Main Outcomes	Author, Year Country Study Design Sample Size	Study Characteristics	Results
	TRUNK		
TLSO Brace	Sison-Williamson et al. (2007) USA "With-and-without intervention quasi-experimental" N=20	**Population:** Mean age=10.9±2.9; Gender: males=10, females=10; Level of injury: C7-L1; Level of severity: AIS A=18, B=0, C=2, D=0; Time since injury: Not reported. **Intervention:** Upper extremity motion analysis – tested in and out of thoracic lumbar sacral orthoses (TLSO) brace. **Outcome Measures:** Reach volume (in and out of TLSO brace)	1. Reachable workspace volumes were significantly greater for the non-TLSO brace condition compared to the TLSO condition (p=0.0002) 2. Anterior posterior and medial lateral ranges of reach were statistically greater in the non-TLSO condition (p=0.002 and p=0.01, respectively). 3. Nondominant hand medial lateral reaches were statistically greater in the non-TLSO brace condition (p=0.03) 4. Dominant hand anterior posterior reaches were statistically greater in the non-TLSO condition (p=0.009).
Scoliosis/ Spinal Fusion	Mehta et al. (2004) USA Case Control N=123	**Population:** Mean age=7.4yr; Gender: males=69, females=54; Level of injury: cervical=69, thoracic=54; Severity of Injury: AIS A=71, B=49, C=1, D=2; Mean time since injury=2.1yr. **Intervention:** Patient records from January 1996 to December 2001 from the Shriners Hospitals for Children-Philadelphia were retrospectively reviewed. Patients were divided into 5 groups based on their radiographic curve severity at presentation (group I: patients with < 1 Ü0 of scoliosis; group II: 11 ° to 20°; group III: 21 ° to 40°; group IV: 4 1 ° to 50°; group V: > 5 1° of curvature). Each group was then subdivided into a group that was managed with prophylactic bracing and a group that was not braced. **Outcome Measures**: Completion of bracing regimen, surgery, or cessation of growth.	At follow-up (range 2-13 yr), 95% of patients had developed scoliosis; surgical stabilization was required in 65% of the total sample. **Group I (initial curve <10°; n=42)** 1. 29 of the patients in this group were braced, and 13 who were not. 2. Of the braced group, 13 (45%) went on to surgery, whereas 10 (77%) of the non-braced group had surgical correction (p=0.03). 3. Of the patients who were initially braced, the average time to surgery was 8.5 yr, whereas that for the non-braced group was 4.2 yr (p=0.002). 4. There was no significant difference between time to surgery for the braced and non-braced patient groups at higher (>20°) initial curve presentations. **Group II (Initial curve 11 ° to 20°; n=25)** 1. Eighteen (72%) patients in this group were braced and 72 8%) were not braced. 2. Nine of the 18 children in the braced group (50%) required surgery at 6.8 years after initial presentation, whereas 6 of 7 of the nonbraced group (86%) required surgery at 3.7 years after presentation. 3. The difference between the rate of surgery (p=0.04) and the length of time to surgery (p=0.008) in the braced vs nonbraced group was statistically significant, whereas the curve at the time of surgery was not (p=0.52). **Group III (Initial curve 21 ° to 40°; n=28)** 1. Of the 20 (61%) children initially braced in this group, 1 2 (60%) went on to have surgery at 4.2 years after

			presentation, whereas 8 (40'7'o) did not require surgery. 2. Of the 8 children (3 9%) who were not braced, 6 (7 5%) went on to surgical correction at 3.2 years after presentation. 3. While there was no statistical difference for time to surgery between the braced and nonbraced patients in group III (p=0.3 6), there was a trend toward less surgical intervention in the braced patients (p=0.08). **Group IV (Initial curve > 41 ° but < 50°; n=16) & Group V (curves > 51 ° at presentation; n=12)** 1. In Group IV, one patient (6%) was not braced and proceeded to surgery, whereas 15 (94%) were braced, of which 12 (80%) went on to have surgical correction of their deformity. 2. In Group V, ten patients (83%) were braced and 2 (17%) were not braced; surgical correction of the spine was performed on 8 children (80%) in the braced group and both children (100%) in the nonbraced group. 3. In group IV and V, There was no significant difference between time to surgery for the braced and non-braced patient groups.
