

Parent and Therapist Perceptions of an Intense Model of Physical Therapy

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Purpose: The purpose of this study was to determine parent and therapist perceptions regarding the effect of an intense model of physical therapy for children with cerebral palsy. **Methods:** Informants included 5 parents, 5 therapists, and 5 children with cerebral palsy who previously participated in an intense program (ie, strengthening and functional activities 4 hours/day, 5 days/week for 3 weeks). Parents and therapists were interviewed, and children were observed. Data were collected and analyzed using qualitative methodology. **Results:** Five common themes emerged, based on perceptions: (1) improvement in motor function, (2) improvement in confidence and independence, (3) stress during the program but a time of no therapy between sessions, (4) increased participation in the community, and (5) fatigue during the program but perceived rapid attainment of goals. **Conclusions:** The constructs identified should be considered by clinicians in program development and by researchers for further study. (*Pediatr Phys Ther* 2010;22:207–213) **Key words:** cerebral palsy, child, exercise therapy, parent, patient satisfaction, physical therapy/methods, physical therapy/organization and administration, qualitative research, time factors

INTRODUCTION

A primary theme emerging from the III STEP Conference in 2005 was that intense activity-based practice is needed to promote functional gains and overall health in individuals with central nervous system dysfunction.¹ The traditional model of physical therapy (PT) for children with cerebral palsy (CP) typically involves 1 to 2 sessions per week, and the therapist must rely on caregivers to complete daily exercises at home. An alternative to this model is short bursts of more intense practice daily for several hours per day for 3 or 4 weeks, followed by a long period of no therapy and self-treatment. Although there is no clear evidence of its efficacy, parents and therapists may seek out this alternative

model, possibly having to travel away from the home and pay up to \$10,000 per episode of care. Parents make these sacrifices hoping that the intense therapy will help their child improve. Qualitative research to describe constructs important to therapists, parents, and children can provide foundational information in guiding research aimed at evaluating the efficacy of intense models of therapy.

The literature related to intense practice in children with CP includes studies on constraint-induced therapy to improve upper extremity function^{2–5} and the use of intense practice of functional activities.^{6–13} The argument has been made that short bursts of intense therapy (ie, daily for several weeks) followed by periods of usual activity and no therapy may be better than traditional therapy (eg, 1 time per week), as the child will have more time away from the clinic,^{8,14} enabling participation in other activities. A recent study⁸ indicated that children who received only 30 sessions over a 6-month period improved in functional outcomes. In this single-subject design, intermittent therapy 4 times per week for 4 weeks followed by a period of no therapy for 8 weeks was well tolerated by 5 children with CP. Gross Motor Function Measure (GMFM) scores improved and were maintained in 3 of the children. Similar results were obtained in a study by Bar-Haim et al⁷ who

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demonstrated that GMFM scores improved in children who received daily intense intervention (ie, 2 hours/day, 5 days/week for 4 weeks) regardless of the modality of treatment (ie, neurodevelopmental treatment or Adeli Suit therapy). In contrast, a study by Christiansen and Lange⁹ demonstrated that GMFM scores improved similarly in 2 groups that received the same amount of PT, regardless of whether it was done intermittently or continuously. Other studies also showed that the GMFM scores changed similarly, regardless of the intensity of PT.^{6,11,12,14} It is possible that these studies did not measure important constructs that are affected by the intense therapy. These constructs need to be identified using qualitative methodology to guide future research on the efficacy of intense therapy models.

Reasons that parents may not seek alternative therapies such as intense therapy include lack of knowledge of alternative interventions, doubt concerning the benefits of such therapy, inability to afford interventions, and concerns regarding difficulties with scheduling.¹⁵ However, as discussed by Trahan and Malouin,⁸ the benefits of an intense model include the positive effect of daily interaction with the child and the family, the capability to adapt short-term goals on a daily basis, and the improved quality of time spent in therapy due to increased quantity. The rest periods and time between intense therapy sessions are beneficial because families experience decreased stress and have more time to do other activities.⁸ In addressing the economic stress of intense therapy, the net cost of intense therapy may be less than conventional therapy, which involves a greater number of treatments over time.⁸ Although these benefits are possible, no study has examined the reasons why parents and clinicians would choose this model.

