# THE PHYSICAL REQUIREMENTS OF GENERAL DUTY POLICE WORK

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# CHAPTER 1: INTRODUCTION

When we first set out to conduct this task analysis of general duty police work we had only one goal in mind — to re-assess the validity of the Police Officers' Physical Abilities Test (commonly called "the POPAT"). This test was developed and initially validated in the mid-eighties, and since then it has been used as a selection tool by all municipal police departments throughout British Columbia in their hiring of police constables. The desire to re-assess its validity through this task analysis evolved primarily out of a concern that it may not be entirely valid today given that the work of police officers has changed in a number of ways over the past decade.

Police will generally agree that the nature of police work changes over time. This has an important implication to selection criteria established in the hiring of new police recruits. For example, if the physical work required of police officers has changed over the past decade tests such as the POPAT, which are legally valid as selection tools only so long as the physical requirements being tested are demonstrated to be directly related to the physical demands of the job, may be invalid. Indeed, human rights legislation in Canada and the United States clearly state that any selection criteria for employment must be directly related to job requirements, and be essential components critical to successful job performance (CHRA, 1985; Farenholtz and Rhodes, 1990)

Accordingly, our initial goal was simply to determine what physical activities general duty police officers perform during their work and compare our findings to what is specifically required by the POPAT. In preparing a research design to meet this goal however, we quickly reasoned that we ought to also consider other issues of interest to the policing community. For instance, it would be useful to examine other activities that police officers do during their work - activities such as talking, using equipment, and

driving; it would be interesting to consider how matters of sleep patterns, shift work, and tiredness relate to police work; it would be useful to look at how police officers approach their work given difference in age, length of service, weight, height, and gender; finally, it would be interesting to collect heart-rate data on police officers and look at how this relates to the various activities that they perform during their work.

Encompassing this broader mind-set we ultimately settled on a design for the study which would both assess the validity of the POPAT and provide a detailed look, minute by minute, at the activities police officers perform during the course of their work. We describe the methodology applied in some detail in Chapter 3 of this report - suffice it to say for now that the subjects of the study are a representative sample comprised of 267 police officers drawn from all twelve municipal police departments in British Columbia, each of whom provided extensive self-report data on critical incidents and their general work requirements. Further, 121 of the officers in the sample were randomly selected for direct observation during one shift, whereby we observed and recorded their every move minute by minute. Additionally, throughout each shift observed each officer wore a heart monitor which recorded the time interval between each heart beat. In the final analysis, the study was carried out over a one year period spanning October 1998 until October 1999, and went even better than anticipated.

This particular report is intend to provide the police community with an introductory description of what we found. It is referred to as "introductory" because there is still much that can be done in terms of data analysis and the integration of our findings with those currently in the literature. As you should expect the report will answer many questions about police work. But as you should also expect, it raises many questions about police work, and to that extent it will serve to stimulate discussion about directions for further research.

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# CHAPTER 2: BRIEF LITERATURE REVIEW

### **Historical Overview of Recruiting Practices**

... applicants between the ages of 22 and 40, active, able-bodied men of thoroughly sound constitution...

Recruiting Poster, Northwest Mounted Police, 1893

Police work was historically physically demanding, requiring long shifts of walking or riding a horse, with frequent confrontation. Police departments set arbitrary standards of height and weight, presuming large males were better suited for the arduous work and physical confrontations which occurred. However, by the 1950's many of the police departments realized the arbitrary nature of these requirements, and their discriminatory nature. Slowly, height and weight restrictions were lifted and departments were left to recruit individuals who had previously been denied employment based on physical size but had the capability of performing the job-related duties.

Height, weight and gender were thought to be equivalent to "soundness" and provide a rough guide as to one's physical abilities. However, once these recruiting criteria were removed because of their discriminatory nature, there became a need to identify some method of insuring a recruit could perform the job-related duties. "It became necessary to define and measure the physical abilities needed to do police work in a manner that was objective, realistic and non-discriminatory (Bonneau and Brown, 1995: p.157)." In this regard, an early decision by the US Supreme Court in the case of *Dorthard v Rawlinson* (1977: 433 US 321) encouraged the development of physical ability (agility) tests.

The Canadian Human Rights Act (CHRA, 1985) protects individuals from discriminatory practices unless bona fide occupational requirements are established for

describes the process by which bona fide occupational requirements can be developed. These guidelines clearly describe the methodology that should be followed in order to establish occupational requirements, and includes: an identification of essential jobrelated tasks; identification of skills or abilities required to carry out the essential tasks; development of a screening protocol to insure individuals can carry out the essential tasks; and, the establishment of standards that reflect one's ability to meet the minimum requirements for the job.

### **Occupational Fitness**

Selecting the right people for police work is not only important to the employer, but also in the best interest of the public. There is a perception in the public, fueled through popular media, that police work is physically demanding, and the public expects police officers to be fit enough to perform their duties without endangering either themselves, or the public. The consequences of employing an unfit work force in physically demanding jobs can have major cost related implications. Failure to screen out individuals who can not perform the physical duties may result in injury, long term disability, rapid employee turnover, and poor productivity, having both a human and economic cost (Brownlie et al., 1985; Superko, Bernauer and Voss, 1988; Greenberg and Berger, 1983; Reilly, Zedeck and Tenopyr, 1979; Wilmore and Davis, 1979).

Occupational fitness is a relatively new term, emerging as a growing body of literature supports the notion that there are physical capabilities that are pre-requisite to successful completion of job-related tasks in many physically demanding occupations. While the physical demands vary immensely between occupations and across position within the same occupation, the occupational fitness requirements also vary. For this reason, occupational fitness requirements are job-specific, and reflect the job-related demands which essential pre-requisites for specific employment.

Trottier and Brown (1994), in explaining the need for occupational fitness and ability standards, compared the role of a police officer to that of a lifeguard. A lifeguard's job is primarily sedentary. For 99.9% of the time a lifeguard can be found sitting and watching over a pool. These duties could easily be performed by a quadriplegic; however, the duties required the remaining 0.1% of the time are related to saving a person in distress. The ability to respond to a drowning victim is a critical and essential part of the job, and is expected of the lifeguard. While the disabled lifeguard would not be unable to perform these duties, they should not be employed as a lifeguard even though they would satisfy 99.9% of the job requirements.

As Bonneau and Brown (1995) put it, "the same applies to police work." Police work, in general, is quite sedentary; however, in the interest of public safety, police are expected to have the ability to apprehend (which may include running, tackling, pushing, pulling and wrestling), arrest and contain criminals (perform take-downs and handcuffing), remove people from damaged vehicles (lifting, carrying, pulling), control large crowds, and separate individuals who are arguing or fighting (pushing, pulling, restraining). Several of theses tasks require maximal effort, and are extremely physically challenging. Further, the inability to perform these duties would clearly endanger themselves, their fellow officers, and the general public.

## **Task Analysis**

Human Rights legislation in Canada and the United States clearly state that any selection criteria for employment must be directly related to job requirements, and be essential components critical to successful job performance (CHRA, 1985; Farenholtz and Rhodes, 1990). Each employer must be able to demonstrate that selection criteria are not discriminatory, demonstrate that each criteria is critical to job performance, and have clearly defined minimal acceptable levels for each of the selection criteria. Each of the selection criteria must be a valid representation of the true job requirements, or a legal case can be successfully mounted against the employer.

Many of the past law enforcement agency's selection criteria have been challenged in court (height, weight, physical agility tests) and been dismissed as discriminatory. In particular, many of the physical abilities tests have been questioned in regards to their validity and adverse impact on females (Greenberg and Berger, 1983; Evans, 1980). Courts have often dismissed test of physical abilities as hiring selection criteria because of the difficulty in demonstrating the job-relatedness of the tests. To use such tests, each agency has the responsibility of establishing the validity of their selection criteria and demonstrate that they are bona fide occupational requirements (BFOR) or bona fide occupational qualifications (BFOQ).

Osborn (1976), in developing a physical agility test for the Los Angeles County Sherriff's Department, described a methodology for developing bona fide occupational requirements. Osborn (1976) describes a methodology using self-report questionnaires encompassing three phases: a questionnaire development phase, a test development phase, and a phase in which minimal levels of performance were established and clearly defined. This methodology has been used by various agencies, including the Justice Institute of British Columbia (Farenholtz and Rhodes, 1986), the Royal Canadian Mounted Police (Bonneau, 1994; Bonneau, 1996; Gaul and Wenger, 1992), Canadian Infantry (Jette, Kimick and Sidney, 1990), firefighters (Gledhill and Jamnik, 1992a; Gledhill and Jamnik, 1992b), Canadian Armed Forces (Stevenson, et al., 1992), and a large multifaceted gas company (Jamnik and Gledhill, 1992), and is now embedded in the Bona Fide Occupational Requirements Guideline (CHRA S1/82-83).

A task analysis provides a tool to describe the tasks of employment and is "undoubtedly the most crucial phase in the development of any test or standard (Bonneau and Brown, 1995: p.159)." In the task analysis performed by Osborn (1976) he identified climbing, running, jumping, lifting, balancing, pulling, pushing, carrying, wrestling, crawling, dragging and striking (hitting or kicking) as those physical skills used most often by a police officer (in order of importance). Farenholtz and Rhodes (1990), using the same methodology, found walking, standing, climbing stairs, running, lifting, carrying, dragging, pulling, pushing, vaulting, jumping and crawling (in order according to the number of occurrences) (see **Table 1**). Many of the task analyses performed on police work have come to similar conclusions, with a core set of core competencies, or physical demands being required in police departments through out the developed world (Osborn, 1976; Wilmore and Davis, 1979; Greenberg and Berger, 1983;Farenholtz and Rhodes, 1986: Superko, Bernauer and Voss, 1988; Farenholtz and Rhodes, 1990 Gaul and Wenger, 1992; Bonneau, 1994; Trottier and Brown, 1994; Bonneau, 1996).

Rank	Osborn, 1976	Farenholtz and Rhodes, 1986	Bonneau, 1996
1	running	walking	walking
2	jumping	standing	standing
3	lifting	climbing stairs	climbing stairs
4	balancing	running	lifting
5	pulling	lifting	carrying
6	pushing	carrying	running
7	carrying	dragging	pulling
8	wrestling	pulling	pushing
9	crawling	pushing	jumping
10	dragging	vaulting	vaulting

Table 1. Most frequently performed physical tasks as found in various task analyses.

It appears that the physical demands of policing are similar across developed nations. In a review of the literature Bonneau and Brown (1995) report similarities in the type and intensity of physical activities reported by police officers in North America, Europe and Australia. The results of large scale task analyses would support the notion that there are a core set of physical abilities required in order to function as a police officer, regardless of age, gender, race or geographic location.

#### **Occupational Fitness Tests**

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In the case of *Dorthard v Rawlinson* (1977: 433 US 321), heard in the Supreme Court in the United States, the judge encouraged occupations that had specific physical demands that were related to satisfactory levels of employment development physical ability or agility tests that were objective, realistic and non-discriminatory. This is also reflected in the Canadian Human Rights Act (CHRA, 1985), in the Bona Fide Occupational Requirements Guideline (CHRA S1/82-83). Since the passing of this legislation, numerous tests have been developed for physically demanding occupations (Farenholtz and Rhodes, 1986; Bonneau, 1994; Bonneau, 1996; Jette, Kimick and Sidney, 1990; Gledhill and Jamnik, 1992a; Gledhill and Jamnik, 1992b; Stevenson, et al., 1992; Jamnik and Gledhill, 1992).

Pre-employment screening for physically demanding occupations have traditionally used one of two methods: an occupational fitness test (Metivier, Gauthier and Gaboriault, 1982; Greenberg and Berger, 1983; Jette, Kimick and Sidney, 1990: Stevenson, et al., 1992) or an occupational physical abilities test (Wilmore and Davis, 1979; Farenholtz and Rhodes, 1990; Jamnik and Gledhill, 1992; Gledhill and Jamnik, 1992a). While US courts have often dismissed test of physical abilities as hiring selection criteria because of the difficulty in demonstrating the job-relatedness of the tests and their adverse impact on females, a shift towards fitness testing in the US occurred. However, fitness and physical ability are not synonymous. Fitness tests are typically physical or performance related fitness tests, measuring strength, endurance, power and agility in non-occupational specific movement patterns (such as a maximal bench press, 12 minute run, vertical or broad jump, and shuttle run). Physical ability tests are an integrated measure of movement patterns typical of the occupation in question, duplicating the specific physical capabilities required.

Standard fitness testing procedures are time consuming, and field tests of fitness are typically 'raught with error, having a large standard error of the estimate. Further, standard fitness tests are often very hard to link to job-related duties. As selection criteria, these tests then have limited usefulness (Jette, Kimick and Sidney, 1990; Rhodes and Farenholtz, 1992; Bonneau and Brown, 1995). At best, general fitness tests should be used to monitor fitness levels of employees, motivate individuals to initiate or sustain a physical training program, and help in the development of individualized training programs (Lindell, 1975; Byrd, 1976; Craig, 1979; Metivier, Gauthier and Gaboriault, 1982; Bonneau and Brown, 1995).

Physical abilities tests are better suited to screen applicants for employment as can be more directly related to the specific physical demands of employment. These tests, while measuring job-related motor abilities, put large amounts of stress on the physiological systems, and reflect the capacity of various fitness parameters (Rhodes and Farenholtz, 1992). In this study, Rhodes and Farenholtz found the run component of the POPAT to be related to maximal aerobic power and anaerobic capacity, while the push/pull apparatus did not correlate well with any of the standard field tests of strength. While the run is only 400 meters in length, this is more in line with the distances covered on the job, and being a maximal test produces near maximal heart rates for two or more minutes, producing a large cardiovascular stress.

#### **Police Specific Testing**

In the first annual International Association of Chiefs of Police (IACP) Law Enforcement Survey, the IACP surveyed 2,914 law enforcement agencies world wide (IACP, 1988). In this survey 81% of the agencies surveyed reported "having physical fitness standards that recruits must meet (p.42)," although only 16% implemented mandatory fitness standards beyond the recruit level.

There are several police specific physical ability tests used in North America. One of the earlier tests was designed for the Los Angeles County Sherriff's Department (Osborn, 1976). Using a questionnaire format to collect information concerning essential job-related duties, Osborn constructed a physical agility test consisting of tests that resemble, "as closely as possible, conditions in the field (Osborn, 1976: p.44)." This test included a six foot wall climb, a 440 yard run, a body transport, a balance beam walk, a vehicle push and a crawl, and time standards for each event were developed using 153 civilians and 89 deputies (although the methods do not indicate their method of deriving actual time standards).

Wilmore and Davis (1979) developed a job-related physical abilities test for the selection of California state traffic officers. This test included a standard battery of field test designed to assess the "discrete components" of cardiovascular endurance, muscular strength, flexibility and body composition, and two physical abilities tests – a barrier surmount test and arrest simulation, and a dummy drag injury rescue simulation. The physical abilities testing was added to the protocol because of "the State Personnel Board's strong desire to correlate performance scores on the field test battery with an officer's ability to perform some critically important job related task that involves physical strength and ability (Wilmore and Davis, 1979: p.35)." The barrier surmount and arrest simulation mimics the work environment of highway patrol, having a highway divider and a perimeter fence on 100 foot intervals. A foot chase for a highway patrol

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officer would typically include vaulting one highway divider, scaling one perimeter fence, and arresting an uncooperative suspect – the later of which was tested using an arrest resistor device.

