Does participating in a supervised fitness program extend the benefits of episodic physical therapy more than a home exercise program for adults with cerebral palsy?

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**Description**

- The lifespan of the patient with cerebral palsy (CP) is approaching that of the general population.
- Adults with CP frequently present with secondary impairments that have the potential to decrease their physical activity levels. They are more likely to lead sedentary lifestyles due to these impairment and activity limitations and are at greater risk of having chronic health conditions than non-disabled adults. Factors that contribute to reduced activity include, poorly fitting exercise equipment, expense of fitness memberships, secondary impairments described above, poor transportation options and decreased motivation. Adults with cerebral palsy specifically are at higher risk for chronic diseases such as diabetes, hypertension, stroke, asthma, emphysema, joint pain and arthritis. The physical consequences of inactivity for persons with disabilities include reduced cardiovascular fitness, osteoporosis and impaired circulation.
- The health benefits of physical fitness have been demonstrated in multiple research studies for able-bodied individuals, but less so for adults with CP.

**Objective**

Previous research has shown that an individualized exercise program led by a physical therapist can improve strength and gait performance of patients with CP. However, retaining gains following PT is difficult and regression often occurs.

The purpose of this study is to compare the effectiveness of 2 community intervention approaches to maintain community mobility and walking speed in adults with CP following an episode of physical therapy.

**Methods**

Study Design: randomized control trial design

Subjects: 30 adults with cerebral palsy, Gross Motor Function Classification System (GMFCS) level I, II, or III. Enrolled within 2 weeks of discharge of physical therapy.

Outcome measures: The Pediatric Evaluation of Disability Inventory Computer Adaptive Test (PEDICAT), Timed Up and Go (TUG) and Six Minute Walk Test (6MWT) will be completed at each of four assessment visits by a reliable, blinded examiner.

Intervention Groups: Randomly assigned post baseline

- one group will receive a home exercise program prescribed by a physical therapist. This HEP will focus on activities the subject can complete in their own home or community such as walking, stair climbing, body resisted strengthening. Subjects will perform the HEP for 12 weeks.
- one group will receive a 12-week community fitness membership including 6 personal training sessions.

Statistical Analysis:

Improvement in mobility will be predicted by changes over time during the four visits and across groups. Linear regression and longitudinal models will be used to test hypotheses. A criterion of p<0.05 will be used to determine significance in the models of all primary hypotheses. In addition to the longitudinal modelling, we will conduct 2-tailed tests for group differences the end of the intervention to account for the potential for improving or declining mobility.

**Preliminary Data**

Evidence of improved functional outcomes following PT intervention:

The Developmental Disabilities program at Sheltering Arms Outpatient Rehabilitation Center has been providing PT services to adults with CP for two years. Between November 2015-November 2016, 119 patients with CP had completed an 8-week PT program. As a routine part of the initial evaluation and discharge visits, we completed the TUG and 6MWT. Based on this data, 60% of the 119 patients had improved their scores more than the MDC on the TUG and 6MWT. While we have routinely encouraged patients to participate in physical activity after discharge, we have provided a home program to those who do not sign up for the Power Ex program. We are currently collecting follow up evaluation data of these patients if they return.

Evidence of ability to transition a patient from PT to community fitness:

We recently saw a patient in our facility who was a 26 year old male with diplegic cerebral palsy. The subject received 8 weeks of physical therapy twice per week for 60 minute sessions. The patient was discharged from physical therapy and then enrolled into the Power Ex fitness program. This client attended the fitness center for 12 weeks and received six personal training sessions. He completed a workout at the fitness center on average of 2-3 times per week. He reported that the exercise program he participated in made him feel stronger, and enabled him to walk daily back and forth to a local convenience store to obtain necessary items, demonstrating an improved participation in the community and independence with activities of daily living.

**Significance**

The proposed study will address the gap in the literature comparing interventions to support retention of physical fitness following discharge from a physical therapy program. As our professions moves toward supporting the use of community services to improve lifelong fitness, activity, and quality of life for all people, we need evidence-based approaches for adults with CP to retain physical fitness throughout their lifespan.

**References**


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