Role and Training of Physical Therapists for Practice in Early Intervention

A Review of the Literature

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Abstract

**Purpose:** The purpose of this project is to define Early Intervention (EI) according to state and federal legislation, examine the role of the physical therapist (PT) in EI, and to describe the preparation and training of PTs for practice in EI.

**Methods:** A literature search was conducted of the following databases: Cumulative Index to Nursing and Allied Health (CINAHL), MEDLINE, Psychology and Behavioral Sciences Collection, PubMed, and Northeastern University Catalog. Parameters were set to include resources published between 1995 and 2013.

**Results:** Twenty four articles were reviewed and information from twenty one is included in this literature review. Information from fourteen additional resources (books, websites, and legislation) is also included. EI, created under Part C of the Individuals with Disability Education Act (IDEA), provides interdisciplinary and family-centered services for children ages birth to three years who have or are at risk for developing a disability, and their families. Physical therapists in EI provide direct services (examination and intervention), coordination and planning of care, and family teaching. Physical therapists must have an entry-level degree from an accredited university program, however both pediatric and EI content within these programs varies. A lack of adequate preparation for practice in EI by graduates of entry-level physical therapy programs has been reported. Northeastern University (NU) offers a higher education certificate program in EI as part of the entry-level Doctor of Physical Therapy curriculum.

**Discussion/Conclusion:** This literature review was done to provide background for a study examining training, employment and self-reported competence of NU PT graduates who completed the EI certificate program. Due to its unique clientele and focused roles of PTs in EI, specialized training is needed.
**Background**

Early Intervention (EI) is a federal entitlement program defined under Part C of the Individuals with Disabilities Education Act (IDEA). It provides developmental services to children ages birth to three years who are at risk for developing or have an established disability diagnosis, as well as their families. EI services are provided by an interdisciplinary team which works with the child and family in the natural environment. Currently, there is a gap between the level of preparation professionals receive and the level of preparation that is necessary to serve this population. Among physical therapists, the American Physical Therapy Association Section on Pediatrics recommends research to define adequate training, confidence, and competence for entry-level practice in pediatric settings. Following this recommendation, training content and methods for EI physical therapists must be explored in order to prepare physical therapists to provide the highest standard of care to this population.¹

**Purpose**

The purpose of this paper is to define EI according to federal and state guidelines. This paper will focus mainly on the state of Massachusetts as it is the location of the accredited physical therapy schools from which a majority of the researchers have graduated. The authors of this paper will examine the role, competencies, and preparation of a physical therapist in the EI setting. Finally, the evidence will be used to investigate the training, employment, and self-reported competence of a group of physical therapists who have completed a higher education EI training certificate program.

**Methods**

A literature search was conducted of the following databases: Cumulative Index to Nursing and Allied Health (CINAHL), MEDLINE, the Psychology and Behavioral Sciences Collection, PubMed and Northeastern University Catalog (NuCAT). Parameters were set to include resources published between 1995 and 2013. Keywords searched included: “Early Intervention,” “physical therapist,” “preparation,” “training,” “personnel,” “education,” “methods,” “competencies,” and “standards.” Additionally, various internet sources were accessed including the American Physical Therapy Association, World Health Organization, Massachusetts Department of Public Health and the federal government’s IDEA website.
Results

The literature search yielded a total number of forty sources. Twenty four peer-reviewed journal articles and textbook resources were identified; Twenty two were used to achieve the desired outcomes of this review. Thirteen resources, from professional, federal, and state associations, were also used.

Definition of Early Intervention

The history of Part C of IDEA, began with The Education for the Handicapped Act Amendments of 1986. This program provided services for families and children starting at birth and specifically, Part H of this Act was created to serve infants and toddlers with disabilities. In 1990, this act was amended and the name was changed to the Individuals with Disabilities Education Act (IDEA). In 1997, IDEA was reauthorized and Part Hof the Education for the Handicapped Act was consolidated into Part C of IDEA. In 2004, the law was amended again with the Individuals with Disabilities Education Improvement Act. This law states “[that] Congress finds that there is an urgent and substantial need (1) to enhance the development of infants and toddlers with disabilities and to minimize their potential for developmental delay, and to recognize the significant brain development that occurs during a child’s first three years of life; (2) to reduce the educational costs to our society, including our Nation’s schools, by minimizing the need for special education and related services after infants and toddlers with disabilities reach school age; (3) to maximize the potential for their independently living in society; (4) to enhance the capacity of families to meet the special needs of their infants and toddlers with disabilities; and (5) to enhance the capacity of state and local agencies and service providers to identify, evaluate, and meet the needs of all children, particularly minority, low-income, inner-city, and rural children and infants and toddlers in foster care.” Currently, Congress must review and reauthorize Part C of IDEA every 5 years to ensure services are continued.