A model to assess one's ability to apprehend and restrain a resisting suspect in police work was developed by Greenberg and Berger in 1983. These authors, because of the "probability of physical injury and the administrative infeasibility of a simulated test" involving the restraining and apprehending of a suspect, developed a regression equation that predicted likelihood of success from basic anthropometric and strength tests. These authors found that those individuals who performed best in a combative task could be predicted from a composite strength score (maximal bench press, upright row, and leg press), left hand grip strength, weight, height and gender.

Farenholtz and Rhodes (1985) developed a physical abilities test (Police Officer's Physical Abilities Test, or POPAT) using the methods of Osborn (1976) and Wilmore and Davis (1979). The test was designed to "predict the potential physical ability of the participant to resolve a critical incident involving the average male suspect (Farenholtz and Rhodes, 1990; p.46)." As the previous authors, Farenholtz and Rhodes divided their test using three distinct portions – getting to the problem (a pursuit), solving the problem (an arrest), and removing the problem (a lift and carry). Getting to the problem consisted of a 400 meter agility run which included changes in direction and stride length, and stairs; solving the problem involved a pushing and pulling apparatus demonstrating the ability to dynamically control 35 kg (80 lbs) of resistance using a machine similar to that of Wilmore and Davis (1979) and a series of squat thrusts; removing the problem involved a lift and carry of 45.5 kg (100 lbs) over a 15.6 m (50 foot) distance.

The Physical Ability Requirement Evaluation (PARE) was developed by the Royal Canadian Mounted Police, modeled after the work of Farenholtz and Rhodes (1985). Because of the potential for adverse impact discrimination, with 65% of the females failing the POPAT, the RCMP re-evaluated those portions of the test which were most problematic. These portions included the push/pull because of the resistance encountered, the vault, and the time frame of the fight portion of the test (Bonneau, 1996).

After an independent evaluation the resistance to be moved during the dynamic push/pull sequence was confirmed, and the value of 35 kg was retained in the PARE. However, the vaulting component of the test was eliminated. The original premise was that officers need to perform activities under maximal stress, however, the run portion of the POPAT elicits a near maximal (90% max HR) level of exertion and the RCMP found the vaulting sequence was not necessary. Further, the fight portion of the POPAT lasts on average one minute and 52 seconds in individuals that successfully complete the test (Rhodes and Farenholtz, 1992) – much longer than the average physical encounter met in the field (80% of which are less than one minute). The modifications forth coming to the

POPAT in the development of the PARE were: the vaults were integrated into the run portion of the test and a series of four falls were added to the "fight" sequence between the push and pull apparatus, reducing the fighting portion to, on average, one minute and ten seconds.

## Conclusion

Physical abilities tests have been successfully implemented in the screening of potential recruits by those employers who have demonstrated that their selection criteria are not discriminatory, that each criteria is critical to job performance, and who have clearly defined minimal acceptable levels for each of the selection criteria. The problems associated with their use are not inherent to the tests themselves, but the implementation of standards within the police force – for example, 81% of the agencies surveyed reported physical fitness standards for recruits, but only 16% implemented mandatory fitness standards beyond the recruit level (IACP, 1988). Should these tests test the true occupational physical ability requirements, then all individuals within the police force should be able to meet this standard, and not just new recruits. This will be the hardest obstacle to overcome should a court challenge arise challenging the physical abilities test.



Figure 2.1. Schematic representation of the POPAT test.

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## Figure 2.2. Schematic representation of the PARE test.



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## CHAPTER 3: METHODS

The purpose of this chapter is to describe the methodology established for the entire **Police Recruit Physical Abilities Study**. While this report only describes results relating to parts of the **Police Recruit Physical Abilities Study**, it will still be useful for the reader to have an understanding of the entire methodology overall since all parts of the study are very much inter-related.

In terms of details here, this chapter will describe the sample of officers involved in the study, the response rates, the research design for each part of the study, the nature of the data base constructed, instruments used, and analyses to be conducted.

#### **Development and Governance: Police Recruit Physical Abilities Study**

Initiated in the summer of 1998 by the Police Academy of the Justice Institute of B.C. and with funds provided by the Police Services Division of the Attorney General's Ministry of British Columbia, the *Police Recruit Physical Abilities Study* began with a purpose directly related to this report-to provide an assessment of the physical demands of police work. In considering a design for that assessment however, it became apparent that a level of cooperation existed within the policing community in British Columbia that would facilitate a broader purpose of the study, as well as a research design that would assume, (to a large degree) a grounded theoretical approach. Indeed, the study was fully supported by both the B.C. Federation of Police Officers and all twelve municipal police chiefs in the province through the Municipal Police Chiefs Association - with the understanding that the study would be exploratory as much as it would be descriptive, and with the assumption that a key element would be to establish a database to facilitate future research efforts.

Today, the study is guided as it has been from the outset by a Research Committee of

the Justice Institute who meet regularly with the Research Team, and who have been instrumental in organizing and scheduling the participation of officers from each department involved. Further, the Research Committee has been actively involved in the design of the instruments used in the study.

### **Design and Components: Police Recruit Physical Abilities Study**

The design of the *Police Recruit Physical Abilities Study* is based primarily on a random sampling of all municipal police officers in British Columbia who were listed as being assigned to "general duty" in June, 1998. The listing of officers was provided by each department to the researchers who simply selected every third officer named. This resulted in 279 officers being asked to participate in the survey component of the study.

The survey component of the study involved each officer receiving two questionnaires, one which asked them to describe the physical demands of their job "on average" (the *Physical Work Record Survey Form* as per Appendix A), and another which asked them to describe the most physically demanding critical incident that they experienced in their most recent twelve months of work (the *Critical Incident Survey Form* as per Appendix B). Both questionnaires were presented in a package along with a letter of introduction explaining the general purpose of the study, the voluntary nature of any participation, the confidentiality of all responses, and instructions for return of the questionnaires in a sealed envelope back to the researchers (see Appendix C). Questionnaire packages were distributed to officers through the Training Officer in each department who collected them for forwarding to the researchers.

A second part of the study involved asking every other officer surveyed to participate in a *ride-a-long component*. Specifically, this component involved having a research assistant ride with the officer for a full shift during which a detailed record is made of all physical activities performed by the officer. Using a set of 24 "Observation Reports" (see Appendix D), the research assistant records all instances of each of 30 different physical activities occurring within each minute of each shift. Instances are recorded from the minute each officer leaves the shift briefing at the start of the shift and through to when the officer goes to the locker room at the end of the shift. Accordingly, data is collected on as many as 720 minutes per twelve hour shift, and as it has turned out, as many as nine physical activities per minute. The data is coded onto the same data set which contains the survey data.

Scheduling of the ride-a-longs has been done in a fashion which ensures that all shifts and all days of the week are proportionately represented. Further, all ride-a-longs are conducted by the study's two primary research assistants who report that the system for recording their observations has worked extremely well. A third part of the study involves having each officer who participates in the ride-along component wear a heart monitor, which records every heart beat. The monitor is activated the minute the researcher starts recording observations of physical activity at the beginning of the shift, and at the end of the shift the data which has been gathered and stored by the monitor is downloaded into the research assistants lap-top computers.

While the intent of the Research Team was to collect heart monitor data on every officer, data from early ride-a-longs was corrupted due to problems with the monitors. These problems resulted in the monitors being replaced with more sophisticated ones which have proven to be quite reliable. Ultimately, the data from the heart monitor component will also be added to the same data set which contains survey data, although beyond the scope of the present report. Analysis of the R-R interval data may occur at a later date should funding be available for computer programming.

One factor of both the ride-a-long component and the heart monitor component is that participating officers will each receive a report at the end of the study which will compare data from their own shift to that of officers in the study overall. In fact, it is perhaps this feature that underlies the enormous interest and cooperation in the study by officers overall - only one officer declined to participate in the ride-a-long component, while many officers not part of the sample, have volunteered to be included.

#### **Characteristics of Primary Sample**

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The sample of officers participating in the study is representative of all officers assigned to general duty/patrol within municipal police departments in B.C.. Accordingly, as **Table 3.1** shows, there are great ranges in terms of the characteristics of the officers participating - some are young (eg. 24 years old) and/or have only a few months of service (e.g. 3 months), while others are nearing retirement at 55 years old and/or have nearly 30 years (e.g. 353 months) experience in the patrol division. The average officer participating is 36 years old and has 10 years of service, which means that on average they were hired at 26 years of age (the average age at which police officers are hired in B.C.).

Officers participating in the ride-a-long component were selected randomly from the above sample, and as you would expect, have the same characteristics.

Overall, the sample is seen to be an especially good one because it provides an opportunity to examine the extent to which the physical demands of general duty police work are the same or different in relation to different work environments (eg. rural vs. urban, eleven vs. twelve hour shifts, one person patrol cars vs. two person patrol cars). In the present sample, as **Table 3.2** shows, virtually half the officers (52%) work in a single department while the others each work in one of eleven other departments.

**Table 3.1.** Selected characteristics of police officers responding.

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Characteristic Considered	Mean (range)
Age	36 yr (24–55)
Months in service	117 mo (3-401)
Months in current position	53 mo (1-353)
Length of shifts	11 hr (10–12)
Working in patrol division	91 %
Male	81 %
Female	19 %
Height	179 cm (155–198)
Weight	84 kg (50–140)
Weight of duty belt	7.3 kg (2-16)
Weight of body armor	2.5 kg (0.5-12)
Always worked with a partner	37 %
Sometimes worked with partner	28 %
Work a full shift rotation	87 %

\* all figures rounded

Police Department	% of Total Sample
Vancouver	52
Victoria	9
Abbotsford	6
Port Moody	3
Esquimalt	3
Central Saanich	2
Nelson	1
Saanich	6
Delta	7
New Westminster	5
Oak Bay	2
West Vancouver	4

Table 3.2. Police departments of officers sampled.

#### The Data Base and Analysis

Constructing a data base for the analysis of data collected through the *Police Recruit Physical Abilities Study* has proved to be a challenge, not only because of the volume of data involved, but also because of the desire to have an ability to ultimately analyze what physical activities occur in each minute of each shift - which is complicated by the fact that any officer might be involved in as many as nine different activities in a single minute. Further, the Research Team wanted to have the ability to analyze every single combination of activities in relationship to potential differential effects regarding a multiplicity of officer and work characteristics. Complicating the analysis yet further is the desire to be able to analyze the data in light of corresponding heart rate data collected. In the final analysis the primary data base is expected to consist of more than 2000 variables and over a million bits of data, all of which will be contained on an SPSS (version 8.0) data base.

The data from the ride-a-long component is of course very important, not only because of the level of detail it makes possible, but because of its role in confirming the validity of responses provided by self-reports of officers. This validation will be especially important to future task analysis studies elsewhere only self-reports are feasible.

For the present report the analysis is focused largely on a descriptive analysis of the *Critical Incident Survey Form* and *Physical Work Record Survey Form*, and on considering the results in light of te POPAT. Further, while not presented here, it should be noted that the researchers have conducted a preliminary analysis of the results of the survey with a view to determining differences based on department, gender, years of service, age, and officer height and weight. Importantly, that analysis was characterized by a lack of observed significant differences. In fact, it is fair to say that any existing differences found where not related to what officers perceived was required of the job in terms of physical activity. That is, officers (on average) generally perform the same activities with like frequency regardless of who they are and where they work. Any differences are more related to how they respond to the physical demands of the job. These issues will be addressed in detail in the final report.

# CHAPTER 4: GENERAL DUTY TASK ANALYSIS

The purpose of this chapter is to describe the results of the *Physical Work Record Survey* component of the *Police Recruit Physical Abilities Study*. As discussed in the methodology chapter, that component involved 267 officers, each of whom completed a questionnaire designed to provide their self-reports regarding their assessment of the physical demands of general duty police work. Specifically, the questionnaire asked officers to describe;

- 1. How necessary it is that they be able to perform selected physical activities;
- 2. How frequent they perform these selected physical activities;
- 3. How much time they spend doing these selected physical activities during an average shift, and;

4. How much effort they feel is required to perform these selected physical activities.

While the listing of physical activities addressed by the questionnaire does not constitute the basis for a comprehensive task analysis of general duty police work, it does include all of those activities which have been shown by earlier studies to be the basis for arguing for selected bona fide occupational requirements in police work.

In terms of a more comprehensive task analysis of police work, as mentioned in the methodology chapter, the *Police Recruit Physical Abilities Study* also includes a "ride-a-long" component. The basic findings of the ride-a-long component of this study are detailed in Chapter 6. Data from 121 ride-a-longs completed were, however, notably consistent with the average responses provided by the officers surveyed.

#### The Necessity of Selected Physical Activities

Officers participating in the survey were asked to consider how necessary they believed it was that they be able to perform each of a list of fifteen physical activities

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during duty, and as **Table 4.1** illustrates, it is clear that the vast majority of officers felt all but two (i.e. crawling and lifting above the shoulders) were necessary.

The necessity of officers being able to perform these duties was confirmed further by the research assistants observing physical activities through the ride-a-longs. Specifically, the average necessity rating assigned to each physical activity by the officers involved was identical to that assigned by the research assistants in all but three cases. In these cases, as **Table 4.2** shows, the officers assigned average ratings of "somewhat necessary" while the research assistants recorded them as clearly "very necessary". The reason officers assigned a lesser rating in these cases (in the view of the research assistants), is that they perhaps did not include;

 Getting in and out of their patrol car, and working on the in-car mobile data terminal as instances of "twisting and turning their upper body"
 Using the radio as instances of "handling and manipulating objects"
 Partial bending such as in cases of standing and working on report writing, and reaching for objects below the waist level.

In any case, the fact remains that thirteen of the fifteen activities listed were cited as necessary to some degree by both the officers and the research assistants.

### The Frequency of Selected Physical Activities

Officers participating in the survey were asked how frequently they performed various physical activities in their work. Specifically, they were to consider the same listing of fifteen physical activities they had assessed in terms of necessity.

Perhaps as would be expected the results respecting frequency very much mirrored those respecting necessity. That is, when the activities are ranked from those activities which are most frequently performed to the least performed, the resulting ranking is basically the same as the ranking respecting necessity shown by **Table 4.1** earlier. As **Table 4.3** shows, only two activities were cited by the majority of officers as being "never" or "seldom" performed. At the same time, ten of the remaining thirteen activities were cited as "often" or "constantly" performed by the majority of officers. **Table 4.1.** Police officers' ratings of how necessary it is that they be able to perform various physical activities during duty.

Physical Activity Considered	% Who Rate Activity as Unnecessary	% Who are Neutral	% Who Rate Activity as Necessary
Standing	3	. 1	96
Walking	3	2	96
Sitting	4	3	94
Climbing up and down stairs	4	3	92
Handling/manipulating objects	5	6	89
Twisting/turning upper body	5	6	88
Pulling and pushing	7	6	88
Running	8	4	88
Climbing up/down from object	7	7	86
Bending, squatting, kneeling	7	9	85
Lifting and carrying	6	11	84
Dragging	10	16	73
Leaping and jumping	15	22	67
Crawling	41	24	35
Lifting above the shoulders	34	35	31

\* all figures rounded

**Table 4.2.** Observed vs officer ratings of how necessary it is that they be able to perform various physical activities.

