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Bock, Claire; Orr, Rob Marc; Stierli, Michael

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The Functional Movement Screen as a Predictor of Tactical Athlete Performance

1Claire Bock, 2Michael Stierli, 2Ben Hinton, 1Rob Orr

1Bond University  2NSW Police Force
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
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
Methods

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 ≤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</th>
<th>FMS Mean (Points)</th>
<th>n = Participants</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
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</th>
<th>Chi Square tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pass FMS</td>
<td>Fail FMS</td>
</tr>
<tr>
<td>Marksmanship</td>
<td>47</td>
<td>6</td>
</tr>
<tr>
<td>Defensive tactics</td>
<td>42</td>
<td>11</td>
</tr>
<tr>
<td>Baton strikes</td>
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<td>6</td>
</tr>
<tr>
<td>Tactical Options</td>
<td>34</td>
<td>19</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

![Box plot showing FMS total score by tactical options (0=Fail, 1=Pass).]
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.

Images: Approved by NSW Police
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