Qualitative methodology has been used in studies to determine the effect of specific PT interventions^{16–18} and to better understand clinical decision making.¹⁹ Resnick et al¹⁸ interviewed community-dwelling adults after stroke to explore factors that motivated them to use a treadmill for exercise. Sekerak et al¹⁷ used qualitative analysis to identify themes involved in the success of PT services in preschool classrooms. Slade et al¹⁶ interviewed adults with chronic low back pain to determine important factors related to exercise programs. Understanding the factors affected by PT interventions can help guide clinical decision making. Through qualitative methodology, Embrey et al¹⁹ identified 4 themes that described clinical decision making of physical therapists during treatment sessions for children with CP. The purpose of this study was to use qualitative research techniques to describe the constructs identified as important to therapists, parents, and children who engage in intense bouts of PT. The research question that this project aimed to answer was “What benefits and challenges do therapists, children, and parents perceive during intense bouts of PT?”

METHODS

Study Design

To answer the research question, we used qualitative, phenomenologic methodology to establish grounded the-

ory as described by Strauss and Corbin,²⁰ and Lincoln and Guba.²¹ Approval was obtained from the Institutional Review Board of the University of Alabama at Birmingham. We began with systematic data collection, which consisted of recruiting 3 groups of informants who were involved in an intense PT program at least 6 months before recruitment. The 3 groups consisted of children with CP and their respective therapists and parents. We interviewed the parents and therapists and observed the children during play. This was followed by data analysis that included open coding and grouping of the data into themes.^{20(p. 25)} In contrast to quantitative methods, which focus on large subject numbers and rigorous data collection and analysis, we used qualitative methods, which require small subject numbers and an emphasis on natural occurrences and meanings.^{20,21}

Establishing Trustworthiness

In qualitative research, trustworthiness is established to minimize threats to validity. To establish trustworthiness, we used 5 techniques as described by Lincoln and Guba^{21(p. 301–316)}: (1) We based interview questions on input from parents and therapists involved in the intense therapy but not recruited as informants. We used audio recordings of the interviews and each researcher typed the words from each recording verbatim. (2) We used triangulation to identify common themes between the 3 sources of data (ie, parent, child, and therapist). (3) We recorded, reflected on, and discussed biases throughout the research process, and then compared biases with the data (ie, reflexivity, which contributes to the credibility, transferability, and dependability of the research).^{21(p. 327)} (4) We sent compiled themes and data (verbatim) to the subjects who provided feedback (ie, member checking). (5) We documented our exact research process to include the method for reaching conclusions through open coding (ie, thick description, which contributes to transferability).^{20(p. 101–121)}

Sampling Strategy

A sample of convenience was used. The inclusion criteria were that the children had a diagnosis of CP and received the intense intervention at least 6 months before recruitment. The intense program was carried out by the therapists at the Children’s Hospital of Alabama, and the intervention included resistance strengthening, functional activities, concentrated walking practice, and activities in the Adeli Suit (ie, a suit with resistance cords attached). The intervention was done 5 days per week for 4 hours per day for 3 weeks. A list of 12 children who met these inclusion criteria was obtained from the lead therapist. Subjects were selected from this list by random drawing of names, and families were contacted via phone in the order that their name was drawn until 5 teams (ie, child, parent, and therapist) agreed to be included in the study. The initial number of 5 teams was selected based on the premise that more would be recruited if saturation was not reached. Saturation occurs when the data begin to repeat (ie, the same themes are represented) and no new themes

emerge.^{20(p. 136)} After agreeing to participate, informants signed an informed consent/assent and authorization to use health information for research. A pseudonym was given to each child. The therapists and parents were given the pseudonym of the child followed by “T” or “P,” respectively (ie, Sam’s parent is named “SamP”). Each child’s therapist determined his or her gross motor function classification system level.²²