Physical Activity Considered	Average Rating Assigned By Officer	Average Rating Assigned By Observers
Standing	very necessary	very necessary
Walking	very necessary	very necessary
Sitting	very necessary	very necessary
Climbing up and down stairs	very necessary	very necessary
Handling/manipulating objects	somewhat necessary	very necessary
Twisting/turning upper body	somewhat necessary	very necessary
Pulling and pushing	somewhat necessary	somewhat necessary
Running	somewhat necessary	somewhat necessary
Climbing up/down from object	somewhat necessary	somewhat necessary
Bending, squatting, kneeling	somewhat necessary	very necessary
Lifting and carrying	somewhat necessary	somewhat necessary
Dragging	somewhat necessary	somewhat necessary
Leaping and jumping	somewhat necessary	somewhat necessary
Crawling	neither	neither `
Lifting above the shoulders	neither	neither

## 5–Point Scale:

very necessary somewhat necessary neither (neutral) somewhat unnecessary very unnecessary. **Table 4.3.** Police officers' ratings of how frequently they perform various activities during duty.

Physical Activity Considered	Never or Seldom Performed	Occasionally Performed	Often or Constantly Performed
Standing	1 %	- 1%	99 %
Walking	-	1 %	98 %
Sitting		2 %	98 %
Climbing up and down stairs	2 %	4 %	94 %
Bending, squatting, kneeling	8 %	12 %	81 %
Handling/manipulating objects	7 %	13 %	80 %
Twisting/turning upper body	5 %	14 %	79 %
Lifting and carrying	14 %	23 %	64 %
Pulling and pushing	14 %	27 %	60 %
Climbing up/down from object	9 %	34 %	57 %
Running	12 %	43 %	46 %
Dragging	35 %	31 %	34 %
Leaping and jumping	31 %	40 %	30 %
Lifting above the shoulders	66 %	26 %	9 %
Crawling	79 %	16 %	5 %

\* all figures rounded

The observations of the research assistants doing ride-a-longs, again, were able to provide confirmation of the reliability of the officer's self reports. Specifically, as per **Table 4.4**, the average frequency rating assigned to each physical activity by the officers involved was identical to that assigned by the research assistants in all but three cases. In these cases, the officers assigned average ratings of "often" performed, while the research assistants recorded them as a "constantly" performed. The rating of "constantly" performed by the research assistants was based on their recording of physical activity in question being performed on multiple occasions during every shift.

Related to the issue of frequency is the issue of how much time officers spend on selected physical activities, and once again the activities which were assessed by officers as the most frequently and necessarily performed are those which they spend the most number of minutes on during a shift. Specifically, as Table 4.5 illustrates, officers spend (on average) more than half of each shift sitting (i.e. 373 minutes), a little more than two hours standing (i.e. 138 minutes), and about an hour and a half (i.e. 94 minutes) walking. The next most frequent physical activities were bending (at 14 minutes per shift), lifting below the shoulders (at 9 minutes), pulling/pushing (at 7 minutes), and squatting / kneeling, which was also at 7 minutes.

Table 4.4. Observed vs of performed during duty.	ficer ratings of how	v frequently variou	s physical activities a	re
P				

Considered	Average Rating Assigned By Officer	Average Rating Assigned By Observers
Standing	constantly performed	constantly performed
Walking	constantly performed	constantly performed
Sitting	constantly performed	constantly performed
Climbing up and down stairs	often performed	constantly performed
Handling/manipulating objects	often performed	constantly performed
Twisting/turning upper body	often performed	constantly performed
Pulling and pushing	often performed	often performed
Bending, squatting, kneeling	often performed	constantly performed
Lifting and carrying	often performed	often performed
Running	occasionally performed	occasionally performed
Climbing up/down from object	occasionally performed	occasionally performed
Dragging	occasionally performed	occasionally performed
Leaping and jumping	occasionally performed	occasionally performed
Crawling	seldom performed	seldom performed
Lifting above the shoulders	seldom performed	seldom performed

**5-Point Scale:** never performed seldom performed occasionally performed often performed constantly performed

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### **Effort Required to Perform Selected Physical Activities**

Officers participating in the survey were also asked about the amount of effort they use to perform each of a listing of six physical activities in their work, and as **Table 4.6** shows, all but one (i.e. climbing up and down stairs) were cited as requiring at least "medium to maximum" or "maximum" effort. Again, these self-reports were lent credence by the observations of the research assistants doing ride-a-longs. They assigned the same ratings as were assigned on average by the participating officers (see **Table 4.7**).

**Table 4.5.** Average amount of time police officers usually spend during a shift performing various physical abilities.

Physical Activity Considered	Average # of minutes per shift
Sitting	373
Standing	138
Walking	94
Bent over at waist	14
Lifting and carrying <i>below</i> shoulder	9
Pulling and pushing	7
Squatting, kneeling	7
Running	6
Lifting and carrying <i>above</i> shoulder	1
Crawling	

forming various physical abilities.

\* all figures rounded

Table 4.6.	Police officers'	ratings of how	much effort	they use in	n performing	various
physical activ	vities during dut	y.			_	

hysical Activity Considered	Less than Medium Effort	Medium Effort	Medium to Maximum Effort
Running	5 %	13 %	88 %
Pulling and pushing	11 %	18 %	72 %
Dragging	10 %	24 %	66 %
Lifting and carrying	13 %	30 %	57 %
Leaping and jumping	17 %	27 %	58 %
Climbing up/down stairs		50 %	23 %

\* all figures rounded

**Table 4.7.** Observed vs officer ratings of how much effort they use in performing various physical activities during duty.

Physical Activity Considered	Average Rating Assigned By Officer	Average Rating Assigned By Observers
Running	medium to maximum	medium to maximum
Pulling and pushing	medium to maximum	medium to maximum
Dragging	medium to maximum	medium to maximum
Lifting and carrying	medium to maximum	medium to maximum
Leaping and jumping	medium to maximum	medium to maximum
Climbing up/down stairs	medium	medium

## 5–Point Scale:

minimum effort minimum to medium effort medium effort medium to maximum effort maximum effort

(25 % maximum) (50% maximum) (75-80% maximum)

## CHAPTER 5: CRITICAL INCIDENT TASK ANALYSIS

In this chapter we describe the results of the *Critical Incident Survey* part of the *Police Recruit Physical Abilities Study* – results which, as noted in the methodology chapter, are based on self-reports from 267 police officers. Recall that those officers were asked to provide information about their most physically demanding critical incident within their most recent twelve months of work. The results are important because they provide a measure of what the physical demands of police work can be in the most difficult of circumstances.

While the results reported here are based on 267 incidents, it is important to be aware that responding officers were asked to place their completed assessment in perspective to all others in their careers. That is, after completing the *Critical Incident Survey Form*, officers were asked to consider their most demanding critical incident of the last twelve months of work in comparison to other equally or more physically demanding incidents they have experience over their entire career. They were asked to recall the number of such incidents they have had over their career, and the results suggested that critical incidents equally as demanding as those reported here occur for each officer at a rate of one every ten months. Further, **more** physically demanding incidents occur at a rate of one every fourteen months.

#### The Nature of Critical Incidents Reported

One of the things asked for by the survey was background information on the critical incidents reported, and the results were as you would expect. Specifically, the results indicated that the most demanding of critical incidents can occur at any time and under a variety of circumstance. For instance, as **Table 5.1** shows, while a greater percentage of critical incidents occurred at night and in May, June, and July significant percentages occur at all times of the day and throughout the year. Further, it is clear that these incidents commonly occur without much forewarning. Indeed, as **Table 5.2** shows, 37% were initiated from observations of an officer as opposed to their being dispatched to the incident (50%) or being called as backup (4%). As well, while many officers were

able to describe the nature of the incident as either relating to a motor vehicle accident (4%), domestic violence (12%), social violence (10%), or resistance resulting from an investigation (31%), a full 43% of officers responding had to describe the nature of the incident so something else (the list of which is too numerous to mention here).

Even the location of critical incidents are without a pattern. About half (51%) of them were reported to have occurred on a street, highway, road, but as **Table 5.3** shows, they also occur in many other locations.

In some respects then, there is no easy way to characterize critical incidents which responding officers describe as the most demanding. Officers have to assume that such incidents occur anytime, almost anywhere, and without warning. On the other hand, the results make it very clear that there are some commonalities among those incidents which officers describe as the most demanding. Specifically, they are likely to involve the officer having to deal with one or more subjects, each of whom is likely to be a suspect as opposed to anyone else (e.g. victim, as per **Table 5.4**). Further, while 89% of the time the incident will involve one subject, 20% of the time it will involve two subjects, 12% of the time it will involve three, and 6% of the time it will involve as many four. Again, as per Table 4, regardless of the number involved, each is likely to be a suspect as opposed to anyone else. More significantly, the subject is likely to be a young male, have average or better physical abilities, and be in a less than desirable mental state. Most of the time (60%), at least one of the subjects will be violent. Finally, as **Table 5.5** shows, the subject will often be taller and heavier than the officer involved.

Month	% of Yearly Total		Time	% of Daily Total
January	5 %		0:01 – 2 AM	15 %
February	10 %		2:01 – 4 AM	10 %
March	7%		4:01 – 6 AM	3 %
April	9%	] [	6:01 – 8 AM	3 %
May	12 %		8:01 – 10 AM	3 %
June	14 %		10:01 – Noon	3 %
July	14 %		12:01 – 2 PM	8 %
August	8 %		2:01 – 4 PM	12 %
September	4 %		4:01 – 6 PM	7 %
October	7 %		6:01 – 8 PM	10 %
November	6%		8:01 – 10 PM	11 %
December	5 %		10:01 – Midnight	14 %

Table 5.1. Occurrences of reported critical incidents by month and time of day.

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\* All figures rounded. Results from Section A, Background Information, Critical Incident Survey Form.

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**Table 5.2.** The nature of critical incidents reported.

Type of Incident	% of Total Reported	
Motor vehicle accident	4 %	
Social Violence	10 %	
Domestic Violence	12 %	
Resistance resulting from investigation	31%	
Other	43 %	

How the incident was init	tiated	
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Planned	3 %
Back-up	4 %
Other	6 %
Observed	37 %
Dispatched	50 %

\* all figures rounded. Results from Section A, Background Information, Critical Incident Survey Form.

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Location Listed	% of Total Reported
Street, highway, road	51 %
Sidewalk	19 %
Residential yard	9 %
Private residence	9 %
Apartment building	9 %
Bar, pub, club	6 %
Public park	4 %
26 other locations, none of which were cited by more than 3% of the officers responding	

Table 5.3. Location of critical incidents reported.

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\* all figures rounded. Results from Section A, Background Information, Critical Incident Survey Form.
Subjects' Status	Subject 1	Subject 2	Subject 3	Subject 4	
% suspect	89	77	77	77	
% victim	8	. 11	7	12	
% other	3	9	16	12	
Subjects' Gender					
% male	88	77	87	91	
% female	12	23	13	9	
Subjects' Mental State					
% violent	60	30	45	38	
% under the influence of drugs and/or alcohol	15	12	21	19	
% mentally unstable, unpredictable	11	10	10	6	
% emotional, upset, abusive	8	22	3	13	
% calm, reasonable, cooperative	6	26	21	25	
Subjects' Physical State					
% below average fitness and abilities	15	16	26	12	
% average fitness and abilities	50	58	55	71	
% above average fitness and abilities	34	27	19	18	

**Table 5.4.** Characteristics of subjects involved in critical incidents reported.

\* all figures rounded. Results from Section A, Background Information, Critical Incident Survey Form.

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Table 5.5. Relative size and age of subjects involved in critical incidents reported.

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Issue Considered	Officer	Subject	% (where applicable)
Weight			
average weight (without armor and equipment)	84 kg	76 kg	
average weight (with armor and equipment)	94 kg	76 kg	
maximum weight of subject		140 kg	
% of subjects weighing more than 84 kg			32 %
% of time subject is heavier than the officer involved (without armor)			39 %
Height			с.
average height	179 cm	176 cm	
maximum height of subject		195 cm	
% subjects taller than 179 cm			25 %
% of time subject is taller than the officer involved			41 %
Age			
average age	36	29	

\* all figures rounded. Results from Section A, Background Information, Critical Incident Survey Form.

### **Physical Demands of Critical Incidents**

Given the characteristics of the suspects involved in the critical incidents reported, it is not surprising that these incidents are also reported to be very physically demanding. Indeed, to gain control of such incidents officers are likely required to engage in a broad range of physical activity, and in doing so they can expect to exert considerable effort (see **Table 5.6**).

Obviously, the primary reason that the physical demands are so great is that the suspect is resisting control in a variety of ways. As **Table 5.7** shows, the suspect is likely to pull or punch on the officer to resist, and otherwise fight during the incident. The circumstances can also be extremely dangerous as suspects may also use (or threaten to use) a club, knife, or gun, and even attempt to take the officer's weapon

Once the officer has control of the critical incident, significant physical demands commonly continue in removing the suspect. Specifically, as **Table 5.8** shows, the officer will often be required to lift, pull, drag, and push the suspect – and in doing so be required to exert considerable effort.

It is also worth noting that half the time (54%) the officer is required to run to get to the incident, make sharp turns in the process, and do all of this exerting considerable effort (see **Table 5.9**). As well, the officer may be required to climb, vault, or jump objects – although most officers don't report these as requiring considerable effort.

Finally, the results showed that the critical incidents reported were generally not over quickly. Specifically, while 20% were over in less than five minutes, 65% lasted ten or more minutes, and nearly 15% lasted an hour or more (see **Table 5.10**).

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**Table 5.6.** Physical activities and effort required in controlling critical incidents reported.

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Activity Performed	% of Officers Citing Activity	% Citing Maximum Effort
Used verbal control tactics	76	52
Pulled and pushed a person	76	56
Twisted and turned controlling a person	76	53
Handcuffed a person	72	. 52
Applied control holds	67	57
Wrestled a person	47	73
Used a wrist / arm lock	44	53
Used a take-down	40	66
Lifted and carried a person	40	52
Struck a person	33	61
Twisted and turned using equipment	27	31
Pulled and pushed on object	25	29
Blocked a punch or kick	23	56
Lifted an carried an object	18	25
Used OC spray	17	42
Used a firearm	10	34
Used a baton	7	50
Other	6	62

\* all figures rounded. Results from Section C, Controlling the Problem, Critical Incident Survey Form.

Resistance Used	Subject 1	Subject 2	Subject 3	Subject 4
Pushed or pulled an officer to resist	57 %	34 %	42 %	24 %
Grasped officer's clothing to resist	28 %	17 %	16 %	18 %
Wrestled officer using holds	26 %	15 %	6%	18 %
Grasped object to resist control	23 %	9%	23 %	12 %
Struck officer (punch, kick, knee)	23 %	9%	16 %	6%
Used other resistance	14 %	19 %	10 %	29 %
Threatened or seized a knife	4 %	2 %	0%	0%
Threatened or seized a gun	4 %	2 %	3 %	6 %
Threatened or seized a club	2 %	4 %	3 %	6%
Attempted to take officer's weapon	2 %	2 %	3 %	6 %

Table 5.7. Types of resistance used by subjects in critical incidents reported.

\* all figures rounded. Results from Section C, Controlling the Problem, Critical Incident Survey Form.

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**Table 5.8.** Physical activities required in removing the problem in critical incidents reported.

