Indego® Clinical Trials
SCI Focus

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PT, DPT, NCS
Disclosures and Acknowledgements

- Indego was originally developed at Vanderbilt University and was licensed by Parker Hannifin Corporation in 2012.

- Trials regarding early design and functionality for SCI and CVA were a collaborative effort between Vanderbilt University and Shepherd Center with funding provided by NIH Grant # 1R01HD059832-01 for the years 2010-2015 (ongoing)

  - Michael Goldfarb PhD (PI on grant), Ryan Farris, PhD, Hugo Quintero, PhD, Kevin Ha, PhD, Spencer Murray, PE and Don Truex, PE all Vanderbilt University and Clare Hartigan, PT, MPT and Ismari Clesson, RN Shepherd Center

  - Shepherd Center MD PIs Dr. David Apple and Dr. Donald Peck Leslie
Disclosures and Acknowledgements

• Trials 2013 – present have also been partially funded by Parker Hannifin Corporation, manufacturer of Indego.
  – Ryan Farris, Michael Clausen, Edgar Wilson, Scott Morrison and Skyler Dalley
  – Shepherd Center is the lead clinical partner for Parker Hannifin

• Indego has not received FDA approval for widespread use in the USA. FDA trails for persons with Spinal Cord Injury are under way at Shepherd, Craig, Kessler, Rehab Inst of Chicago and Rusk.

• Indego is used at present only for research with all subjects fully consented.
Indego Background

• Device trials at Shepherd Center since 2010
  – Spinal Cord Injury (SCI)
    – C5 Complete and lower AIS A,B,C
  – Stroke (CVA)
• Designed to be light weight, modular
  • Total weight: 26 pounds
  • 5’1” – 6’3”, ≤ 250 lbs.
• Options for variable robotic assist and FES
• Operated wirelessly (iPod app)
• Compact frontal profile enables wearing device in personal wheelchair, standard chair, car, etc.
• Used with stability aid; UEPRW, RW, FCs, Quad Cane, Hemi Walker or Single Point Canes
Primary Indications:
Mobility Mode and Therapy Mode

• **Non-ambulatory individuals:** *Mobility Mode* provides legged mobility and associated health benefits

• **Limited-ambulatory individuals:** *Therapy Mode* enables over ground locomotor training for neural re-education and functional recovery (SCI, CVA, MS, TBI)
Gen Two Fit and Functionality Trial

• **Objective**: Assess the design, fit and functionality of the 2\textsuperscript{nd} Generation Indego (*mobility mode only*) for subjects with SCI C5 complete and lower.

• **Design**: Subject’s seen for 5 sessions to include 1 PT Evaluation and 4 Indego training sessions (1.5 to 1.75 hours each).
  – Enrolled over the course of 4 months (May-August 2014)
  – All subjects received 100% Robotic Assist.

• **Outcomes**: In addition to skill acquisition and level of assist:
  – Mobility measures (10MWT, 6MWT)
  – Borg Perceived Rate of Exertion
  – Metabolic Testing
  – Self report of pain and spasms

• **Inclusion Criteria**: Medically cleared for locomotor training (consider bone health, range of motion, skin, orthostasis, Modified Ashworth Spasticity Scale 3 or less); Age $\geq$ 18, C5 NLI and lower; Weight $\leq$ 250 lbs
# Subject Characteristics in Gen 2 Trials

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Age</th>
<th>Neurological Level of Injury</th>
<th>Time Since Injury</th>
<th>Height and Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 Subjects (3 Females)</td>
<td>19-52</td>
<td>C5-C6 A/B: 3 subjects</td>
<td>3 months – 20 years</td>
<td>5’2” and 120 lbs to 6’3” and 240 lbs</td>
</tr>
<tr>
<td></td>
<td>Avg: 33</td>
<td>T1-T8 A-C: 4 subjects</td>
<td></td>
<td>Avg: 5’ 10”, 163 lbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T9-L1 A-C: 8 subjects</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 16 subjects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Skill Acquisition Within 5 Sessions

• **Individuals with Tetraplegia (using Grasping Gloves)**
  – Walking inside, carpet, thresholds and elevators with **Minimal Assist of 2 to Moderate Assist of 1**
  – Walking outside on grass, ramps and sidewalks **Minimal Assist of 2**

