Conditions such as cerebral palsy and Down syndrome are known to delay or impair development of infant mobility. Often these children are left with limited means to explore their environment and require constant assistance to get from one place to another.

Several investigators have reported that mobility may provide benefits to children with physical disabilities, including increased interaction with their environment, self-initiated independent movement, positive affect, and interaction with others (Butler, 1986; Deitz, Swinth, & White, 2002; Nicholson & Bonsall, 2002).

Traditionally, powered mobility has not been recommended until children are 24-36 months of age due to safety concerns and costs (Cox, 2003; Galloway, Ryu, & Agrawal, 2007). However, there has been limited research conducted to explore potential benefits of providing mobility at a younger age.

Software has been developed for the Pioneer 3 mobile robot to provide mobility for very young children. An infant is placed in a secure seat on top of a Wii balance board on the robot. The robot is programmed to recognize an infant’s weight shift via the balance board, and to move in the corresponding direction. A ring of sonar sensors on the robot base prevent collisions with objects or people in the environment.

Babies who are typically developing will help us to:
- Determine the best robot control method and parameters for infants of different ages and abilities.
- Determine an infant’s ability to purposefully control the robot’s movement.

It is anticipated that this phase will demonstrate an infant’s ability to learn to move the robotic device in a safe manner.

We hope to use what we learn from this work to develop systems to allow safe, purposeful powered movement for infants with physical disabilities. The next phase of the research will be to study the same research questions using different control systems, and working with children with disabilities.

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