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Investigating the Routine Dispatch Tasks Performed by Police Officers

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Received: 12 September 2020; Accepted: 7 December 2020; Published: 10 December 2020

Abstract: Police officers perform a variety of physical tasks that can range from deskwork to chasing down fleeing suspects on foot. If not sufficiently prepared these tasks can lead to an increased risk of injury or task failure. The aim of this study was to profile the routine dispatch tasks performed by the Australian law enforcement officers of a state police force by frequency and duration. Participants for this study (n = 53: male n = 43, age = 33.5 ± 7.7 years, years of service = 7.2 ± 6.4 years: Female n = 10; age = 31.6 ± 9.1 years, years of service = 7.1 ± 6.1 years) were drawn from ten different police stations. Data reporting the tasks attended, their priorities, and their durations were gathered from a computer-aided dispatch system. Data from 77 shifts (3.8 ± 4.0 tasks/shift) captured 292 tasks attended (29.2 ± 17.5 task per station). 'Check bona fides' (checking an individual's identification; 27%) was the most frequently occurring task followed by attending a domestic incident (14%). The longest task was attending an accident (mean = 43.50 ± 78.85 min, range 2–249 min). The results of this study suggest that police tasks are highly varied in terms of type and duration and these may differ between regions. An understanding of the dispatch tasks police officers are required to attend can inform injury mitigation and return-to-work rehabilitation practices.

Keywords: law enforcement; occupational health; duties; tactical; return-to-work; rehabilitation

1. Introduction

Police officers perform a variety of complex physical tasks as part of their law enforcement duties, each with their own unique physical demands [1–13]. These tasks can range from deskwork to chasing down fleeing suspects on foot [2,6,8,9], and require the maintenance of high levels of physical conditioning and skills to ensure adequate occupational performance. Performing these routine tasks can expose police officers to an increased risk of musculoskeletal injuries (such as lower back pain) and, over a period of time, chronic conditions such as cardiovascular disease (for example, hypertension and atherosclerosis) [1,6–8,11,14–23].

Research by Anderson et al. [1] found that 86% of Canadian municipal police officers reported intermittent back pain in their careers, with 10% having consistent back pain. The injury incidence within this population was 1.3 injuries per year [1]. Apart from musculoskeletal conditions, evidence also suggests that police officers are at an increased risk of cardiovascular disease [10,12,24,25]. In addition, recent research by Can et al. [24] in their study of 172 male United States police officers found that 42% were obese and at risk of cardiovascular disease. Similarly, a study by Thayyil et al. [22] found that 41% of the 900 United States police officers investigated were hypertensive, 75% had increased

cholesterol levels and 65% were classified as clinically obese. These three factors (hypertension, increased cholesterol levels and obesity) are well known for their association with an increased risk of cardiovascular disease [22]. In order to develop a better understanding of the potential links between the occupational roles of police officers and the musculoskeletal and cardiovascular disorders they suffer, there is a need to accurately account for the tasks typically performed by police officers as part of their routine duties, including those that occur when they are dispatched to an area.

Research regarding police tasks has tended to focus on the general nature of the physical activities performed and the frequency with which these types and levels of physical activities are undertaken by police officers. The types of occupationally relevant physical activities examined include activities such as 'running, dragging, walking, sitting, wrestling, bending, squatting, carrying and jumping' [2–6,9]. For example, a survey by Anderson and colleagues [2] found that standing was considered to be 'very necessary' by police respondents, while a study by McKinnon and colleagues [9] found that 45% of a police officer's typical day was spent doing activities while seated in a police vehicle. However, while this information is valuable, it does not actually define the specific police tasks that are routinely conducted, and the proportions of officer time spent undertaking each specific type of occupational tasks. For example, it is unclear exactly what occupational tasks police undertake in the 45% of time they are reported to spend in their vehicles [9] or in the standing positions police say are 'very necessary' [2]. This information is critical to enable the development of specific fitness testing and physical conditioning strategies which have face validity. For example, research by Decker et al. [26] has shown that police officers while driving with their sirens on can reach heart rates exceeding their predicted maximum. As such, while officers would be sitting while driving, the physiological and cardiovascular stress on the officer would be very different to sitting at a desk doing paperwork [27]. The aim of this study was to profile the dispatch tasks routinely performed by a group of general-duties state police officers operating in Australia, during regular shifts.