• **Individuals with Upper-Mid Level Paraplegia (T1 - T8)**
  – Walking inside, carpet, thresholds and elevators with **Supervision to Minimal Assist of 1**
  – Walking outside on grass, ramps and sidewalks with **Minimal to Moderate Assist of 1**
Skill Acquisition Within 5 Sessions

• **Individuals with Lower Level Paraplegia (T10 - L1)**
  – Walking inside, carpet, thresholds and elevators with **Supervision** to **Minimal Assist of 1**
  – Walking outside on grass, ramps and sidewalks with **Supervision** to **Minimal Assist of 1**

• **Borg Rating of Perceived Exertion (on Scale of 6-20)**
  – Individuals with Tetraplegia
    • Inside surfaces: **9-11** (Very Light - Fairly Light)
    • Outside surfaces **11-13** (Fairly Light - Somewhat Hard)
  – Individuals with Paraplegia
    • Inside surfaces: **9** (Very Light)
    • Outside surfaces: **10-11** (Fairly Light)
# Indego Data Gen 2 Trials

<table>
<thead>
<tr>
<th>Average Performance</th>
<th>10 MWT Time (sec)</th>
<th>Walking Speed (m/s)</th>
<th>6 MinWT (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tetra: C5 to C6 A/B:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Total w/ Data</td>
<td>47.0 secs</td>
<td>0.22 m/s</td>
<td>64.12 meters</td>
</tr>
<tr>
<td><strong>Upper Para: T1-T8 A:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Total w/ Data</td>
<td>39.82 secs</td>
<td>0.26 m/s</td>
<td>74.0 meters</td>
</tr>
<tr>
<td><strong>Lower Para T9-L1 A-C:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Total w/ Data</td>
<td>23.38 secs</td>
<td>0.45 m/s</td>
<td>120.83 meters</td>
</tr>
</tbody>
</table>
Preliminary Studies with FES

10 channels of Indego® controlled FES

• 4 channels for each leg, 2 channels for trunk
  o Leg FES timed appropriately for stepping
  o Trunk FES provides low level constant stimulation
Indego Cooperative FES Controller

- The FES controller combines the joint torque from two types of actuators: the electric motors of the exoskeleton and the user’s muscles activated by FES.

- Preliminary trials incorporated stimulation of the hamstrings and quadriceps only.
  - The hip joints are actuated by the hip motors and the hamstrings
  - The knee joints are actuated by the knee motors and the quadriceps

- Quadriceps activated in swing phase (with knee free quadriceps extend knee)
- Hamstrings activated in stance (with knee straight hamstrings extend hip)
# 3 Subjects Participated in FES Assisted Walking Trials

<table>
<thead>
<tr>
<th></th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neurological Level</strong></td>
<td>T 7 AIS A</td>
<td>T 10 AIS A</td>
<td>T 6 AIS B</td>
</tr>
<tr>
<td><strong>Gender/Age</strong></td>
<td>Male 27 yo</td>
<td>Male 43 yo</td>
<td>Male 19 yo</td>
</tr>
<tr>
<td><strong>Years Injured</strong></td>
<td>3</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td><strong>Height/Weight</strong></td>
<td>1.75 m/ 82 kg</td>
<td>1.85 m/ 75kg</td>
<td>1.75m/ 54 kg</td>
</tr>
<tr>
<td><strong>10 minute walking</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>period for each.</strong></td>
<td>279 steps total</td>
<td>324 steps total</td>
<td>204 Steps total</td>
</tr>
<tr>
<td><strong>Self selected speed.</strong></td>
<td>- 140 steps “on”</td>
<td>-160 steps “on”</td>
<td>-99 steps “on”</td>
</tr>
<tr>
<td></td>
<td>- 139 steps “off”</td>
<td>-164 steps “off”</td>
<td>-105 steps “off”</td>
</tr>
</tbody>
</table>

- Controller turned on @ 1 minute for FES “on” or “off” for each subject only during double support phases of gait.

- Data continuously recorded joint angles, motor torque and stimulation levels.

