

Functional Changes Following 18 Months of Conductive Education: A Case Report

Elizabeth Balas, MPT
Maureen Michalski, MPT

Introduction

Conductive education was developed in Hungary by András Pető in the 1940s^{1-4,6} and can be defined as a holistic method that utilizes an active cognitive approach to teach individuals with neurological dysfunction and motor disorders (most commonly individuals with cerebral palsy) to become more functional participants in daily activities.^{3,5} There are several characteristics of conductive education which make it a unique approach for individuals with motor disorders, including the leader, rhythmic intention, task series, and group format.^{4,7} The leader is responsible for knowing every child's specific impairments and goals and is expected to individualize the tasks to each child's ability. Pető believed that language and learning were strongly interconnected⁷ and incorporated self-talk into every task to promote learning new tasks through repetition and rhythm. The task series is a way in which an activity is broken down into smaller, more functional units⁷ in order to promote motor control and improved orthofunction. The group provides a social context, which promotes learning, develops peer relationships, improves communication skills⁸ and encourages confidence, support and motivation. The purpose of this case report is to describe the significant improvements noted in one child's functional daily life skills as a result of participating in 18 months of a conductive education program.

Subject

EO is a fun-loving, intelligent 12 year-old boy with spastic quadriplegia cerebral palsy. He was born at 40 weeks gestation after a reportedly easy labor and meconium stained fluid. He was intubated to decrease risk of meconium aspiration, but 12 hours later was experiencing episodes of apnea. Approximately 24 hours after birth, he was noted to have seizures for which he was given phenobarbital for a period of 9 months. He underwent a selective dorsal rhizotomy in June, 2005 to reduce spasticity with positive results per parent report. Between January 2008 and January 2012, EO participated in an intensive serial casting program promoting lower extremity extension and static weight bearing, no walking encouraged. He was evaluated for the Center for Independence program in February of 2012, and was determined to be an appropriate candidate.

Interventions and Outcome Measures

EO participated in an intensive motor training program at the Center for Independence through Conductive Education, which utilizes a transdisciplinary team approach with physical therapists and occupational therapists, alongside conductive education teachers from February 2012 through August 2013. He attended a program five days per week for three hours each day on a one-month on, one-month off basis for this duration. He also completed two intensive summer camps in which he attended five days a week for six hours each day, for one month. Upon his first and last day of each session, EO was measured for maximum passive knee flexion range of motion (ROM) to monitor any gains in ROM. His daily program consisted of completing tasks geared towards relaxing spastic muscles, increasing strength, supporting independence, and promoting proper alignment while relying on rhythmic intention, the social context of the group, and task breakdown. Some of the functional motor activities in his daily program included donning and doffing shoes, AFOs, and socks, sit to stand transitions, weight shifting, side stepping, 4-point position, rolling, ambulation and stair navigation. Specific, individualized goals are described in Table 1.

Individual Goals and Progress

	2/13/2012	8/13/2012	4/13/2013
Sit-stand given Min A.	Mod A	Min A	SBA-plinth Min A- walker
Maintain 4-point for 5 minutes with Min A.	Max A	Mod A *ES	Min A*ES
Ambulate with walker 40 ft. with Min A.	Mod A with no AFOs	SBA/CGA	S
Ambulate holding a ring or a stick, 10 feet, given Min A.		Mod A	Min A
Stand for 5 minutes with back up against the wall with CGA.		SBA/Min A	SBA/CGA
Transition standing to squatting to 90° knee flexion with Min A.		Min A	CGA/Min A
Side step up 3 stairs with Min A.		New goal	SBA/CGA
Side step down 3 stairs with Min A.		New goal	SBA/CGA
While seated on the floor, doff shoe with Mod A.	Min A	SBA	*Upgraded to stool CGA
While seated on the floor, don AFO with Mod A.	*No AFOs	Mod A	*Upgraded to stool Min A/SBA
Don t-shirt while sitting on a stool, given Mod A.	Mod A	SBA	Mastered
Doff t-shirt while sitting on a stool, given Min A.	Min A	SBA	Mastered

KEY: S-Supervision, SBA- Standby Assist, CGA-Contact Guard Assist, Min A- 25% Assist or Less, Mod A- 25-50% Assist, Max A- 75-50% Assist, ES- elbow supports

Table 1. Functional independence measurements⁹ for goals specific to EO.