EI is a federal entitlement program that provides services to eligible children ages birth to three years of age, and their families. In order to be eligible for services, these children must have a disability or are deemed at risk for developing a disability without EI services by a medical professional. EI is designed to promote normal development of a child and encourage all possible independence and participation in life activities. Its main focus is on treating a child while in a natural setting and involving the family members as much as possible.

The federal government provides financial assistance in the form of block grants to states participating in EI. While it is an optional program, all states currently provide EI services and thus receive federal assistance. States can implement a sliding fee schedule to help support statewide EI services based on a family’s size and income, although services are commonly provided at no cost to families. In Massachusetts, the Department of Public Health will cover service charges for an
uninsured child, or for claims that insurance companies appropriately deny. In 2004, Massachusetts
instated an annual fee for families based on family size and income to help support statewide EI services.
The fee is assessed for every child with a signed Individualized Family Service Plan (IFSP) and services
cannot be denied if the family cannot pay.8

Infants and toddlers who have a disability or who are at risk for developing a disability without
services, and their families are eligible for EI. A physical, cognitive, communication, social and
emotional, and/or adaptive developmental delay can necessitate EI services.1,7 The degree of delay which
qualifies a child for services is determined by individual states.2 In Massachusetts, the child must have an
established diagnosis that will result in developmental delay, a 30% delay in one of the five major areas
of development determined by norm-referenced assessment or a risk for developing delay. For example,
children diagnosed with Down syndrome, Autism Spectrum Disorder, Cerebral Palsy, Muscular
Dystrophy, hearing or visual impairment, Erb’s palsy etc. qualify for EI services.8 A child considered “at
risk” for developing delay may reside in a home with domestic violence, be born at a low-birth rate, be
homeless or not have enough food or clothing, or have parents with a serious medical condition.9

Due to the diverse needs of children receiving EI services and the myriad of challenges faced by
their families, EI incorporates a number of service domains.10 Professionals involved in EI services
include special educators, physicians, speech language pathologists and audiologists, orientation and
mobility specialists, vision therapists, social workers, nurses, registered dietitians, family therapists,
occupational therapists, physical therapists, and psychologists.1 The number and domain of professionals
involved in the services provided to a child and family are dependent on the needs of the child and family.
Each of these professionals works in collaboration with the rest of the team and the family to develop a
treatment plan, while maintaining a level of autonomy within his or her discipline specific role.11 This
coordination between professionals is necessary to ensure that EI services are provide at the highest
quality possible and family centered.10

Previous research by Block et al., has shown that “children learn best when they are allowed to
play and explore their own environment on their own terms.”12 Therefore, EI interventions take place in
the natural setting, which is defined by Part C as “…home, and community settings in which children
without disabilities participate.”1 Seventy-six percent of EI services take place in the home setting,
however they can also take place in center-based EI programs, playgrounds, daycare, or anywhere else
same-age peers are present.13 These settings allow a child to participate in activities prioritized by the
family in the IFSP.6 According to the World Health Organization, participation consists of involvement
in a life situation.14 In the case of EI, a child’s participation includes eating, bathing, and playing in the
context of his or her family.15
EI services are most effective when treatment strategies are incorporated into a child’s routine. In order to do so, families must be involved both in direct service strategies and in service planning. Therefore, the full benefits of EI services are received only when a healthy relationship exists between families and providers. This relationship is strongest when collaboration occurs between the family and professional team. To ensure the partnership between professionals and family members, the IFSP is required for each child receiving EI services. The IFSP assesses the strengths, needs, and priorities of the child and his or her family. By developing an IFSP, the opinions of each member of the interdisciplinary team and of the family are considered, thus ensuring agreement on the child’s plan of care.

Role of Physical Therapists in Early Intervention

Physical therapists are crucial members of the EI team. The overarching goals of physical therapists for all patients include restoring, maintaining and/or improving physical skills. Physical therapy patient management processes include examination and evaluation, interventions, reexamination and discharge to maintain or improve participation and independence in activities across the lifespan. Physical therapists possess specialized skills and knowledge in areas including sensorimotor function, motor and perceptual development, musculoskeletal status, neurobehavioral organizations, cardiopulmonary status, and environmental adaptation and are able to apply these concepts to the early intervention population. More specifically, physical therapists use discipline-specific knowledge to address self-care function, assistive technology needs, and medical/healthcare science issues. Knowledge regarding these three domains allows a physical therapist to effectively communicate and collaborate with family members and other healthcare professionals, which is an essential skill for work in EI.