Description of Informants

All subjects used English as their primary language. Parent informants included 4 mothers and 1 father who lived within 10 (n = 2) and 50 (n = 3) miles of the facility. Educational levels of the parent informants included high school diploma (n = 1), college degree (n = 3), and graduate degree (n = 1). Household income levels were \$50,000 and higher (n = 4) and \$35,000 to \$49,999 (n = 1). Ethnicities were African American (n = 1) and white (n = 4). All parents used medical insurance to pay for the intervention, and 2 parents supplemented the insurance with out-of-pocket payment. All children received some form of PT after the intense program including school only (n = 2), outpatient only (n = 1), and both school and outpatient (n = 2) (Table 1).

Data Collection

Before data collection, we interviewed 2 parents and 2 pediatric therapists familiar with the intense program but not recruited for the study. On the basis of this information, we developed 2 open-ended semistructured interview questionnaires (Appendix). One question asked of the therapist was “Why do you think that the intense program was better for this child than traditional approaches?” One question asked of the parent was “Why did you decide to allow your child to participate in the intense program?” The questions were used only as a guide, and the interviewer allowed the interviewee to dictate the flow of each conversation.

Under the supervision and training of a faculty mentor, 3 physical therapist students performed the interviews. Student 1 interviewed the therapists, and student 2 inter-

viewed 1 parent of each child. Before performing the interviews, each student practiced by interviewing a faculty member knowledgeable in qualitative research methods and received corrective feedback. Student 3 observed each child’s activity and talked to each child about the program. Although we realized that the observations were not an indication of how the children performed before the program, it was an indication of what the child could do at the time of the parent and therapist interview. Therefore, we thought that this was a rich source of data because it could be compared with data obtained from parents and therapists.^{20(p. 11)} The 3 sources of data were as follows: (1) parent interviews (n = 5), (2) child observations (n = 5), and (3) therapist interviews (n = 5). We triangulated the data (ie, analyzed to recognize common themes).^{21(p. 283)}

Students 1 and 2 interviewed individual therapists and parents (respectively) in private rooms and audiotaped all interviews. Student 3 videotaped and talked to each child at the same time as the parent interview. All therapist interviews took place in the therapist’s work environment. Parent interviews and child observations were done in a variety of locations (Table 1). The questionnaires (Appendix) guided students 1 and 2 during the semistructured interviews. Student investigators used a constant comparative approach^{21(p. 339–344)} immediately after each interview to determine emerging themes, which were explored in successive interviews. The faculty mentor conducted 1 parent interview (EmilyP) because of illness of student 2 on the day of the scheduled interview.

Data Analysis

Students 1 and 2 individually transcribed their interviews. Student 3 transcribed descriptions of observations from the videotapes and comments from the children. Each student carefully reviewed the transcripts multiple times and identified and highlighted code words. This was accomplished by reading each interview and observation transcript line by line and coding phrases, sentences, groups of sentences, and/or small paragraphs that contained a meaningful, distinct thought process.^{20(p. 101–121)} Each investigator also reflected on and recorded individual

TABLE 1

Informant Demographics

Child Pseudonym	GMFCS Level	Age at Time of Interview (y)	Where Interviewed/ Observed	Therapist’s (T) Experience, (y)	Parent (P) Interviewed
Sam	III ^a	8.8	Home	9	Mother
Polly	I ^b	4.9	Home	27	Mother
Izzy	III ^c	5.0	Outpatient clinic	11	Mother
Darla	III ^c	4.9	Outpatient clinic	4	Mother
Emily	I ^b	6.0	University	<1	Father

Abbreviation: GMFCS, Gross Motor Function Classification System.