Results

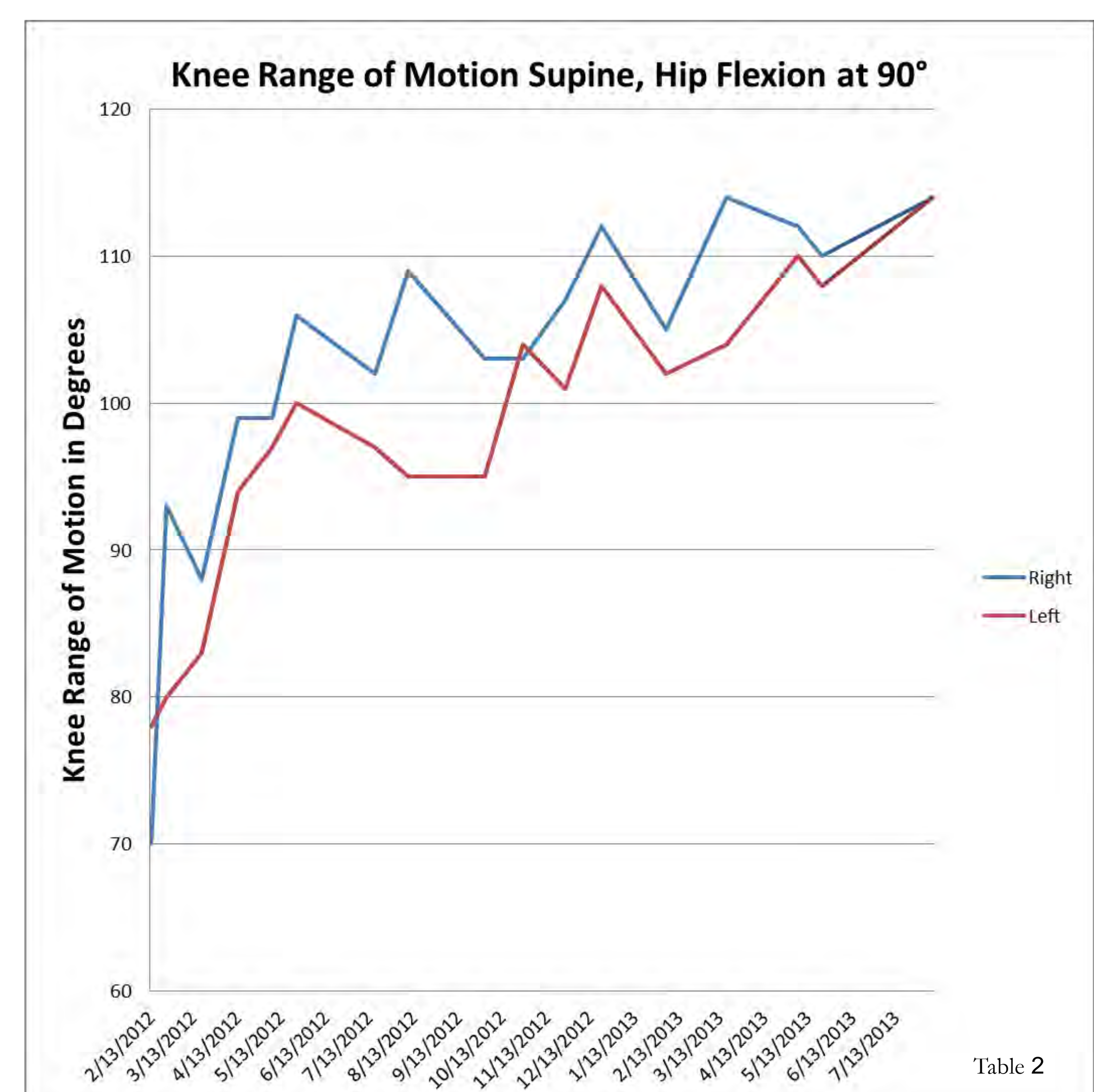


Table 2



Sitting Posture February 2012



Sitting Posture August 2013



Standing Posture 2012



Standing Posture 2013

Discussion

Conductive education continues to develop and evolve as time goes on but the main guiding principles must remain intact in order for the integrity of the program to be represented. The social context, intensity, and individualized task analysis greatly contribute to the gains experienced by the case subject. Objective findings through the use of the FIM and passive knee ROM document improvements that positively affected the orthopedic function and daily life skills of the case subject. EO was able to demonstrate clinically significant functional improvements as documented in Table 1. One of the main goals of conductive education is to teach an individual how to achieve independence in daily tasks. After participating in a conductive education program for approximately 18 months, EO went from being reliant on others for mobility, to ambulating independently in the community with a walker. He has gained confidence, balance, and postural control, all of which have allowed him to become a stronger, more independent individual. The benefits of conductive education reach beyond the therapeutic environment. As his mother has stated, "He has developed so many new skills that give him the opportunity to be more independent. He continues to grow and improve after each session. His attitude towards attaining these goals is amazing. He would much rather work hard and take his walker places than take his wheelchair."

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