TLSO Brace	Chafetz et al. (2007) USA Prospective Controlled Trial N=14	**Population:** Mean age:10.8±2.4yr; Gender: males=7, females=7; Level of injury: C1-C7=1, T1-T12=13; Severity of injury: Not reported; Time since injury: Not reported. **Intervention:** Children with spinal cord injuries (SCI) completed the activities of the functional activities scale (FAS) and repetitive timed motor tests (TMT) while wearing a thoracolumbosacral orthosis (TLSO) and without a TLSO. Subjects were asked their preference for wearing or not wearing the TLSO during each of the activities. **Outcome Measures:** Timed motor test (TMT), functional activities scale (FAS).	1. For each of the activities of the TMT, subjects were slower when wearing the TLSO. For those wearing a TLSO, there was a noticeable 26% increase in time for donning a shirt (13.6±4.3s to 17.1±8.0s), and a 21% increase in time for donning pants (40.0±8.6s to 48.2±12.8s) (p<0.01) 2. For FAS, wearing a TLSO did not impact the activities of eating, grooming, wheelchair propulsion, curb management, or transitioning from sitting at the edge of a bed to a supine position 3. The only statistically significant difference was for upper-body dressing, with the activity scoring lower when the subject was wearing a TLSO (p<0.01) 4. Preference for not wearing a TLSO was significantly different (p<0.05) for lower-body dressing, reaching for the floor, and transitioning from a supine position to sitting at the edge of the bed
Scoliosis/ Spinal Fusion	Mulcahey et al. (2013) USA Cross-Sectional N=217	**Population:** 13.2±4.9yr.; Gender: males=127, females=90; Level of injury: Not reported; Level of severity: AIS A=105, B=45, C=30, D=21, Missing=16; Time since injury=4.2±3.7yr. **Intervention:** None – observational, participants	1. Age of injury (p<0.0001) and AIS classification (p<0.0095) were the only significant predictors of worse curve when grouped as an entire sample 2. Risk of spinal fusion increased by 11% for every yr. decrease in age at injury

		evaluated using the testing guidelines of the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) to determine predictors of worse curve and spinal fusion in neurological scoliosis. *All participants had neuromuscular scoliosis and 24 of the 217 participants underwent spinal fusion due to their progressive neuromuscular scoliosis. **Outcome Measures:** ISNCSCI classification, Cobb angles, motor score.	3. Sex, motor score, and neurological level were not predictors of worse curve of spinal fusion 4. Subjects injured before the age of 12 were 3.7 times more likely to require a spinal fusion than those injured after age 12 (95% CI, 0.31-44.64)
Scoliosis/ Spinal Fusion	Schottler et al. 2012 USA Cross-Sectional N=159	**Population:** Median Age: 2yr (age range: 0-5yr); Gender: males=92, females=67; Level of severity: Paraplegia=100 (incomplete=33, complete=64, unknown=3), Tetraplegia=52 (incomplete=23, complete=24, unknown=5), Not reported=7; Time Since Injury=Not reported **Interventions:** **Outcome Measures:** Complications (i.e., scoliosis, hip dysplasia, latex allergies, autonomic dysreflexia, pressure ulcers, spasticity, deep venous thrombosis, and kidney stones), demographic and injury-related factors (i.e., age at injury, etiology, level of injury, American Spinal Injury Association Impairment Scale (AIS), and SCIs without radiological abnormalities (SCIWORA))	1. Ninety-six percent of participants developed scoliosis, 57% had hip dysplasia, and 7% had latex allergy. 2. Median age of initiating wheelchair use was 3 years 4 months (range 1y 2mo–12y 5mo). 3. Twenty-four participants were community ambulators, and they were more likely to have AIS D lesions and less likely to have skeletal complications.
