Novel Assembled Sensorized Glove Platform for Comprehensive Hand Function Assessment by Using Inertial Sensors and Force Sensing Resistors presented by Dr. I-Jung Lee (5/20)

2) "Design a Paired Associative Nerve Stimulation System and Treatment Strategy for Incomplete Spinal Cord Injury: A Preliminary Study" presented by Dr. Yin-Kai Huang (黃胤凱)

Dr. Lai performed repetitive magnetic brain stimulation for stroke patients for a couple years. Now he applied magnetic brain stimulation to spinal cord injury patients. The second topic is his pilot research with design a paired associative nerve stimulation system for brain and spine to treatment incomplete spinal cord injury patients. The second speaker is Dr. Yin-Kai Hung. He joins the study since last year and he has two backgrounds. He is the first-year resident in the Department of Physical Medicine and Rehabilitation in TMUH and also a Ph. D candidate in the Department of Biomedical Engineering at National Taiwan University.

賴教授針對腦中風病患進行電刺激研究已有數年，目前則將電刺激應用於脊髓損傷患者。第二個主題是他的初步研究，設計針對大腦和脊椎的互動式神經刺激系統，以治療不完全脊髓損傷的患者。第二位講者為黃胤凱博士，黃博士自去年開始加入賴教授的研究。他目前為北醫附設醫院的第一年住院醫師，同時也就讀國立台灣大學醫學工程學系博士班。

Brief summary of Dr. Huang's speech:

People who suffer from spinal cord injury (SCI) usually loss sensory and motor function of extremities that depend on the severity and location of the injury. Following SCI, brain reorganization and

motorneuronal connection from brain to spinal cord play a crucial role in the recovery and rehabilitation of sensory and motor dysfunction of distal limbs. Hence, how to strengthen the plasticity of brain and spinal cord to optimize the functional outcome in people with SCI is a challenge. Both repetitive transcranial magnetic stimulation (rTMS) and trans-spinal electrical stimulation (tsES) have become popular neuroplasticity methods that improve motor function by modulating neuroplasticity of brain and spinal cord. However, few studies examined the effectiveness of combined rTMS with tsES therapy. Therefore, we first implemented the design in combination of rTMS with tsES therapy for individuals with iSCI. We used paired stimulation of rTMS and tsES to facilitate the convergence of descending motor and local sensory circuits in the spinal cord. Next, we assessed the effects of rTMS and tsES on corticospinal excitability and motor performance in individuals with iSCI and then evaluated whether different settings of paired stimulation could have different impact on individuals with iSCI.

tsDCS in spinal cord injury

NeuroRehabilitation, 2016;38(1):27-35. doi: 10.3233/NRE-151292.

Transvertebral direct current stimulation paired with locomotor training in chronic spinal cord injury: A case study.

Powell ES¹, Carric

Author info

Abstract

STUDY DESIGN
locomotor training

OBJECTIVE: De tvDCS paired wi


SETTING: Unive Hospital.

METHODS: A sir before crossove (10MWT), 6 Min test (MMT), and

RESULTS: Impr sham tvDCS and following cathod

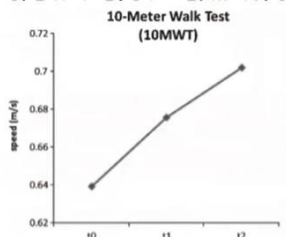
CONCLUSION: excitability, and

SPONSORSHIP: Translational Sc Endowment (12:

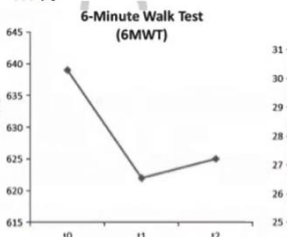


TMUH+
臺北醫學大學附設醫院

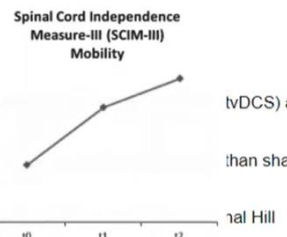
10-Meter Walk Test (10MWT)



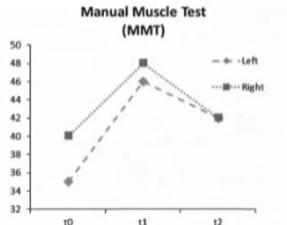
6-Minute Walk Test (6MWT)



Spinal Cord Independence Measure-III (SCIM-III) Mobility



Manual Muscle Test (MMT)



Berg Balance Scale (BBS)

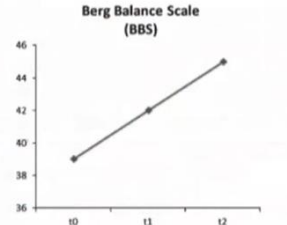


Fig. 2. Motor functional outcome measures at baseline (t0), post-sham (t1), and post-cathodal (t2) time points. Improvements were seen from baseline to post-sham in all outcome measures except 6MWT. Likewise, improvements were seen from post-sham to post-cathodal for all outcome measures with the exception of MMT, on both right and left lower extremities.



Design a Paired Associative Nerve Stimulation System and Treatment Strategy for Incomplete Spinal

Cord Injury: A Preliminary Study presented by Dr. Yin-Kai Huang (5/20)

At the end of the meeting, Prof. Wang announced that the next monthly meeting will be hosted by the NeuroImage Team on Jung 17 via Zoom. Looking forward to your active participation.

會議結束時間為 13:30。