2. Materials and Methods

2.1. Study Design and Participants

A cross sectional study design was used to investigate the operational dispatch tasks routinely performed by uniformed police officers. Data covering police shifts during the research period were extracted retrospectively from the computer-aided dispatch (CAD) system, which captures the specific types of occupational tasks attended by police officers whilst on duty, as well as each task's priority and duration. The required data were extracted by administrators of the CAD system and provided to the research team in a non-identifiable form. Ethics approval for the study was given by the Bond University Human Research Ethics Committee (RO 1893).

The 53 police officers included in the study, recruited as a sample of convenience, each completed between two and four work shifts (2-day shifts/2-night shifts). These police officers (age (mean ± SD) = 33.5 ± 7.7 years; years of service = 7.2 ± 6.4 years; height = 177.0 ± 8.2 cm; weight = 84.7 ± 14.7 kg) were from ten different police stations of an Australian state law enforcement agency. The sample of officers included 10 female officers (age = 31.6 ± 9.1 years; years of service = 7.1± 6.1 years; height = 166.5 ± 5.9 cm; weight = 66.6 ± 5.9 kg) and 43 male officers (age = 40.0 ± 7.4 years; years of service = 7.3 ± 6.5 years; height = 180.5 ± 6.2 cm; weight = 88.9 ± 11.9 kg). The police stations (and subsequent geographically based local area commands) in which these officers operated were selected through purposive sampling to cover as much of the state as possible, ensuring they were stations that operated over a complete 24 h period with at least two car crews covering first response.

2.2. Data Collection and Analysis

Data were extracted from the CAD system and made non-identifiable by the system's administrators, before being provided to the research team for analysis. The data included, for each task attended by the officers, the nature, duration (arrival time and completion time) and priority of

that task. When a task was called in, the dispatcher routinely coded and recorded that task by priority. The priority assigned was determined based on the urgency and nature of the incident and indicated by a number on a scale of 1 to 4, with a Priority 1 task being the most urgent and Priority 4 the least urgent task, noting that a single job task could vary in priority depending on its level of urgency (e.g., a domestic violence incident could be classified as a priority 1 or 4 task).

The CAD data were imported into Microsoft Excel (v.2011, Microsoft Corporation, Redmond, WA, USA) and summarized by station, task, priority, and duration. Basic demographic details of the participants, which did not allow for their identification, were also provided, to enable the researchers to derive summary statistics to describe the participants, as a group. Descriptive statistics (means, standard deviations and frequencies) were calculated to profile the participants, as a group, the tasks attended and the task durations. Three geographic contexts were established to facilitate differences in task profiles between these contexts to be assessed. These were metro (city), urban (suburbs surrounding the city) and rural (towns that were separated from other cities, urban areas, and other towns by distance) contexts. These classifications were based on pre-established local area commands of the state police agency. A Fisher's exact test was used to determine differences in dispatch priority across the geographical contexts with alpha levels set at 0.05. Total and mean numbers of tasks attended by participant officers from each police station in each geographical context were calculated, along with the mean numbers of tasks attended in each shift by participant officers located in each geographic context. Task types were ordered by frequency of occurrence in the data, and the top 15 most frequently reported tasks were identified for analysis of mean task durations and of the geographic contexts in which they most occurred.

3. Results

Six of the selected police stations were categorized as rural stations, two were urban stations and two were metro stations. Across all of these police stations, data were extracted for a total of 77 shifts attended by participant officers, equating to a mean of 3.8 ± 4.0 tasks/shift per station. From the six rural police stations, data from 43 shifts (mean 4.6 ± 3.3 tasks/shift per rural station) were extracted. From the two urban and two metro stations, data from 20 shifts (mean 2.7 ± 2.4 tasks/shift per urban station) and 14 shifts (2.9 ± 2.8 tasks/shift per metro station) were extracted, respectively.

The CAD system registered a total of 292 tasks (mean 29.2 ± 17.5 tasks per station) that were attended by the officer participants over the study period. Of these, 199 were undertaken by participants from the six rural stations, 54 by those from the two urban stations, and 39 by those from the two metro stations. It is important to note that these were the tasks attended by officer participants only, for whom data were extracted, and that they do not include tasks undertaken by non-participant officers at the same stations. As such, these figures are not indicative of the total workload at each station or in each geographical context. The distribution of tasks by priority level and geographic context is shown in Table 1, with no statistical difference between geographical context and dispatch priority ($p = 0.143$, Fisher's exact test).