The literature provides an in-depth description of developmental domains on which physical therapy interventions focus. Common areas targeted through physical therapy EI intervention include static and dynamic balance, mobility, fine and gross motor skills, etc. Lobo et al. investigated the importance of incorporating perceptual-motor experiences, including sitting, object interaction, and locomotion, into treatments. Perceptual-motor, language, social, and cognitive abilities are also important treatments due to the challenges children with disabilities face with these activities. Lobo and Galloway investigated the importance of positioning for children with disabilities to facilitate the development of motor skills. Because physical therapists are movement specialists, positioning techniques can be incorporated into treatment sessions as well as taught to family members for increased motor learning.

Working with parents to support positive change in motor behaviors is a foundational skill for EI physical therapists. While patient and family education on all aspects of health is an important role of a physical therapist, one of the most critical aspects in EI is educating parents on the specific treatment techniques for their child. Motor skills are learned through daily activities and everyday life such as
bathing, dressing, feeding, and playing. The more that children practice motor tasks, the more their motor development increases, facilitating the earlier achievement motor milestones and decreasing the severity of disability.²² Educating parents about the possible situations that can replicate motor learning increases a child’s opportunities to practice.⁵,⁷,²³

**Competencies for Physical Therapists Working in Early Intervention**

According to Effgen and Chiarello, “competence in one’s own profession is necessary before one can be a fully contributing member of a collaborative team.” Additionally, the researchers assert that “…competency-based education is a sound approach to the organization, content and evaluation of physical therapy education in Early Intervention.”⁶ Due to the collaborative nature of EI services, professional competencies are therefore necessary to the practice and education of physical therapists in EI. Entry-level competencies for physical therapists are identified by the American Physical Therapy Association (APTA), however the literature suggests that additional competencies exist which are specific to work in the EI field. In a study by Case-Smith et al., researchers determined that the relationship between family and professionals is key to EI services. This relationship is strongest when the entire team, including the family, agrees upon the treatment, priorities, approaches, and attitudes being administered to the child. In order to foster the strongest relationship possible with the family, physical therapists need to be experts in their domains of practice, be aware of the family's needs, and be willing to help the family in any way. Case-Smith et al. also found that EI providers must be able to “acknowledge that parenting a child with a disability is a 24/7 job; recognize that internal and external resources are essential to family adaptation; respect parents as the experts on their child; and accept the family’s values.”¹⁷ Accepting the family’s values is an essential component of cultural competence, which, in turn, impacts the effectiveness of a professional’s communication with children and family members.⁵,¹⁶ Due to the diversity of the families requiring EI services, cultural competency is a necessary quality of all EI providers, including physical therapists.¹³

Competencies for physical therapists working in the EI field were established and published initially in 1990 and then updated in 2006. These competencies go beyond what is needed of entry-level physical therapists, speaking to the skill and preparation required of physical therapists working in this setting. According to Chiarello and Effgen, the nine revised competencies for physical therapists working in EI include:

1. **Context of Therapy in EI Settings:** according to professional, federal, state, and local EI rules and regulations
2. **Wellness and Prevention**
3. **Coordinated Care:** work with other disciplines to carry over and overlap domains
4. **Evaluation and Assessment:** family interviewing, observation
Physical Therapist Preparation for Work in Early Intervention

Current Training for Early Intervention Physical Therapists

All physical therapists must graduate from a program accredited by the Commission of Accreditation in Physical Therapy Education (CAPTE).\(^6\)\(^,\)\(^7\) CAPTE encourages programs to provide physical therapy education with a lifespan approach.\(^6\) Due to the amount of content a lifespan curriculum must encompass, pediatric physical therapy curricula rarely provide adequate preparation for entry-level practice in this setting.\(^4\) According to J. Schreiber et al., physical therapy students who regard their pediatric content as adequate report more clinical practice with pediatric patients than those reporting inadequate content. Students receive clinical practice either in laboratory settings or through clinical education experiences. Laboratory experiences are affected by discrepancies between the practice with actual pediatric patients and with peers pretending to be pediatric patients. Additionally, Schreiber et al. found that only 7% of physical therapy students are required to participate in pediatric clinical education experience.\(^24\) With such a small portion of the curriculum allotted to pediatrics, focus on EI content is even less common. Further limiting students’ exposure to EI is the frequent hiring of part time physical therapists by EI agencies. Part time physical therapists are in a less advantageous position to work with clinical students, resulting in minimal partnerships for clinical experiences in EI.\(^6\)

