



Full Length Article

Let's play! An observational study of primary care physical therapy with preterm infants aged 3–14 months

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ARTICLE INFO

Article history:

Received 27 June 2016

Received in revised form

20 November 2016

Accepted 10 January 2017

Available online 22 January 2017

Keywords:

Physical therapy

Preterm infants

Sensory-motor play

Enactive theory

ABSTRACT

Introduction: Sensory-motor play is at the core of child development and an important element in physical therapist(PT)s' work to improve infants' motor skills. In this study, we investigate how PTs scaffold and use play in physical therapy intervention with preterm infants at corrected age (CA) 3–14 months.

Material and methods: We collected data by observing 20 physical therapy sessions. In the analysis, we connected to enactive theory on cooperation.

Results: Successful use of sensory-motor play in physical therapy requires cooperation toward common goals. This is achieved via an *enactive therapeutic sensory-motor play* approach, in which the PTs plan and tailor the intervention to match the infant's interests; attune themselves to the infant's intentions; and incorporate therapeutic measures in sensory-motor play interactions with the child.

Conclusions: Via cooperation and mutuality in therapeutic interactions, PTs can provide play situated learning opportunities that support the infants' development and understanding of the world.

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1. Introduction

Infants born preterm are at risk of developmental delays and impairments that can persist or aggravate during the first years of life (Sansavini et al., 2014). In early infancy, preterm infants tend to be less attentive, less responsive and need more breaks from interaction than term infants (Wolf et al., 2002). As these children grow older, they are at risk of learning disabilities, which can in turn affect cognitive, motor and social competencies (Lobo & Galloway, 2013; Spittle et al., 2012). Studies indicate that preterm infants are also at risk of delayed play skills (Korja, Lehtonen, & Latva, 2012; Vig, 2007). They profit from caregivers' structuring and scaffolding of play, by which they become more engaged, more attentive and more persistent in play activities (Childress, 2011; Cress et al., 2007). Furthermore, interactions characterized by caregiver sensitivity and synchronized dyadic interactions correlate with better developmental outcomes for preterm infants (Forcada-Guex, Pierrehumbert, Borghini, Moessinger, & Muller-Nix, 2006; Treyvaud et al., 2009).

Pediatric physical therapist (PT)s aim to alleviate preterm infants' movement problems, enhance motor development and support the infants' participation in age-appropriate activities (Blauw-Hospers, De Graaf-Peters, Dirks, Bos, & Hadders-Algra, 2007; Campbell, Palisano, & Orlin, 2012; Spittle et al., 2012). In this work, attention and motivation are key factors

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for the infants' motor learning, mastery of new skills and sense of self-efficacy (Atun-Einy, Berger, & Scher, 2013; Brodal, 2010). Sensory-motor play is inherently motivating for young infants, and serves as a driving force of infants' motor, social, cognitive and language development (Lifter, Foster-Sanda, Arzamarski, Briesch, & McClure, 2011). Via gradually advancing fine and gross sensory-motor play, infants can express their intentions; discover emerging capabilities of their body; and develop their perceptions and understandings of the world (Adolph, 2008; Lifter, Foster-Sanda et al., 2011; Lobo, Harbourne, Dusing, & McCoy, 2013; Sheets-Johnstone, 2011). During this development, infants' interactions with objects and people co-emerge and co-develop (Rossmanith, Costall, Reichelt, López, & Reddy, 2014). This indicates a close link between play, interaction and learning; it is via interactive play with others that infants learn how to move and act upon their world (Bigelow, MacLean, & Proctor, 2004; Rossmanith et al., 2014).

Therefore, to promote learning and development for preterm infants with potential attention, responsiveness and endurance problems; PTs need to engage these infants in interactive sensory-motor play activities and scaffold the infants' ability to play. Motivation, play and sensitivity in interaction are recognized as important elements in physical therapy (Blanchard & Øberg, 2015; Lifter, Foster-Sanda et al., 2011; Majnemer, 2011; Øberg, Blanchard, & Obstfelder, 2014). However, play is primarily referred to as a developmental domain and a context in which intervention occurs (Lifter, Foster-Sanda et al., 2011), and knowledge is lacking regarding the use of play as a therapeutic tool in interventions for children with developmental delays (Lifter, Mason, & Barton, 2011). In this study, we explore this merging of play and therapy based on the research question:

In what ways do PTs scaffold and use preterm infants' sensory-motor play engagement in their work to achieve therapeutic goals?

1.1. Theoretical framework

In our investigation, we connect to enactive and phenomenological views on cooperation, attention and intentions (Fantasia, De Jaegher, & Fasulo, 2014; Fiebich & Gallagher, 2013; Pacherie, 2012). In cooperation, the subjects take into account the other's interests and intentions, and act to complement the other's responses (Fantasia et al., 2014). Cooperating individuals communicate by verbal and bodily expressions, movements and behavior. Thus, via these embodied interactions, cooperation is possible even for young infants. Even more, cooperation is fundamental to infant development, in three interdependent ways (Fantasia et al., 2014). First, cooperation is the infant's mode of being with others. Second, within the framework of cooperation development occurs. Third, development entails an advancement of the infant's cooperative abilities.

Cooperation builds on intentions that are generated and transformed as interaction proceeds (Fantasia et al., 2014; Fiebich & Gallagher, 2013; Pacherie, 2012). This requires joint attention, which moves from simple to more sophisticated forms as the infant develops (Fiebich & Gallagher, 2013); and engagement, in which the subjects connect to each other and allow the interaction to acquire its own momentum (Fantasia et al., 2014). Furthermore, cooperation is dynamic; interactions fluctuate between the participants' mutual *coordination with* each other and one participant's uni-lateral *coordination to* the other (Fantasia et al., 2014). Consequently, cooperation is not always successful. Within the momentum and dynamics of interaction, coordination can break down and repairs must be made for cooperation to continue.

2. Material and methods

2.1. Study design

This is an interpretive study based on observational data from physical therapy sessions. We video recorded the sessions to enable a detailed analysis of the interactional nature of clinical practice (Heath, Hindmarsh, & Luff, 2010). The study was approved by the review board at NSD – Norwegian Centre for Research Data.

2.2. Study setting

The study was conducted in the Norwegian primary health care setting, where preterm infants and their parents can receive physical therapy both as a preventive and a therapeutic service. Most families in Norway receive paid maternity or paternity leave and stay at home during the infant's first year of life. Thus, all physical therapy sessions were with one or both parents present. The sessions took place either in the family's home or at the PT's workplace. Floor space was an available and natural site for the conduction of physical therapy. The infants quickly adapted to the researcher's presence. The PTs and parents were encouraged to proceed with the session as usual and not make changes to accommodate the researcher.

2.3. Study sampling and recruitment

PTs at three hospitals distributed inquiries of participation to parents of infants born preterm with a gestational age (GA) \leq 33 weeks, who received primary care physical therapy. Parents gave their consent via regular mail, upon which the first author contacted the families and obtained consent from the local PT. Parents of 11 infants consented to the study. Due to cessation of therapy or PTs' declination of participation, 7 triads of preterm infant, parent(s) and PT were finally included

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