Table 1. Numbers of tasks by priority level and geographic context.

Context	Priority 1	Priority 2	Priority 3	Priority 4	Total
Metro	0	6	32	1	39
Rural	0	35	163	1	199
Urban	0	9	42	3	54
Total	0	50	237	5	292

A total of 35 task types were recorded over the collection period. The most common task type was 'check bona fides' (checking an individual's identification; $n = 80$; 27.4%) with other common tasks including attending 'a domestic incident' ($n = 41$; 14.0%), 'concern for welfare' ($n = 28$; 9.6%) or 'motor vehicle accident' ($n = 25$; 8.6%). There were 16 different tasks, for which only one or two

instances were recorded during the period of data collection. Examples of these included 'brawl' (n = 2; 0.7%), 'child locked in vehicle' (n = 2; 0.7%), 'missing persons' (n = 1; 0.3%) and 'hold up alarm' (n = 1; 0.3%). The top 15 tasks, by frequency, are shown in Table 2.

Table 2. Top 15 tasks attended by police officers during shifts, by frequency, as reported on the computor added dispatch (CAD) system.

Rank	Task	General Description	Frequency	% of Total Tasks
1	Check Bona Fides	Checking the identify/activity of a person or group of people	80	27.4
2	Domestic	A domestic dispute/incident	41	14.0
3	Concern for Welfare	Checking on the welfare of a person following a report from a concerned person	28	9.6
4	Accident	Attending to a vehicle/industrial accident	25	8.6
5	Break and Enter	A property has been forcibly entered without consent and the offender may/or may not still be on the premises	17	5.8
6	Arrest	Effecting an arrest on an offender	10	3.4
7	Malicious Damage	Unlawful damage to property	8	2.7
8	Stealing	Attending to a report of a general theft where the offender may/or may not be on the premises	8	2.7
9	Neighbour Dispute	A dispute/argument between neighbors	6	2.1
10	Noise Complaint	A complain has been made about excessive noise from a dwelling/venue	6	2.1
11	Stealing from Motorized Vehicle	Theft exclusively from a motor vehicle	6	2.1
12	Assault	A person/group of people have been assaulted	5	1.7
13	Person on Premises	An unknown person has been reported on the premises of a property	5	1.7
14	Shoplifter	A stealing incident from a retail premises has been reported and the offender may/or may not be present	5	1.7
15	Storm/Tempest	Danger to the population due to weather events and results of ensuing damage (e.g., cordon off an area due to fallen wires/trees, etc.).	5	1.7

Of all tasks, effecting an arrest had the highest mean duration of any task recorded (41:50 ± 78.85 min), although the duration of this task did vary considerably, ranging from 2 min to 249 min. Several tasks lasted around 1 min in length, remembering that this duration time was based on the time between arrival at the scene and reporting the task as having been resolved on the CAD system, and thus did not include travel time. A breakdown of the top 15 tasks by mean duration is shown in Table 3.

Table 3. Top 15 tasks, by mean duration, as reported on the CAD system.

Rank	Task	General Description	Freq	Duration (mins)	
				Mean ± SD	Range
1	Arrest	Effecting an arrest on an offender.	10	43.50 ± 78.85	2–249
2	Accident	Attending to a vehicle/industrial accident	25	37.84 ± 28.69	11–127
3	Stealing	Attending to a report of a general theft where the offender may/or may not be on the premises	8	36.38 ± 17.43	18–63
4	Person on Premises	An unknown person has been reported on the premises of a property	5	26.80 ± 17.12	8–52
5	Steal from Motorized Vehicle	Theft exclusively from a motor vehicle	6	24.83 ± 17.36	7–58
6	Driving Complaint	Attending to a location in relation to the manner with which a vehicle has been driven	4	24.50 ± 14.82	12–44
7	Domestic	A domestic dispute/incident	41	23.12 ± 20.83	2–94
8	Hoodlums	Attending to a report of the intimidating manner of a congregated group of people	3	21.33 ± 17.79	1–34
9	Neighbour Dispute	A dispute/argument between neighbors	6	20.66 ± 11.67	5–36
10	Shoplifter	A stealing incident from a retail premises has been reported and the offender may/or may not be present	5	20.20 ± 9.68	4–29
11	Intoxicated Person	Person acting under the influence of alcohol or narcotics	4	20.00 ± 28.58	1–62
12	Break and Enter	A property has been forcibly entered without consent and the offender may/or may not still be on the premises	17	20.00 ± 17.92	1–67
13	Check Bona Fides	Checking the identify/activity of a person or group of people	80	15.33 ± 16.40	1–97
14	Concern for Welfare	Checking on the welfare of a person following a report from a concerned person	28	15.31 ± 16.78	1–64
15	Malicious	Unlawful damage to property	8	13.50 ± 10.26	1–32