Activity Performed	% of Officers Citing Activity	% Citing Maximum Effort	Average Distance Involved (meters)
Lifting / carrying below shoulder level	46	44	22
Pulling a person or object	40	50	23
Pushing a person or object	36	43	8
Dragging a person or object	22	50	22
Lifting / carrying above shoulder level		50	42
* In over 80% of these instances it was a person who was lifted, carried, pulled,			

pushed, or drug.

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\* all figures rounded. Results from Section D, Removing the Problem, Critical Incident Survey Form.

**Table 5.9.** Physical activities and effort required in getting to critical incidents.

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Activity Ferformed	% of Officers Citing Activity	% Citing Maximum Effort
Walking	56	6
Running	54	75
Climbing over objects	17	53
Vaulting over objects	13	45
Jumping down from objects	11	38
Jumping over objects	9	38

\* all figures rounded. Results from Section B, Getting to the Problem, Critical Incident Survey Form. **Table 5.10.** Time elapsed during the officers' involvement in the critical incident.

# of Minutes	% of Officers Citing Time Elapsed
0-4	20 %
5-9	15 %
10-14	16 %
15 – 19	9 %
20-24	8 %
25-29	1 %
30 - 59	15 %
60 plus	15 %

\* all figures rounded. Results from Section B, Getting to the Problem, Critical Incident Survey Form.

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# CHAPTER 6: OBSERVATIONAL DATA

The purpose of this chapter is to describe the results of the ride-a-long component of the study. As discussed in the methodology chapter, this component involved performing ride-a-longs with 121 officers, during which work activities were observed and recorded. Activities were recorded in one-minute intervals with as many as nine activities being recorded for any single minute. Accordingly, the data collected could be described in terms of what officers do on average in every minute of every shift. For our purposes here, however, the focus will be on describing how often officers perform various activities over the course of an average shift.

To begin this chapter we will present some background information on the sample of officers involved in the ride-a-long component. This information will be followed by a look at activities related to the time officers spend communicating, time they spend in their patrol cars, time they spend performing various physical activities, and time spent on activities related to firearms and use of force. The findings concerning physical activities performed and use of force are particularly relevant to the assessment of the POPAT as a selection criteria (the topic of Chapter 7).

### Background

The **Observed Data** was collected during 121 ride-a-longs with the data collected over a 12 month period spanning dates in both 1998 and 1999. The total observational period included 75,867 minutes, representing 1265 hours of observation.

In considering the sample of officers involved in the ride-a-long component it is important to remember that while we started with a random selection of officers, we also had to be attentive to the logistics of scheduling research assistants to complete a representative range of shifts over the course of a year. Further, over the year, officers moved out of patrol or were otherwise unavailable on shifts scheduled for study. Accordingly, we replaced some originally selected officers with others in our larger sample, and not all shifts were covered to the exact proportions as they occur over the days, weeks, and months of the year. Still, we came close to our original intentions and are completely confident that the resulting sample of officers involved and the shifts involved constitute a very good representation of the officers and work activity involved in municipal policing in British Columbia. The reader can have some degree of confidence in this regard as supported by the data provided concerning the nature of the shifts involved and the characteristics of participating officers.

In terms of the officers involved, as **Table 6.1** shows, they are remarkably similar to our larger sample of officers. Further, their distribution across individual police departments is the same as it is for officers in our large sample (**Table 6.2**). In terms of the shifts involved, it can be seen by **Table 6.3** that the mean day of the week for the group of shifts was Wednesday (with Sunday as the start of the week), the mean day of the month was the 15<sup>th</sup>, and the mean month of the year was June. Also note that a wide range of shift start times were covered.

In considering the findings presented it should be noted that observations began on each shift after each officer's briefing (within five minutes). The observations then continued through to the point when the officer returned to the station and logged-off shift. While observations were immediately recorded on minute by minute tracking sheets (see Appendix D), on some occasions they were recorded on tape as activity occurred and later transcribed on to tracking sheets. Table 6.1. Characteristics of officers sampled.

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Characteristic Considered	Overall Sample	Officers Participating in Ride-alongs
Age	36 yrs (24 – 55)	34 yrs (24 – 51)
Female Officers	19 %	21 %
Height	179 cm (155 – 198)	178 cm (160 – 198)
Weight	84 kg (50 – 140)	82 kg (50 – 113)
Weight of Duty Belt	7.3 kg (2 – 16)	7.1 kg (2 – 16)
Weight of Body Armor	2.5 kg (0.5 – 12)	2.5 kg (0.5 – 10)
Months in Current Position	53 mo (1 – 353)	46 mo (1 – 228)
Always Worked With Partner	37 %	41%
Sometimes Worked With Partner	28 %	26 %
Work a Full Shift Rotation	87 %	94 %
Length of Shift	11 hrs (10 – 12)	11 hrs (10 – 12)
Work in Patrol Division	91 %	97 %

\* All figures rounded (range in brackets).

 Table 6.2.
 Police departments of sampled officers.

Police Departments	% of Overall Sample	% of Officers Participating in Ride-alongs
Vancouver	52 %	51 %
Victoria	9%	7 %
Abbotsförd	6 %	7 %
Port Moody	3 %	2 %
Esquimalt	3 %	2 %
Central Saanich	2 %	3 %
Nelson	1 %	2 %
Saanich	6 %	6 %
Delta	7 %	9 %
New Westminster	5 %	5 %
Oak Bay	2 %	2 %
West Vancouver	4 %	4 %

\* All figures rounded.

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### Table 6.3. Characteristics of shifts sampled.

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Considered	
Average month	June
Average day of the month	15 <sup>th</sup>
Average day of the week	Wednesday
Weather at start of shift	
- Rain	30 % of time
- Clear	30 % of time
- Cloudy	39 % of time
Start times	
- 5 am	4 %
- 7 am	19 %
- 9 am	2 %
- NOON	1 %
- 2 pm	22 %
- 4 pm	14 %
- 5 pm	12 %
- / pm	23 70
Minutes observed per shift	627 min (474 – 740)
Length of breaks taken	73 min (2 – 205)

# Characteristics **Overall Sample**

\* All figures rounded (range in brackets). Overall, 75,867 minutes (1265 hrs) of shift activity observed.

# **Driving Activity**

In addressing driving activity we observed and recorded the number of minutes per shift that each officer spent driving and simply idling the patrol car. Further, driving and idling were categorized as follows:

#### Driving

- Normal driving
- Driving Code 1 responds to a call
- Driving Code 2 responds as fast as possible in normal traffic or minor pursuit
- Driving Code 3 responding as fast as possible or major pursuit
- Total driving

#### Idling

- Idling for reasons of watching
- Idling for reasons of a traffic violator stop
- Idling for reasons of a suspicious vehicle check
- Idling other

As **Table 6.4.a** shows, officers do a considerable amount of driving per shift. Specifically, of those who drove (92%) they averaged 220 minutes (or 3.7 hrs) of driving during their shift. Further, 29% of officers were required to drive "Code 3" during their shift, and these officers spent an average of 5 minutes per shift driving at that level.

Translated into what we should expect in any given month, we can see from **Table 6.4.b** that (on average) an officer will be required to perform most levels of driving during most shifts. The only exception is "Code 3" driving, but even this will be performed (on average) 4 shifts per month. Overall, in terms of time spent driving, an officer will be required to spend 39.1 hrs in normal driving, 4.4 hrs driving "Code 1", 1.4 hrs driving "Code 2" and 18 minutes driving "Code 3" each month. Accordingly, it is fair to say that all levels of driving are "necessary" and clearly more than occasionally performed.

On the matter of time spent idling it is interesting to note that officers spend an **a**verage of 14.9 hrs per month in this activity and almost a third of that time (32%) is due to watching, traffic violator stops and suspicious vehicle stops (see **Table 6.4.b**).

Finally, on the matter of driving, we observed that, on average, officers get in an out of their patrol cars 21 times per shift (i.e. 21 "in" and 21 "out"). While we did not record these instances as "twisting and turning", each of course would be.

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**Table 6.4.a.** Percentage of officers observed in various forms of driving activity each shift and number of minutes involved in each form.

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Activity Considered	% of officers observed performing activity	Average # of minutes the activity was performed	Median # of minutes the activity was performed	The range over which the activity was performed
Idling - watching	57 %	13	8	1 – 59
Idling - traffic stop	55 %	16	12	1 – 79
Idling - suspicious vehicle stop	42 %	9	6	1 – 31
Idling - other	98 %	44	39	1 – 174
Normal Driving	92 %	182	179	1 - 383
Code 1 Driving	79 %	24	21	1 - 62
Code 2 Driving	65 %	9	7	1 - 43
Code 3 Driving	29 %	5	3	1 – 22
Total Driving	92 %	220	13	1 - 406

\* All figures rounded. Observation results: recorded information from ride-a-longs.

**Table 6.4.b.** Estimated number of shifts and number of minutes (hours) each officer will be required to perform various driving activities.

Activity Considered	# of shifts per month where activity is required	# of minutes per month the activity is required
Idling - watching	8	102 (1.7 hrs)
Idling - traffic stop	. 8	125 (2.1 hrs)
Idling - suspicious vehicle stop	6	51 (0.9 hrs)
Idling - other	14	609 (10.2 hrs)
Normal Driving	13	2344 (39.1 hrs)
Code 1 Driving	11	265 (4.4 hrs)
Code 2 Driving	9	82 (1.4 hrs)
Code 3 Driving	4	18 (0.3 hrs)
Total Driving	- 13	2834 (47.2 hrs)

\* All figures rounded. Figures assume an average of 14 shifts per month and represent observed data (results from ride-a-longs).

## **Communication Activity**

In addressing communication activity, we observed and recorded the number of minutes per shift that each officer spent talking to complainants, suspects and other officers. We also recorded the amount of time officers spent on the phone, using the computer and writing. Additionally, we recorded all *incidents* where officers used the radio or a mobile data terminal (MDT). In all instances we only recorded the activity if the content of the communication involved was directly related to the officer's work.

As **Table 6.5.a** shows, at least 90% of officers talked to complainants, suspects and other police officers each shift and just as many wrote and used both the radio and their MDT. Further, as the same Table shows, each officer (on average) spent a significant amount of time talking and writing. They also used the radio and MDT many times each shift.

Translated into what we should expect in any given month, we can see from **Table 6.5.b** that officers will be required to perform these activities virtually every shift. At the same time, officers will be required to use the computer in at least half their shifts in any given month. Accordingly, it is fair to say that all forms of communication observed are necessary and often or constantly performed.

**Table 6.5.a.** Percentage of officers observed in various forms of communication activity each shift and number of minutes involved in each form.

Activity Considered	% of officers observed performing activity	Average # of minutes the activity was performed	Median # of minutes the activity was performed	The range over which the activity was performed
Talking to complainant	93 %	27	20	1 - 89
Talking to suspect	95 %	40	35	2 – 172
Talking to public	98 %	84	64	2 - 296
Total talking	100 %	208	198	74 – 434
On the phone	74 %	16	12	1 – 70
Using computer	50 %	26	13	1 – 160
Writing	99 %	55	49	1 – 196
Incidents of talking on radio	100 %	31 times	29 times	2 – 93 times
Incidents of using MDT	90 %	55 times	47 times	1 – 173 times

\* All figures rounded. Observation results: recorded information from ride-a-longs.

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**Table 6.5.b.** Estimated number of shifts and number of minutes (hours) per month each officer will be required to perform various communication activities.

Activity Considered	# of shifts per month where activity is required	# of minutes per month the activity is required
Talking to complainant	8	354 (5.9 hrs)
Talking to suspect	8	534 (8.9 hrs)
Talking to public	6	1152 (19.2 hrs)
Total talking	14	2910 (48.5 hrs)
On the phone	13	168 (2.8 hrs)
Using computer	11	180 (3.0 hrs)
Writing	9	762 (12.7 hrs)
Incidents of talking on radio	4	434 times
Incidents of using MDT	13	693 times

\* All figures rounded. Figures assume an average of 14 shifts per month and represent observed data (results from ride-a-longs).

## **Physical Activity**

In addressing physical activities we observed and recorded the same list of activities officers were asked to consider in the survey (self-report) component of the study. Accordingly, we considered the number of minutes (or times) in each shift officers performed each of the following activities:

Sitting	Twisting (excluding getting
Standing	in/out of car)
Walking	Pulling / Pushing
Bending	Running
Lifting (below waist)	Climbing Objects
Climbing Stairs (up / down)	Balancing
Manipulating Object	Lifting (above shoulder)
Squatting / Kneeling	Jumping
	Sitting Standing Walking Bending Lifting (below waist) Climbing Stairs (up / down) Manipulating Object Squatting / Kneeling

The first thing we can say about what we found with respect to these activities is that our observations were remarkably similar to the self-reports of police officers. For example, the first 12 most frequently occurring activities we observed (**Table 6.7.a**) are identical to the 12 most frequently cited activities that officers reported as being "necessary" in the job. In fact, at least 84% of officers described each of these 12 activities as either "somewhat necessary" or "very necessary" to the job. Secondly, of the 12 most frequently observed activities, 11 were self-reported by most officers as being "often" or "constantly" performed. The remaining activity of the 12 (i.e. running) was identified by 46% of the officers as being "often" or "constantly" performed.

Overall, as Table 6.7.b shows, there is no activity observed that officers should not expect to perform at least once per month, and the majority will be performed at least once per shift.

**Table 6.6.a.** Percentage of officers observed in various forms of physical activity each shift and number of minutes involved in each form.

Activity Considered	% of officers observed performing activity	Average # of minutes the activity was performed	Median # of minutes the activity was performed	The range over which the activity was performed
Sitting	99 %	343	349	34 - 504
Standing	100 %	147	152	31 - 348
Walking	100 %	52	43	14-206
Bending	86 %	. 13	8	1-63
Lifting (below waist)	75 %	6 times	4 times	1 – 30 times
Climbing Stairs (up) (down)	98 % 98 %	4 times 4 times	4 times 4 times	2-11 1-11
Manipulating Object	63 %	15 times	11 times	1 – 52 times
Squatting / Kneeling	60 %	3 times	2 times	1 – 16 times
Twisting (excluding getting in/out of car)	45 %	5 times	4 times	1 – 19 times
Pulling / Pushing	36 %	3 times	1 time	1 – 19 times
Running	22 %	1 time	l time	0.33 – 4
Climbing Objects	19 %	2 times	2 time	1 – 17 times
Balancing	10 %	2	2	1 – 7 times
Lifting (above shoulder)	6 %	4 times	1 time	1 – 22 times
Jumping	6 %	1 time	1 time	1-2 times

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\* All figures rounded. Observation results: recorded information from ride-a-longs.

**Table 6.6.b.** Estimated number of shifts and number of minutes (hours) per month each officer will be required to perform various physical activities.

Activity Considered	# of shifts per month where activity is required	# of minutes per month the activity is required	
Sitting	14	4802 (80 hrs)	
Standing	14	2058 (34 hrs)	
Walking	14	72 <b>8</b> (12 hrs)	
Bending	12	182 times	
Lifting (below waist)	11	62 times	
Climbing Stairs(up)(mean # = 71 stairs / shift)(down)	14 14	46 times	
Manipu'ating Object	9	132 times	
Squatting / Kneeling	8	27 times	
Twisting (excluding getting in/out of car)	6	33 times	
Pulling / Pushing	5	15 times	
Running	3	4	
Climbing Objects	3	5 times	
Balancing	1	3	
Lifting (above shoulder)	1	3 times	
Jumping	1	1 time	

\* All figures rounded. Figures assume an average of 14 shifts per month and represent observed data (results from ride-a-longs).

