POSTURAL STABILITY PERFORMANCE IN YOUNG COLLEGE STUDENTS WITH THE BIODEX STABILITY SYSTEM

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INTRODUCTION: Postural stability has been defined as the ability to maintain an upright posture within the base of support and is considered to be an important indicator of musculoskeletal health and physical performance. This study examined the postural stability in 19 to 21 years old college students using the Biodex Balance System (BBS).

METHOD: Forty-one young, healthy college students (11 males, 40 females; mean age 19.6 ± 0.8 years; mean height 162.6 ± 7.4 cm; and mean body mass 54.4 ± 8.6 kg) with no previous pathology in the lower extremities were study participants. After a brief warm-up exercise and a practice session on the BSS, subjects were tested without footwear and completed three, 20 seconds trials attempting to maintain their balance at stability level eight (Lv 8), the static, and stability level two (Lv 2), the dynamic. Overall Stability Index (OSI), Anterior/Posterior Index (API), Medial/Lateral Index (MLI) were obtained under 3 conditions: bi-lateral stance (BS), dominant single leg stance (DS), and non-dominant single leg stance (NS) and the order of the condition was randomized. A one-way analysis of variance with repeated measures was employed to establish statistical mean difference between the three test conditions at both stability levels.

RESULTS: The means and standard deviations of three test conditions as shown in Table 1. During the Lv 8 condition, the OSI, API, and MLI were significantly smaller (p<.05) between the BS and DS, NS, respectively. However, during the Lv 2 condition, only the OSI and MLI were significantly smaller (p<.05) between the BS and DS, NS, respectively.

Table 1. The means and standard deviations (M±S.D.) of three test conditions

<table>
<thead>
<tr>
<th></th>
<th>Bi-lateral</th>
<th>Dominant</th>
<th>Non-Dominant</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSI</td>
<td>0.7±0.3*</td>
<td>1.0±0.5</td>
<td>1.0±0.5</td>
</tr>
<tr>
<td>API</td>
<td>0.5±0.2*</td>
<td>0.7±0.4</td>
<td>0.7±0.4</td>
</tr>
<tr>
<td>MLI</td>
<td>0.4±0.2*</td>
<td>1.2±0.5</td>
<td>1.3±0.6</td>
</tr>
</tbody>
</table>

* represent significant difference between BS and DS, BS and NS, respectively.

DISCUSSION: The static and dynamic postural stability were significantly better on BS than DS and NS. In addition, no significant difference was found on API between BS, DS, and NS during level 2 indicating a different postural control on anterior and posterior direction during unstable stance.

CONCLUSION: This study demonstrated different postural control strategies might be used during different postural task. The current data are relevant for research in other domains within the clinical field, like ankle injury prevention, developmental coordination disorder and fall prevalence.

REFERENCES