^a Age 6–12 years: must use an assistive device to walk inside/outside on level surface, may climb stairs using railing, typically uses wheelchair for long distances or uneven outdoor terrain.²²

^b Age 4–6 years: can independently sit in a chair and transfer to and from a chair; can stand, walk, and climb stairs inside and outside independently; and begins to run/jump.¹⁹

^c Age 4–6 years: requires support at trunk/pelvis to use hands in sitting position, must use upper extremities to transfer in/out of a chair, can walk with assistive device on level surfaces, requires help to climb stairs, and usually transported for long distances or uneven surfaces.¹⁹

biases (ie, reflexivity) to compare with the data.^{21(p. 327)} For example, student 1 was surprised that the therapists were not as focused on the specific equipment used during therapy sessions, such as the Adeli Suit, as much as on the intense nature of the program. Student 2 was not surprised to find out that the parents were willing to do whatever it took (eg, miss work, travel, miss school) to help their child achieve functional goals.

After reviewing and coding the transcripts, investigators (students 1, 2, and 3 and a faculty mentor) met 4 times to identify common themes between the 3 sources of data. Investigators discussed all possible themes, and careful triangulation of the data led to the identification of 5 common themes. The investigators reread the transcripts and compiled supporting evidence for each theme. The faculty mentor sent this information to the parents and therapists to confirm its accuracy (ie, member checking to determine credibility of the data).^{21(p. 314)} Table 2 shows the relationships between code words and themes.

RESULTS

We reached saturation with 5 parent/therapist/child teams. During review of the transcripts, code words were identified. The code words clustered into 5 major themes, based on perceptions that the intense program had the following effects: (1) improvement in motor function, (2) improvement in confidence and independence, (3) stress during the program but a time of no therapy between sessions, (4) increased participation in the community, and (5) fatigue but perceived rapid attainment of goals during the program. Through member checking, all parents and therapists confirmed that the themes and supporting data accurately depicted their perceptions.

Theme 1: The Intense Program Improved Motor Function

Code words *strength*, *stronger*, *endurance*, and *function* were used by all therapists and parents to describe the

effect of the program on motor function. Therapists commented on gains in strength from the program as being precursors to gains in function. Parents commented on the benefits of strengthening to improve function.

(PollyT): I think if it's a child that strengthening is one of the main missing components of movement, it's an ideal program. If you strengthen and you have the motor power, then you can accomplish the functional task . . . the main goal should be function based on strength-related goals for this program.

(IzzyP): [Izzy] has participated in it before and it just helps strengthen her every time. [When] she does participate in it she gets stronger and quicker with her walking and just helps her all around.

Another parent recognized the gains in strength but did not see a direct relation to improvement in function. (SamP): "As far as the [intense] program, I think it just actually makes him stronger. I don't think it changes things . . . he doesn't do anything different. He's just stronger." However, later in the interview (SamP) commented about Sam's improved ability to transfer into and out of the car after completion of the program, which could be viewed as a functional gain.

Improved endurance was referenced by several therapists, parents, and other individuals in the children's lives:

(SamT): I think it's because we worked 4 hours/day and that really challenged his endurance . . .

(EmilyP): [Emily's] endurance multiplied, almost exponentially. It was amazing! You could go shopping the whole day and she could keep up with you . . . her endurance improved tremendously.

Observation notes, videos, and conversations with the children confirmed the effect of the program on motor function. Children with Gross Motor Function Classification System level III (Sam, Darla, and Izzy) were observed climbing stairs, and Sam was observed climbing in and out of bed independently. All children walked distances of over 400 feet without significant fatigue, and Emily was observed bouncing on a hippity-hop toy for 2 minutes before stopping.

(DarlaT): Just the continual practice over and over again plus the strengthening that she gained from being in the program [allowed Darla to meet the goals that she met].

(IzzyP) [Izzy] is quicker, you know she walks faster, you can just tell her all around strength has increased. The things she does—climbing up on stuff, just moving, getting around, doing things—she just does it a lot better, a lot easier.

