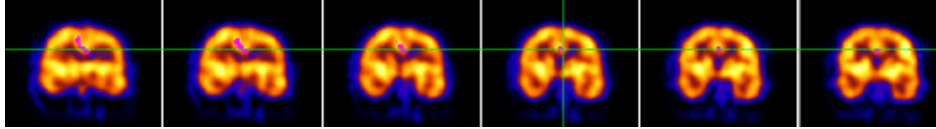


# Research

## Traumatic Brain Injury Recovery Imaging Pilot Study



From September 2001 until March of 2003, The HANDLE® Institute participated with the University of Washington on a pilot study of adults with traumatic brain injury. The project, initiated as medical research by Dr. David Lewis and conducted at Harborview Medical Center in Seattle, evaluated the effect of HANDLE therapy for traumatic brain injury as imaged by regional brain blood flow (SPECT) imaging.

The article appears in the July 2006 edition of the Journal of Neuroimaging:

[Imaging Cerebral Activity in Recovery from Chronic Traumatic Brain Injury: A Preliminary Report Journal of Neuroimaging](#), Volume 16, Issue 3, Date: July 2006, Pages: 272-277 David H. Lewis, Judith P.

Bluestone, Maryann Savina, William H. Zoller, Emily B. Meshberg, Satoshi Minoshima

The participants were five adults (three men and two women) between the ages of 18 and 50, each of whom had sustained a brain injury at least 2 ½ years prior, an amount of time that would rule out any changes as being the result of general healing. Study participants were evaluated on the Learning Foundations Inventory and taught a home-implemented program of activities specifically designed to strengthen weak areas of their sensory motor processing, in the same manner as all HANDLE clients. During their six-month program, they were scheduled to return monthly for clinical visits to update their home program; however, for some of the clients these visits were spaced less regularly due to scheduling difficulties.

All clients had a series of six SPECT scans at Harborview Medical Center—one rest and one activation scan each at three intervals: immediately after undergoing the HANDLE assessment, at the first sign of significant improvement, and at the end of their program. The HANDLE programs were completed by all five subjects, and data has been compiled on the responses that those clients had to the HANDLE program.

All five subjects reported improvements at their monthly visits with their HANDLE practitioner. Some of the reported improvements were:

- Fewer dizzy spells
- Communicating better with people
- Able to go to a party without being on overload
- Restarted writing music and poetry
- Not getting angry - or better able to diffuse anger
- Improved memory
- Emotionally more consistent
- Improved sleep
- Visual field more stable
- Able to ride a bike again
- Better balance
- Able to do work for a longer period of time
- Able to interact with objects with less confusion
- Improved finger dexterity
- Decreased edema
- Improved articulation and flow of speech
- Decreased ringing in ears
- Better word-finding
- No longer carsick
- Improvement in reading

Study participants also filled out a Mayo-Portland Inventory at the outset of their program and again at the end. This inventory was self-rated, and the participants were asked to consider how much their problems interfered with daily life. The inventory asked about mobility, self-care, communication, memory, emotional state, and how they were managing transportation, work, school, money management, and other aspects of life.

Summarizing information can sometimes over-simplify it. However, certain trends in responses on the Mayo-Portland Inventory are interesting to note.

Improvements over six months:

- 5 of 5 in vision
- 4 of 5 in audition, attention, novel problem solving, decreased fatigue, improved self-awareness

- 3 of 5 in long-term memory and visual-spatial skills and decreased pain

The following areas were rated by one or more of the clients to be worse at the end of six months:

- Communication
- Anxiety
- Initiation
- Self care
- Money management

Note: It is important to consider that because study participants did express and demonstrate improvements during clinical visits, and did not express difficulty with these areas, it may be that on self-rating at the end of six months, client expectations had shifted, as they began to interact more with general society.