

Clinical pain research

Physical and occupational therapy outcomes: Adolescents' change in functional abilities using objective measures and self-report[☆]

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HIGHLIGHTS

- Measures of adolescent physical functioning during pain rehabilitation are needed.
- Subjective measures capture change in functioning and perceived ability.
- Additional objective measures enhance monitoring of functioning.
- Functional changes in pediatric pain rehabilitation are independent of pain scores.

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ABSTRACT

Purpose: This study evaluates the clinical usefulness of patient-rated and objective measures to identify physically-oriented functional changes after an intensive chronic pain program in a pediatric setting. Past studies have demonstrated the importance of adolescents' perception of their abilities and measurement tools used for rehabilitation outcomes within physical and occupational therapy; however, these tools used are not often easily utilized or have not been examined with a pediatric chronic pain population. In chronic pain rehabilitation, it is important to have a primary focus on functional improvement not on pain reduction as a leading outcome. This study examines how both self-report and objective physical activity measures can be meaningful constructs and can be used as reliable outcome measures. It was hypothesized that adolescents completing an interdisciplinary pain rehabilitation program would report functional gains from admission to discharge, and that perceived gains in physical ability would be associated with objective physical activities. Further, it was hypothesized that gains in functioning would be associated with mild pain reduction.

Methods: Data from 78 children and adolescents with chronic pain that participated in an intensive multidisciplinary treatment program completed self-report measures including the Lower Extremity Functional Scale (LEFS), Upper Extremity Functional Index (UEFI). In addition, adolescents were objectively monitored for repetitions of selected physical activities for 1 min intervals.

Results: Data demonstrated significant gains in all measures of functioning during the program. Correlations between self-report and objective outcomes suggest they are measuring similar yet distinct factors.

Conclusions: The LEFS, UEFI, and objective exercises provide a meaningful way to track progress in pediatric chronic pain rehabilitation. Despite similarities, they appear to track separate but related aspects of rehabilitation and capture important short-term response to rehabilitation. Both measures appear distinct from pain as an outcome. These findings increase our understanding of rehabilitation practices provide opportunities to promote clinical improvement in pediatric pain.

Implications: The use of self-report measures along with objective measures can help therapists gain understanding in regards to a patient's insight and how that may impact their overall outcome compared to the use of a single outcome measure. Viewing these rated measures at any point in the rehabilitation process can be useful to facilitate discussion about challenges they can identify and how therapies can facilitate improvement and functional gains.

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1. Introduction

1.1. Background

Pediatric chronic pain is on the rise, affecting up to 40% of adolescents, causing significant functional impairments (5–10%) [1–4]. Adolescents with chronic pain often struggle with every day activities, family interactions, participation in sports or leisure activities, and consistent school attendance. As a result, many begin to experience worsened self-perceived health status [5,6], including their perception and ability to complete physical tasks.

An interdisciplinary rehabilitation approach is a useful model of care for adolescents severely affected by chronic pain and functional disability [5,7–10]. Given the nature of chronic pain, dramatic reduction in pain is not anticipated or targeted as an early outcome to intervention. Rather, treatment aims to increase independent symptom management and improved daily functioning [2,11]. Research supports education and participation in physical activity/exercise can reduce pain and limit disability [12]; therefore daily physical, occupational, and recreational therapies are a necessary part of rehabilitation. Therapy goals for adolescents with chronic pain are to improve independent, consistent daily physical functioning, and to reduce sedentary habits and activity avoidance.

Due to a global sense of impairment and lack of insight, many adolescents who experience chronic pain often perceive that they are limited in daily functional tasks and basic physical activity [7,13]. For this reason, gains in therapy physical functioning should be measured with both self-report and objective measures. Self-report tools help track perceived functional gains and demonstrate the psychological aspects of independent functioning. Objective measures can enhance assessment of functional gains by isolating the psychological aspects of perceived confidence.