As only basic pediatric and EI training is provided prior to working in an EI setting, physical therapy graduates have a superficial knowledge of pediatric physical therapy and a limited repertoire of strategies to apply to EI. Therefore, most EI knowledge and treatment strategies are learned while working in an EI setting\(^4\)\(^,\)\(^6\)\(^,\)\(^16\), through “trial and error” experience, conferences, lectures, and on the job training.\(^16\) Physical therapists, along with speech language pathologists, occupational therapists, nurses, and social workers are the only EI professionals with well defined academic and licensing processes.\(^13\) However, the policies, curricula, licensing and degree requirements are still different between disciplines, even though IDEA calls for an interdisciplinary approach to EI.\(^25\)

The federal government mandates the development of a Comprehensive System of Personnel Development (CSPD) by each state receiving funding for EI. Through the CPSD, states must establish strategies to recruit and retain competent EI personnel. Additionally, the CPSD must set professional standards for these personnel and enable personnel to meet those standards.\(^1\)\(^,\)\(^26\)
In Massachusetts (MA), the Department of Public Health oversees state-wide implementation of IDEA Part C. The states’ CPSD includes 9 competencies that all EI providers must achieve. These include infant and toddler development, evaluation and assessment, family centered services and support, individualized family service plan, service coordination, intervention strategies, team collaboration, policies and procedures, and professionalism. According to the Massachusetts CPSD these competencies are attained through higher education, in-services, and mentorship. Once these competencies are achieved, a professional can apply for full certification as an Early Intervention Specialist.

Currently in Massachusetts, three levels of certification exist for EI personnel: provisional certification, provisional certification with advanced standing, and full certification. All professionals who meet entry level requirements to work in EI are awarded provisional certification. In order to obtain provisional certification with advanced standing, professionals must graduate from a higher education program in EI that is recognized by the MA Department of Public Health. Such programs exist through Lesley University, Northeastern University, the Massachusetts General Hospital Institute of Health Professions, and Emerson College. In MA, Northeastern University is the only program which utilizes an interdisciplinary approach to training and which provides training for physical therapists in addition to other professions. Those with provisional certification can apply for full certification by providing a portfolio which demonstrates their performance in the nine EI competencies after completing 1440 hours of supervised EI work. Those with provisional certification with advanced standing can apply for full certification after the completion of 1440 hours of supervised EI experience. All EI professionals working twenty or more hours per week in EI must be fully certified within three years of working in this setting.

**Necessary Training for Early Intervention Physical Therapists**

The literature proposes a variety of skill sets and knowledge domains necessary for physical therapists to work in EI as well as methods to obtain these skills and knowledge. According to researchers, EI professional development should include an understanding of pediatric physical therapy, professional, federal, state and local rules and regulations regarding EI, family-centered practice, team collaboration, IFSP development and implementation, and working in the natural environment. Current preparation models include interdisciplinary training, learning through cases studies, working with diverse families, interdisciplinary teaming, and apprenticeship. Applequist et al. assert that apprenticeship is the best way to prepare professionals for work in physical therapy, as it facilitates the “transfer of knowledge and skills to the novice practitioner.” Chiarello and Effgen support this claim stating that training for EI should include mentorship.

With the many ways to prepare for working in EI and the differences in content covered, research suggests that most personnel do not feel prepared for their work after graduation. Conversely, a study by
Hayes et al. study found that 76% and 91% of physical therapists reported they were well-prepared to work with families, respectively.\textsuperscript{13} Although this data seems contradictory, it is important to recognize that these are self-surveys and the data is subjective information.

Bruder and Dunst investigated this lack of confidence in preparation among EI personnel by distributing a survey to universities with EI programs and asking specific questions about the employed training approach. The researchers inquired about the exposure that EI students received to family based services, interdisciplinary approaches, the IFSP, service coordination, and working in the child’s natural environment. Bruder and Dunst found that programs which apply an interdisciplinary approach to EI training provide the most training in each knowledge area.\textsuperscript{33} However, out of all of the universities surveyed, the lowest number of programs reported using this approach.\textsuperscript{33, 34} Bruder and Dunst also found that out of all EI personnel, physical therapy-specific programs reported the least preparation in all of the investigated areas.\textsuperscript{33} Similarly, while developing the updated competencies for physical therapists working in EI, Chiarello and Effgen found that physical therapy education was lacking in training for teamwork, IFSP, natural environments and service coordination. The researchers hypothesize that the lack of time allocated to pediatric services is due to the use of a lifespan approach in physical therapy programs’ curricula.\textsuperscript{4} This approach requires content to cover patient management from birth to end of life, and therefore allows for a limited focus on pediatric content.

