

FUNCTIONAL CHANGES FROM VARIOUS SUBJECT-SPECIFIC TRAINING PROGRAMS IN PEDIATRIC AMBULATORY INDIVIDUALS WITH CEREBRAL PALSY. Brewer JF, Goodson NJ, Johnson KM, Mejia CT, Pruitt LC, Schneider CJ. Hardin-Simmons University Department of Physical Therapy, Abilene, TX.

PURPOSE: Determine the effectiveness and longevity of traditional gait training, bodyweight supported treadmill training (BWSTT) via the Biodex Gait Trainer 3®, visual and audio feedback, resistance training, flexibility, and balance interventions via Biosway® Portable Balance System in pediatric individuals with cerebral palsy (CP). **SUBJECTS:** Pediatric individuals with CP capable of functional ambulation were to be trained by five Physical Therapy students. Subjects were excluded from the research study if they were not cleared to participate by a physician. **METHODS:** Gait assessment and training of the subjects were completed for a total of 8 weeks with pretest, posttest, and retention measures occurring before and after the training period. Pre, Post, and Retention testing measurements included Two-Minute Walk Test (2MWT), Observational Gait Scale (OGS), Limits of Stability (LOS) via the Biosway Platform, Functional Gait Assessment (FGA), spatial and temporal gait parameters (step length, step cadence, distance ambulated) via BWSTT, active and passive range of motion (ROM), lower extremity (LE) force transducer (FD) muscle testing, and Pediatric Berg Balance Scale (PBBS). After pre-testing, a one-hour training session was conducted twice a week for 8 weeks and included stretching, resistance training, balance training, BWSTT and overground gait training. Over the 8 weeks, BWSTT and gait training progressed from 6 to 10 minutes. Subjects started unweighted at 20% body weight and progressed to 5% unweighted on the BWSTT. **RESULTS:** Three subjects (S1=M, 13 yo, S2=F, 7 yo, S3=M, 8yo) participated in the study. Guardians of each subject signed an informed consent prior to data collection. A two-band standard deviation method of analysis was used to determine statistically significant improvements from baseline through retention phases. For OGS, all three subjects showed significant changes bilaterally. S1 improved 11 to 18/22 (R), 16 to 17/22 (L); S2 improved 12 to 19/22 (R), 13 to 20/22 (L); S3 improved 11 to 19/22 (R), 17 to 21/22 (L). On 2MWT, only S3 showed statistically significant improvement in distance from 307.5 to 330 feet. FGA score <22/30 is considered a fall risk with a required minimal clinically important difference of 4-points improvement. S1 and S2 moved out of the fall risk category by the end of intervention (S1=24; S2=22). All subjects improved in active and passive ROM, BWSTT spatial and temporal gait parameters, Biosway LOS, LE FD muscle testing, and one subject (S1) improved in the PBBS. **CONCLUSIONS:** Findings suggest that strength, balance, flexibility interventions combined with BWSTT and traditional overground gait training can be successfully used to improve OGS score and 2MWT distance. **CLINICAL RELEVANCE:** Efficient gait requires quality strength, balance and active ROM, which can all be improved through physical therapy interventions. Improving overall gait can reduce falls and improve quality of life in pediatric individuals with CP. Further research is needed to evaluate larger populations and other classifications of CP using physical therapy interventions and gait training to determine more normative training parameters.