## **Use of Force**

In addressing the use of force, one of the things we observed and recorded was the number of minutes each officer spent handling their gun in one way or another. In this regard, we categorized firearm activity as follows.

- hand on gun (which did not include minutes with snap open, gun drawn or gun pointed)
- snap open (which did not include minutes with gun drawn or gun pointed)
- gun drawn (which obviously assumes hand on gun and snap open, but it does not include gun pointed where gun pointed within the same minute)
- gun pointed at suspect (again, assumes hand on gun, snap open, and gun drawn)

Accordingly, for example, an observation that our officer drew his or her gun and pointed it within the same minute would only be recorded as "gun pointed at suspect".

In any case, as expected there were few observations of officers handling their firearm, and among those that did, the event was over quickly (see **Table 6.7.a**). For example, only 3% of officers drew their gun and the longest period drawn was 3 minutes, and the longest period "pointed" was just 2 minutes. Translated to what we should expect in any given year, we can see in **Table 6.7.b** that an officer is likely to have their hand on their gun at some point during 16 shifts, have it drawn during 6 shifts in a year, and actually have it pointed at a suspect during 5 shifts in a year.

Another thing we considered in terms of uses of force activities was the number of minutes each officer spent tussling, wrestling, and engaged in a full-scale fight. Additionally, we recorded the number of incidents where an officer handled their baton or OC spray, and handcuffed suspects. And as **Table 6.7.b** shows, while officers can expect to engage in tussling 14 times per year, and wrestling 7 times, only twice per year (on average) are they likely to engage in full-scale fighting. Further, those fights are not likely to last more than a minute each.

Incidents where suspects were handcuffed were frequent, and officers can expect to do this at least once during 44 shifts per year for a total of 62 times per year (see **Table 6.7.b**).

Over the course of the ride-a-longs there were fourteen incidents that were recorded as "incidents involving significant resistance from a suspect." Such events were detailed using the *Critical Incident Survey Form* and involved 12 (10%) of the 121

officers participating in the ride-a-long portion of the study. Therefore, we should expect that an officer will have 17 such events (on average) per year.

The incidents themselves lasted (on average) 10 minutes each with a range from 2 to 29 minutes (medium = 8 minutes). Further, as **Table 6.8** indicates, they occurred in a variety of circumstances and involved male suspects who were most likely under the influence of drugs and/or alcohol (**Table 6.9**). Half (50%) of the suspects were violent, and 79% were in average or better fitness. As well, in 36 % of the incidents the suspects were heavier than the officer involved and in an equal percentage of incidents (36%) the suspects were taller than the officer involved (**Table 6.10**).

In terms of "getting the problem", it is noteworthy that 50% of officers were required to run, and on average they ran 87 metres with a range from 5 to 350 metres. Further, 43% of officers reported using either difficult or maximum effort in this activity

In terms of "controlling the problem", 93% of officers were required to push and pull the suspect, 86% had to twist and turn and use control holds to control the suspect, 72% had to use a wrist/arm lock, 57% had to wrestle the suspect, and 43% used a take-down (**Table 6.11**). Further, 36% lifted and carried the suspect, and 21% found it necessary to strike the suspect. In 79% of cases, the officer involved also handcuffed the suspect. All in all, it amounts to a broad range of physical activity carried out in a relatively short period of time expending considerable effort.

Finally, in terms of "removing the problem" a large percentage of officers were required to lift, pull, drag, and push objects of significant mass (see **Table 6.12**), again, requiring considerable effort.

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**Table 6.7.a.** Percentage of officers observed in various forms of force or force readiness activity each shift and number of minutes involved in each form.

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Activity Considered	% of officers observed performing activity	Average # of minutes the activity was performed	Median # of minutes the activity was performed	The range over which the activity was performed
Tussle	8 %	2.5	1	1 – 12
Wrestling	4 %	1.4	1	1-3
Full fight	1 %	1.0	1	1 – 1
Incidents of baton or OC spray	3 %	1.0 time	1 time	1 – 1 time
Incidents of handcuffing	26 %	1.4 times	1 time	1-3 times
Firearm Activity				
Hand on gun	9%	2.3	2	1-4
Snap open	4 %	2.6	.1	1-8
Gun drawn	3 %	1.8	1.5	1 – 3
Gun pointed	3 %	1.3	1	1-2

\* All figures rounded. Observation results: recorded information from ride-a-longs.

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**Table 6.7.b.** Estimated number of shifts and number of minutes (hours) per month each officer will be required to perform various force or force readiness activities (number of minutes per year in brackets).

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Activity Considered	# of shifts per month where activity is required	# of minutes pe month the activity is required
Tussle	1.2 (14.0)	3.0 (36.0)
Wrestling	0.57 (7.0)	0.79 (9.0)
Full fight	0.14 (2.0)	0.14 (2.0)
Incidents of baton or OC spray use	0.46 times (6 times)	0.46 times (6 times)
Incidents of handcuffing	3.7 times (44 times)	5.2 times (62 times)
Firearm Activity		
Hand on gun	1.3 (16.0)	2.99 (36.0)
Snap open	0.56 (7.0)	1.46 (18.0)
Gun drawn	0.46 (6.0)	0.83 (10.0)
Gun pointed	0.42 (5.0)	0.55 (7.0)

\* All figures rounded. Figures assume an average of 14 shifts per month and represent observed data (results from ride-a-longs).

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	Characteristics Considered	% of Total Incidents Observed (n = 14)
-	<b>Type of Incidents</b> - domestic violence - social violence - resistance resulting from investigation - other	14 % 21 % 21 % 43 %
	How the Incident was Initiated - back-up - observed - dispatched	14 % 36 % 50 %
	Location - street, highway, road - residential yard - private residence - bar, pub, club - sidewalk	64 % 14 % 7 % 7 % 7 %
	Officer Status - with partner - acting as back-up - with back-up - alone	43 % 29 % 21 % 7 %

\* All figures rounded. Overall, 75,867 minutes (1265 hrs) of shift activity observed.

Table 6.9. Characteristics of subjects involved in an observed critical incident.

Characteristics Considered	% of Total Suspects
Gender - male	100 %
Mental State - calm, reasonable, cooperative - emotional, upset, abrasive - mentally unstable, unpredictable - violent - under the influence of drugs/alcohol	7 % 14 % 36 % 50 % 64 %
<ul> <li>Physical State</li> <li>below average fitness and abilities</li> <li>average fitness and abilities</li> <li>above average fitness and abilities</li> </ul>	21 % 50 % 29 %

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\* All figures rounded. Overall, 75,867 minutes (1265 hrs) of shift activity observed.

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Table 6.10. Relative size and age of subjects involved in an observed critical incident.

Issue Considered	Officer	Subject	%
Weight	4		
average weight (without armor and equipment)	88 kg	84 kg	
average weight (with armor and equipment)	98 kg		
maximum weight of subject	*	110 kg	
% of subjects weighing more than 88 kg			36 %
% of time subject is heavier than the officer involved (without armor)			14 %
Height			
average height	181 cm	178 cm	
maximum height of subject		191 cm	
% subjects taller than 181 cm			36 %
% of time subject is taller than the officer involved			21 %
Age			
average age	33	28	

\* All figures rounded. Overall, 75,867 minutes (1265 hrs) of shift activity observed.

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Activity Considered	% of officers performing activity	% of officers using difficult or maximum effort
Pushed and pulled subject	93 %	46 %
Twisted and turned controlling a person	86 %	50 %
Applied control holds	86 %	42 %
Handcuffed the suspect	79 %	36 %
Used a wrist / arm lock	71 %	30 %
Wrestled the suspect	57 %	62 %
Used verbal control tactics	57 %	38 %
Used a take-down	43 %	50 %
Lifted and carried suspect	36 %	0 %
Struck the suspect	21 %	67 %
Pulled and pushed an object	7 %	0 %
Used a firearm	7 %	0 %
Lifted and carried an object	0 %	N/A
Twisted and turned using equipment	0 %	N/A
Used baton or OC spray	0 %	N/A • *
Blocked a punch or kick	0 %	N/A
Other	0 %	N/A

**Table 6.11.** Activities performed by officers in controlling the problem.

\* All figures rounded. Overall, 75,867 minutes (1265 hrs) of shift activity observed.

**Table 6.12.** Physical activities performed by officers in removing the problem during observed critical incidents.

Activity Performed	% of officers performing activity	average mass involved (kg)	average distance involved (meters)	% citing difficult / maximum effort
Push	86 %	79 (30 – 100)	12 (0.5 – 95)	42 %
Pull	79 %	83 (40 - 110)	10 (0.5 – 65)	46 %
Lift below shoulder level	50 %	62 (2 - 100)	108 (1 – 750)	14 %
Drag a person or object	43 %	85 (50 - 110)	6 (0.5 - 30)	67 %
Lift above shoulder level	7 %	2	1	0 %

\* all figures rounded (range in brackets). Overall, 75,867 minutes (1265 hrs) of shift activity observed.

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# CHAPTER 7: POPAT AS A SELECTION CRITERIA

Selecting the right people for police work is not only important to the employer, but also in the best interest of the public. Police work, in general, is quite sedentary; however, in the interest of public safety, police are expected to have the ability to apprehend (which may include running, tackling, pushing, pulling and wrestling), arrest and contain criminals (perform take-downs and handcuffing), remove people from damaged vehicles (lifting, carrying, pulling), control large crowds, and separate individuals who are arguing or fighting (pushing, pulling, restraining). Several of theses tasks require maximal effort, and are extremely physically challenging. Failure to screen out individuals who can not perform the physical duties may result in injury, long term disability, rapid employee turnover, and poor productivity, having both a human and economic cost (Brownlie et al., 1985; Superko, Bernauer and Voss, 1988; Greenberg and Berger, 1983; Reilly, Zedeck and Tenopyr, 1979; Wilmore and Davis, 1979).

The results of large scale task analyses would support the notion that there are a core set of physical abilities required in order to function as a police officer, regardless of age, gender, race or geographic location (see **Table 7.1**), leading to the development of several pre-employment screening devices. To determine the ability to with stand the physical rigor of police work, pre-employment screening tests may use one of three methods: an occupational fitness test (Metivier, Gauthier and Gaboriault, 1982; Greenberg and Berger, 1983); an occupational physical abilities test (Farenholtz and Rhodes, 1990; Bonneau 1988 and 1994); or a combination of both (Osborn, 1976; Wilmore and Davis, 1979).

Fitness tests are typically physical or performance related fitness tests, measuring strength, endurance, power and agility in non-occupational specific movement patterns (such as a maximal bench press, 12 minute run, vertical or broad jump, and shuttle run). Physical ability tests are an integrated measure of movement patterns typical of the occupation in question and are more directly related to the specific physical demands of

employment. These tests, while measuring job-related motor abilities, put large amounts of stress on the physiological systems, and reflect the capacity of various fitness parameters (Rhodes and Farenholtz, 1992).

Rank	Present Results (1999)	Restricted * Results (1999)	Farenholtz and Rhodes, 1986	Bonneau 1996	
1 .	sitting	standing	walking	walking	
2	standing	walking	standing	standing	
3	walking	climbing stairs	climbing stairs	climbing stairs	
4	climbing stairs	pulling/pushing	running	lifting	
5	manipulating objects	running	lifting	carrying	
6	twisting / turning	climbing object	carrying	running	
7	pulling / pushing	lifting/carrying	dragging	pulling	
8	running	dragging	pulling	pushing	
9	bend / squat / kneel	jumping	pushing	jumping	
10	lifting and carrying	crawling	vaulting	vaulting	

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\* restricted to categories included in previous studies.

One of the earlier occupational physical abilities tests was designed for the Los Angeles County Sheriff's Department (Osborn, 1976). Using a questionnaire format to collect information concerning essential job-related duties, Osborn constructed a physical agility test consisting of tests that resemble, "as closely as possible, conditions in the field (Osborn, 1976: p.44)." Similarly, Wilmore and Davis (1979) included two physical ability tests, the barrier surmount and arrest simulation and dummy drag tests in their test battery for California State Highway patrolmen.

In Canada, Farenholtz and Rhodes (1986) developed the Police Officer's Physical Abilities Test (POPAT) using the methods developed by Osborn (1976) and Wilmore and Davis (1979). The POPAT was designed to "predict the potential physical ability of the participant to resolve a critical incident involving the average male suspect (Farenholtz and Rhodes, 1990; p.46)," and was later used as the foundation of the Physical Abilities Requirement Evaluation developed by the Royal Canadian Mounted Police (Bonneau and Brown, 1995).

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#### The POPAT

Based on the results of a self-report questionnaire task analysis Farenholtz and Rhodes (1986 and 1990) developed a physical abilities test to be used as a preemployment screening tool for the Justice Institute of British Columbia Police Academy. As the previous authors, Farenholtz and Rhodes divided their physical abilities test into three distinct portions — getting to the problem (a pursuit), solving the problem (an arrest), and removing the problem (a lift and carry).

### **Getting to the Problem**

During a critical incident "Getting to the Problem" typically involves a pursuit or "catching up to" the suspect. In the present study getting to the problem involved walking, running, climbing over objects, vaulting objects, jumping down from objects and over objects, with multiple tasks required in each pursuit. Most often (56% of the time) officers are required to run to the problem with officers exerting maximal effort in 75% of cited incidents.

In the POPAT the ability to "Get to the Problem" is tested through the use of a 400 meter agility run which includes changes in direction and stride length, and the climbing of stairs. The median values for distance run (Farenholtz and Rhodes, 1985; Bonneau, 1996) in a shift were approximately 140 meters, although there was wide variability in the distances reported, and involved 54-64 stairs, jumping 152 cm, and vaulting 140-152 cm. **Table 7.2** presents the data from the critical incidents reported in the present study, as compared to data reported for a typical shift as reported by Bonneau (1988) and Farenholtz and Rhodes (1986).

As reported in Chapter 5, 88% of the respondents in the present study considered running to be an essential task, 92% considered climbing stairs, and 67% considered leaping and jumping to be essential tasks.

The existing data would support the elements related to "getting to the problem" although the run distance and times are longer than those reported. Officers report having to chase suspects on foot, changing direction and speed often, while avoiding or maneuvering over or under objects. Seventy-five percent of the officers surveyed in the present study suggest that they encounter maximal exertion during their pursuits, and is reflected in the POPAT – near maximal cardiovascular stress occurs in 90% of the participants by the fourth lap (Bonneau, 1996).

Rhodes and Farenholtz (1992) found the average time on the run portion of the POPAT to be two minutes and thirteen seconds. While the run is longer than the median distance encountered, the distance covered in the POPAT (400 m) would fall at the 85<sup>th</sup>

percentile of distances reported by Farenholtz and Rhodes (1986), and police officers should expect to run further distances at least once a year. Further, the total number of stairs encountered represents real life situations, although in the POPAT the stairs occur in blocks of six stairs rather than complete flights of stairs.