- Parameters: Biphasic 200µs pulse width, 25Hz-50 Hz, amplitude adjusted to elicit anti-gravity contraction.
Knee and Hip Joint Angles with and without FES

Knee Joint Angle during Swing

Hip Joint Angle during Stance

(a) Subject 1  (b) Subject 2  (c) Subject 3

(d) Subject 1  (e) Subject 2  (f) Subject 3
Results: Quadriceps FES Contribution

**Subject 1**

- Mean Torque with FES Off: 5.3 Nm
- Mean Torque with FES On: 0.84 Nm
- Muscle Contribution: 84%

**Subject 2**

- Mean Torque with FES Off: 6.9 Nm
- Mean Torque with FES On: 1.2 Nm
- Muscle Contribution: 82%

**Subject 3**

- Mean Torque with FES Off: 3.6 Nm
- Mean Torque with FES On: 1.1 Nm
- Muscle Contribution: 69%

Three Subject Average Muscle Contribution of Quadriceps during swing = 79%
Results: Hamstring FES Contribution

Subject 1

Hip Joint Torque during Stance

Mean Torque with FES Off 13 Nm
Mean Torque FES On 10 Nm

Muscle Contribution 25%

Subject 2

Hip Joint Torque during Stance

FES Off 21 Nm
FES On 16 Nm

20%

Subject 3

Hip Joint Torque during Stance

FES Off 19 Nm
FES On 17 Nm

7.9%

Three Subject Average Muscle Contribution of Hamstrings during swing = 18%
# Summary of All SCI Indego Clinical Trial Outcomes at Shepherd Center 2010-Present

<table>
<thead>
<tr>
<th><strong>Rehab Use</strong></th>
<th><strong>Personal Use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Potential for use with a wide variety of diagnoses (SCI, CVA, TBI, MS, others)</td>
<td>• Provide options for mobility, not to replace a wheelchair</td>
</tr>
<tr>
<td>• Appropriate along continuum of care</td>
<td>• Easy to transport (self or caregiver)</td>
</tr>
<tr>
<td>• Easy to learn (staff, users, family)</td>
<td>• Can be worn in w/c</td>
</tr>
<tr>
<td>• Light weight; easy transport</td>
<td>• Can be used over Indoor/Outdoor surfaces, or in the community</td>
</tr>
<tr>
<td>• Quick donning/doffing = high staff productivity and patient dosing</td>
<td>• Exercise</td>
</tr>
<tr>
<td>• Physiological benefits of FES</td>
<td>• Use in home (ADLs)</td>
</tr>
<tr>
<td></td>
<td>• Easy to learn (users, family)</td>
</tr>
<tr>
<td></td>
<td>• FES/Stairs (pilot data completed)</td>
</tr>
</tbody>
</table>
• A Lower-Limb Exoskeleton Control Approach to Facilitate Recovery of Locomotion following Stroke
  Spencer A. Murray PE, Kevin H. Ha, PE, Clare Hartigan, MPT and Michael Goldfarb PhD, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, Accepted July 2014


• Newly Developed Robotic Exoskeleton, Named Indego® That Provides Over-Ground Legged Mobility And Option for Functional Electrical Stimulation. Clare Hartigan¹, Michael Goldfarb², Ryan Farris², Hugo Quintero, Kevin Ha, Spencer Murray, David F. Apple, Donald Peck Leslie. *American Congress Rehabilitation Medicine Annual Conference* November 2013


• A Method for the Autonomous Control of Lower Limb Exoskeletons for Persons with Paraplegia H. Quintero, R. Farris, and M. Goldfarb. *ASME Journal of Medical Devices, July 2012*


• Control and Implementation of a Powered Lower Limb Orthosis to Aid Walking in Paraplegic Individuals, R. Farris, H. Quintero, and M. Goldfarb *IEEE International Conference on Rehabilitation Robotics, pp. 1-6, July 2011.*
A Collaborative Research Approach To The Development Of A Light Weight Robotic Exoskeleton With FES

