

inferior extensor retinaculum. There is a lack of research regarding objective outcome measures for balance following this procedure. The purpose of this report was to assess changes in static and dynamic balance for an individual who underwent the modified Broström-Gould surgery.

**Methods:** A 28 year-old female with right CAI completed pre-testing (two weeks prior to surgery) and post-testing (two months following surgery). Outcome measures included the modified STAR Excursion Balance Test (mSEBT), the Balance Error Scoring System (BESS), and Single Leg Hop Down Test for time to stabilization (TTS) using force plate testing.

**Summary of Results:** Postoperatively, the patient showed improvements in all directions on the mSEBT for the affected and unaffected lower extremities (LE), with greater improvement seen on the affected LE by 22-30%. The patient improved her overall score for the BESS, demonstrating a reduced number of errors on the affected LE from 20 to 15. The Single Leg Hop Down Test revealed a decrease in the average TTS on the affected LE from 1.88 seconds to 1.01 seconds.

**Conclusion:** After completion of the modified Broström-Gould surgery and in conjunction with rehabilitation, the patient showed an improvement in dynamic balance measures, possibly due to increased strength and reduced pain levels following rehabilitation after surgery. Future studies should examine the role of exercise interventions and fitness level in determining patient outcomes following the modified Broström-Gould surgery.

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**1348 Board #110 May 30 10:30 AM - 12:00 PM**  
**Validation Of The Tekscan Strideway Plantar Pressure Mat Compared To A Force Platform**

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 (No relevant relationships reported)

Force platforms represent the criterion method of assessing external force applied to an athlete during a given task. However, force platforms have several characteristics that may limit their use in sport and clinical environments including limited portability. Therefore, a need exists for portable equipment with high validity to measure load-related variables such as vertical force. **PURPOSE:** To validate vertical force measured using the Tekscan Strideway Plantar Pressure system compared to a force platform. **METHODS:** Five participants performed three 10-second quiet standing trials in each of eight weighting conditions. Increased weighting was achieved by increasing load during a deadlift. Vertical ground reaction force was measured independently using a plantar pressure mat (PPM, 500 Hz, Tekscan Strideway Plantar Pressure Mat, Boston, MA) and a force platform (FP, 1000 Hz, AMTI, Watertown, MA). Custom software (MATLAB, MathWorks, Natick, MA) was used to analyze vertical force data from the PPM and FP. FP data were downsampled to 500 Hz and the average force across the final 5 seconds of each trial was calculated. A correlation analysis was conducted to determine the strength of agreement between the PPM and FP. A paired samples t-test was conducted to compare mean force values measured using the PPM and FP. Cohen's d effect sizes were calculated to determine the meaningfulness of differences between the FP and PPM. **RESULTS:** No differences in vertical force were observed between the PPM and FP were observed ( $p = 0.483$ ; PPM:  $227.9 \pm 64.7$  N/kg; FP:  $237.5 \pm 57.9$ ). A small effect size ( $d = 0.15$ ) suggests the small differences were likely not meaningful. A high level of agreement ( $r = 0.959$ ) was observed between the PPM and FP. **CONCLUSIONS:** These data demonstrate that vertical force measured using the Tekscan Strideway plantar pressure system are comparable to the more expensive criterion method of a strain gauge-based force platform measures. Moreover, the Strideway platform is mobile providing a solution for non-laboratory based assessments of vertical forces. Further research should evaluate the validity of the Strideway plantar pressure system during more dynamic activities such as jumping and landing and for different force-related variables.

**C-35 Free Communication/Poster - Disability**

Thursday, May 30, 2019, 7:30 AM - 12:30 PM  
 Room: CC-Hall WA2

**1349 Board #111 May 30 9:30 AM - 11:00 AM**

**Should We Stick with Step Counts after Incomplete Spinal Cord Injury? A Case-Control Investigation**

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Step count is a common metric or criterion to prescribe physical activity. Step activity benchmarks were designed to reflect an overall daily energy expenditure, but this objective measure is exposed to error when gait is impaired. Individuals with functional limitations are known to expend more energy during locomotion when compared to non-impaired controls (CON).

**PURPOSE:** The primary goal was to evaluate metabolic cost per step for someone with an incomplete spinal cord injury (iSCI) when compared to a CON. A secondary goal was to evaluate estimated daily energy expended between the individuals to determine if step count is an appropriate metric for activity recommendations for those with functional limitations. **METHODS:** This case-control study included a participant with an iSCI and an age-, sex-, height-matched CON. Participants completed a 6-minute walk (6MWT) and timed walks at slow, moderate, and fast paces (matching the step monitor's intensity benchmarks) while wearing a portable metabolic cart. Relative oxygen consumption ( $VO_2$ ) was determined using a 15-breath moving average. Daily step activity was recorded during the 7-day period between sessions. Stride length was determined using 3D motion analysis. **RESULTS:** Differences were observed between participants for average 6MWT  $VO_2$  (iSCI=21.5 ml/kg/min; CON=28.18 ml/kg/min), step length (iSCI: 0.36m; CON: 0.73m), energy expenditure during the 6MWT (iSCI: 0.34kcal/m; CON: 0.09kcal/m), and daily step activity (iSCI: 2616, CON: 9890). Estimated energy expended from walking for iSCI and CON was 336 kcal/day and 735 kcal/day, respectively, when extrapolating  $VO_2$  from paced walks to data retrieved from the step monitor. **CONCLUSION:** Supporting previous literature, it is likely inappropriate to standardize activity recommendations based on step metrics for those with functional limitations. Unrealistic expectations may heighten perceived barriers, undermine mobility related self-efficacy, and discourage adoption or adherence. Exercise prescription based on energy expenditure goals may serve as an alternative means to individualize recommended daily activity. Future research should attempt to establish new recommendations based on functional status for those outside of the typical gate norm.

**1350 Board #112 May 30 9:30 AM - 11:00 AM**

**The Effects of 8-weeks Structural Exercise-Based Intervention on Autism Spectrum Disorders**

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Lack of physical activity reduces the effects of interventions and brings more health risks for individuals with ASDs (Autism Spectrum Disorders). Accumulating evidences indicate exercise program integrated varied types of exercises in a structured framework would achieves maximum gains in fitness for them. However, most of existed studies focused on one special exercise type to reduce the autism-specific impairments.

**PURPOSE:** to observe fitness changes with a 8-weeks structured exercise-based intervention for ASDs.

**METHODS:** The subjects were 6 adolescents with ASDs between the ages of 11-14 yrs (male = 5, female = 1) were recruited. They were mild-moderate and severe ASD patients according scores from the Social Responsiveness Scale. The intervention program was seen in Tab1. The Physical fitness was measured by body composition analysis with indicators, including fat mass (FM), body mass index (BMI) etc. The mental fitness was evaluated by Autism Treatment Evaluation Checklist (ATEC). Data comparisons were made using paired t-test.

**RESULTS:** The overall weight of the subjects decreased about 2.4%, and significant decrease happened in FM at 11.7% ( $27.35 \pm 14.36$  vs.  $24.16 \pm 13.78$  Kg,  $p < 0.05$ ). Among 4 subclasses of ATEC, significant decrease happened in Communication ( $18.50 \pm 3.42$  vs.  $12.00 \pm 3.46$ ,  $p < 0.01$ ) and Sociability ( $25.00 \pm 6.38$  vs.  $15.75 \pm 6.40$ ,  $p < 0.01$ ). Average total score of subjects was in moderate category, while was in severe category before the intervention.