Theme 2: The Intense Program Improved Confidence and Independence

Code words identified were *trying*, *independent*, *able to*, *doing better*, and *specific functional skills* (eg, steps, walking). The positive effect of this program on confidence and independence was supported by therapists and parents, who noticed that the children were more confident to try new things, especially in community situations.

TABLE 2

Relationship Between Code Words and Themes

Code Words	Themes
Strength, stronger, endurance, and function	The intense program was perceived to improve motor function
Trying to, independent, able to, doing better, and specific functional skills	The intense program was perceived to improve confidence and independence
Time, disrupt, communication, home program, distance, sacrifice, and commitment	The intense program was perceived as a stressor to family life during the program but allowed a time of rest and no therapy between intensive sessions
Community, Lakeshore Foundation, and church	The intense program was perceived to encourage and enable participation in the community
Intensity, fatigue, and goals	The intense nature of the program caused fatigue, but enabled perceived rapid attainment of functional goals

(SamT): His mom was telling me that he's really trying to take more independent steps wherever they go, like church, at his grandmother's, and at school.

(PollyT): [Her parents] loved that she could ride her bike outside, and they weren't worried about her going off the curb.

(DarlaT): She was able to be more independent with her walker, which was a huge thing mom wanted.

(SamP): Now I can really tell that [Sam] is doing a whole lot better, because when we get out of the car he will get out and go ahead and start coming up the steps; when it used to be I would have to do everything.

(PollyP): [Polly's] abilities were strengthened a lot, but I think her confidence was strengthened a ton because she knew she could do it. She would try things a little bit more readily and you know, help herself a little more, big independence.

Parent and therapist statements were confirmed by observations. Sam requested to show student 3 that he was able to go up and down a flight of stairs independently. He also walked without assistive devices, a new skill obtained after participating in the intense program. (Sam): "I was like walking with nothing, so I just started doing it [at home]." To demonstrate a new skill, Polly walked up and down steps to and from her house independently. Izzy walked independently with canes, without someone guarding her.

Theme 3: The Intense Program Was a Stressor to Family Life During the Program, But Allowed a Time of Rest and No Therapy Between Sessions

Code words to support this theme were *time*, *disrupt*, *communication*, *home program*, *distance*, *sacrifice*, and *commitment*. Therapists identified time commitment, school/work, and payment issues as challenges faced by the family.

(IzzyT): Another challenge is the time factor—how can a child (especially an older child or a child with multiple siblings) participate in the program without interfering with other commitments like school or community activities or without completely disrupting the routines of the family.

(EmilyP): It doesn't matter what I have to pay because of the benefits of the program. Whatever she needs she is going to get. He also pointed out, I could tell [it was worth the sacrifices] from the improvement she made going 3 weeks, 4 hours/day, 5 days/week as opposed to going once a week.

Children talked about being able to participate in school activities, play with siblings after school, and do their home exercises instead of going to weekly therapy appointments after the program was completed. Parents identified an unconditional commitment to help their children, but some faced challenges of traveling to complete the program.

(PollyP): Just the distance and then the timing of 2 working parents with another child . . . it shot the day! [Polly] goes to preschool . . . so it interrupted that, and not that we have any regrets, but she wasn't able to do the Christmas pageant and things like that, but no regrets.

Theme 4: The Intense Program Encouraged and Enabled Participation in Community

Code words were *community*, *Lakeshore Foundation* (ie, a local wellness center with programs for children with disabilities), and *church*. Therapists focused on the importance of referral to community organizations.

(EmilyT): Sometimes we refer kids to Lakeshore Foundation, because they have an excellent facility where they can get a type of gym membership and continue a life-long building exercise into their life and being more functional. And suggesting activities like swimming, dancing, gymnastics or whatever they are interested in.

(SamT): He's doing a lot of stuff in the community, so that's one reason he isn't seeing me on a regular basis because they have switched their focus into the community, which is exactly what we want them to do.

Parents indicated that this model allowed more time for participation in community programs.

