# Gait Improvement in Children with Cerebral Palsy after Myofascial Structural Integration Therapy

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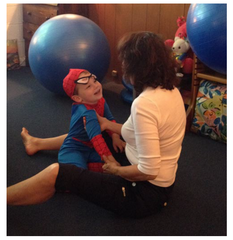
## Introduction

- **Cerebral Palsy (CP)**: Most prevalent physical disability of childhood
  - Prevalence: 3/1000 children in the US
  - Structural changes in distal myofascial unit important in maintaining stiffness associated with spastic CP
- **Myofascial Structural Integration (MSI)**: Deep muscle manual therapy strives to reposition muscles, bones, and joints
- **Dynamic equinus**: Foot deformity in children with CP, results in toewalking and plantarflexion of the foot and ankle

## Objective

**To assess whether MSI, when used as a complementary treatment, improves aspects of gait in children with CP**



## Treatment

- Ten weekly sessions of MSI
- Single certified practitioner
- Playful and non-painful approach; children allowed to be on bed, parent's lap, or floor
- All pre-existing therapies and treatments remained unchanged

## Outcomes Measures

**GAITRite® Electronic Walkway**

Temporal and spatial measures selected:

- Foot Length
- Foot Width
- Step Length
- Heel-to-Heel Base of Support
- Double Support Time
- Velocity

## Case Series Participants (n=9)

- Mean Age: 2 years, 8 months (SD=10.4 months)
- All ambulatory children with spastic CP
  - Hemiplegia=7, Diplegia=2
- Gross Motor Classification System
  - Level I=7, Level 2=2

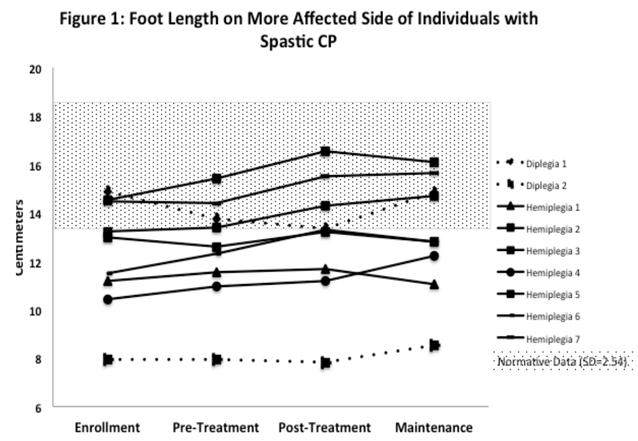
## Results

- Paired sample t-tests compared pre-treatment to post-treatment.
- Differences between enrollment and pre-treatment, post-treatment and maintenance not significant for foot length or heel-to-heel.

| Measurement on More Affected Side | Normative Data (SD) | Pre-Treatment Mean (SD | Post-Treatment Mean (SD) | t | *p* |
|---|---|---|---|---|---|
| **Foot Length (cm)** | **16.0 (2.52)** | **12.5 (2.19)** | **13.0 (2.54)** | **-3.04** | **.02*** |
| Foot Width (cm) | 7.0 (2.11) | 5.8 (1.25) | 6.2 (1.39) | -1.28 | .24 |
| Step Length (cm) | 34.3 (7.35) | 32.5 (5.11) | 32.2 (3.89) | .16 | .88 |
| **Heel-to-Heel Base of Support (cm)** | **8.3 (3.25)** | **11.5 (1.90)** | **10.2 (3.10)** | **2.25** | **.06** |
| Double Support Time (% of Cycle) | 16.5 (5.0) | 22.3 (4.25) | 21.8 (7.16) | .22 | .83 |
| Velocity (cm/sec) | 101.1 (29.9) | 82.6 (11.58) | 84.0 (15.69) | -.28 | .78 |

## Results

Figure 1: Foot Length on More Affected Side of Individuals with Spastic CP




## Conclusion

- MSI treatment was associated with **increased foot length**
- Foot length interpreted as reduction in dyamic equinus, improved heel strike and reduction in toe walking particularly in children with hemiplegic CP.
- MSI was associated with a trend toward reduction in **heel-to-heel base of support.**

## Acknowledgements

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