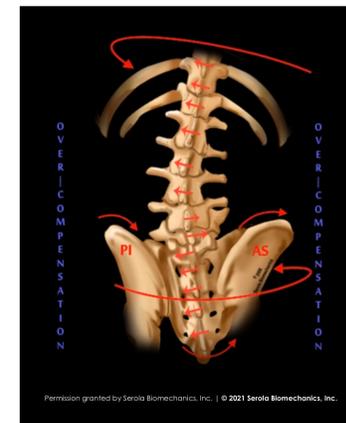


A retrospective review of patient Optogait results and comparison to side of patient pelvic compensation

Lydia Knutson DC, Fred Langenegger PhD, John Coleman PhD, Stephanie G.B. Sullivan DC PhD, Martha Herbert PhD MD



Exaggerated illustration of an LPC. © 2021 Serola Biomechanics, Inc.

Introduction

Axial Stability Method (ASM) is a low-force, protocol-driven approach to restoring whole body biomechanical stability. It focuses on restoring stability to the pelvic structural system using SOT blocks, followed by instrument assisted adjusting of the kinetic chain for the anti-gravity/recovery phase of gait.

Using postural analysis and orthopedic muscle testing, patients are evaluated for instability in the pelvic structure resulting in a compensatory twist - a PI ilium. This sacroiliac nutation lesion compensation is either a left pelvic compensation (LPC) or a right pelvic compensation (RPC). Anecdotally it has been noted that LPC patients are less physically robust, with allergies and poor immunity, whereas RPC patients tend to be more resilient and maintain structural integrity once stabilized. This study compares the effect of ASM chiropractic care on gait symmetry in LPC patients and RPC patients.

Methods and Results

This practice-based exploratory study was done at Lydian Chiropractic (LC), a chiropractic practice in Cambridge, Massachusetts. All new patients who presented at LC from July 8, 2013 to September 17, 2014 (n=174), and established patients at LC who had an injury which returned them to their baseline chiropractic presentation (n=3), were invited to perform a 30-second march in place test with eyes closed before they received any care at LC, and to perform the same test again at least one day after they had completed a standard series of 10-14 ASM treatments at LC. The standard endpoint of this series is a correction for the counternutation phase of gait in a standing position.

An Optogait (an optical sensor device) was used to measure contact time and lateral position of each step during the march in place tests. All Optogait testing was done prior to treatment on the day of testing. All patients were classified as either LPC or RPC using ASM chiropractic analysis prior to any chiropractic care or Optogait testing.

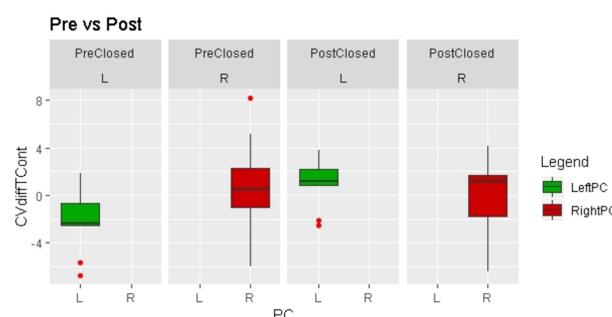
38 patients - 11 LPC and 27 RPC - age 18 or older met the inclusion criteria for this study. 3 patients were instructed to raise their knees to hip height while marching, and the other 35 patients were given no instruction except to lift their feet high enough to enable the Optogait to measure their steps.

Clinical outcomes of presenting primary and secondary complaints were rated on a 1-5 scale (1=no improvement, 5=complete resolution) through chart reviews. Oswestry and Neck Disability Indexes were also used where appropriate.

Note: This study utilizes raw data that was exported out of the Optogait software. Some accompanying Optogait data was subsequently lost due to computer malfunction.

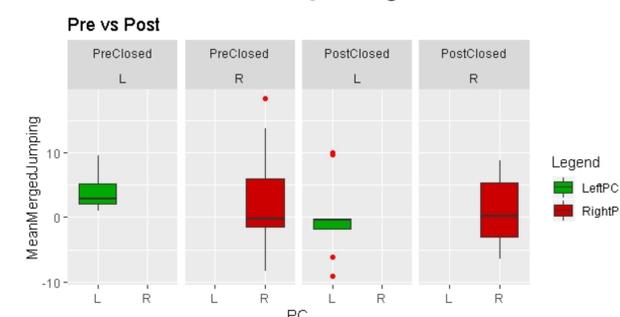
Clinical Outcomes		
Mean Values		
	LPC	RPC
Age	49.2	49.4
Sex	9F, 2M	23F, 4M
Primary Complaint (1-5)	3.5	3.9
Second Complaint (1-5)	3.4	3.6
Oswestry pre-post Δ	-12% (n=3)	-13% (n=8)
NDI pre-post Δ	-22% (n=1)	-17% (n=3)

CV of difference of L foot - R foot Contact Time

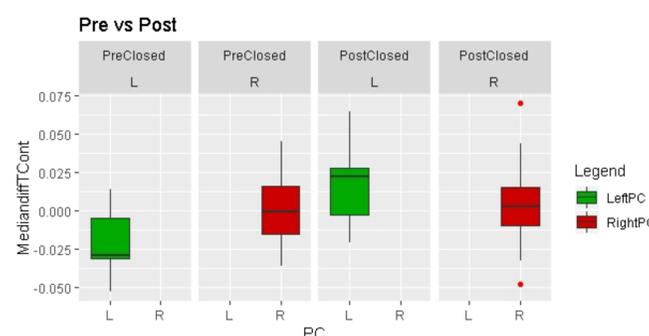


Mean lateral shift of midpoint between feet (cm)

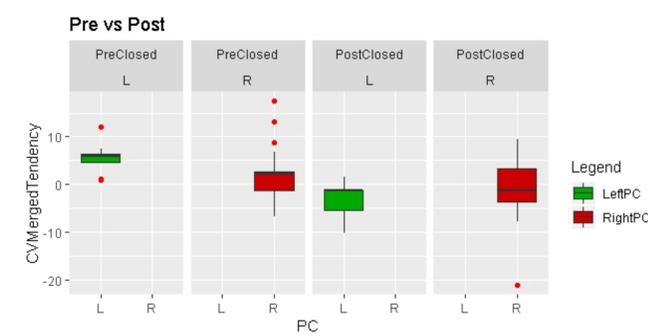
Positive value=shift to right; Negative value=shift to left.



Median of difference of L foot - R foot Contact Time



CV of lateral shifts of midpoint between feet (cm)



Discussion

The Coefficient of Variation (CV) and median of the difference between left and right foot contact times for the LPC group increased significantly post care (p<0.02), but in a manner that brought them closer to 0, which implies greater temporal symmetry. Greater temporal symmetry is also implied by the decreased mean CV for contact times for both the left foot and right foot in the LPC group post care (but those decreases were not significant (p>0.05)).

We observed more gait changes in LPCs than in RPCs, both in temporal and spatial symmetry. This is interesting, since anecdotally RPCs are more structurally resilient than LPCs. Perhaps LPCs show greater improvement in gait symmetry because they start out with greater structural challenges.

The LPCs' significant (p<0.02) change from a baseline rightward drift to a leftward drift post care is also surprising. This might be caused by chronic compensation patterns that change post care. Further study is needed, perhaps with EMG and brain-based assessments.

Contact Time CV		
Mean Values		
	LPC	RPC
L Foot - Pre	4.85	4.04
L Foot - Post	4.31	3.94
R Foot - Pre	4.07	4.07
R Foot - Post	3.79	4.41