	STAND		
FES	(Johnston et al., 2003) USA Pre-Post N=9	**Population:** Age: 12.7±5.2 yr (range 7-20 yr); Level and Severity of Injury: C7 tetraplegia (n=1), T1-11 paraplegia (n=8); Long Leg Bracing [LLB] Used: Knee Ankle Foot Orthoses [KAFO] (n=2), Hip Knee Ankle Foot Orthoses [HKAFO] (n=2), Reciprocating Gait Orthoses [RGO] (n=5). **Intervention:** Lower extremity Functional Electrical Stimulation (FES) implant which delivered a balanced asymmetrical biphasic waveform with pulse duration up to 200 msec, 20 Hz frequency, and 20 mA current. Bilateral ankle foot orthoses (AFO) set in zero degrees of dorsiflexion were worn when ambulating with the FES system. After implantation and immobilization participants	1. Two subjects did not complete training and were not included for analysis 2. 12/72 originally implanted electrodes required revision primarily due to inadequate force production 3. Subjects completed four activities more quickly when using FES as compared to LLB: donning (p=0.0026), stand and reach (p=0.0012), high transfer (p=0.0009), bathroom (p=0.0164) 4. Subjects completed five activities with less assistance when using FES as compared to LLB: donning (p=0.0001), stand and reach (p=0.0036), high transfer (p=0.0191), bathroom (p=0.0006), and floor to stand (p=0243) 5. No activity required more time or more assistance to complete with FES as compared to LLB

		did 2-4 wk of FES strengthening followed by standing and walking exercise, and upright mobility training. **Outcomes:** Completion of eight upright mobility activities, scored based on completion time and level of independence: donning, stand and reach, high transfer, bathroom, floor to stand, 6-meter walk test(6MWT), stair ascent, stair descent.	6. Subjects reported preferring FES for 87.5% of the activities, LLB for 3.6% of the activities, and showed no preference for 8.9% of the activities
FES	(Johnston et al., 2005) USA Post Test N=3	**Population:** Age: 17-21; Gender: males=3; Level and Severity of Injury: Motor complete T3-T8; Time since injury: 1.0-1.5 yr; **Intervention:** Functional electrical stimulation (FES) consisting of 22-channel implant stimulator, extension leads and epineural electrodes. Leads emanating from the stimulator include two tresses of nine leads each for stimulation of lower extremity muscles and one tress of four leads for stimulation for bladder and bowel function (parameters: 0.2–8 mA amplitude, 25–600 ms pulse duration, 2–500 Hz pulse frequency per channel). After implantation and immobilization participants completed exercise phase (FES strengthening) followed by lower extremity conditioning, standing and upright mobility training (13 wk). **Outcome Measures:** Completion of eight upright mobility activities, scored based on completion time and level of independence: donning, stand and reach, high transfer, bathroom, floor to stand, 6-meter walk test (6MWT), stair ascent, stair descent.	1. Three of the 52 electrodes placed for lower extremity stimulation experienced changes in the responses of the muscles 2. Two subjects used a walker with wheels to perform the mobility activities and one subject used forearm crutches. 3. None of the subjects required physical assistance to complete the activities but two required supervision 4. One individual could not ascend/descend stairs as it was felt to be unsafe for him; several activities could not be performed by another subject secondary to complaints of shoulder pain related to poor scapular muscle control 5. All subjects reported preferring a swing through pattern for walking as they felt it was faster; two subjects could ambulate up to 20 feet and the third subject up to 75 feet 6. Just one subject demonstrated positive neuromodulation effects of the bladder; stimulation suppressed reflex bladder contractions acutely thereby reducing vesical pressure 7. For one subject, low frequency stimulation significantly increased rectal and anal sphincter pressure which reduced time to defecate; compared to bowel management without stimulation, the patient reported greater satisfaction with stimulation.
FES	(Moynahan, Mullin, et al., 1996) USA Observational N=5	**Population:** Age: 18.4±1.1 yr; Gender: males=2, females=3; Level of Injury: T4 (n=2), T5 (n=1), T8 (n=1), T11 (n=1); Severity of Injury: AIS A; Orthotics Use: Molded Shoe Insert=4, Ankle Foot Orthosis [AFO]=1. **Intervention:** Hybrid system of implanted Functional Electrical Stimulation [FES] (pulse duration 0-150µsec, frequency 0-50 Hz) with wearable AFO. After implantation, participants completed training for standing and mobility.	1. The frequency of donning the system ranged 23%-34% of the days surveyed; this is equivalent to donning the system once every 3 to 4 days. 2. The two most common standing activities were "one-handed activities (e.g., painting furniture, changing a car's air filter, pushing a sibling on a swing-set) or reaching" and "standing for exercise or to stretch," accounting for 62% of all reported standing activities across subjects. 3. Maneuvering" was typically performed in areas of the house

		Outcome Measures: Patterns of home and community FES use; barriers and facilitators of use. Assessed every 1-4 wk for 1 yr.	that were easily accessed by wheelchair. 4. The FES system was used to perform swing-to gait with their walkers around the house, sometimes transferring to other seats. 5. "Standing with others" included showing friends or family standing ability, to take pictures or for hugging. 6. "Transfers" (e.g., for weighing or to transfer into a car) were not widely performed. 7. "Motivators" for FES use included: being able to do things that would be difficult/impossible otherwise, perceiving a healthful benefit from exercise/standing, having a sense of well-being, and feeling an obligation to stand as a member of the research study. 8. "Barriers" included: not having time to stand or exercise, having difficulty seeing opportunities and reluctant to wear it all day.