Donald Peck Leslie , MD
Medical Director, Shepherd Center

Clare Hartigan, PT, MPT
Program Manager Robotics, Shepherd Center
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A Lower-Limb Exoskeleton Control Approach to Facilitate Recovery of Locomotion following Stroke IEEE Transactions on Neural Systems and Rehabilitation Engineering, Spencer A. Murray PE, Kevin H. Ha, PE , Clare Hartigan, MPT and Michael Goldfarb PhD, Accepted July 2014


Enhancing Stance Phase Propulsion during Level Walking by Combining FES with a Powered Exoskeleton for Persons with Paraplegia K. Ha, H. Quintero, R. Farris, M. Goldfarb, IEEE International Conference of Engineering in Medicine and Biology Society August 2012

A Method for the Autonomous Control of Lower Limb Exoskeletons for Persons with Paraplegia H. Quintero, R. Farris, and M. Goldfarb ASME Journal of Medical Devices, July 2012


Control and Implementation of a Powered Lower Limb Orthosis to Aid Walking in Paraplegic Individuals, R. Farris, H. Quintero, and M. Goldfarb IEEE International Conference on Rehabilitation Robotics, pp. 1-6, July 2011.
Indego Trials at Shepherd Center

- Device trials at Shepherd Center began in 2010
  - Spinal Cord Injury (SCI) and Stroke
  - SCI C5 Complete and lower
- Designed from the beginning to be light weight, modular, variable robotic assist, option for FES and wireless control (iPod app)
- Modular design with total weight 26 lbs
  - Each piece comes in S/M/L for easy and efficient fit
  - 5’1” – 6’3” ≤ 250 lbs
- Compact frontal profile enables wearing device in personal wheelchair, standard chair, car, etc
- Used with stability aid; UEPRW, RW, FCs, Quad Cane, Hemi Walker or Single Point Canes
Indego Device Indications

Mobility Mode and Therapy Mode

• Non-ambulatory individuals: Mobility Mode provides legged mobility and associated health benefits

• Limited-ambulatory individuals: Therapy Mode enables over ground locomotor training for neural re-education and functional recovery (SCI, CVA, MS, TBI)

• Variable Robotic Assist

• 10 Channels FES 2 trunk. 4 each leg
SCI Mobility Studies
Objective, Design and Methods

• **Objective**: To assess the design, fit and functionality for persons with SCI C5 complete and lower.

• **Design**: Preliminary testing indoor and outdoor surfaces including stairs
  - 2 Initial subjects (T10 complete para) seen 3 consecutive days every 3 months for 2 years to allow for engineer modifications. 2010-2012
  - All subsequent subjects seen for an average of 10 sessions only (range 5 -20 sessions for 1-2 hours each session). 2013- present

• **Outcomes**: In addition to skill acquisition and level of assist
  - Mobility measures (10MWT, 6MWT, TUG, 600 Meter)
  - Borg Perceived Rate of Exertion
  - Metabolic Testing
  - Self report of pain, spasms and bowel changes

• **Inclusion Criteria**: Medically cleared for locomotor training (consider bone health, range of motion, skin, orthostasis, Modified Ashworth Spasticity Scale 3 or less)
SCI Stability Aid Suggestions

• C5 – C8 SCI Complete or Incomplete: Person with biceps, shoulder muscles, but very weak or absent triceps, wrist and grip (hands): Use Bilateral or Unilateral Platform Rolling Walker, taller Indego trunk wings and quad gloves.

• Approximately T1- T6 SCI complete or incomplete: Person with full arm strength but weak or poor trunk control: Use Rolling Walker and either regular or tall Indego trunk wings.

• Approximately T7 and below SCI complete or incomplete: Person with full arm strength and better trunk control: Use forearm crutches or walker and regular Indego wings.
# SCI Subject Characteristics (Mobility Trials)

<table>
<thead>
<tr>
<th>Subject #</th>
<th>Gender</th>
<th>Age</th>
<th>Neurological Level of Injury</th>
<th>Time Since Injury</th>
<th>Ht and Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 Subjects</td>
<td>28 Male</td>
<td>18-51</td>
<td>Range C5 A- T12 C</td>
<td>3 months – 20 years</td>
<td>5’2” and 120 lbs to 6’3” and 240 lbs</td>
</tr>
<tr>
<td></td>
<td>3 Female</td>
<td>Avg: 40</td>
<td>C5-6 A/B x 5</td>
<td></td>
<td>Avg: 9 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T1-T10 A x 23</td>
<td></td>
<td>Avg: 5’ 10 “ 180 lbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T 7 C X 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T12 A x 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Skill Acquisition and Effort for Paras**