(SamP): If he wasn't going to Lakeshore [Foundation] 3 days, I would probably have him in physical therapy . . . but that is therapy. When asked what he does at Lakeshore, (Sam): "play wheelchair basketball, swim, jump on the trampoline and stuff."

(Darla P): It took us a while, but we joined Lakeshore Foundation . . . we just started this summer, she went 2 times a week and we are starting back after [the intense program], she will go once a week. We have done Special Equestrians in the past.

Theme 5: The Intense Nature of the Program Caused Fatigue But Enabled Perceived Rapid Attainment of Functional Goals

Code words that highlighted and explained the unique design of the intense program were *intensity*, *fatigue*, and *goals*. Therapists commented on the intense nature of this program, and the benefits of having more treatment time with each child.

(SamT): I feel like you get results quicker because of how much you're working, your intensity. You can get about 3 months results in 3 weeks because of the hours that you are spending.

(PollyT): [The intense program] allows you a lot of time to get a new movement and then 2 or 3 things to practice on, because you have 4 hours . . . In a 1-hour block or 2-hour typical block, you don't have enough time to do all of that.

Parents commented on the intense nature of this program.

(SamP): It was more intense, everyday for 3 weeks straight . . . like in PT we only go once or twice a week, so for him to be able to go everyday it did make him a lot stronger . . . With therapy, with an hour, they didn't have time to do all the stuff.

(DarlaP): Traditional therapy I guess would just be a 30-minute blip and it's hard to get as much in, and [the program] is a lot more intense.

Fatigue was discussed by therapists and parents, as well as observed in the children during therapy.

(IzzyT): We've all kinda seen [the fatigue factor], about Thursday of the first week, and Wednesday of the second week, they usually have a really "blah" day. And getting them through that day can be really hard.

(EmilyT): That's a big thing the first week, just how easily fatigued they are because they are not used to the intense 4-hour therapy.

Therapists and parents commented on the perception of rapid goal attainment and the ability to maintain gains from the program over time.

(SamT): At 3 months we've been doing some surveys with parents, and they have been coming back saying that the kids have been keeping the skills or maybe even doing a little better. We haven't had anyone return it and say that they have regressed in their skills.

(EmilyP): She's maintained, I feel what she could maintain, from a realistic expectation.

(IzzyP): You can tell maybe 2 weeks after; it will regress a little bit. But it's because she's not doing it 5 days a week, 4 hours a day. Anybody would kind of go back a little bit. Now she doesn't go all the way back to where she was . . . so, you know I do notice a decrease in strength, but it's still worth it.

DISCUSSION

These results suggest that for these informants, the intense PT program was perceived to improve motor function, confidence, and independence. It caused stress during the program, but a time of no therapy between sessions so that children had time to participate in other activities. Although children experienced fatigue and parents experienced stress during the program, parents and therapists both perceived that the children rapidly attained their goals.

These results supported the findings of Trahan and Malouin,⁸ highlighting the benefits of intense PT to include rapid goal attainment, improved communication between the therapist and family, and increased "normalcy" of lifestyle during rest periods while maintaining therapy benefits. Triangulation of data revealed that the intensity of the program design was effective in identifying that parents and therapists perceived children met and surpassed functional goals. Functional gains were perceived to transfer to the school, home, and community settings.

Informants perceived a positive effect on motor function, confidence and independence, and community involvement. Although traditional models of therapy also encourage community participation, the fact that children must keep weekly appointments might cause them to be pulled out of school or miss events that are important to them. The intense model has the potential to improve community engagement during the times when the child does not have to attend regular therapy.

A negative effect was seen on the family during the program. Informants reported stressors to family life including difficulties with travel, time commitment, and school/work scheduling. Having a child with CP changes the daily life of

everyone involved in the child's care.²³⁻²⁶ When recommending interventions, clinicians should consider the effect that the intervention will have on family stress levels. According to a review by Rentinck et al,²⁶ parental stress changes over time depending on the child's developmental stage, available family resources, and life stages. Although supportive environments can positively affect parental stress, they can also cause stress if overwhelming.²⁶

This group of parents and therapists perceived an overall positive change in the children with CP who received this intervention. Two constructs identified in this study are typically measured in the clinic (ie, gross motor function and goal attainment). However, the other constructs (ie, improved confidence and independence, stress to family, community involvement, and fatigue) may not be measured. Clinicians should consider these factors when designing and recommending interventions.