**Discussion**

“The development of gross motor abilities is essential to the development of social and play skills.”\textsuperscript{12} As such, physical therapy is an invaluable discipline in EI. Physical therapists need adequate training in order to foster the motor development of children and consequently the development across all other domains.

In a study by Bruder et al., researchers assessed the confidence and competence of professionals working in EI. The researchers define confidence as the ability to “perform a task in a self-assured manner.” Competence is defined as the “ability to perform and proficiently implement specified tasks or practices.” Bruder et al. report that EI professionals, including physical therapists, rate their confidence greater than competence in family-centered practice, assessment and evaluation, IFSP, instruction, natural environment and inclusion. Conversely, professionals rate their competence greater than their confidence in teaming. Although professionals feel that they have the necessary skills to work with other professionals, the uncertainty of outcomes of the interdisciplinary collaboration decreases their confidence in this area. Similarly, professionals’ confidence is higher in the aspects of practice in which they are certain of results, regardless of their ability to perform the skills correctly. More clinical training
may be needed in order to improve competence in these skill areas. By increasing the consistency of EI requirements across disciplines, training in EI specific practices may become more comprehensive, thereby improving professionals’ competence in key components of EI service.

Research suggests that physical therapy preparation for work in EI should include an in-depth understanding of pediatric physical therapy, definitions of EI rules and regulations on the federal, state and local government level, family centered care, working in a child’s natural environment, team collaboration, IFSP use and implementation, and cultural competency. According to Bruder et al., physical therapists lack the necessary skills in IFSP, service coordination, treating in a natural environment, family-based services and working as part of an interdisciplinary team. These five skills should be addressed more in-depth in physical therapists’ education and preparation for EI work.

Language barriers pose additional challenges to EI personnel. The development of language skills other than English will allow providers to be better prepared for the diversity they will face in EI.

As of June 2011, under the Standards, Policies, Positions and Guidelines of the APTA, there is no mandate regarding EI training for entry-level doctorate of physical therapy (DPT) graduates. Since the APTA is the governing body of the physical therapy profession, a stance on whether or not EI specific training should be a pre- or post-entry level requirement would provide more regulation for EI preparation of physical therapists.

The literature recommends mentoring and interdisciplinary approaches in the training of physical therapists in EI. As research has demonstrated the effectiveness of mentoring in the transfer of intervention skills and knowledge, it should be an integrated part of EI personnel training. Likewise, the interdisciplinary approach to EI has been shown to be the most effective in developing competent EI workers and should therefore be the standard for EI training.

Northeastern University uses the interdisciplinary approach to training in its EI certificate program. Since the research has stated that physical therapy graduates feel the least prepared to work in EI, Northeastern’s EI physical therapy graduates are a key population to use for further research on the best EI training methods. A survey of graduates from Northeastern University’s EI program can be used as an outcome assessment of physical therapists practicing in EI who received interdisciplinary prior to work in EI. The survey should focus on self-reported confidence in the physical therapy competencies established by the APTA Section of Pediatrics. Additionally, this population provides a unique opportunity to explore the effect of the completion of a higher education EI training program on employment in EI.
Conclusion

EI, created under Part C of IDEA, is a federal entitlement program which provides services to infants and toddlers who are at risk or have an established developmental delay, and their families. In order to most effectively serve this unique population, EI utilizes a family-centered and interdisciplinary approach which promotes the incorporation of therapeutic strategies throughout the daily routines of children and their families. Physical Therapists are an invaluable member of the EI team. Their expertise on movement analysis, kinesiology and efficient motor function allow them to identify and treat impairments that affect a child’s participation in daily activities. Physical therapists graduate from a CAPTE accredited program and can choose to work in early intervention. Research has shown that many discrepancies exist between programs and across the disciplines involved in EI in both teaching methods and content.

Further research is required to explore the most necessary skills for an entry level physical therapist working in pediatrics or, more specifically, in EI. This will provide direction for curricula development which will effectively prepare physical therapists to work in EI. Furthermore, research must be conducted to determine the most effective methods of teaching these skills. Once the essential content areas and efficient training methods are determined, physical therapy education can be adjusted to best prepare practitioners for work in this setting. Additionally, research conducted by the APTA to declare whether EI-specific training should be a requirement for entry-level physical therapists would help guide the methods, timing and content for EI practitioners.
Bibliography


