PHOTO 1: AUGMENTATIVE MOBILITY DEVICES, SUCH AS THIS GAIT TRAINER, CAN FULFILL A CHILD’S INTRINSIC DESIRE TO BE MOBILE, TO EXPLORE THEIR ENVIRONMENT AND TO BE ACTIVE AND PARTICIPATE IN LIFE.
Over the last seven years, Roslyn Livingstone and I have gathered expert opinions and research evidence for the medical necessity of power mobility for four distinct groups of children. Augmentative mobility devices (walkers, gait trainers, mobile prone standers, and power mobility devices) can fulfill a child’s intrinsic desire to be mobile, to explore their environment and to be active and participate in life (Casey, 2013) (see Photo 1).

Augmentative mobility devices should not be considered as the last option but, rather as a tool to enhance activity and participation and to enable children to keep up with their peers. The ability to move around and explore the world has an immense impact on children including the development of language, cognition and personality (Lobo, 2013). Children who cannot move and explore their environment independently and efficiently rarely learn how their own behavior can make things happen. Therapists, teachers, families and the entire early intervention community must augment mobility for children with disabilities at the same age their peers are beginning to move around independently.

Gait trainers and mobile prone standers may be solutions for some children and others can benefit from prone crawling devices and adapted trikes, but power mobility devices should also be considered. Power mobility (PM) continues to be under-used (Rodby-Bousquet and Hägglund 2010), even though it can be the most effective means of providing independent and autonomous mobility for children with significant and moderate physical impairments. We need to shift this practice pattern. All of us who touch the lives of children with mobility impairment need to be able to provide long-term training opportunities and long-term loaners until the child can be provided with his or her own individual solution. We hope by identifying these four distinct groups who need power and augmentative mobility that accessing equipment will become easier.

Children who will need access to augmentative mobility include:

1. Children who are not likely to walk before age 4,
2. Children with inefficient mobility,
3. Children who lose the ability to walk or to walk efficiently, or
4. Children who need mobility assistance only in early childhood.

Research Evidence:

When do infants who are typically developing start to move and explore? Most infants begin to roll, crawl, pull to stand, and walk around 6 to 12 months of age. This exact same time frame might be when motor neural plasticity is at its peak, meaning the first two years of life are the most important in terms of setting down the tracts that will carry vital information about sensation and motor.

Research suggests augmentative mobility devices can be safely
introduced with infants as young as 7 months of age (Lynch et al, 2009). Children can successfully begin using augmentative mobility devices around 9 to 14 months (Livingstone, in press). We know from the research that there are no known negative impacts on motor development following augmentative mobility use (Bottos et al, 2001, Jones et al, 2012). There is even some suggestion that it can enhance a child’s motivation to move, and so, might promote walking ability.

Augmentative mobility use has also been shown to facilitate language, play and social skills (Tefft et al, 2011) and case study evidence suggests it may also impact communication and cognitive development (Jones et al, 2003, Lynch, 2009). Introducing augmentative mobility before 2 years of age may be important to facilitate the typical co-development of socialization with mobility (Ragonesi et al, 2011). Survey and qualitative evidence suggests use of an augmentative mobility device can have a positive impact on participation in family life and integration with peers (Horne and Ham, 2003, Wiart et al, 2004). Furthermore, augmentative mobility has been shown to decrease caregiver burden, as well as increase the child’s independence (Ostensjø et al, 2005).

**Readiness**

We used to think a child would only be successful with power mobility if he or she had object permanence, cause and effect and spatial awareness (Tefft et al, 1999), meaning the child had to be able to drive and explore before we even started teaching them. Well, that’s just silly! There is increasing acceptance that early augmentative mobility starts with exploration of movement (Durkin, 2009) and that many so-called “readiness skills” develop with mobility experience, meaning children won’t be able to drive and explore until they are given experience! What a catch-22! All mobility-restricted children who have limited means of activity and participation should be given the opportunity for augmentative mobility experience (Hardy, 2004).
Children who have not yet established cause-effect or don’t understand the use of switches for multiple functions may not be ready to be functionally independent power wheelchair users. However, they are able to benefit from augmentative mobility experience (McGarry et al, 2011). Children who are at the gross motor function classification system (GMFCS) level IV and V are not expected to develop independent upright ambulation and will have no other form of efficient independent mobility without augmentative mobility (Palisano et al, 1997) 

Children achieving GMFCS level III will ambulate using crutches or walkers. Power mobility should be considered when these children are unable to keep up with peers, or when endurance or efficiency of gait interferes with activity and participation.

**Implementation: How do we get this done?**

We need to give greater consideration to using augmentative mobility as a complement to other interventions and not view it solely as a last mobility choice. Where participation and activity is the goal, augmentative mobility can be used as a therapeutic tool for children with restricted mobility. It can facilitate children to move voluntarily toward the activities of their choice (within the safe confines of adult supervision) and thereby participate and experience these activities in a meaningful way. Augmentative mobility can promote learning and exploration and may involve use of powered toys and shared use of a power wheelchair, as well as individual wheelchair prescription. We need to foster an attitude change toward the purpose and benefits of using augmentative mobility. We need to support families and caregivers in accepting augmentative mobility that includes a range of mobility options. Then, maybe rather than seeing augmentative mobility as a negative factor, signifying giving up on the potential for walking, or as a deterioration of their child’s health, these strategies can be seen as contributing to the whole development of the child. Hopefully then families and caregivers would view augmentative mobility as a positive intervention, representing greater independent engagement and participation for their child in everyday activities.

**Conclusion**

Look at your case load and pick a 9- to 15-month-old child who meets one of the following criteria:

1. Child who is not likely to walk before age 4,
2. Child with inefficient mobility,
3. Child who will or may have lost the ability to walk or to walk efficiently, or
4. Child who will need mobility assistance only in early childhood.

Get him or her a loaner power chair and start daily 15 minute two times per day or 30 minute daily training sessions. Administer a standardized test that measures language and cognition. Wait three months and re-evaluate; then if the child is having fun and/or beginning to explore, and you think it’s feasible, move toward purchase.

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**REFERENCES:**