4. Discussion

The aim of this study was to profile the routine daily dispatch tasks typically performed by police officers of an Australian state police force during regular shifts over a 14-week time period. The results of the study demonstrate that officers were exposed to a wide variety of tasks in terms of type and total duration. The data also identified that task types and durations varied in general and by their geographical location (being regional, urban, or metro stations).

Most tasks attended by the officers were of low priority. When comparing activities between rural, metro, and urban regions the percentages of Priority 1–4 tasks was comparable between location groups with no significant differences identified. Therefore, regardless of region, the priorities of tasks for which the police officers were dispatched were similar. Considering this, further investigation is required to determine whether aspects of the tasks themselves (e.g., driving to the scene) differ between these regions.

Several studies have attempted to classify the physical activities that police officers must perform as part of their essential job duties [2,3,6]. Walking, running, squatting, lifting, carrying, and climbing stairs in unpredictable environments and during critical events are typical activities that have been cited [2,26]. However, these studies failed to contextualize the tasks in which these activities may be occurring. As such, while the body positions were defined, the tasks being performed in these body positions were not investigated. This needs consideration, as the physiological costs and cardiovascular strain of driving with sirens on at high speed, which while performed in a sitting position can see an officer breach their maximum heart rate [26], will not only differ if the same officer was sitting at a desk or in a vehicle [28] but may also differ depending on the priority of the dispatch task [27].

Based on the results of this study, it was discovered that the most commonly performed job tasks for the officers involved in this study were checking bona fides (27.4%), responding to domestic disputes (14.0%) and concern for welfare checks (9.6%). However, while these activities appear to be of a low physical demand, this does not mean an officer's risk exposure is less. Ellis et al. [29] reported that policing domestic disturbances was strongly associated with officer injury risk due to the frequency with which these incidents occur. Additionally, during stressful situations, brain neurotransmitters (i.e., serotonin, norepinephrine, dopamine and gamma-Aminobutyric acid) are released [30]. The release of these neurotransmitters serves a vital biological function as it increases cardiac output and alertness, and prepares the body for danger (e.g., "fight or flight" response) [30]. While this physiological response to stress is a vital part of the body's natural protective mechanism, chronic elevation of these hormones may increase one's risk of morbidity and premature mortality [31], and can last for at least 30 to 60 min after the event has been resolved [27]. Due to an officers need to remain hypervigilant in order to protect themselves and others while on duty, and the continued elevation of heart rate after the event, it is possible that chronic elevations of these hormones may lead to increased health risks [31]. This supposition is supported by evidence suggesting that police officers are more likely to suffer cardiovascular disease than the general population [31]. More research is needed to determine the physiological (e.g., chasing and restraining non-complaint offenders) and psychological (e.g., attending crime scenes and motor vehicle accidents occasioning serious injury or death) stress officers undergo when performing occupational tasks, to reduce the incidence of both injury and health-related illness.

The least frequently occurring tasks included storm/tempest management (1.7%), dealing with shoplifters (1.7%), and responding to a person on premises (1.7%). Conducting an arrest, which may likely be the most physically demanding and dangerous task performed, only occurred 2.7% of the time while on duty [29,32,33]. These findings are also consistent with other investigations [29]. While physically demanding events occur less frequently, often these situations are critical in nature, can place an officer in grave danger, and require maximal, or near maximal, physical exertions [6,30].

