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Profiling the incidents and injuries of part-time and full-time soldiers in the Australian army

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Profiling the Incidents and Injuries of Part-time and Full-time Soldiers in the Australian Army

Dylan MacDonald\textsuperscript{2} & Rod Pope\textsuperscript{1} & Rob Orr\textsuperscript{1}

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Background

- The Australian Army is comprised of both part-time and full-time personnel

  (ADF Health Status Report, 2000; Defence White Paper 2013)

- However, unlike full-time regular soldiers, part-time soldiers (or ‘reservists’) typically have primary employment outside the military and only become full-time soldiers when called upon to participate in training exercises and local or international military operations

  (Williams, 2005)
Background

• With active service of this nature becoming increasingly more frequent in recent years, these part-time personnel are no longer considered to be ‘back up’ personnel, but rather to be integral to the successful functioning of the full-time forces

(Smith & Jans, 2011)
Background

- With operational deployments increasing, part-time soldiers now contribute to around 10% of Australian and UK forces
  
  (Smith & Jans, 2011; Dandeker et al., 2011)

- In the US, reservists make up approximately half of personnel actually fighting in current conflicts

  (Moore & Barnett, 2013)
Background

• Strategically, the ADF Defence White Paper has acknowledged the importance of integrating ARES and ARA personnel under the government approved plan, BEERSHEBA

  (Defence White Paper 2013)

• For this reason, the ability of ARES personnel to effectively work and keep pace with their ARA peers, without experiencing excessive numbers of work health and safety incidents or injuries, is vital

  (Moore & Barnett, 2013)
Background

- Ultimately, work health and safety incidents and resulting injuries affect both populations

  (ADF Health Status Report, 2000; Defence White Paper 2013)

- Despite the importance of this Reserve capability, preliminary research conducted by the ADF in 2000, based on limited data, suggested that part-time ADF personnel were three times more likely to report injuries that had occurred during physical and military training than full-time personnel

  (ADF Health Status Report, 2000)
Aim

- To profile the incidents & injuries reported in Part-time compared to Full-time soldiers serving in the Australian Army

This research was supported by a grant from the Defence Health Foundation
Methods

• Retrospective cohort study, covering 01 Jul 2012 – 30 Jun 2014
• Incident data for ARES & ARA extracted from WHSCAR database by system administrators & made non-identifiable
• Inclusion Criteria:
  – Incident or injury sustained by Part-time or Full-time personnel
  – Incident or injury occurred during 01 July 2012- 30 June 2014
• Exclusion Criteria:
  – Foreign defence service on secondment
  – Missing data
Methods

- Population sizes ascertained from annual Defence Agency Resources & Planned Performance reports
- Total annual numbers of ARES days served provided by AHQ
Methods

• Data analysis:
  – Comparison of the types, source & mechanisms of these incidents
  – Frequency distributions of key incidents
  – Compare Part-time vs. Full-time incidents & injuries
  – Incidence & injury rates Year One vs. Year Two
Methods

• Ethics approval from ADHREC (LERP14-024) & BUHREC (RO1907)
• Abstract approved for presentation by JHC (150707)
## Results

**ARES and ARA Population Sizes 2012-2014**

<table>
<thead>
<tr>
<th></th>
<th>ARES</th>
<th>ARA</th>
<th>Whole of Army</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 - 2013</td>
<td>14867</td>
<td>28955</td>
<td>43822</td>
</tr>
<tr>
<td>2013 - 2014</td>
<td>15200</td>
<td>29847</td>
<td>45047</td>
</tr>
<tr>
<td>Mean pop. 2012-14</td>
<td>15034</td>
<td>29401</td>
<td>44435</td>
</tr>
</tbody>
</table>
Results

Total No. of Incidents

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-time</td>
<td>802</td>
<td>789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ful-time</td>
<td>6831</td>
<td>6643</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results

Total No. of Injuries

Year 1 | Year 2 | Year 1 | Year 2
--- | --- | --- | ---
Part-time | 708 | 726 | 4775 | 5054
Full-time | | | |
Results - Incidence rates, by year and Service type

<table>
<thead>
<tr>
<th>Years</th>
<th>ARES</th>
<th>ARA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-2013 (1 year)</td>
<td>30.84</td>
<td>16.49</td>
</tr>
<tr>
<td>2013-2014 (1 year)</td>
<td>30.19</td>
<td>16.93</td>
</tr>
<tr>
<td>2012-2014 (2 years)</td>
<td>30.50</td>
<td>16.72</td>
</tr>
</tbody>
</table>