FES	(Bonaroti et al., 1999a) USA Case Report N=1	**Population:** 11 yr, T10 AIS A SCI **Intervention:** Functional electrical stimulation, Knee Ankle Foot Orthoses **Outcome Measures:** Functional Independence Measure (FIM) and time to completion during upright mobility activities: donning, high transfer, toilet transfer, floor-to-standing transfer, ascend/descend stairs.	1. FIM measurements of bathroom transfer and descending stairs completed significantly faster with KAFO ($p<0.001$ and $p=0.04$ respectively) 2. For the remaining activities there was a trend towards faster completion times with FES, but this was not statistically significant (donning: $p=0.28$; high transfer: $p=0.36$; floor transfer: $p=0.67$; ascending stairs: $p=0.32$) 3. While performing the 10 subset activities of the FST, the subject displayed no significant differences in completion times between the 2 modes 4. Subject was significantly more stable in the static position using KAFO ($p=0.03$) whereas in dynamic testing subject was slightly more stable using FES, but was not statistically significant ($p=0.7$) 5. Ambulation velocity was significantly faster using FES during the 100 feet ambulation ($p<0.001$) and maximum ambulation ($p<0.001$) test but not during energy expenditure testing ($p=0.13$)
FES	(Bonaroti et al., 1999b) USA Pre-Post N=5	**Population:** Age: 9 yr (n=2), 10 (n=1), 18 yr (n=2); Gender: males=4, females=1; Etiology: Traumatic SCI=4, Non-Traumatic SCI=1; Level of Injury: cervical=2, thoracic=3; Severity of Injury: Paraplegia=5. Bracing for Standing & Therapy: Knee Ankle Foot Orthoses [KAFO]=5. **Intervention:** Hybrid system of implanted Functional Electrical	1. When comparing the upright mobility activities between using FES versus LLB, subjects required equal (70%) or less (24%) assistance when using FES compared with using LLB 2. One subject had greater independence using LLB for the *floor to stand* transfer

		Stimulation [FES] (pulse duration 0-150μsec, frequency 0-50 Hz) with wearable Ankle Foot Orthoses (AFO). After implantation, participants completed FES strengthening followed by sit/stand exercise, and then upright mobility training for 4 weeks. **Outcome Measures:** Completion of eight upright mobility activities, scored based on completion time and level of independence with FES versus Long Leg Braces (LLB): donning, stand and reach, high transfer, floor to stand, 6-meter walk test (6MWT), toilet transfer.	3. One subject had greater independence using LLB for the 6MWT 4. For each activity in which FES provided greater independence, subjects improved from requiring contact assistance (3 or 4) while using LLB to not needing contact assistance (5 or 6) while using FES 5. There were two subjects who required minimal contact assist (4) with LLB but were independent with FES (6), both for the *stand and reach* activity, and six instances in which minimal (4) or moderate (3) contact assistance was required with LLB and no contact assistance (5) was required using FES 6. Two activities, *stand and reach* and *high transfer,* were performed significantly faster with FES 7. When subjects were asked which mode of standing they preferred, FES was preferred in 62% of the cases, LLB were preferred 27% of the time, and there was no preference 11% of the time.