It was also discovered that the job duties performed by officers in this study varied dramatically in duration. The lengths of the tasks recorded in this investigation ranged from 1 to 249 min. Further, it was found that even the duration of a given task had widely varying times required to complete the task. For instance, while making an arrest lasted an average of 43.50 min, the range reported for this task differed by as much as 247 min. Other research by Ellis et al. [29] reported average times spent responding to domestic disturbances of 45 min and to robberies of 127 min. Ranges of durations for these activities were not made available, however. Further, at this time, the duration for physical demands (i.e., time spent standing, walking, running, lifting, etc.) and the physiological responses (i.e., changes in heart rate, blood pressure, energy expenditure, etc.) for these job duties are not known. Future research should incorporate the use of physiological measurement devices, observation, and incident reports to provide a more complete description of the actual physical stress associated with these job tasks. For example, Anderson et al. [2] reported that the average distance required for an officer to run to get to a 'problem' was 87 m. However, the range in distances covered was between 5 and 350 m. On this basis, estimating officer requirements based on means (such as running 87 m) can notably underestimate the demands placed on an officer, especially given that the participants in the Anderson et al. [2] study stated they were working at difficult or maximum effort. As such, this underestimation may in turn place the life of an officer at risk. As an example, a police pursuit saw the officer chase an offender across fields and over fences before having to fight off the offender who then tried to steal the officer's weapon [31]. Considering this information, training for the mean duration or distance may underprepare an officer to perform essential job tasks. Rather, looking at the average ranges related to durations (and distances) may provide a better understanding of the risks associated with policing.

One area that was unaccounted for in this study is the impact of shift work on police tasks. Previous research has shown that officers working non-day shifts were likely to experience a higher

number of stressful events compared to day shift officers [34]. The higher amount of stressful events at night may be due to the higher number, and greater hazard, of calls officers respond to [35]. However, a cursory search of the literature shows that the differences in routine tasks performed during day and night shifts have not been explored in depth. Likely due to its impact on the circadian rhythm [36], working night shifts has been shown to increase social distress, decrease task performance, and disrupt sleep in police officers [34,37,38]. Disruptions in sleep can affect the human body's ability to recover from both physiological and psychological stress [39]. These disruptions can lead to various negative health consequences, including cardiovascular disease [40]. In addition to understanding the tasks performed by police officers daily, accounting for the other demands experienced by this population, such as shift work, is vital when discussing officer health and wellbeing. Further research on the different job demands incurred during day and night shifts will also allow for a more thorough understanding of the job requirements for police officers.

Given the potential injury risk during tasks, the increased risk of cardiovascular disease and the potential requirement for demanding physical efforts during a critical incident, it is essential that officers develop and maintain a certain level of physical conditioning and general fitness to help sustain occupational performance and reduce injury and illness risk. However, research suggests that the nature of policing (shift work, stress, etc.) can lead to officers losing fitness [11]. A study by Orr et al. [32] found that incumbent police officers were less fit (reduced sit-up and run performance), than their age-matched police cadet counterparts. One factor considered to lead to this finding was the lack of any formal fitness training or assessment requirements once the officer left their training academy. On this basis, injury risk mitigation and return-to-work rehabilitation guidelines can become difficult to ascertain with no known physical benchmark standards through which to inform these practices. As such, the detailed profiling of the job requirements of police officers becomes of greater importance.

5. Conclusions

Conducting a job task analysis of commonly performed job duties provides important insight into the physical demands and risks officers are exposed to daily. Conducting this analysis based on geographical area (i.e., urban, regional, and metro areas) is also important as tasks may change based on population density and physical characteristics. This information can be used to inform police command (asset distribution), as well as to profile the types of tasks and physical stressors involved in these different areas. The task analysis for this study can be used as a baseline to offer insight into these questions on which future research can be based, and can fill current gaps in the literature related to the physiological demands of police work, and as such inform injury-prevention strategies and return-to-work requirements.

Author Contributions: R.O. had a role in the conceptualization, methodology, validation, analysis, resources, data curation, writing, editing, supervision, funding acquisition and project administration. B.H. visualized the project and led the investigation and had a role in the methodology project and, resources administration, and writing. A.W. assisted in the formal analysis, investigation, writing, visualization, and project administration. R.P. assisted with the validation, formal analysis, methodology, writing, and supervision. J.D. assisted with writing, formal analysis, methodology, and investigation. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Acknowledgments: The authors have no acknowledgements to make.

Conflicts of Interest: The authors declare no conflict of interest.

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