			Anderson & Plecas 1999 -		Bonneau 1988		Farenholtz & Rhodes 1986	
Task		Freq.	Median	Freq.	Median	Freq.	Median	
Running		54 %	125 m	21 %	161 m	1.4 %	138 m	
Stairs		< 4.0 %	3 ··	69 %	54	36 %	64	
Vaulting		13 %	150 cm	6.0 %	137 cm	2.9 %	152 cm	
Jumping		9%	150 cm	6.9 %	152 cm	2.7 %	152 cm	

**Table 7.2.** Frequency and median values for tasks performed in "getting to the problem."

### **Solving the Problem**

During a critical incident "Solving the Problem" typically involves a physical struggle and arrest. In the present study it was found that 57% of the suspects pushed or pulled on the officer to resist arrest, while 76% of the officers cited pushing and pulling a suspect; 88% of the police officers surveyed considered pushing and pulling an essential task.

Simulation of "Solving the Problem" in the POPAT involves a pushing and pulling apparatus demonstrating the ability to dynamically control 35 kg (80 lbs) of resistance – such as that found when fighting an averaged sized individual. The resistance encountered has been validated elsewhere (as reported in Farenholtz and Rhodes, 1988; Bonneau, 1995), reflecting the resistance encountered during the arrest of the average male suspect.

There are very few methods of assessing one's ability to control a dynamic resistance which are appropriate for a field test, and do not involve a large skill component. Standard fitness tests (push-ups, pull-ups and grip strength) do not correlate well with the "fighting" component of the POPAT (Rhodes and Farenholtz, 1992), while data from the present study would support the pushing and pulling portions of the POPAT. For this reason it appears that pushing and pulling activities measured in the

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POPAT are essential job-related physical activities, and competency in these tasks are not related to standard fitness tests.

The push and pull segment of the POPAT, while measuring unique physical abilities, uses a static body alignment without twisting and turning at the waist, which is not realistic. Seventy-six percent of the officers in the present study reported the need to twist and turn at the waist during the control and arrest of a suspect. There is, however, a safety issue concerning the lower back should twisting and turning at the waist be implemented into the test. This safety concern would also be the case should simulated "take-downs" and other controlling maneuvers be introduced into the test, even though officers report these tasks to be essential.

A report by Loree (1995) clearly demonstrates that force is required to resolve many situations, and that, failure to use force may jeopardize the safety of the public or fellow police officer. However, 80% of the physical encounters last less than one minute, which is not in line with the time required to complete the "fight component" of the POPAT. In its present form Rhodes and Farenholtz (1992) report the average time to complete the "fight component" of the POPAT to be 2 minutes and 16 seconds. The time required to complete this section involves a period of time immediately after the push/pull during which subjects are required to vault over a height of 0.9 meters, perform a controlled landing, and then fall alternately on their back or their stomach. This portion of the test takes on average 60 seconds and was designed to elicit a maximal response from the candidate, during which conscious decisions to fall to the stomach or the back had to be incorporated. However, the movement patterns are not specific to police work while Bonneau (1988) demonstrated that the run portion of the POPAT elicits a maximal cardiovascular response in 90% of the participants after the completion of the fourth of six laps. The present data would concur with previous research that suggests that the vaulting segment of the POPAT may not be required, or should be modified so as to reduce the length of the "fighting" segment of the POPAT.

#### **Removing the Problem**

During a critical incident "Removing to the Problem" typically involves the tasks of lifting or dragging a suspect, or carrying confiscated materials. In the present study 46% of the officers surveyed reported having to lift and/or carry an object below shoulder level, 40% reported pulling a person or object, 36% reported pushing an object, 22% reported dragging a person, and 6% reported having to carry an object above shoulder level. Of those objects manipulated, 80% of them involved moving a person.

Eighty-four percent of the officers surveyed in the present study consider lifting and carrying essential tasks. These tasks are often performed at the end of a critical incident (46% of the time), soon after their maximal effort has been exerted. The POPAT
simulates this scenario by having a lifting and carrying component following the modified squat thrusts at the end of the fight portion. The subject is required to lift and carry a 45.5 kg sack a total of 15.25 m, while negotiating one corner. Both the distance and mass carried appear reasonable, and if anything, conservative. The median mass carried and distance covered found in the present study and those of Bonneau (1988) and Farenholtz and Rhodes (1986) are presented in Table 7.3.

. * *	Anderson & Plecas 1999		Bon 19	neau 988	Farenholtz & Rhodes 1986	
Task	Freq.	Median	Freq.	Median	Freq.	Median
Lifting / Carrying	46 %	75 kg	34 %	31 kg	13 %	27.3 kg
		5 m		15 m		7.6 m
Pulling	40 %	80 kg	16 %	61 kg	4.6 %	60 kg
		3 m		9.1 m		3.0 m
Pushing	36 %	80 kg	7.5 %	61 kg	3.3 %	41 kg
		2 m		4.6 m		3.0 m
Dragging	22 %	80 kg			4.6 %	60 kg
		5 m				3.0 m

**Table 7.3.** Frequency and median values for tasks performed in "removing the problem."

### Summary

The present data are similar to data presented in the past, especially when rank ordering rather than percentage of respondents reporting an activity are examined. Differences in percentage of respondents reporting an activity are due to differences in methods. For example, in the present study each officer filled in one survey concerning their average shift, and one recent critical incident that was physically demanding. Previous studies have obtained multiple surveys from the same officers, and include data concerning full shifts and not single incidents.

The present data, in general, supports the physical tasks encountered in the POPAT. Discrepancies in distances covered and time of the events are evident however. That portion which is least supported would be the inclusion of the vaults at the end of

the fight segment, with the vaulting involved being far more frequent than that reported, and out of sequence, disrupting the normal flow of a pursuit, arrest, and removal of a person and/or property.

Analysis of the present and past data would indicate that the POPAT is a jobspecific test which measures physical abilities that are required in the course of duty as a general duty police officer.

#### Legal Concerns

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Task analyses performed by police departments in developed nations all indicate that there are a core of essential job-related physical abilities that must be performed in the regular course of duty. In fact, there is "marked similarity in the type and intensity of physical activities reported (Bonneau and Brown, 1995: p.158)." However, having determined that a core of activities are essential to satisfactory job performance, insuring the safety of the public, self and fellow officers, few departments have mandatory fitness or physical abilities requirements past a probationary period (IACP, 1988).

Several reports have demonstrated that the majority of police work is essentially sedentary, with 80-90% of the job being devoted to tasks involving limited physical activity (Maher, 1984; Balkin, 1988; Farenholtz and Rhodes, 1986). In fact, there is ample evidence supporting the notion that the physical requirements of police work are not frequent enough to maintain officer's fitness levels, with a good relationship between reduction in fitness and years of service (McGhee, 1976; Wilmore and Davis, 1979; Charles, 1982; Metivier, Gauthier and Gaboriauly, 1982; Maher, 1984; Bonneau and Brown, 1995). In a study examining the fitness levels of 71 members of the Ottawa Police Force Metivier et al. (1982) found the police to have levels of fitness which were similar to the average Canadian population. Wilmore and Davis (1979) found California Highway Patrol officers to have an average level of physical fitness as compared to the general population, concluding that the predominantly sedentary nature of the job led to a rapid deterioration of fitness. Collingwood (1974), in comparing the average police officer to the average inmate, found inmates to be more physically fit, leading to the conclusion that the average police officer would not have the physical capacity to face the average criminal. This is not surprising when one considers the results of Gaul and Wenger (1992) who, examining the health habits of RCMP members outside of their work, found that only 17% of the police officers surveyed engaged in physical activity at an appropriate intensity three time a week.

From a legal standpoint, this information opens the door to several lines of litigation. Task analyses demonstrate that the physical nature of police work does not change, at a given rank, with years of service (Farenholtz and Rhodes, 1986; Bonneau,

1988), yet there are no mandatory fitness or physical abilities requirements of police officers who have been in service for longer than their probationary period (IACP, 1988). Carter (1982), legal advisor for the Waco Texas police department, clearly states that "it makes no sense to select police officers on the basis of their physical fitness and abilities, and then have no requirement that minimum fitness and abilities is maintained (p.15)." If physical fitness is truly job-related, all law enforcement officers should be required to maintain the same levels of fitness.

### **Direct Discrimination**

Direct discrimination occurs when an employer discriminates against an employee on the basis of that person belonging to an identifiable group. A case for discrimination can only be successful if it is shown that there is intent to discriminate – such as having a policy prohibiting the hire of a female or minority group (Davis, 1980; Maher, 1984; Blair, 1995). Should such a case be made against the POPAT, the employer would only have to demonstrate that the POPAT is a bona fide occupational requirement. The Supreme Court of Canada, in *Ontario v Etobicoke* (1982: 1 S.C.R.202, p.208) defined the general principles of a bona fide occupational requirement as follows:

To be a bona fide occupational qualification and requirement a limitation... must be imposed honestly, in good faith, and in the sincerely held belief that such limitation is imposed in the interests of the adequate performance of work involved in the reasonable dispatch, safety and economy, and not for the ulterior or extraneous reasons... In addition, it must be related in an objective sense to the performance of the employment concerned, in that it is reasonably necessary to assure the efficient and economical performance of the job without endangering the employee, his fellow employees and general public.

Blair (1995) and Evans (1980) suggest that an employer can successfully uphold its discriminatory practice if the bona fide occupational requirement reduces unacceptable safety risks to the employee, co-workers or the public. It is Blair's opinion that the employer would have difficulty in demonstrating that the POPAT is a bona fide occupational requirement as many certified police officers would be unable to pass the POPAT. In fact, Rhodes and Farenholtz (1992) found that in a group of 98 certified police officers, only 55% of them could pass the POPAT, with 68% of the males and 16% of the females completing the POPAT in the time allotted.

While the present results would suggest that the POPAT requires the performance of essential job-related physical abilities, and should be considered a bona fide occupational requirement, arguments to the contrary will most likely involve the unfair application of the test — only applied to new recruits.

#### **Adverse Impact Discrimination**

Adverse impact discrimination involves a policy that has the appearance of being "neutral" on its face, but adversely effects a person or group of persons (such as females or new recruits) differently from others to which the same policy applies (Davis, 1980; Maher, 1984; Blair, 1995). A case for adverse impact discrimination could be made by women based on the results of Rhodes and Farenholtz (1992), and Hernandez (1981) who found the majority of male police officers and/or recruits to pass the physical abilities tests, while only 16% of the females obtained passing times. This would suggest that physical abilities tests carry adverse impact on women, especially in those components requiring upper body strength (Maher, 1984). A similar case could be made for recruits when the majority of seasoned veterans in the police force who have satisfactory job performance could not pass the physical abilities test (Bonneau, 1988; Rhodes and Farenholtz, 1992).

According to Blair (1995), the only defence against adverse impact discrimination is to demonstrate that the occupational requirement is "rationally connected to the performance of the job" and that the employer has "reasonably accommodated" the employee to the point of undue hardship. Without being able to defend the first because of differential application of physical abilities requirements between recruits and certified officers, again this defence may be difficult. Towards this end, the RCMP has developed a model (Gaul and Wenger, 1992) which would direct "reasonable accommodation" and the development of the physical abilities required by seasoned officers.

#### Moving Towards Global Standards

Should the tasks identified be essential to satisfactory job performance, all individuals in similar positions should be required to reach the same standard. According to Bonneau and Brown (1995) recent adjudication has suggested that "an employer cannot demand from applicants a level of performance not asked for from incumbents (p.162)." If such a standard is not universally applied, litigation directed towards the standards will be difficult to defend (McGhee, 1976; Ebel, 1977; Evans, 1980; Maher, 1984; Blair, 1995: Bonneau and Brown, 1995).

Moving towards a universal application is difficult, however, without the measure appearing to be "punitive" in nature. If the employer can demonstrate that the standards are critical to job-performance, reasonable to obtain, and it is "impossible to accommodate those who do not meet the standard, since it is based on the very nature of the work (Bonneau and Brown, 1995: p.161)," it would be necessary to remove those from their positions who could not reach the standards set. This, according to Canadian courts, is acceptable provided the employees effected have been reasonably accommodated and provided a sufficient grace period to meet the standards set. The RCMP have moved towards implementation of a force-wide job performance standard. Gaul and Wenger (1992) describe the results of a two year longitudinal study concerning the implementation of these standards, and the educational support they received during this period. Initially, of those attempting the PARE 69% were able to complete the PARE in less than 4:00 minutes, and 83% were able to complete the PARE in less than 4:00 minutes and 88% in less than 4:30. After an 18 month period these numbers improved to 72% completing the PARE in less than 4:00 minutes and 88% in less than 4:30. While there were several medical exemptions to performing the PARE (20%), 78% of the constables were able to complete the PARE in under 4:00 minutes at the beginning of the project, while 93% of them completed the PARE in under 4:00 minutes at the end of the project with fewer higher ranking officers passing the test. The conclusions suggested that the PARE was a reasonable and achievable standard for "most able-bodied regular members... if graduated goals are provided for members to attain (p.83)."

In "Discrimination: A legal definition in the employment context" Tinsley (1998) defends the use of pre-employment tests as measures of bona fide occupational requirements. As defined by Tinsley (1998), a bona fide occupational requirement is a rational link between a policy that "discriminates on a legislatively prohibited ground" and on occupation, and is defendable in a court of law. For example, in a recent case (Public Service Employee Relations Committee v British Columbia Government and Service Employee's Union, 1997) the British Columbia Court of Appeal overturned an arbitrator's decision that required an employer to accommodate an employee on the basis that indirect discrimination had occurred.

This case involved a female employed in the physically demanding role as a crew member of a British Columbia Ministry of Forests first response fire fighting team. This role places large demands on the aerobic and muscular systems, and these demands have been defined as bona fide occupational requirements as failure to perform on the job may jeopardize the safety of the crew member, the crew, or the general public. However, the fitness standard created resulted in a passing rate of only 35% for females as compared to the 65% passing rates for males.

While on its face the fitness standard appears to be neutral, with all employees having to reach the same fitness standard, the large difference between the passing rates of males and females would suggest the fitness standard indirectly discriminates against women.

In the ruling by the B.C. Court of Appeal, the court reasoned that "because the distinction was not based on personal characteristics attributed to an individual solely on the basis of association with a group (i.e. females), but rather based on individual merits and capabilities relevant to the occupation, discrimination did not occur (Tinsley, 1998; p.25)." This decision was later appealed to the Supreme Court of Canada and a decision was rendered in favor of the firefighter. This decision was based on several factors,

including: failure to demonstrate undue hardship; failure to demonstrate a safety risk (either personal or other); and problems in test construction and the assignment of criterion scores. This ruling sets out a clearly defined precedent with components which must be addressed in a successful defense of the POPAT; However, in combination with the findings of this and previous studies defining the occupational requirements of police work (Bonneau, 1988; Farenholtz and Rhodes, 1990), a defense of the POPAT as a preemployment screening device should be easier to mount and defend successfully.

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## **APPENDICES**

A. Physical Work Record Survey Form B. Critical Incident Survey Form C. Cover Letter D. Observation Report

# APPENDIX A PHYSICAL WORK RECORD SURVEY FORM

# POLICE ACADEMY

# PREPARE STUDY

(Police Recruit Entrance Physical Ability Requirement Exercise)



UNIVERSITY COLLEGE of the FRASER VALLEY

# PHYSICAL WORK RECORD FORM

RESEARCH TEAM

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### **PHYSICAL WORK RECORD FORM**

### **RE-EVALUATING THE POPAT**

As you are aware, anyone hired to be a municipal police officer in British Columbia is first required to pass a physical abilities test. That test (i.e. the POPAT) was introduced in 1986 and is based on an assessment of the physical demands of being a police officer at that time, The primary purpose of *this* study is to determine the extent to which the POPAT needs to be revised for policing today.

