**Context**

- Chronic Ankle Instability (CAI) is a frequent and serious repercussion of lateral ankle sprains.\(^1\)^\(^2\)^\(^3\)
- Individuals with a larger BMI may have a higher risk of developing CAI due to requiring more displacement to maintain postural balance.\(^1\)^\(^3\)
- Those with CAI have also been shown to have differences in center of pressure (COP) while maintaining postural stability compared to healthy controls.\(^3\) However, no analysis has been performed to determine if body mass index (BMI) has an effect on the COP of individuals with CAI.

**Objective**

- To identify differences between COP and BMI among control, coper, and CAI participants and examine the relationship between COP and BMI across the groups.

**Participants**

- 45 subjects participated in this study (Table 1).
- 15 were healthy controls without history of ankle injury. 15 were coper’s with a history of ankle injury but no reported instability, and 15 had self-reported CAI.

**Interventions**

- Participants completed the Cumberland Ankle Instability Tool (CAIT) and an ankle history questionnaire prior to testing.
- All participants performed a single-leg balance test on a Neurocom Balance Master System 8.4 force platform (100Hz) for 60 seconds.

**Main Outcome Measures**

- BMI, center of pressure range (COP-R) and velocity (COP-V) in the anterior-posterior (AP) and medial-lateral (ML) directions were calculated.
- Differences (\(p<0.05\)) in demographic data and COP measures among groups were assessed via an analysis of variance (ANOVA).

**Results**

- There were no significant differences in BMI or COP variables across groups.
- BMI was significantly, moderately correlated with deviations in COP-R ML in individuals with CAI (\(r=0.451, p=0.05\)).

<table>
<thead>
<tr>
<th>Groups</th>
<th>BMI (kg/m(^2))</th>
<th>COP-R (mm)</th>
<th>COP-V (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ML</td>
<td>AP</td>
<td>ML</td>
</tr>
<tr>
<td>Control</td>
<td>25.5±3.9</td>
<td>30.16±7.1</td>
<td>37.3±8.7</td>
</tr>
<tr>
<td>Coper</td>
<td>23.9±2.7</td>
<td>30.8±6.1</td>
<td>41.6±11.7</td>
</tr>
<tr>
<td>CAI</td>
<td>24.2±3.9</td>
<td>30.8±5.0*</td>
<td>42.1±13.9</td>
</tr>
</tbody>
</table>

**Conclusion**

- A moderate correlation existed between BMI and ML COP-R postural control in those with CAI. This correlation did not exist in control and in coper groups.
- Thus, BMI may be a moderator of poor postural stability, potentially compounding deficiencies frequently observed in those with CAI.
- Further research is necessary in order to fully explore this relationship between BMI and COP to identify if reducing BMI improves outcomes in individuals with self-reported CAI.

**References**