Average gait session length 1.5 hours

<table>
<thead>
<tr>
<th>Skill</th>
<th>*Sit to Stand Min A</th>
<th>*Stand to Sit Min A</th>
<th>*Walk inside Min A over hard floor/carpet/thresholds</th>
<th>*Walking outside ramps/grass/sidewalks</th>
<th>Avg walking Speed per 10MWT</th>
<th>Avg distance 6Min WT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Level Para T10-T12 Complete/Incomplete</td>
<td>Session 1 BPRE 9</td>
<td>Session 1 BPRE 9</td>
<td>Session 1 BPRE 9</td>
<td>Session 3 BPRE 11</td>
<td>Session 5 0.4 m/s</td>
<td>Session 5 250 feet BPRE 10</td>
</tr>
<tr>
<td>Upper Level Para T1-T7 Motor Complete</td>
<td>Session 1 BPRE 9</td>
<td>Session 1 BPRE 9</td>
<td>Session 1 BPRE 9</td>
<td>Session 3 BPRE 10</td>
<td>Session 5 0.4 m/s</td>
<td>Session 5 300 feet BPRE 10</td>
</tr>
</tbody>
</table>

* Supervision for sit/stand and gait inside/outside surfaces with Rolling Walker or Forearm Crutches were ALL achieved by session 10

** Excludes the 2 subjects with T10 A who began with early prototype development
Video T9 Session #3
Video T12 AIS A Session 18
**Skill Acquisition and Effort for Tetras**  
Average gait session length 1.5 hours

<table>
<thead>
<tr>
<th>Skill: BUEPRW + Grasping Gloves</th>
<th>Sit to Stand</th>
<th>Stand to Sit Min A</th>
<th>Walk inside Min A over hard floor/carpet thresholds</th>
<th>Walking outside ramps/grass/sidewalks</th>
<th>Avg walking Speed per 10MWT</th>
<th>Avg distance 6Min WT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Complete C5-C6</td>
<td>Session 1 A of 3 (Min A each side + front)</td>
<td>Session 1 A of 3 (Min A each side + front)</td>
<td>Session 1 A of 3 (Min A each side + front)</td>
<td>Session 5 A of 2 (Min A/CG each side)</td>
<td>Session 5 0.2 m/s</td>
<td>Session 5 225 ft</td>
</tr>
<tr>
<td></td>
<td>BPRE 13</td>
<td>BPRE 11</td>
<td>BPRE 11</td>
<td>BPRE 12</td>
<td>BPRE 11</td>
<td>BPRE 12</td>
</tr>
<tr>
<td></td>
<td>Session 5 A of 2 (Min A/CG each side)</td>
<td>Session 5 A of 2 (Min A/CG each side)</td>
<td>*Session 5 A of 2 (Min A/CG each side)</td>
<td>BPRE 12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 1 person achieved Min A of 1 only and another Mod A of 1 only
Video C5-6 Sessions 2 and 3
Indego Cooperative FES Controller

• The controller combines the joint torque contributions from two types of actuators: the electric motors of the powered exoskeleton and the user’s muscles activated by FES.

• Trials at Shepherd incorporated stimulation of the hamstrings and quadriceps only, such that the hip joints are actuated by the combination of hip motors and the hamstrings, and the knee joints are actuated by the combination of knee motors and the quadriceps.