Injuries per 100 person-years of active service
Results

No. of Incidents Part-time

- No Personal Injury
- Serious Injury or Illness
- Dangerous Incident
- Near Miss
- Fatality

Year 1 vs Year 2

No. of Incidents Full-time

- No Personal Injury
- Serious Injury or Illness
- Dangerous Incident
- Near Miss
- Fatality

Year 1 vs Year 2

Defence Health Foundation

BOND UNIVERSITY TACTICAL RESEARCH UNIT
## Results - Body locations affected by reported WHS incidents, by Service type

<table>
<thead>
<tr>
<th>Body location</th>
<th>ARES</th>
<th>ARA</th>
<th>Whole of Army</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower limb</td>
<td>36.5%</td>
<td>30.8%</td>
<td>31.4%</td>
</tr>
<tr>
<td>Trunk and Pelvis</td>
<td>23.4%</td>
<td>21.2%</td>
<td>21.4%</td>
</tr>
<tr>
<td>Upper limb</td>
<td>14.6%</td>
<td>9.5%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Systemic</td>
<td>10.6%</td>
<td>22.8%</td>
<td>21.5%</td>
</tr>
<tr>
<td>Head</td>
<td>8.3%</td>
<td>7.8%</td>
<td>7.9%</td>
</tr>
<tr>
<td>Other</td>
<td>6.6%</td>
<td>7.9%</td>
<td>7.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>
## Results - Mechanisms of injuries resulting from reported WHS incidents, by Service type

<table>
<thead>
<tr>
<th>Mechanism of injury</th>
<th>ARES</th>
<th>ARA</th>
<th>Whole of Army</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular stress while lifting, carrying or donning equipment</td>
<td>34.8%</td>
<td>31.6%</td>
<td>31.9%</td>
</tr>
<tr>
<td>Fall</td>
<td>20.2%</td>
<td>14.9%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Contact with moving or stationary object</td>
<td>12.1%</td>
<td>10.3%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Chemical substance</td>
<td>5.5%</td>
<td>18.1%</td>
<td>16.8%</td>
</tr>
<tr>
<td>Vehicle accident</td>
<td>3.0%</td>
<td>3.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Insect and spider bites and stings</td>
<td>2.3%</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Contact with, or exposure to, biological factors of unknown origin</td>
<td>2.1%</td>
<td>2.3%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Contact with hot objects</td>
<td>1.9%</td>
<td>0.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Exposure to environmental heat</td>
<td>1.9%</td>
<td>1.6%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Rubbing and chafing</td>
<td>1.1%</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Long term exposure to sounds</td>
<td>0.2%</td>
<td>1.6%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Other and multiple mechanisms of injury</td>
<td>13.8%</td>
<td>13.8%</td>
<td>13.8%</td>
</tr>
<tr>
<td>Unspecified mechanisms of injury</td>
<td>1.1%</td>
<td>1.1%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Results - Activities during which reported WHS incidents occurred, by Service type
Discussion

• The lower limbs were the leading body location affected
  – ARES slightly higher than ARA when compared to the regular army population.
  – Lower limbs in particular have been previously found to be the leading body location of injury in military personnel (Knapik et al., 2001; Kaufman et al., 2000)

• Lower limb injuries across Army in this study = 31.4% & the Australian Defence Health Status Report = 31.5%
Discussion

- The trunk (ARES = 23.4%: ARA 21.2%) next highest
- This result differs from the findings in the Australian Defence Health Status report in 2000 which found the upper limbs to be the next most commonly reported body location of injury in the Australian Defence Force as a whole (21.7%), followed by the trunk (14.8%).
Discussion

• Both groups had similar PT percentages
• Notably higher sporting injuries in ARA (ARES = 2.5%: ARA = 8.9%)
• Combat tasks (inc patrolling) and manual handling were other activities for which differences between the two populations existed. (ARES = 29.6%: ARA = 13.8%)
Concluding remarks

• ARES personnel would benefit from combat task orientated conditioning (e.g. load carriage)

• Based on previous literature, this conditioning should preferably occur on a weekly basis (Orr et al., 2010; Knapick et al., 2012)

• While wearing actual combat loads in public would not be suitable, encouraging and facilitating participation in orienteering, rogaining and hiking clubs may provide a means of providing some load carriage relevant conditioning stimulus
Concluding remarks

• Detailed literature in this area is lacking and an increased focus needs to be placed on the injury prevention, physical conditioning and assessment of ARES personnel if they are to be safely employed at a level commensurate with ARA personnel.
Acknowledgement

• The Defence Health Foundation
References

References


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