FES	(Betz et al., 2002) USA Case Report N=1	**Population:** 13 yr, male, T8 SCI. **Intervention:** Lower extremity implanted Functional Electrical Stimulation (FES) with a Knee Ankle Foot Orthoses (KAFO). **Outcome Measures:** Completion of eight upright mobility activities, scored based on completion time and level of independence: donning, stand and reach, high transfer, bathroom, floor to stand, 6-meter walk test (6MWT), stair ascent, stair descent.	1. Across all time periods, the subject required less time to don the FES system (P<0.0001) and to complete the high reach (P<0.0001), high transfer (P<0.0001), and 6MWT (P=.006) compared with KAFO 2. More time was needed to complete the floor-to-stand activity for FES compared to KAFO (P=0.0001) 3. No time differences were seen between FES and KAFO for the inaccessible bathroom transfer (P=0.507) and ascending (P=0.753) and descending stairs (P=0.164) 4. Subject was able to more quickly complete the sit-to-stand transition (P<0.0001), reach for a videotape on a high shelf (P<0.0001), and return to sitting in the wheelchair (P<0.0001) when using FES 5. Subject preferred FES to KAFO for all activities but floor-to-stand at 2-yr. follow-up
Dynamic gait trainer	(Altizer et al., 2017) USA Case Report N=1	**Population:** 23 mo, female, T10 AIS A SCI. **Intervention:** Overground supported stepping intervention using a dynamic gait trainer. **Outcome Measures:** Paediatric Evaluation of Disability Inventory (PEDI), Spinal Cord Independence Measure (SCIM), Gross Motor Function Measure (GMFM-66), Developmental Profile (DP-3), Support Walker Assessment Ambulation Performance Scale (SWAPS), 6-Minunte Walk Test (6MWT).	1. PEDI score improved by 6 points (60%) from age 36-54mo. and by 18 points (75%) from age 54-72mo 2. SCIM score improved over the 3 yr of intervention (36mo. – 19; 54mo. – 31; 72mo. – 43) but remained well below the median adult score for those with injury at T10 of 63 3. GDFM-66 score improved minimally over 3 yr of intervention 4. DP-3 score demonstrated a continued motor deficit in comparison to age, but also shows progress in physical skills 5. 6MWT change from 54-72mo. was double what was expected from

			documentation in literature for her age and level of SCI.
Dynamic Gait Trainer	(Choksi et al., 2010) Observational USA N=32	**Population:** Mean age 10.6±6.2 (1-19) yr; Injury Etiology: Traumatic=24, Non-traumatic=8; Level of Injury: Cervical=18, Thoracolumbar=14. **Intervention:** Inpatient rehabilitation physiotherapy and occupational therapy (3 hr/day). **Outcome Measures:** Pediatric Evaluation of Disability Inventory (*mobility* and *self-care*) via Functional Skills and Caregiver Assistance scales).	1. PEDI mobility (functional skills): ↑24.0±14.7 2. PEDI mobility (caregiver assistance): ↑26.1+21.5 3. All children improved or showed no change on walking-related PEDI items: • Indoor locomotion methods: 8/21 ↑ • Indoor locomotion distance/speed: 11/21 ↑ • Indoor locomotion pulls/carries: 13/21 ↑ • Outdoor locomotion methods: 1/21 ↑ • Outdoor locomotion distance/speed: 12/21↑ • Outdoor locomotion surfaces: 12/21↑
	GAIT		
Orthoses	(Vogel & Lubicky, 1995) USA Observational N=39 N(Parapodium)=26 N(RGO)=13 RGO – Reciprocating Gait Orthoses	**Population:** (Parapodium) Age at injury=3.2yr. (range birth-9yr.); Gender: males=15, females=11; Level and severity of injury: T1-T4 paraplegia=7, Tetraplegia=6, Not reported=13; Time since injury: Not reported. (RGO) Age at injury= 8.1yr. (range birth-15yr.); Gender: males=5, females=8; Level and severity of injury: T4 paraplegia=1, Tetraplegia=0, Not reported=12; Time since injury: Not reported. **Intervention:** Chart review of parapodium and RGO users. **Outcome Measures:** Post-orthotic use outcomes.	1. No patients in either group were community ambulators 2. Among the 20 children that began using parapodia at less than 6yr., 12 were household ambulators 3. All 6 children who began using parapodia after 6yr. old were therapeutic ambulators 4. Among children that initially used RGOs, 2 were household ambulators and the remaining 11 were all therapeutic ambulators 5. Of the 26 children in the parapodium group, four were lost to follow-up or died after a mean of 3.7 yr. of orthotic use, 12 continued to use their parapodia with a mean follow-up of 3.4 yr., and 10 stopped using their parapodia after 2.2 vr on average 6. 12 children who continued to use their parapodium. the mean age at injury was 2 1/2 yr., mean age at initiation of parapodium use was 3.7 yr., and their mean age at current follow-up was 7.1 yr. 7. For the 10 children who had discontinued use of their parapodium, the mean age at injury was 5 yr., mean age at initiation of orthotic use was 5.7 yr., and mean age at discontinuation of parapodium use was 7.9 yr. 8. Among the 13 children who initiated their orthotic use with RGOS, three were lost to follow-up after using their RGOs for an average of 2 1/2 yr., two are still using RGOs and 8 have stopped using them 9. The two children still using them were approximately 2 1/2 yr. old when injured and began orthotic use at three and 3 1/2 yr. of age, each has been followed for 1 1/2 yr. 10. The eight individuals who discontinued RGO use were on average 10.8 yr. old at the time of

			their injury, began using the RGO at a mean age of 12 1/2 yr. and stopped using their RGOs at a mean age of 16.7 yr. 11. Of the eight individuals who discontinued RGO use seven did not progress to another orthotic device and one teenager with T10 paraplegia progressed to a knee ankle foot orthosis (KAFO) which she used sporadically for 1 1/2 yr.