Limitations of this study include the sampling strategy, which was a sample of convenience. We had very broad inclusion criteria and did not purposefully select subjects with similar characteristics (ie, age, gross motor function classification system level, socioeconomic status of parents, and experience level of therapists). Although we had a preconceived bias that parents and therapists would find the intense program beneficial, we remained objective in our assessment of perceptions by recording this bias before data collection and constantly comparing it to the data during analysis. Even with these limitations, we were able to determine their perceptions on the benefits and challenges.

Further research is needed to measure the short- and long-term effects of intense (ie, this type of program) versus less intense and traditional models of PT delivery. Studies need to not only consider the effect on gross motor function and development but also on community participation and family stress. Researchers should consider including outcomes that measure these constructs when studying the efficacy of different models of PT delivery for children with CP.

CONCLUSION

Parents and therapists perceived that the intense model of therapy delivery was difficult, time consuming, and caused fatigue. However, they also perceived that it improved motor function, positively affected confidence and independence, improved community involvement, and enabled rapid goal attainment. Controlled studies should be completed to determine the efficacy of this model.

REFERENCES

1. Damiano DL. Activity, activity, activity: rethinking our physical therapy approach to cerebral palsy. *Phys Ther*. 2006;86:1534-1540.
2. Taub E, Griffin A, Nick J, et al. Pediatric CI therapy for stroke-induced hemiparesis in young children. *Dev Neurorehabil*. 2007;10:3-18.
3. Charles JR, Wolf SL, Schneider JA, et al. Efficacy of a child-friendly form of constraint-induced movement therapy in hemiplegic cerebral palsy: a randomized control trial. *Dev Med Child Neurol*. 2006;48:635-642.

