Spinal Cord Injury (SCI) Cluster

Department of Rehabilitation Medicine, Chiang Mai University
Spinal cord injury (SCI)

Background

- Spinal cord injury affects many aspects of life, range from general physical function to coping skills and social reintegration. For examples: problems with bladder and bowel care, sexual dysfunction, and complications.
- From our previous study, incidence of SCI in Chiang Mai was about 23 per million population and seemed increasing due to traumatic and non-traumatic causes.

Propose

- Our aim is to improve the quality of life of people with spinal cord injury by increasing functional capacity and preventing unwanted secondary conditions such as pressure ulcers and urinary tract infection.
Our future focus

- **SCI database**
  - Registry and cause of injury survey: a pilot study of ASCON
  - International SCI survey

- **Mobility & assistive technology**
  - Robots for leg and arm
  - Wheelchairs

- **Rehab Management Outcomes**
  - Neurogenic bladder management
  - Neurogenic bowel management
  - Cardiovascular risk management
  - Tetraplegic hand and shoulder
  - Pressure ulcers
Members

- Assoc. Prof. Dr. Apichana Kovindha (Head) ★ E-mail: apichana.k@cmu.ac.th
- Asst. Prof. Dr. Siam Tongprasert
  E-mail: sitongpr@gmail.com
- Dr. Pratchayapon Kammuang-lue
  E-mail: pratchayapon.k@cmu.ac.th
- Dr. Montana Buntragulpoontawee
  E-mail: montana.b@cmu.ac.th
- Dr. Jeeranan Rapipong
  E-mail: jeeranan.r@cmu.ac.th
- Dr. Sintip Pattanakuha
  E-mail: umedicus@hotmail.com
New Collaboration Projects starting in 2015

International collaborations with …

- **Asian Spinal Cord Network (ASCON):** the ISCoS Database: ASCoN Pilot Project (IDAPP) project
- **Swiss Paraplegic Foundation (SPF):** the International Spinal Cord Injury Survey

National collaborations with

- **NECTEC:** Upper limb robot, WEFRE Rehab system in tetraplegic patients
- National SCI registry
New Collaboration Projects starting in 2015

- **Institute (CMU) collaborations:**
  - Faculty of Engineer, CMU: Gait training robot phase II in 2015
  - Department of Orthopedic Surgery, Faculty of Medicine, CMU: SCI registry and Shoulder problems in SCI
  - Department of Physical therapy, Faculty of Associated Medical Science, CMU: Comparison of neuromuscular electrical stimulated patterns to minimize orthostatic hypotension in patients with spinal cord injury during standing on a tilt table
Collaborations: Department of Orthopaedics, Faculty of Medicine, Chiang Mai University

Project: CMU SCI registry

- Assist. Prof. Dr. Torpong Bunmaprasert, torpong197@gmail.com
- Dr. Suthipas Pongmanee, suthipow@yahoo.com
Collaborations: Department of Physical therapy, Faculty of Associated Medical Science, Chiang Mai University

Project: Comparison of neuromuscular electrical stimulated patterns to minimize orthostatic hypotension in patients with spinal cord injury during standing on a tilt table

- Assoc. Prof. Jonjin Ratanapinunchai, Ph.D., P.T., jonjin.r@cmu.ac.th
Project: IDAPP

- **Principal investigator:** Dr. Chhabra, Indian Spinal Injuries Centre, India. E-mail: issicon@isuctionline.org

- **Collaborators:** Multi-national in SEA region

- **Site investigators:**
  - India: Dr. Chhabra, ISIC, India
  - Chiang Mai, Thailand: Assoc. Prof. Apichana Kovindha,
  - UM, Malaysia: Assoc. Prof. Nazirah Hasnan,
  - Nepal: Dr. Esha Tapa,
  - CRP, Bangladesh:
  - Bach Mai Hospital, Hanoi, Vietnam

- **Duration:** 1 year (2015)
Project: International SCI Survey

Principal investigator: Prof. G. Stucki, Director of SPF, Switzerland
E-mail: spf@paraplegie.ch

Objectives:
- International SCI database
- Implementation of WHO’s disability action plan and the implementation of the IPSCI report

National collaborator: Assoc. Prof. Apichana Kovindha

Study coordinator:

International Collaborations:
- America: Brazil, Mexico, Canada, USA
- AO: China, Japan, Korea, Malaysia, Thailand, Australia, NZ
- Europe: Austria, France, Germany, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal,
Project: Upper limb robot, WEFRE Rehab System in tetraplegic patients

- **Principal Investigator**: Dr. Winai Chonnaparamutt, NECTEC
  E-mail: Winai.Chonnaparamutt@nect.or.th

- **Site investigators**: Assoc. Prof. Apichana Kovindha
  Asst. Prof. Siam Tongprasert
  Wachiraporn Wittayanin
  Arunotai Prommajuk

- **Duration**: 1 year (expected to start in June 2015)
Project: National SCI Registry

- **Project investigator:** Assoc. Prof. Apichana Kovindha
- **Site PIs:**
  - CMU: Assist. Prof. Siam Tongprasert
  - CU: Assist. Prof. Wasuwat Kitisomprayoonkul
  - PSU: Assist. Prof. Wipawan Leelasamran
  - SNRC: Dr. Napasakorn Komaratat
  - Udonratchatanee: Dr. Sukanya Paileeklee
  - Ratchaburee: Dr. Rungarun Mahachai
  - Nan: Dr. Phuricha Chaivirach
  - Siriraj: Dr. Chayaporn Chotiyarnwong

Department of Rehabilitation Medicine  3/16/2015
Departmental new research projects

- **Hand function assessment for tetraplegic patients**
  - Principal investigators: Assistant Prof. Siam Thongprasert
  - Co-investigators: Dr. Pratchayapon Kammuang-lue

- **Hand splints for maintaining tenodesis hand function**
  - Principal investigators: Associate Prof. Apichana Kovindha
  - Co-Investigators: Dr. Montana Buntragulpoontawee
    - Narumon Sumin
    - Nawaporn Jitngam
Departmental new research projects

- Shoulder problems of chronic para- and tetra-plegic individuals
  - Principal investigators: Assistant Prof. Siam Thongprasert
  - Co-investigators: Dr. Jeeranan Rapipong
On-going project

- Wheelchair maintenance
  - Principal investigators: Assoc. Prof. Apichana Kovindha
  - Co-investigators: Dr. Pratchayapon Kammuang-lue, Nantawan Daolert, PT
Recent collaboration projects

- **International level**
  - None

- **National level**
  - Budgeting Impact Analysis on Using an Alternating - Air Mattress Overlay in Preventing of Pressure Ulcer among Persons with Chronic Spinal Cord Injury in Thailand, 2012-2013 with IHPP

- **Institute (CMU)**
  - Gait training robot – body weight support and treadmill with Faculty of Engineer and Faculty of Associate Medical Science
Project: Preventing of Pressure Ulcer among Persons with Chronic Spinal Cord Injury in Thailand

- **Collaborators:** International Health Policy Program, Ministry of Public Health
  - Dr. Thanawat Wongphan; E-mail: thanawat@ihpp.thaigov.net
  - Dr. Phusit Prakongsai; E-mail: phusit@ihpp.thaigov.net

- **Site principal investigator:** Assoc. Prof. Apichana Kovindha
- **Site co-investigator:** Dr. Pratchayapon Kammuang-lue
Project: Robotic gait training

Collaborators:
- Dr. Radom Pongwuthitham; Faculty of Engineer, CMU
- Assoc. Prof. Dr. Jonjin Ratanapinunchai, Department of Physical therapy, Faculty of Associated Medical Science, CMU
  E-mail: jonjin.r@cmu.ac.th

Objective:
- To invent a low-cost robot to assist gait training
Previous Collaboration projects

- **International level**
  - Swiss Paraplegic Research: ICF core set for SCI, internationally multi-center study

- **National level**
  - NECTEC: Use of Wii Games for training trunk balance

- **Institute (CMU)**
  - Department of PT, Faculty of AMS, CMU
  - Faculty of Engineer, CMU
Publications - ICF


Publications – Neurogenic bladder


Publications – Neurogenic Bowel


Publications – Pressure ulcers

Publications - CVD


Publications- Mobility and Wheelchairs

Other related publications


Grants and awards

Research grants

- Chiang Mai University Grants
- Department SCI funds