There is limited research supporting specific outcome measures for adolescents with chronic pain in rehabilitation, specifically targeting physical or occupational therapy interventions. Commonly used therapeutic objective measures and assessments include the BOT [14], GMFM [15], and TUG [16]. Although helpful, these standardized tests can be time consuming, require additional resources, and be limited by areas of functioning or age ranges. Other standardized physical measures exist for high level athletes (PACER test, shuttle run, etc. [17]), but are less ideal in deconditioned adolescents. Few easily administered and appropriate objective measures exist for evaluating and tracking physical function for adolescents with chronic pain.

There exists a need for easily administered self-report and objective measures to examine adolescent functioning and change in functioning following chronic pain rehabilitation. Past research suggests the utility of self-report measures, but the utility of objective measures and their relation to self-report measures remain unknown.

1.2. Hypothesis

This study examines the use of two self-report measures and 5 objective fitness exercises to track physically oriented functional gains within a pediatric chronic pain rehabilitation program. Hypotheses include:

- Adolescents completing a multidisciplinary pain rehabilitation program, which targets physical functioning, will report perceived functional gains from admission to discharge.
- Adolescents will similarly demonstrate improvements in objective measures as they do in their rating of perceived functional gains.

- Self-report and objective measures will correlate at both admission and discharge.
- While we do not expect a large decrease in pain during rehabilitation, we anticipate that adolescents who report or demonstrate gains in physical ability will also demonstrate a mild reduction in reported pain intensity.

2. Methods

2.1. Participants

116 Children and adolescents (hereafter referred to as adolescents) ranging in age from 8–19 years old, with varying chronic pain diagnoses, were treated in this chronic pain rehabilitation program. Data for this study was collected retrospectively on all program participants. The most common diagnoses include headaches and migraines, back pain, abdominal pain, amplified musculoskeletal pain syndrome (AMPS) and complex regional pain syndrome (CRPS) (Fig. 1). Adolescents were excluded from data analysis if they: opted out of specific treatment, left the program early, withdrew consent, incomplete data forms, or participation in the program was extended past the typical 3–4 weeks (38 adolescents). Data of both self-report and objective measures for 78 adolescents was reported.

2.2. Program/procedure

Chronic pain rehabilitation on a multidisciplinary level focuses on improved strength and endurance, facilitating return to daily life activities, and using appropriate self-directed coping and pain management skills [5–7]. Participants were typically seen for three weeks including both inpatient and day hospital care for full days. Within the program, adolescents participated in rehabilitation therapies, psychological services, medical subspecialty care, alternative therapies, and school services. Since an adolescent is part of a family unit, parents were also involved in education and observations with providers to help them support continued progress once home [6].

The goal of chronic pain rehabilitation has evolved from eliminating pain to managing pain so that overall functioning is

Percentage of Cases by Diagnosis

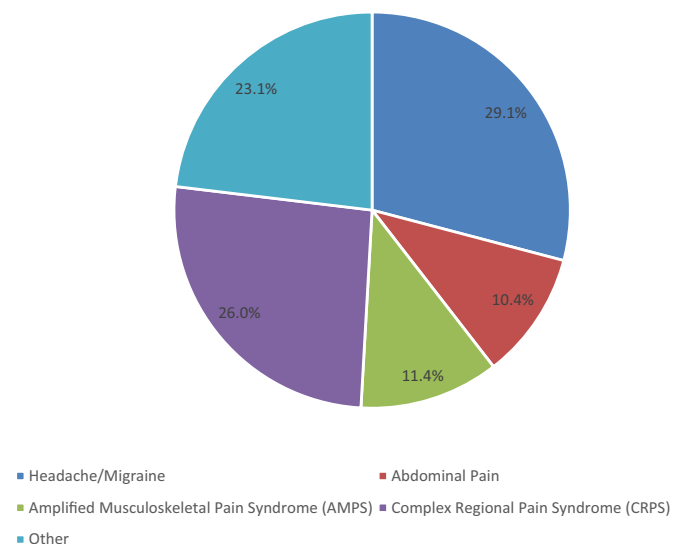


Fig. 1. Percentage of cases by diagnosis.

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