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Validation of Modified Functional Movement Screen (MFMS) in NCAA DIII Female Soccer Players

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Abstract

Background: The Functional Movement Screen (FMS) is comprised of seven tests to identify compensatory movement patterns that may increase injury risk. A modified FMS (MFMS) was created by Augsburg Athletic Trainers to improve screening efficiency. It included three original FMS tests: shoulder mobility (SM), active straight leg raise (ASLR), trunk stability push-up, (TSPU) and a newly added test; the vertical drop jump (VDJ), all scored on a simplified 0-2 scale.

Objective: This study aimed to validate the MFMS for DIII female soccer players.

Methods: 16 NCAA DIII soccer players and 20 non-athlete controls were recruited and completed two trials of FMS and MFMS. Reliability was calculated as Pearson Product Moment. Concurrent validity was calculated between FMS and MFMS score using R Statistical Software.

Results: Mean age of soccer group was 21 (SD=1.37) and control 21.05 (SD=1.61). Mean FMS score for soccer group was 14.38 (SD=1.54) and control 13.35 (SD=2.39). Mean MFMS score for soccer was 5.62 (SD=0.96) and control 4.95 (SD=0.69). Soccer scores for the first MFMS trial were significantly larger than controls (p=0.02). MFMS reliability coefficient was 0.99 and MFMS was 0.88.

Discussion: There were moderate positive correlations between FMS and MFMS for the soccer group (r=0.51) and for controls (r=0.46), but they were not large enough to validate the MFMS. When the MFMS was rescored on the original 0-3 scale (excluding VDJ) it was valid for both groups (soccer r = 0.79, controls r = 0.85), suggesting that the modified scale was the reason for the lack of validity.

Conclusion: The MFMS is not valid, suggesting potential issues with the new scoring system.

Table 1. Summary of Results

<table>
<thead>
<tr>
<th>Test</th>
<th>Means</th>
<th>Soccer</th>
<th>Controls</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>21 ± 1.37</td>
<td>21.05 ± 1.61</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>FMS Trial 1</td>
<td>14.38 ± 1.54</td>
<td>13.35 ± 2.39</td>
<td>-7.2</td>
<td></td>
</tr>
<tr>
<td>FMS Trial 2</td>
<td>14.44 ± 1.26</td>
<td>13.35 ± 2.39</td>
<td>-7.5</td>
<td></td>
</tr>
<tr>
<td>MFMS Trial 1</td>
<td>5.62 ± 0.96*</td>
<td>4.95 ± 0.69</td>
<td>-11.9</td>
<td></td>
</tr>
<tr>
<td>MFMS Trial 2</td>
<td>5.5 ± 0.97</td>
<td>4.95 ± 0.69</td>
<td>-10</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Validity for soccer (r=0.54)  Figure 2. Validity for controls (r=0.46)

Discussion

Trial 1 of MFMS for the soccer group was significantly higher than trial 2 by 2.12% (p = 0.02). Given that the soccer players participated in drills and lifts for other studies between trials, this MFMS could be sensitive to fatigue status. When the MFMS was rescored on the 0-3 scale (excluding VDJ) it was valid for both groups (soccer r = 0.79, controls r = 0.85), suggesting that the modified scale was the reason for the lack of validity.

Conclusion

This version of MFMS was not valid when rating on a scale from 0-2 but is valid when rating on a scale from 0-3, suggesting issues with the new scale.

References