4. Charles JR, Gordon AM. A repeated course of constraint-induced movement therapy results in further improvement. *Dev Med Child Neurol.* 2007;49:770–773.
5. Deluca SC, Echols K, Law CR, et al. Intensive pediatric constraint-induced therapy for children with cerebral palsy: randomized, controlled, crossover trial. *J Child Neurol.* 2006;21:931–938.
6. Begnoche DM, Pitetti KH. Effects of traditional treatment and partial body weight treadmill training on the motor skills of children with spastic cerebral palsy. A pilot study. *Pediatr Phys Ther.* 2007;19:11–19.
7. Bar-Haim S, Harries N, Belokopytov M, et al. Comparison of efficacy of Adeli suit and neurodevelopmental treatments in children with cerebral palsy. *Dev Med Child Neurol.* 2006;48:325–330.
8. Trahan J, Malouin F. Intermittent intensive physiotherapy in children with cerebral palsy: a pilot study. *Dev Med Child Neurol.* 2002;44:233–239.
9. Christiansen AS, Lange C. Intermittent versus continuous physiotherapy in children with cerebral palsy. *Dev Med Child Neurol.* 2008;50:290–293.
10. Bower E, McLellan DL, Arney J, et al. A randomised controlled trial of different intensities of physiotherapy and different goal-setting procedures in 44 children with cerebral palsy. *Dev Med Child Neurol.* 1996;38:226–237.
11. Provost B, Dieruf K, Burtner PA, et al. Endurance and gait in children with cerebral palsy after intensive body weight-supported treadmill training. *Pediatr Phys Ther.* 2007;19:2–10.
12. Weindling AM, Cunningham CC, Glenn SM, et al. Additional therapy for young children with spastic cerebral palsy: a randomised controlled trial. *Health Technol Assess.* 2007;11:1–90.
13. Gagliardi C, Maghini C, Germiniasi C, et al. The effect of frequency of cerebral palsy treatment: a matched-pair pilot study. *Pediatr Neurol.* 2008;39:335–340.
14. Bower E, Michell D, Burnett M, et al. Randomised controlled trial of physiotherapy in 56 children with cerebral palsy followed for 18 months. *Dev Med Child Neurol.* 2001;43:4–15.
15. Parkes J, Donnelly M, Dolk H, et al. Use of physiotherapy and alternatives by children with cerebral palsy: a population study. *Child Care Health Dev.* 2002;28:469–477.
16. Slade SC, Molloy E, Keating JL. People with non-specific chronic low back pain who have participated in exercise programs have preferences about exercise: a qualitative study. *Aust J Physiother.* 2009;55:115–121.
17. Sekerak DM, Kirkpatrick DB, Nelson KC, et al. Physical therapy in preschool classrooms: successful integration of therapy into classroom routines. *Pediatr Phys Ther.* 2003;15:93–104.
18. Resnick B, Michael K, Shaughnessy M, et al. Motivators for treadmill exercise after stroke. *Top Stroke Rehabil.* 2008;15:494–502.
19. Embrey DG, Guthrie MR, White OR, et al. Clinical decision making by experienced and inexperienced pediatric physical therapists for children with diplegic cerebral palsy. *Phys Ther.* 1996;76:20–33.
20. Strauss A, Corbin J. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* Thousand Oaks, CA: Sage Publications; 1998.
21. Lincoln Y, Guba E. *Naturalistic Inquiry.* Newberry Park, CA: Sage Publications Inc; 1985.
22. Palisano RJ, Hanna SE, Rosenbaum PL, et al. Validation of a model of gross motor function for children with cerebral palsy. *Phys Ther.* 2000;80:974–985.
23. Ketelaar M, Volman MJ, Gorter JW, et al. Stress in parents of children with cerebral palsy: what sources of stress are we talking about? *Child Care Health Dev.* 2008;34:825–829.
24. Raina P, O'Donnell M, Rosenbaum P, et al. The health and well-being of caregivers of children with cerebral palsy. *Pediatrics.* 2005;115:e626–e636.
25. Sloper P. Models of service support for parents of disabled children. What do we know? What do we need to know? *Child Care Health Dev.* 1999;25:85–99.
26. Rentinck IC, Ketelaar M, Jongmans MJ, et al. Parents of children with cerebral palsy: a review of factors related to the process of adaptation. *Child Care Health Dev.* 2007;33:161–169.

APPENDIX

Parent Questionnaire

1. Why did you decide to allow your child to participate in the intensive program?
2. How does the intensive program differ from traditional therapy programs in which your child has participated?
3. What were some of the challenges that you and your child encountered during the 3-week program?
4. Describe the goals that you had for your child and whether these goals were met during the program.
5. Why do you think that your child either met or did not meet these goals?
6. Immediately after finishing the intensive program, what differences did you notice in your child's abilities?
7. What abilities have remained or not remained?
8. Compare your child's home program before participating in the intensive program with your child's home exercise program after participating in the intensive program.
9. Would you allow your child to participate again? Why or why not?

The following questions were not matched with a therapist question:

1. How do other people such as friends, family members, and teachers perceive your child's progress?
2. What suggestions do you have that might improve the intensive program?

Therapist Questionnaire

1. Why do you think that the intensive program was better for this child than traditional approaches?
2. In your opinion, how does the intensive program differ from traditional therapy programs?
3. What were some of the challenges that you encountered while working with this child during the intensive program?
4. Describe the goals that were set for this child and whether these goals were met during the program.
5. Why do you think that this child either met or did not meet these goals?
6. Immediately after finishing the intensive program, what differences did you notice in this child's abilities?
7. If known, what abilities have remained or not remained in follow-up evaluations?
8. What factors did you consider when prescribing the home program for this child?
9. Would you recommend this child to participate in the program again? Why or why not?