For your part we are asking you to assist us by completing two questionnaires - this one, which asks you to describe the physical demands of your job "on average", and another, which asks you to describe the most physically demanding situation you have ever encountered as a police officer *in the last six months.* We will be asking you to tell us how essential you feel various physical activities are, how frequently you engage in them, and how much effort is required to meet the demands of various activities.

In asking you to complete the questionnaire, we are aware that many demands of your job are quite obvious. Given that, we suspect that some of the questions asked will seem silly to you (they do to us as well). Remember though, the obvious may not be so obvious to someone seeking to take issue with the stated physical requirements of the job. With this in mind, it is very important that each question be regarded seriously and answered as accurately as possible.

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As you should expect, your responses will be kept confidential and accessed only by the research team. Your completed questionnaires should be placed in the envelope provided and returned to your immediate supervisor by June 30th. In the meantime, if you have any questions or concerns about the study please do not hesitate to call Dr. Greg Anderson at 820-6004.

Many thanks.

## **BACKGROUND INFORMATION**

If you do not know your exact body weight, height or fitness level please provide your closest estimate.
1. What is your current duty position?
2. What is your length of service? Years Months
3. What is your age? Years
4. Do you work with a partner? Yes No Sometimes
5. Do you normally work a full shift rotation (i.e. work all shifts)? Yes No
6. What is the usual length of your shifts? # of Hours
7 Are you assigned to a special duty (e.g. SWAT K-Q etc.)? Ves No.
If yes please specify
IT yes, please speeny.
8. What is your gender? Male Female
, ,
9. What is your height?cm. orinches
10. What is your weight? kg. or lbs.
11. How would you rate your personal level of physical fitness? (check the appropriate box)
poor below average average above average excellent
12. How would you rate your current physical ability to perform policing duties?
poor somewhat inadequate adequate more than adequate excellent

# **ESSENTIAL PHYSICAL ACTIVITIES DURING DUTY**

		Never Performed (not required)	Not Essential (seldom performed)	Essential "But" (task can wait/ assist)	Very Essential (task can't wait/ assist)	Absolutely Essential (must perform)
s	1 How essential is Sitting:			ū		
and a	2. How essential is <b>Standing</b> and Walking:					
	3 How essential is <b>Running</b> :	ū				
	4. How essential is Climbing up and Down Stairs:		a			
	5 How essential is Climbing Up Onto and/or down from Objects:(such as furniture)	0 *				0
	6. How essential is Bending, Squatting And Kneeling:					
	7. How essential is Crawling:	D		G		a

.

# **ESSENTIAL PHYSICAL ACTIVITIES DURING DUTY (CONT'D)**

	Never Performed (not required)	Not Essential (seldom performed)	Essential "But" (task can wait/ assist)	Very Essential (task can't wait/ assist)	Absolutely Essential (must perform)
8. How essential is <b>Pulling</b> and Pushing:					a
9. How essential is Lifting and Carrying:			ū		
10. How essential is Lifting Above the Shoulders:	ū	ū	a	ū	
11 How essential is <b>Twisting and</b> <b>Turning the Trunk (back)</b> :	i D				Q
12. How essential is Handling/ ` Manipulating Objects:		D	ũ		
13. How essential is Writing:				D	
14. How essential is Typing:					

## FREQUENCY OF PHYSICAL ACTIVITY DURING DUTY

	Never Performed (not required)	Seldom Performed (seldom required)	Occasionall Performed (maybe 1 per week)	y Often Performed (maybe 1 or more per shift)	<b>Constantly</b> <b>Performed</b> (always performed)
1. How frequent is Sitting:	Q	•			
2. How frequent is Standing and Walking:	Q		D	۵	a
3. How frequent is Running:				D	Q
4. How frequent is Climbing Up/Down Stairs:					
5. How frequent is Climbing Up Onto and/or Down From Objects: (such as furniture)	D				
6. How frequent is Bending, Squatting And Kneeling:	C	0	0		
7 How frequent is Crawling:		a	0		D

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# FREQUENCY OF PHYSICAL ACTIVITY DURING DUTY (CONT'D)

	Never Performed (not required)	Seldom Performed (seldom required)	Occasionall Performed (maybe 1 per week)	y Often Performed (maybe 1 or more per shift)	Constantly Performed (always performed
8. How frequent is <b>Pulling</b> and Pushing:					
9 How frequent is Lifting and Carrying:	Q		a	ū	
10. How frequent is Lifting Above The Shoulders:		Q		۵	Q
11 How frequent is <b>Twisting and</b> <b>Turning the Trunk (back):</b>					
12. How frequent is <b>Handling</b> / <b>Manipulating Objects:</b>					
13 How frequent is Writing:	ū				0
14. How frequent is <b>Typing:</b>	a	a			a



# **EFFORT OF PHYSICAL ACTIVITY DURING DUTY**

		Minimum Effort (little/minimal effort)	Minimum to Medium (noticeable-about 25% of my maximum effort)	Medium Effort (about 50% of my maximum effort)	Medium to Maximum (quite hard work about 75-80% of maximum effort)	Maximum Effort (my maximum effort-as hard/ fast as I can work)
1.	If Running is essential what effort do you usually use:			D)	0	<b>D</b>
2.	If Climbing Up/Down Stairs is essential what effort do you usually expend:					Q
3.	If <b>Pulling and Pushing</b> abilities are essential what effort do you use to gain control over clients:			a		
4.	If <b>Lifting and Carrying</b> of objects, equipment, tools and persons are required, how much effort do you usually use:	a				à

## **SPECIFIC INFORMATION**

1. How much time during your shift do you normally spend sitting?	# of minutes
2. How much time during your shift do you normally spend standing?	# of minutes
3. How much time during your shift do you normally spend walking?	# of minutes
4. How much time during your shift do you normally spend <i>running</i> ?	# of minutes
5. How much time during your shift do you normally spend crawling?	# of minutes
6. How much time during your shift do you normally spend <i>sqatting or kneeling</i> ?	# of minutes
7. How much time during your shift do you normally spend <i>bent over at the waist</i> ?	# of minutes
8. How much time during your shift do you normally spend pulling/pushing objects?	# of minutes
9. How much time during your shift do you normally spend • <i>lifting/carrying above the shoulders</i> ?	# of minutes
10. How much time during your shift do you normally spend <i>lifting/carrying below the shoulders</i> ?	# of minutes
11. How far do you walk during an average shift?	# of km
12. How far do you run during an average shift?	# of km
13. How many stairs do you <i>climb</i> during an average shift?	# of stairs

-

14. When pushing/pulling what is the maximum resist	ance?	# of kg
15. When lifting/carrying <i>above</i> the shoulders, what is	the maximum resistance?	# of kg
16. When lifting/carrying <i>above</i> the shoulders, what is	the distance covered?	# of metres
17. When lifting/carrying below the shoulders, what is	the maximum resistance?	# of kg
18. When lifting/carrying below the shoulders, what is	the distance covered?	# of metres

Please provide additional comments concerning your working environment, equipment, uniforms, etc. that can be improved to assist you in performing your duties with a greater degree of safety, reduce the potential for medical problems, etc. Your comments will be recorded anonymously.

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# APPENDIX B CRITICAL INCIDENT SURVEY FORM

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# POLICE ACADEMY

# PREPARE STUDY

(Police Recruit Entrance Physical Ability Requirement Exercise)



UNIVERSITY COLLEGE of the FRASER VALLEY

# **CRITICAL INCIDENT FORM**

RESEARCH TEAM DR. GREG ANDERSON, DEPT. OF KINESIOLOGY & PHYSICAL EDUCATION, UCFV DR. DARRYL PLECAS, DEPT. OF CRIMINOLOGY, UCFV ROBIN LITZENBERGER, RESEARCH ASSISTANT PAUL LOVATT, RESEARCH ASSISTANT

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<b>D</b> #		

## **CRITICAL INCIDENT FORM**

## **INSTRUCTIONS**

The purpose of this information is to clearly identify the physical work police officers perform during their efforts to resolve critical incidents. A "critical incident" is defined to include:

1. All Physical Custody (Arrests)

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- 2. All Vehicle and Foot Pursuits
- 3. All Dispatched Code Responses (Emergency)
- 4. All Motor Vehicle Accidents that Require Physical Work
- 5. All Calls Which Present an Active Threat to Life and/or Property

Please complete this form - recalling the most demanding critical incident during the course of your duties anytime within the last six months. Usually the response to such incidents involve three phases:

- 1. Getting to the Problem
- 2. Controlling the Problem
- 3. Removing the Problem

This form is organized to assist you in recalling and recording the sequence of events and the work performed during each of these phases. Please provide complete information in each of areas using your best estimates of time, distance, weights, measurements, etc. It is important to note how hard you worked (the degree of effort you expended) rated on a 5 point effort scale.

### **5** Point Effort Scale

- 1. Minimum Effort (routine, normal, little effort)
- 2. Noticeable Effort (little extra effort)
- 3. Medium Effort (half your maximum effort)
- 4. Extreme Effort (quite hard work)
- 5. Maximum Effort (as hard as you could)

If you feel that additional comments would assist the researchers in interpreting/applying your information, please use the space that has been provided at the end of this form.

Thank you.

### **CRITICAL INCIDENT - BACKGROUND INFORMATION**

Please provide us with some background information concerning the critical incident. This will help us understand and interpret the circumstances of the event.

Date of occurrence: Police file			umber:			
1. What was the nature of	of the incident?					
MVA Domesti Violence	ic Social e Violence	Resistance resulting from investigation	Other			
2. Were you acting alone?						
Alone With Partner	G With Back Up	Acting as Back Up	Other			
3. How was the incident	initiated?					
Observed Dispatch	ned 🛛 Planned	Back up Investigation	Other			
4. When did the incident	occur (eg. 0800 hrs)?					
5. How much time elapse	d during your involvement	nt in this incident?	minutes			
6. What was the location	of the incident (check the	e appropriate boxes below	v):			
<ul> <li>1. Airport</li> <li>2. Apartment Bldg</li> <li>3. Basement Suite</li> <li>4. Bridge/Overpass</li> <li>5. Business Office</li> <li>6. Business Spts. Club</li> <li>7. City Street</li> <li>8. Hospital</li> <li>9. Industrial Lot</li> </ul>	<ul> <li>11. Liquor Store</li> <li>12. Mall Retail Store</li> <li>13. Police Cell Area</li> <li>14. Police Office</li> <li>15. Private Apartment</li> <li>16. Private City Yard</li> <li>17. Private Club</li> <li>18. Private Motor Veh.</li> <li>19. Private Residence</li> </ul>	<ul> <li>21. Public (city) Park</li> <li>22. Public Admin. B</li> <li>23. Public Highway</li> <li>24. Public Transit</li> <li>25. Public Transit St</li> <li>26. Restaurant</li> <li>27. Rural Area Road</li> <li>28. Rural Farm Yard</li> <li>29. School</li> </ul>	<ul> <li>a 31. Sidewalk</li> <li>ldg. 32. State Park</li> <li>33. Store Warehouse</li> <li>34. Street Retail Store</li> <li>a 35. Tavern or Bar</li> <li>36. Theater</li> <li>37.</li> <li>38.</li> <li>39.</li> </ul>			
10.Industrial Warehouse	20. Pub. Sports Facility	30. Shopping Mall	<b>4</b> 0.			

## **CRITICAL INCIDENT - GETTING TO THE PROBLEM**

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The first phase of a response requires activities relating to "getting to the problem . If you may perform any of the activities listed below, please provide the appropriate information. If you did not perform any of the listed activities, please mark the "does not apply" box. The first phase of a response requires activities relating to "getting to the problem". If you had to

Driving	Applies	Does not a	apply	
Road Co	onditions	Structure		Location
Dry/b Wet Snow Other	oare covered/icy	Asphalt/co Gravel Dirt Other	oncrete	<ul> <li>City</li> <li>Highway</li> <li>Rural</li> <li>Off road</li> <li>Other</li> </ul>
What	was your top speed?		km/h	
What	was your average spe	eed?	km/h	
How	far did you travel?		km	
Running	Applies	Does not a	pply	
□ Walke □ Ran t	d to location o location	Metres walked: Metres run:		
Effort re Minin Notic Medi Extre	equired: mum effort eable effort um effort eme effort mum effort	Surface I ran asphalt gravel/rock mud sand grass other	on: c	Slope over the distance run. <ul> <li>mostly flat</li> <li>down hill</li> <li>mostly uphill</li> </ul>
I mad I ran I ran	e sharp turns up stairs down stairs	How many? _ How many? _ How many?		

# Climbing/Vaulting

4

I climbed over objects		
Effort required: Minimum effort Noticeable effort Medium effort Extreme effort Maximum effort	Object(s): fence railing wall other	How many?
I vaulted over objects		
Effort required: Minimum effort Noticeable effort Medium effort Extreme effort Maximum effort	Object(s): fence railing wall other	How many?
Thinking of the most difficult object climbed:		
Effort required: Minimum effort Noticeable effort Medium effort Extreme effort Maximum effort	Object(s): fence railing wall other	Object height:m. orin.
Jumping/Dropping		
I jumped over objects		
Effort required: Minimum effort Noticeable effort Medium effort Extreme effort Maximum effort	Object(s): ditch debris traffic abutment other	How many?

I jumped down from	•	
Effort required: Minimum effort Noticeable effort Medium effort Extreme effort Maximum effort	Object(s): ditch debris traffic abutment other	How many?
Thinking of the most difficult object jumped over or from:		
Effort required: Minimum effort Noticeable effort Medium effort Extreme effort Maximum effort	Object(s): ditch debris traffic abutment other	Object height:m. orin.
<b>Quick Reactions</b>		
I reacted quickly	Number of Times	
	For What Reason? To avoid a traffic acc To avoid falling To avoid running inte To avoid being struch To gain control over Other	cident o something k (i.e. hit, etc.) a person

## Additional Comments

\*

\*

Give any other pertinent information which describes your physical activities while *Getting to the Problem*:

## **CRITICAL INCIDENT - CONTROLLING THE PROBLEM**

The second phase of a resonse requires activities relating to "controlling the problem". If you had to perform any of the activities listed below, please provide the appropriate information, including an effort rating as outlined below.

	1.	<b>Minimum Effort</b>	(routine, normal, lit	ttle effc	ort)			
	2.	<b>Noticeable Effort</b>	(little extra effort)					
	3.	<b>Medium Effort</b>	(half your maximur	n effor	t)			
	4.	<b>Extreme Effort</b>	(quite hard work)					
	5.	<b>Maximum Effort</b>	(as hard as you cou	ld)				
I pulled and pushed a person		Effort required	1. 🗖	2. 🗖	3. 🗖	4. 🖸	5. 🗖	
I pulled and pushed equipment			Effort required	1. 🗖	2. 🗖	3. 🗖	4. 🗖	5. 🗖
I lifted and carried a person		Effort required	1. 🗖	2. 🗖	3. 🗖	4. 🗖	5. 🗖	
I lifted and carried equipment			Effort required	1. 🗖	2. 🗖	3. 🗖	4. 🗖	5. 🗖
I twisted/	turned c	controlling a person	Effort required	1. 🗖	2. 🗖	3. 🗖	4. 🗖	5. 🗖
I applied	control	holds	Effort required	1. 🗖	2. 🗖	3. 🗖	4.	5. 🗖
I twisted and turned using equipment			Effort required	1. 🗖	2. 🗖	3. 🗖	4. 🗖	5. 🗖

1. 2. 2. 3. 4. 5. 0 I used verbal control tactics Effort required

## **Suspect/Victim Information**

Estimate and rate perceptions of the subject(s) you encountered during this critical incident.

