The Relationship of Core Stability to Static and Dynamic Balance
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Introduction
- The ability to maintain balance is prerequisite to many functional activities. Static balance is the attempt to keep the center of pressure stable and unmoving within the base of support. Dynamic balance is the capability of remaining steady while completing a motion task.
- Core stability may be a contributing factor to static and dynamic balance.

Purpose
- To examine the relationship of core stability to static and dynamic balance in recreationally active young adult men and women.

Methods
- Institutional review board approval was received and all participants signed an informed consent.
- Static and dynamic balance was tested on the non-dominant leg in 30 recreationally active individuals (males \( n = 15 \); females \( n = 15 \)) with ages ranging from 18-23 years.
- Static balance was tested by 3 trials of the Balance Error Scoring System (BESS).
- Dynamic balance was tested by 3 trials of the Star Excursion Balance Test (SEBT) in both the medial and lateral direction with reach distance normalized to leg length.
- The duration of a single, maximal effort side plank tested frontal plane stability on the same side as the subject’s non-dominant leg.

Table 1. Mean scores; results of Pearson correlation for side plank time and SEBT medial reach distance, SEBT lateral reach distance, and number of deviations for BESS.

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>Pearson ( r ) (correlation with side plank time)</th>
<th>( p ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial (meters)*</td>
<td>1.075 (± 0.0579)</td>
<td>0.233</td>
<td>0.215</td>
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<tr>
<td>Lateral (meters)*</td>
<td>0.950 (± 0.0713)</td>
<td>0.151</td>
<td>0.425</td>
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<tr>
<td>BESS (# of deviations)</td>
<td>4.62 (± 1.14)</td>
<td>-0.185</td>
<td>0.329</td>
</tr>
<tr>
<td>Side Plank (sec)</td>
<td>97.64 (± 31.04)</td>
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Figure 1. Number of deviations on the BESS versus side plank time
Figure 2. Medial and lateral SEBT reach distances versus side plank time

Conclusions
- There was no significant correlation between the time the side plank was held (core stability) and either of the balance tests (static and dynamic balance).
- Only a single static measure of core stability was evaluated, taken in the frontal plane.
- A very heterogeneous population was used; many confounding variables were present including body type, physical fitness, and sports specific training.
- The results indicate that there is not a significant relationship between core stability and either static or dynamic balance in recreationally active young adults.

References

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