Overview of Rehab. Patients of University Hospital (2005, Toyoake)
(April 1 2005 – March 31 2006)

- Total New Patients: 2,586
- Inpatients / Outpatients: 2,102 / 484
- Age: 59.8 ± 21.9 yo (0–104, Med 65 yo)
- Gender: male 1,256 female 1,330
- Length of Stay: 60.2 ± 66.7 days
Overview of Rehab. Patients (2005)

Etiologies

2,586 Patients

FIM at AD: 75.1, at DC: 90.9

1,978 Patients

FIM ... & Motor-FES Hybrids

Motor-FES Hybrid

Saitoh et al. 2000

FES Hybrid

Saitoh et al. 1994

Major Research Projects of FHU-R

- WPAL project: Reconstruction of Paraplegic Locomotion
- NOW project: a new AFO (APS-AFO) Development
- Tomy project: Integrated Treadmill Gait Analysis
- FIT project: Integrated Stroke Rehabilitation Program
- COSPIRE project: Clinical Oriented Education System
- Clover project: Unified Database for FHU-R
- Phi project: Multidimensional Dysphagia Research

Reconstruction of Paraplegic Locomotion

W/C usage should continue forever?

PrimeWalk system

Developing a modified Medial Single Hip (MSH) Joint System with Tims Co. Ltd.

- Compatible with W/C usage
- Less constraint by trunk-free
- Good standing balance by MSH
- Better gait function by virtual hip axis

Saitoh E et al. 2000

Powering Primewalk

with FES, Motor, & Motor-FES Hybrids

FES Hybrid

Saitoh et al. 1994

Motor Hybrid

Saitoh et al. 2000

Motor-FES Hybrid

Uno et al. 2002
Powering with Control
Developing Robot
WPAL project
Wearable Power-Assist Locomotor
start at 2005
• Fujita H. Univ.
• Toyohashi Univ.Tec.
• Aska Co. Ltd.
• Tims Co. Ltd.

HOW project
(Hemiplegic Orthotic Walking)
a new AFO Development
(the Adjustable Posterior Strut AFO)

Developing an Adjustable Posterior Strut AFO: APS-AFO
• Guide for movement by Posterior Strut
• Adjustable by a simple joint

Effect of APS-AFO
Mizuno et al. 2004

Shape of Shoehorn AFO & Misdirection of Movement
• Along with calf
• Make rigidity
• Problem of motion direction
Tomy project
Integrated Treadmill Gait Analysis

Research Interest:
- Bipedal Locomotion
- Inverted Pendulum
- Central Pattern Generator
- Passive walking etc.

Need in Clinic:
- Heavy Burden
- Abnormal Pattern
- Gait exercise
- Evidence of Tx
- Prevent of Fall
- New Instrument etc.

Integrated Treadmill Gait Analytic (ITGA) System
by FHI-R Tomy Project since 2000

Expression using Lissajous’s Figure
a healthy subject

FIT project
Full-time Integrated Treatment program
named by Prof. Palmer
Integrated Stroke Rehabilitation Program
at Fujita Health University Nanakuri Hospital
Weak Points of Rehab Approach

- Learning requires More Time
- Learning requires Active Participation of Patient and Family
- Teamwork requires Much Informational Cost

Framework of FIT program

- to increase exercise dose
  - Ward gym: an integration of ward and gymnasium
  - Triangle-pairs (TriP): a new therapist team system for everyday therapy
- to encourage motivation of patient and family
  - Activity-affordable corridor
  - Weekly stroke class
- to enrich the communication among staff
  - LAN-based online database system

a New Rehab. Unit for the FIT program

Started from Dec. 2000 at Nanakuri Rehab. Center

Activity-affordable corridor of 6 m-width

Ward gym: an integration of ward and gymnasium

FIM–motor gain and LOS

![Graph showing FIM–motor gain and LOS](image)

- LOS (Days) Ctrl: 80 FIT: 70 P<0.05
- FIM-gain Ctrl: 12.7 FIT: 20.3 P<0.001
- FIM-efficiency Ctrl: 0.16 FIT: 0.30 P<0.001

COSPIRE project

Clinical Oriented Education System

Co-education of physician & therapist

Utilize an advantage of the FHU-R
Open a New Faculty of Rehabilitation in School of Health Sciences for the COSPIRE project

Enhanced Clinical Training
- 1,520-hours, about 2 times more than average
- 2/3 of program carried in FHU-R
- First-class clinicians as teachers

the Unified Database for FHU-R
- Used in conferences

Clover project
- the Unified Database for FHU-R
- quantified prognostication by using data-base

Phi project
- Multidimensional Dysphagia Research

Multidimensional Dysphagia Research
- Repetitive Saliva Swallowing Test (RSST) (Goguchi et al. 2000) & Non-VF Flow Chart (Baba et al. 2001)
- Clinical application of the Process Model (Shibata et al. 2003-)
- FES for the Bulbar Palsy (Kagaya et al. 2004-)
- Reconsideration about Positional Effect (Okada et al. 2005)
- Outcome of the Bulbar Palsy (Ozeki et al. 2005-)
Repetitive Saliva Swallowing Test (RSST) (Oguchi et al. 2000)

- Counting dry swallow numbers in 30 sec
- Becoming a standard screening test in Japan

Join with Professor Palmer

- 1996 Oct: NISAH in Nagoya
- 1998 Aug: 1st Joint Conference at JHU
- 2000 Feb: 2nd Joint Conference at JHU
- 2000 Sep: 6th JSOR in Kurashiki
- 2001 Apr: 3rd Joint Conference at JHU
- 2003 Oct: 4th Joint Conference at FHJ
- 2004 Sep: 10th JSOR in Niigata & 5th Joint Conference at FHJ
- 2005 Aug: 6th Joint Conference at JHU

Non-VF Flow Chart (Baba et al. 2001)

- Sensitivity: 1.00
- Specificity: 0.91
- False positive: 0.40
- False negative: 0.00

Clinical application of the Process Model

(Joyita et al. 2003)

Location of leading edge of bolus at swallow onset

Products for Dysphagia Rehabilitation

- Jelly for dysphagic patients (2005)
- Swallow Cup (2002)
- Balloon catheter (2003)
- Adjustable chair for VFG (2001)