		Subject #1	Subject # 2	Subject #3	Subject #4
Subject's status		victim suspect	victim suspect	victim suspect	victim suspect
Height	 0 <b>r</b>	cm in	cm in	cm in	cm in
Weight	or	kg lb	kg lb	kg lb	kg lb
Age		yr	yr	yr	yr
Gender		□ male □ female	☐ male □ female	□ male □ female	☐ male ☐ female

### What type of resistance did the suspect use to resist arrest?

(If the suspect resisted in any of the following ways, please check the appropriate box for that subject)

4	Subject #1	Subject # 2	Subject #3	Subject #4
	Ū.			
		-		D
				_
	ja,	Subject #1	Subject #1       Subject #2         0       0	Subject #1       Subject #2       Subject #3         0       0       0

### What type of resistance did the suspect use to resist arrest?

(If the suspect resisted in any of the following ways, please check the appropriate box for that subject)

	Subject #1	Subject # 2	Subject #3	Subject # 4
Talked to the suspect				
Handcuffed the suspect				
Searched the suspect				
Used wrist / arm lock				
Used a take-down				
Blocked a punch or kick				
Struck the suspect (punch, elbow, etc.)				
Wrestled the suspect (body/neck holds)				
Used pepper spray in gaining control				
Used a baton in gaining control				Q.
Used a firearm in gaining control				
Other				

### **Application of restraining devices**

5

(If you applied restraint equipment in any of the following ways, please check the appropriate box for that subject)

	Subject #1	Subject # 2	Subject #3	Subject # 4
Standing, cooperatively				
Standing, with resistance				
Kneeling,				
Prone, cooperatively				
Prone with resistance				
No other officer assisted				
One or more officers assisted				

The perceived mental and physical abilities (fitness) of the suspect are some of the determining factors in how and at what level of force the officers engage the suspect/victim(s). Please complete this section by rating the perceived mental state and physical fitness (abilities) of the suspect/victim(s) using the point scales listed below, and the type of resistance encountered.

	Subject #1	Subject # 2	Subject #3	Subject #4
Mental State	12345	12345	12345	12345
Physical Ability	12345	12345	12345	12345
Resistance	$ \begin{array}{c} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{array} $	$ \begin{array}{c} (1) & (2) & (3) & (4) \\ (5) & (6) & (7) & (8) \end{array} $	$ \begin{array}{c} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{array} $	$ \begin{array}{c} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{array} $

### **Mental State Definitions**

- 1. Calm, Reasonable, Cooperative
- 2. Emotional, Upset, Abusive
- 3. Mentally Unstable, Unpredictable
- 4. Under the Influence of Drugs/Alcohol
- 5. Violent

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### **Physical Fitness and Abilities Definitions**

- 1. Poor Fitness and Abilities
- 2. Below Average Fitness and Abilities
- 3. Average Fitness and Abilities
- 4. Above Average Fitness and Abilities
- 5. Excellent Fitness and Abilities

### **Type of Resistance Definitions**

- 1. None
  - cooperative, followed all verbal instructions of the officer
- 2. Slight
  - I had to use some physical force [skills] to encourage suspect to cooperate
- 3. Moderate
  - I had to use arm/wrist lock and/or distracting techniques to gain compliance and control
- 4. High

- I had to use fighting skills to disengage [to use spray or baton] or continue to fight in an effort to gain control

5. Violent

- I had to use fighting skills to disengage [to use spray/baton/firearm] or continue to fight and use neck restraint

6. Explosive

- I decided not to engage suspect and had to use spray / baton / firearm or other equipment [special weapons and tactics] to gain control

- 7. Suspect Ran Away from officer in an attempt to escape
- I had to chase and control
- 8. Suspect Threw Object at me with intent to obstruct or injure

### **CRITICAL INCIDENT - REMOVING THE PROBLEM**

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The third phase of a response requires activities relating to "removing the problem". If you had to perform any of the activities listed below, please provide the appropriate information, including an effort rating as outlined below. If you did not perform any of the listed activities, please mark the "does not apply" box.

·****		1. 2. 3. 4. 5.	Minimum Effort Noticeable Effort Medium Effort Extreme Effort Maximum Effort	(routine, normal, little effort) (little extra effort) (half your maximum effort) (quite hard work) (as hard as you could)	
3	Lifting and	Carrying	Applies	Does not apply	
4	[	I lifted / carried of below shoulder lev	bjects vel	I lifted / carried objects at or <i>above</i> shoulder level	
	required: 1	1. 0 2. 0 3. 0	4. 🖸 5. 🖸	1. 0 2. 0 3. 0 4. 0 5. 0	
	Weight: k	kglbs		kg lbs	
	Distance: n	n yds _		m yds	
Object:  police equipm traffic equipm evidence (seiz emergency me male person female person other		<ul> <li>police equipment</li> <li>traffic equipment</li> <li>evidence (seized of emergency medication male person</li> <li>female person</li> <li>other</li> </ul>	(cones, etc.) objects) al equipment	<ul> <li>police equipment</li> <li>traffic equipment (cones, etc.)</li> <li>evidence (seized objects)</li> <li>emergency medical equipment</li> <li>male person</li> <li>female person</li> <li>other</li> </ul>	
	Pulling/Dra	Igging	Applies	Does not apply	
	Effort required: 1	I pulled / dragged	an object (#1) 4. 🗖 5. 🗖	□ I pulled / dragged an object (#2) 1. □ 2. □ 3. □ 4. □ 5. □	
	Weight: k	iglbs		kg lbs	
	Distance: m	n yds		m yds	
	Object:	<ul> <li>equipment cart</li> <li>evidence (seized of male person</li> <li>female person</li> <li>other</li></ul>	objects)	<ul> <li>equipment cart</li> <li>evidence (seized objects)</li> <li>male person</li> <li>female person</li> <li>other</li> </ul>	

Pushing	Applies	Does not apply	
I pushed an object	rt (#1)	I pushed an object	t <b>(#2)</b>
required: $1. \Box 2. \Box 3. \Box$	4. 🖬 5. 🖬	1. 🖸 2. 🖬 3. 🖬	4. 🖸 5. 🖸
Weight: kg lbs _	×	kg	lbs
Distance: m yds		m	yds
Object: equipment cart vidence (seized male person female person other	objects)	<ul> <li>equipment cart</li> <li>evidence (seized of male person</li> <li>female person</li> <li>other</li></ul>	bjects)
I reacted quickly	Number of Times		
	For What Reason? To avoid a traffic To avoid falling To avoid running To avoid being str To gain control ov Other	accident into something ruck (i.e. hit, etc.) ver a person	

## Additional Comments

Give any other pertinent information which describes your physical activities while *Controlling the Problem*:
## APPENDIX C COVER LETTER

.



#### **Police Academy**

715 McBride Boulevard New Westminster, B.C. V3L 5T4 Telephone (604) 525-5422 Fax (604) 528-5754

Dear

## Re: Study of Police Officer Physical Abilities Test (POPAT)

I would like to take this opportunity to say a few words about the POPAT study that the Police Academy is conducting for the municipal policing community of British Columbia.

To ensure that the POPAT continues to be a valid personnel selection tool it must be reevaluated, and so the Police Academy needs your help. As a patrol constable, you are uniquely qualified to supply information on the physical abilities that are necessary to perform the patrol function, which is the heart of policing. Consequently, your opinions and observations are extremely important. Please take 15 to 30 minutes of your time to complete both attached survey questionnaires, which are **absolutely confidential**.

Please seal both surveys in the attached envelope and give it to the person identified on the envelope as soon as possible. The number on the survey questionnaires and the envelope is your unique number. Once all surveys have been collected, all names will be destroyed; therefore, should you request feedback on your results, you need to be able to supply your unique number.

Your response will have a direct impact on the selection of police recruits, and I want to express my sincere appreciation for your cooperation in this study.

Yours truly,

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Paul N. Tinsley Program Director Advanced Program

PNT/am

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## APPENDIX D OBSERVATION REPORT

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## **Observational Report Coding Categories**

#### **Physical Movement**

Sitting full minute Sitting over 30 sec. Sitting under 30 sec. Standing full minute Standing over 30 sec. Standing under 30 sec. Walking full minute Walking over 30 sec. Walking under 30 sec. Running full minute Running over 30 sec. Running under 30 sec. Bending Balancing Crawling Jumping Climb up stairs Climbing down stairs Climbing on objects Lifting above Lifting below Squatting/kneeling Twisting /turning Getting In car Getting Out of car Workout

#### **Physical Force Applications**

Pushing pulling Tussel Wrestling Full scale fight

#### **Driving situations**

Driving normal Driving minor pursuit Driving Major pursuit Code 1 Code 2 Code 3

#### **Idling in Police Vehicle**

Idling - watching Idling - traffic violator stop Idling - suspicious vehicle stop Idling - other

#### Verbal Communication

Talking - complainant Talking - suspect Talking - witness Talking - radio Talking - other Talking - other Talking - victim Talking - informant Talking - fire department Talking - fire department Talking - guvenile Talking - police officer

#### **Force Options**

Firearm - hand on gun Firearm - snap open - hand on gun Firearm - gun drawn Firearm - gun pointed Firearm - gun discharged Force - OC spray Force - baton use Force - handcuffing

#### **Equipment Usage**

Handling objects - radio Handling objects - flashlight Handling objects - other Handling object - baton Using in car megaphone Using in car radar Using normal telephone Using cell phone Using binoculars Using video camera Typing - computer in station Typing - Mobile Data Terminal

#### **Other Activities**

Writing Reading Surveillance Fingerprinting Work break

Observation	Report -	Legend
	*	

A Driving	<ol> <li>Code 1 - Regular response to call</li> <li>Code 2 - Fast as you can respond to call</li> <li>Code 3 - Emergency response to call</li> <li>Normal driving</li> <li>Minor pursuit</li> <li>Major pursuit</li> </ol>
B. Idling	<ol> <li>Watching</li> <li>Traffic violator stop</li> <li>Suspicious vehicle stop</li> <li>Other</li> </ol>
C. Call Assignment	1. Assigned 2. Back-up
D. Talking	<ol> <li>Complaintant</li> <li>Suspect</li> <li>Witness</li> <li>Radio</li> <li>Other</li> </ol>
E. <u>Use of Force</u>	<ol> <li>Tussel</li> <li>Wrestling</li> <li>Full scale fight</li> <li>Baton Use</li> <li>OC spray</li> <li>Handcuffing</li> </ol>
F Firearm Use	<ol> <li>Hand on gun</li> <li>Snap open - hand on gun</li> <li>Gun drawn</li> <li>Gun pointed</li> <li>Gun discharged</li> </ol>

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## POLICE RECRUIT PHYSICAL ABILITIES STUDY

# **OBSERVATION REPORT**

1. Date:			e e e e
2. Day of W	/eek:	9	
3. Weather:	Start Midpoint	5	Temperature
	End		
4.Start Time		End Time	
5. Shift Ord	er: D	N	
6. Weight:	Start Equipped End		
7. How man	y hours of slee	ep did you get pric	or to this shift?hrs
8. How long	; have you bee	n awake prior to th	his shift?hrs
9. How diffi	cult was it for	you to get to sleep	p? ( Please circle the appropriate number)
	1. Ve 2. Sor 3. Ne 4. Sor 5. Ve	ry difficult newhat difficult ither newhat easy ry easy	5 *
10. How wo	uld you rate y	our present level o	f tiredness? ( Please circle the appropriate number)
		Before	After
r i	1. Ve 2. So 3. Ne	ry tired newhat tired ither	<ol> <li>Very tired</li> <li>Somewhat tired</li> <li>Neither</li> </ol>
	4. Soi 5. Ve	newhat rested	4. Somewhat rested 5. Very rested

25

# **OBSERVATION REPORT**

Page #\_\_\_\_

	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	П	10	9	8	7	6	5	4	3	2	1	1	0	2 2 2 2010
Balancing							E	alan	cing									Bala	ncir	g								Bala	nci	12	T		Balancing
Bending		1	Benc	ing									Ben	ding									Bo	ndiı	g						Τ		Bending
Break								Bre	ak									B	eak									E	real		T		Break
Climb up stairs	C	mb	ing	up st	airs							Clim	bing	up s	tair							Cli	nbin	ıg up	stai	8				Γ	Τ		Climb up stairs
Climbing down stairs						CI	mbi	ng do	wn s	airs						C	limb	ng c	own	stai	5				3		Clin	bin	dov	su st	inters	ş	Climbing down stairs
Climbing on objects	Clin	nbir	ig oi	obj	ects						С	imb	ng c	n oh	ject							Clin	bin	on	obje	ls							Climbing on objects
Crawling							0	raw	ing		( <b>7</b> )							('rav	ling			~						Cri	wli	ng	Ţ		Crawling
Driving		D	rivit	g									Dri	ving								8	t	rivi	g					1	T		Driving
Firearm								Firea	rm									Fire	arm									Fir	earn	1	T		Firearm
Force		F	orce										For	e									Fo	ce						Γ	T		Force
Handling objects							Ha	ndlin	g ob	ects							land	ling	obj	ects		2 *1					H	andl	ing o	obje	els		Handling objects
Idling		1	llin	4									ldli	ng									1	lling						1	T		Idling
In/Out of car							In	Ou	of	ar			2010-1				ln/	Out	ofc	ar								ln/	Out	ofe	a		In / Out of car
Jumping		J	սութ	ing									ump	ing									Jun	npin									Jumping
Lifting above							Lif	ling	ibov	c							Li	tting	abo	ve								Lin	ing a	ibov			Lifting above
Lifting below		Lil	ling	belo	W					•		Li	ling	belo	w							L	îlin	g be	ow						T		Lifting below
Pushing/Pulling							Pus	hing	Pull	ng							Pus	hing	/Pul	ing							р	ushi	11e/P	ulli	n		Pushing/Pulling
Running		R	linni	ing								Ru	nnin	g									Ru	nin							T		Running
Sitting								Sitti	ng									Sit	ing									S	Ittin		1		Sitting
Squatting/Kneeling	S	quat	ing/	Knee	ing							Squa	tting	Kne	eling							Squ	ttin	/Kn	eling						T		Squatting/Kneeling
Standing								\$tan	ling									Star	ding									S	land	ing	T		Standing
Talking		1	ſalk	ing									Tall	ing									Tal	king							T		Talking
Twisting / Turning							Tw	isting	/Tur	ning							Tw	istin	g∕ ľu	rnin							Т	wisti	ng/1	arni	ne		Twisting / Turning
Typing		T	уріг	ng								1	ypir	g									Tyr	ing							Ť		Typing
Walking							W	/alkii	g				×.					Wa	kin									W	alki		T	-	Walking
Writing		1	Vriti	ing									Wri	ing									w	ritin						Ī	t		Writing
Other								Othe										0	her									C	the	1	T		Other
	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	C	,	