

An Exercise Intervention to Address Pain in Adults with Cerebral Palsy

**Laura K. Vogtle, PhD, OTR/L
University of Alabama at Birmingham**

**Laurie Malone, PhD
Lakeshore Foundation**

Pain as a Secondary Condition

- A number of studies have documented significant chronic pain at much earlier ages than in adults without disabilities (Andersson & Mattsson, 2001; Cathels & Reddihough, 1993, Murphy et al., 1995; Turk et al., 1997)
- Engel and colleagues specifically studied adults with CP to document pain (Schwartz et al., 1999; Engel et al., 2003; Jensen et al., 2004)

Pain Occurrence, Location and Source

- **Pain occurrence ranges from 23% to 67% depending on the author**
- **Hip, back, and lower extremities are most frequent pain sites**
- **Occurrence somewhat higher in more persons with more severe impairments**
- **History of hip dislocation/subluxation, boney surgery, lack of position change, spasticity, obesity, osteoporosis/fractures, falls, other**

Pain Interventions

- **Exercise, stretching, massage, heat, staying active have been reported as sources of pain relief (Engel et al., 2000; Jensen et al., 2004)**
- **Engel et al. (2002) used biofeedback for pain relief with some success**
- **Jensen et al. (2006) reported decreased use of catastrophizing imagery and increased use of activity resulted in decreased pain**

Study Objectives

- Changes in pain will be seen in adults with cerebral palsy with participation in a regular exercise program.
- Adults with cerebral palsy across GMFCS levels will experience changes in pain with regular exercise.
- Changes in pain status of those adults with cerebral palsy who participate in regular exercise will result in improved participation in daily living skills and improved quality of life.

UCP Adult Day Program



Lakeshore Foundation



Participants

- **Participants in this analysis includes 17 adults, 12 females and 6 males.**
- **4 were African-American, the rest were Caucasian**
- **Mean age was 36.5, range 25-56 years**
- **Nine had GMFCS levels of 1 and 2; 7 were classified as level 4 and 1 was classified as level 5.**
- **Eight participants lived in group homes; the remaining 9 adults lived independently in the community.**

Research Design

- Within subjects design using subjects as their own control
- 3 phases
 - Baseline
 - Intervention
 - Follow-up
- Each phase was three months



The exercise interventions were carried out at UCP for Adult Day Program attendees and at Lakeshore Foundation for those persons living in the community

Exercise Program


- 3 times a week for an hour a session
- Led by a certified fitness instructor hired from Lakeshore Foundation in both settings
- Focus was resistive and cardiovascular exercise
- Adapted devices and assistants were used when needed
- If clients were able to use equipment from a wheelchair or transfer independently, exercise equipment options were used



All participants wore heart monitors during the exercise program and reported RPE midway through and at the end of each session

Instruments

- **Numerical Pain Scale/Wong-Baker Faces Pain Scale (Wong et al., 2001)**
- **Multidimensional Fatigue Scale – Teen Report (Varni, 1998)**
- **Pain Disability Index (Tait, Pollard, Margolis, Duckro, & Krause, 1987)**
- **Physical Activity Scale for Persons with Physical Disabilities (Washburn, Weimo, McAuley, Frogley, & Fioni, 2002);**
- **SF-12 (Ware, Kosinski, & Keller, 1996)**

- All tests administered at first, 3rd, 6th, and 9th data points
 - Collected pain and fatigue assessments monthly
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Outcomes at End of Phase One and Phase Two

- Pain scores pre-post, $t = 1.93$, $p = .072$
- Multidimensional Fatigue Scale
 - General fatigue, $t = 2.83$, $p = .012$
 - Resting fatigue, $t = 3.873$, $p = .001$
 - Cognitive fatigue, $t = 1.869$, $p = .08$
- Difference in number of pain sites, $t = 3.742$, $p = .002$
- No differences across GMFS levels in these data

Adverse Events

- One woman was dropped at home during a transfer the first week of class and developed pain
- Three episodes of spasm during class
- One man developed back pain and had to drop out

Dropouts

- Three went through baseline and decided not to go through intervention
- Two clients dropped out during the intervention due to transportation problems
- One woman dropped out of follow-up phase

Discussion

- Preliminary findings are encouraging
- Anecdotal feedback regarding increased energy, improved physical function
- Mixed group cognitively which opens some test data up to question
 - Example: PDI outcomes were significant for adults who were cognitively intact but not for the group with cognitive impairments
- **Transportation issues**

Summary

- We feel that exercise shows promise as an intervention to manage pain in adults with CP, including adults with more severe impairments
- However transportation to sites where organized exercise programs are available is a significant barrier
- Care needs to be taken when choosing exercise interventions to minimize injury potential

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