FES	(Johnston et al., 2003) USA Pre-Post N=9	**Population:** Age: 12.7±5.2 yr (range 7-20 yr); Level and Severity of Injury: C7 tetraplegia (n=1), T1-11 paraplegia (n=8); Long Leg Bracing [LLB] Used: Knee Ankle Foot Orthoses [KAFO] (n=2), Hip Knee Ankle Foot Orthoses [HKAFO] (n=2), Reciprocating Gait Orthoses [RGO] (n=5). **Intervention:** Lower extremity Functional Electrical Stimulation (FES) implant which delivered a balanced asymmetrical biphasic waveform with pulse duration up to 200 msec, 20 Hz frequency, and 20 mA current. Bilateral ankle foot orthoses (AFO) set in zero degrees of dorsiflexion were worn when ambulating with the FES system. After implantation and immobilization participants did 2-4 wk of FES strengthening followed by standing and walking exercise, and upright mobility training. **Outcomes:** Completion of eight upright mobility activities, scored based on completion time and level of independence: donning, stand and reach, high transfer, bathroom, floor to stand, 6-meter walk test(6MWT), stair ascent, stair descent.	1. Two subjects did not complete training and were not included for analysis 2. 12/72 originally implanted electrodes required revision primarily due to inadequate force production 3. Subjects completed four activities more quickly when using FES as compared to LLB: donning (p=0.0026), stand and reach (p=0.0012), high transfer (p=0.0009), bathroom (p=0.0164) 4. Subjects completed five activities with less assistance when using FES as compared to LLB: donning (p=0.0001), stand and reach (p=0.0036), high transfer (p=0.0191), bathroom (p=0.0006), and floor to stand (p=0243) 5. No activity required more time or more assistance to complete with FES as compared to LLB 6. Subjects reported preferring FES for 87.5% of the activities, LLB for 3.6% of the activities, and showed no preference for 8.9% of the activities
FES	(Johnston et al., 2005) USA Post Test N=3	**Population:** Age: 17-21; Gender: males=3; Level and Severity of Injury: Motor complete T3-T8; Time since injury: 1.0-1.5 yr; **Intervention:** Functional electrical stimulation (FES) consisting of 22-channel implant stimulator, extension leads and epineural electrodes. Leads emanating from the stimulator include two tresses of nine leads each for stimulation of lower extremity muscles and one tress of four leads for stimulation for bladder and bowel function (parameters: 0.2–8 mA amplitude, 25–600 ms pulse duration, 2–500 Hz pulse frequency per channel). After	1. Three of the 52 electrodes placed for lower extremity stimulation experienced changes in the responses of the muscles 2. Two subjects used a walker with wheels to perform the mobility activities and one subject used forearm crutches 3. None of the subjects required physical assistance to complete the activities but two required supervision 4. One individual could not ascend/descend stairs as it was felt to be unsafe for him; several activities could not be performed by another subject secondary to complaints of shoulder pain related to poor scapular muscle control

		implantation and immobilization participants completed exercise phase (FES strengthening) followed by lower extremity conditioning, standing and upright mobility training (13 wk). **Outcome Measures:** Completion of eight upright mobility activities, scored based on completion time and level of independence: donning, stand and reach, high transfer, bathroom, floor to stand, 6-meter walk test(6MWT), stair ascent, stair descent;	5. All subjects reported preferring a swing through pattern for walking as they felt it was faster; two subjects could ambulate up to 20 feet and the third subject up to 75 feet 6. Just one subject demonstrated positive neuromodulation effects of the bladder; stimulation suppressed reflex bladder contractions acutely thereby reducing vesical pressure 7. For one subject, low frequency stimulation significantly increased rectal and anal sphincter pressure which reduced time to defecate; compared to bowel management without stimulation, the patient reported greater satisfaction with stimulation