

thoracic SNAGs were performed over a 7 day period. **Results:** The patients' mean change for CROM in degrees from pre to post after 3 SNAG treatments was 10° for flexion, 10° for extension, 5° for left rotation, and 10° for right rotation. Minimal Detectable Change (MDC) was achieved for flexion (9.6° improvement), and left rotation (7.6° improvement). The mean change of Numeric Pain Rating Scale (NPRS) score from initial evaluation to discharge was 4.74 ( $\pm 1.75$ ), statistically significant ( $p = .01$ ) and met the Minimal Clinically Important Difference (MCID) of 2. Additionally, NDI mean change ( $\pm$ SD) score from initial evaluation to discharge was 9.20 ( $\pm 7.0$ ). Although NDI was statistically significant ( $p = .01$ ) it did not meet the Minimal Clinically Important Difference (MCID) of 9.5% improvement. A Pearson's correlation was performed to examine the pre-post outcomes measures for NPRS, NDI and CROM. Cervical flexion ( $r = .882$ ,  $p = .048$ ) as well as cervical rotation to the left ( $r = .895$ ,  $p = .040$ ) demonstrated statistical significance for all patients and this effect was maintained during follow up. **Uniqueness:** Brian Mulligan's concept of Mobilization with Movement (MWM) specifically thoracic SNAGs, are clinically indicated to increase CROM and decrease pain in patients with MNP through the theorized correction of a "positional fault". At this time, no attempts have been made to examine the effect of thoracic SNAGs on pain and disability in patients classified with MNP utilizing a regional interdependent (RI) model. **Conclusions:** Identifying interventions for patients within the athletic population with MNP has been challenging as the majority of research efforts have focused on traumatic cervical spine injuries rather than the recalcitrant clinical problem of MNP. This case series highlights the utilization of the RI model and SNAGs to provide an increase in function and decrease in pain for the athletic population not suffering from traumatic cervical spine injury as SNAGs have been shown to be considerably safer and within the scope of the athletic trainer's clinical practice for the treatment of MNP.

### **Sequential Pulse Compression's Effect on Muscle Strength and Blood Flow in the Lower Extremity**

Brock KA, Games KE, Eberman LE, Laird R, Elmer D: Indiana State University, Terre Haute, IN; McDaniel College, Westminster, MD; Berry College, Mt. Berry, GA

**Context:** Exercise-induced muscle damage or delayed onset muscle soreness (DOMS) affects physically active individuals at all levels and can last for multiple days. These conditions may leave the individual with symptoms of soreness, inflammation, and decreased strength, which can affect his or her performance. One popular approach to reduce the intensity and duration of the symptoms associated with DOMS centers around the use of extremity compression. Common methods by which this is accomplished include massage, compression garments, intermittent pneumatic compression, and most recently, Sequential Pulse Compression (SPC). These treatments aim to increase blood flow to alleviate symptoms. However, to date, no research has examined if SPC alters total blood flow of the treatment area in physically active individuals. **Objective:** To examine the acute effects of a single treatment of SPC on blood flow compared to a control condition. **Design:** Single cohort, crossover design. **Setting:** University research laboratory **Patients or Other Participants:** Twenty-three participants (male = 15, female = 7; age =  $21.78 \pm 3.38$  years; height =  $179.76 \pm 11.97$  cm; mass =  $81.33 \pm 19.9$  kg) who reported exercising a minimum of 200 minutes per week volunteered for this study. Participants reported no current or history (past 12 months) of surgery, lower extremity injury, or cardiovascular, neurologic, or metabolic disease. **Interventions:** Participants reported to the University research laboratory on two separate occasions. Participants were randomly assigned to receive either the experimental condition or control condition during the first

session. The experimental condition included the application of SPC boots (NormaTec MVP Pro Leg Recovery System, MA, USA) for 30 minutes in a resting, supine position at a compression level of 80 mmHg in each cell. The control condition included 30 minutes of quiet lying in a resting, supine position. Baseline measures of total blood flow were collected following a 10-minute rest period and at the conclusion of the 30-minute experimental or control condition. No less than 24 hours after the conclusion of session one, participants returned to the research laboratory to complete the second session. **Main Outcome Measures:** Relative change in total blood flow between pre- and post-condition measurements as measured by near-infrared spectroscopy at the medial gastrocnemius muscle. **Results:** We found a significant difference between the change scores of the experimental condition compared to the control condition ( $t_{22} = 3.12$ ,  $P = 0.005$ ,  $d = 0.63$ ). SPC resulted in a total relative blood flow increase of  $4.45 \pm 6.85$  units greater than the control condition. **Conclusions:** These data suggest that a 30-minute treatment of SPC increases blood flow in the lower extremity, which may have implications for the treatment of exercise-induced muscle damage or DOMS. Therefore making a viable option in the management of DOMS.