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The Functional Movement Screen as a Predictor of Tactical Athlete Performance

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The Functional Movement Screen as a Predictor of Tactical Athlete Performance

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Introduction

“The Functional Movement Screen as a Predictor of Police Occupational Task Performance”

Aim
Investigate the relationship between movement quality and occupational task performance

Question
Can the Functional Movement Screen predict occupational performance in police recruits?
Procedures

• As part of their training process, 173 police recruits completed 4 occupational measures
• Police recruits were then divided into tutor groups by College staff who were blinded to the study
• The research team then randomly selected two tutor groups, to complete the FMS
• n= 53 police recruits

Exclusion criteria

• Any recruit who did not give informed consent
• Suffering from a current injury
Methods

**Functional Movement Screen** (Cook et al. 2006)

- Evaluation tool used to assess the fundamental movement patterns of an individual in a dynamic and functional capacity

- Movement patterns require elements of muscle strength, flexibility, range of motion, coordination, balance, and proprioception for successful completion

- Identifies an individual’s functional limitations and / or asymmetries
Functional Movement Screen (Cook et al. 2006)

- 7 movement patterns include:
  - Overhead squat, hurdle step, inline lunge, shoulder mobility, active straight leg raise, push-up, and rotary stability

- Each movement pattern is scored on a 0-3 ordinal scale

- Overall scores can range from 0 to 21

- Previous studies have suggested that low FMS scores of \( \leq 14 \) have an association with musculoskeletal injuries in athletic (Chorba, et al. & Kiesel, et al.), general (Schneiders, et al. & Perry, et al.) and tactical (O’Conner, et al. & Lisman, et al.) populations
Methods

Occupational Measures

• Marksmanship
  – Standard police Z-4 target with a 9mm Glock pistol firing a total of 30 scoring rounds over several serials

• Defense Tactics
  – Restraining belligerent assailants and handcuffing

• Baton Strikes
  – Baton strikes to precise areas of designated static targets

• Tactical Options
  – Choose correct application of force to control a situation
Results

- FMS scores ranged from 8 to 18 points (mean=13.9 ± 1.9 points)
- 11% (n=6) Failed the Marksmanship & Baton Strike assessments
- 21% (n=11) Failed Defensive Tactics
- 36% (n=19) Failed Tactical Options

Table 1: Descriptive statistics for occupational measures

<table>
<thead>
<tr>
<th>Variables</th>
<th>n = Participants Pass Occupational Measure</th>
<th>FMS Mean (Points)</th>
<th>n = Participants Fail Occupational Measure</th>
<th>FMS Mean (Points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marksmanship</td>
<td>47</td>
<td>14.02 ± 1.994</td>
<td>6</td>
<td>13.50 ± 2.074</td>
</tr>
<tr>
<td>Defensive tactics</td>
<td>42</td>
<td>14.07 ± 2.005</td>
<td>11</td>
<td>13.55 ± 1.968</td>
</tr>
<tr>
<td>Baton strikes</td>
<td>47</td>
<td>13.96 ± 2.048</td>
<td>6</td>
<td>13.83 ± 1.602</td>
</tr>
<tr>
<td>Tactical Options</td>
<td>34</td>
<td>14.32 ± 1.718</td>
<td>19</td>
<td>13.32 ± 2.311</td>
</tr>
</tbody>
</table>

*p = 0.077
Results

Post hoc analysis

- Scaled FMS scores were converted to categorical pass (14+) or fail (<14) using scoring system associated with injury prediction

<table>
<thead>
<tr>
<th>Variables</th>
<th>n = Participants Pass FMS</th>
<th>n = Participants Fail FMS</th>
<th>Chi Square tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>$\chi^2$</td>
</tr>
<tr>
<td>Marksmanship</td>
<td>47</td>
<td>6</td>
<td>-0.589</td>
</tr>
<tr>
<td>Defensive tactics</td>
<td>42</td>
<td>11</td>
<td>-0.444</td>
</tr>
<tr>
<td>Baton strikes</td>
<td>47</td>
<td>6</td>
<td>-0.019</td>
</tr>
<tr>
<td>Tactical Options</td>
<td>34</td>
<td>19</td>
<td>-3.627</td>
</tr>
</tbody>
</table>

- No significant relationship was found between the FMS scores and the Marksmanship performance, Defensive tactics assessment or Baton Strikes assessment

- Tactical Options assessment approached a significant relationship
Results
The results of our study indicate a relationship was found between FMS scores and an occupational measure (Tactical Options assessment) of police recruits.

**Findings are supported by 3 studies**
- Chapman, et al. 2013
- Petersen, et al. 2007
• Police occupation requires completion of dynamic tasks in which poor movements may lead to decreased performance and injury

• The current study suggests that the FMS may predict performance of the Tactical Options assessment

• Further research is required to advance the findings of this study within a larger cohort of police recruits
References


References

References

• SPSS Inc.: Statistical Package for the Social Sciences (Version 19.0) [computer software]. IBM Corporation; 2010.
• Images: Approved by NSW police for media release