• Quadriceps activated in swing phase (knee free acts as knee extensor)

• Hamstrings activated in stance (with knee straight hamstrings acts as hip extensor)
FES Incorporated into Indego Device

10 channels of Indego® controlled FES

• 4 channels for each leg (8) and 2 channels for trunk
  o Leg FES timed perfectly for stepping
  o Trunk FES provides a low level of constant stimulation
• Stimulation timing and levels automatically adjusted (on step-by-step basis) by the exoskeleton controller to provide as much assistive joint torque as possible.
  o FES turns off if muscle fatigue is detected, allows for muscle recovery, and turns back on.
Onset of FES During Gait Cycle

Left Stance and Right Swing

Left Hamstrings and Right Quadriceps Stimulated

Right Forward Double Support

Right Hamstrings and Left Quadriceps Stimulated

Right Stance and Left Swing

Left Forward Double Support
## 3 Subjects Participated in FES Assisted Walking Trials

<table>
<thead>
<tr>
<th></th>
<th>Subject 1</th>
<th>Subject 2</th>
<th>Subject 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological Level</td>
<td>T 7 AIS A</td>
<td>T 10 AIS A</td>
<td>T 6 AIS B</td>
</tr>
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<td>Gender/Age</td>
<td>Male 27 yo</td>
<td>Male 43 yo</td>
<td>Male 19 yo</td>
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<tr>
<td>Years Injured</td>
<td>3</td>
<td>11</td>
<td>2</td>
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<tr>
<td>Height/Weight</td>
<td>1.75 m/ 82 kg</td>
<td>1.85 m/ 75kg</td>
<td>1.75m/ 54 kg</td>
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<tr>
<td>10 minute walking</td>
<td>279 steps total</td>
<td>324 steps total</td>
<td>204 Steps total</td>
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<td>period for each</td>
<td>- 140 steps “on”</td>
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<td>Self selected speed.</td>
<td>- 139 steps “off”</td>
<td>-164 steps “off”</td>
<td>-105 steps “off”</td>
</tr>
</tbody>
</table>

- Controller switched @ 1 minute for FES “on” or “off” for each subject only during double support phases of gait

- Data continuously recorded joint angles, motor torque and stimulation levels

- Parameters; Biphasic 200µs pulse width, 25Hz-50 Hz, amplitude 45mA. Minimal amount to elicit contraction against gravity and no stronger.
Results: Movement is essentially the same w/wo FES
Results: Quadricep FES Contribution

Subject 1
Mean Torque FES Off 5.3 Nm
Mean Torque FES On 0.84 Nm
Muscle Contribution 84%

Subject 2
FES Off 6.9 Nm
FES On 1.2 Nm
82%

Subject 3
FES Off 3.6 Nm
FES On 1.1 Nm
69%

Three Subject Average Muscle Contribution of Quadriceps during swing = 79%
Results: Hamstring FES Contribution

Subject 1
Mean Torque FES Off 13 Nm
Mean Torque FES On 10 Nm
Muscle Contribution 25%

Subject 2
FES Off 21 Nm
FES On 16 Nm
20%

Subject 3
FES Off 19 Nm
FES On 17 Nm
7.9%

Three Subject Average Muscle Contribution of Hamstrings during swing = 18%
Self Reported Overall Health Post Trials

• Reduced Pain where present
• Reduced Spasms during walking and up to 4 hours after walking (MAS 1-3)
• Reduced time for bowel results
• “I can walk to just walk or go faster to get exercise”
• “Best I have felt since my injury”
<table>
<thead>
<tr>
<th><strong>Rehab Use</strong></th>
<th><strong>Personal Use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Potential for wide variety of diagnoses so meets program needs in SCI, CVA,</td>
<td>• Transport (self/caregiver)</td>
</tr>
<tr>
<td>TBI, MS, others.</td>
<td>• Worn in w/c as they propel</td>
</tr>
<tr>
<td>• Appropriate along continuum of care</td>
<td>• Indoor/Outdoor surfaces</td>
</tr>
<tr>
<td>• Easy to learn for staff, families, users</td>
<td>• Community Amb (paras)</td>
</tr>
<tr>
<td>• Light weight; easy transport</td>
<td>• Exercise (tetras with assist)</td>
</tr>
<tr>
<td>• Efficiency for staff productivity and patient dosage</td>
<td>• Use in home (ADL RW/FC)</td>
</tr>
<tr>
<td>• Benefits of FES</td>
<td>• Easy to learn (user/family)</td>
</tr>
<tr>
<td></td>
<td>• FES/Stairs (pilot data completed)</td>
</tr>
</tbody>
</table>
Thank You!

Please visit the Indego Booth at #47 and #49

More information on the device and upcoming clinical trials please visit www.Indego.com

Questions?