Early detection and interventions for infants and children with movement delays

Translational Science Benefits Model

IMPACT PROFILE

Dr. Lobo's research focuses on designing and testing assessments, interventions, and rehabilitation devices that maximize early motor development for infants and children with neuromotor movement disorders.

The Challenge

Movement delays stem from a variety of causes, including brain injuries occurring before, during, or soon after birth. In the U.S., 7 infants per 1,000 births experience such brain injuries, placing them at high risk for lifelong motor and cognitive impairments. Most children with motor delays, such as children with cerebral palsy, are not diagnosed in the first two years of life, thus missing a critical window to implement early, effective interventions.

The Approach

Dr. Lobo's research includes:

- Using learning, memory, and developmental assessments to identify predictors of delays
- Studying how early motor skills (e.g., object exploration, reaching, sitting) relate to future motor, cognitive, and learning outcomes
- Creating and testing play-based, parent-guided interventions for home and community use
- Collaborating with multidisciplinary teams to design and test rehabilitation technologies for infants and children with impaired mobility

The Impact

Dr. Lobo's work has resulted in:

- Validation of play-based programs for infants with neuromotor delays through the START-Play RCT
- Development and clinical testing of assistive and rehabilitation technologies, including exoskeletons, wearable devices, and mobile apps
- Development and adaptation of tools, such as the MEPSAT and APSP-4, to detect problem-solving difficulties in very young children
- Informed training for clinicians and early intervention providers on effective early detection tools and interventions
- Creation of digital resources to help families and clinicians monitor and support infant development

RESEARCH HIGHLIGHTS

Lobo's research for infants and children with neuromotor movement disorders has resulted in:

Adoption of standardized tools by therapists and clinicians used **to track infants' motor and cognitive development** in early intervention settings

Adoption of play-based programs by early intervention programs and services nationwide

Adoption of assistive rehabilitation devices and apps that improve daily life for children with motor delays and their caregivers

Dissemination of educational resources that help parents and communities promote motor and cognitive development through at-home activities

Key Benefits

Developed tools to help clinicians identify at-risk infants

Designed best practices that help clinicians integrate motor and cognitive interventions in pediatric care

Designed family-centered, low-cost, accessible, play-based interventions for in-home use by caregivers

Collaborated with families and children to design adaptive clothing and supportive devices for real-world use

Generated information to support policy changes that prioritize earlier screening for motor and cognitive delays in pediatric settings

Generated findings to support the reduction in long-term healthcare, educational, and societal costs associated with treatments to manage lifelong motor and cognitive impairments

The investigator:

Dr. Lobo is a pediatric physical therapist and Associate Professor in the Department of Physical Therapy and co-lead of the Move to Learn (M2L) Innovation Lab at the University of Delaware.

Find out more:

https://explore.de-ctr.org/profiles/michele-a-lobo-pt-phd

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