HEALTH TRENDS IN A CANADIAN POLICE FORCE: A CROSS-SECTIONAL AND LONGITUDINAL STUDY

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Health Trends in a Canadian Police Force: A Cross-Sectional and Longitudinal Study

by

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Abstract

Previous research suggests that members of the police force are at risk of certain health problems and exposed to a variety of occupational health hazards. To clarify the character of these health problems and their association with certain occupational hazards 414 police officers in one division of the Royal Canadian Mounted Police were assessed. Data examined included their overall health, the extent to which this changed over a five year period (1994-1998), the extent of their exposure to occupational hazards, and the association of the hazards with their health status. An expanded definition of health was used to measure four areas of health: morbidity, health indicators, subjective perceptions and functional capacity. The results revealed that the members of this police division scored high on most measures of health and that there was little change between 1994 and 1998. However, the results suggest that members were at risk for developing cardiac disease and diabetes, and/or may suffer from chronic conditions, such as asthma and joint/back problems. The male police officers had higher levels of elevated cholesterol and obesity than the general male Newfoundland population. Some aspects of police work were found to be associated with poorer health. These findings are discussed with reference to other research on police health.

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I would like to acknowledge the support of the Royal Canadian Mounted Police, "B" Division, Newfoundland and Labrador for providing me the opportunity to evaluate the Periodic Health Assessments of the members and to assist them in their goal of being "Fit for Duty, Fit for Life." It is hoped that this thesis will contribute to the RCMP's knowledge of the health of their members and their continued efforts to find ways to improve their health.

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Chapter 1

Introduction

1.1 Overview

The health of Canadians and the factors that influence quality of life has been well documented in the literature (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996; Heart and Stroke Foundation of Canada, 1997; Canadian Heart Health Research Group, 1992). Canadians as a whole have a high standard of health, but it is not shared equally by all sectors within society (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996). For example, "men are more likely to die prematurely than women, largely as a result of heart disease, fatal unintentional injuries, cancer and suicide. While women live longer than men, they are more likely to suffer depression, stress overload (often due to efforts to balance work and family life), chronic conditions such as arthritis and allergies, and injuries and death resulting from family violence" (Federal, Provincial and Territorial Advisory Committee on Population Health, 1999, p. viii).

There is also evidence that the quality of health varies across occupations and that physical and psychological conditions of the workplace influences the health and well-being of working Canadians (Federal, Provincial and Territorial Advisory Committee on Population Health, 1999). Occupational health hazards and accidents result in a large number of deaths and injuries, particularly for those between 15 and 40 years of age

(Clarke, 2000; Banister, Allen, Fadl, Bhakthan and Howard, 1988). Different occupations have higher rates of mortality and morbidity than others (Meng, 1991). To better understand these occupational variations there is a need to examine the health status, the health practices, and risk hazards of various occupational groups. This work examined these three aspects with respect to the health of police officers.

Police work is an occupation that has, historically, required that recruits be healthy. One early recruiting poster advertised for

> ... applicants between the ages of 22 and 40, active, able-bodied men of thoroughly sound constitution." (Recruiting Poster, Northwest Mounted Police, 1893)

Police forces today continue to require applicants to be healthy, but they no longer have gender, height or weight restrictions. The Royal Canadian Mounted Police (RCMP) is the largest police force in Canada. Despite this, there has been relatively little research carried out on the health of its members. The central objective of this work is to investigate the health of members of the RCMP, the extent of their exposure to occupational hazards, and the impact of the hazards on their health.

1.2 Definitions of Health

1.2.1 What is Health?

Our understanding of health, what makes people healthy and how we measure health has been evolving over the last century. Health is no longer viewed as simply the

absence of disease, but has evolved into a more holistic inclusive concept. The classic World Health Organization's definition of health as a state of physical, mental and social well-being has been refined and extended. For the purposes of this work, the concept of health was defined as "a complete state of physical, mental, and social well-being; the ability to realize hopes and satisfy needs and to change or cope with the environment" (Federal, Provincial and Territorial Advisory Committee on Population Health, 1996). This definition is very broad. The challenge in research is to operationalize this definition so that we can examine changes and variations.

1.2.2 What Makes People Healthy?

In recent years, researchers have come to realize that there are no simple answers as to what makes people healthy. They have found that health is determined by a number of factors, such as gender, age, socio-economic status, occupation and even country of origin.

The document *Strategies for Population Health* (1994) identifies a number of determinants which impact upon a person's ability to sustain a dynamic state of positive well-being. The main determinants identified are:

1) **Income and Social Status:** Many studies show that health status improves at each step up the income and social hierarchy. As well, societies which are reasonably prosperous and have an equitable distribution of wealth have the healthiest populations, regardless of the amount they spend on health care.

2) **Social Support Networks:** Support from families, friends and communities is associated with better health.

3) **Education:** Health status improves with level of education, including self-ratings of positive health or indicators of poor health such as activity limitation or lost work days. Education increases opportunities for income and job security, and equips people with a sense of control over life circumstances – key factors that influence health.

4) **Physical Environment:** Physical factors in the natural environment such as air, water and soil quality are key influences on health. Factors in the human-built environment such as housing, workplace safety, community and road design are also important influences.

5) **Biology and Genetic Endowment:** The genetic endowment of the individual, the functions of various body systems, and the processes of development and aging are fundamental determinants of health. Biological differences in sex, and socially constructed gender, influence health on an individual and population basis.

6) **Personal Health Practices and Coping Skills:** Social environments that enable and support healthy choices and lifestyles, as well as peoples knowledge, intentions, behaviours and coping skills for dealing with life in healthy ways, are key influences on health.

7) **Health Services:** Health services, particularly those designed to maintain and promote health and prevent disease, contribute to individual and population health.

8) **Employment and Working Conditions:** Those with more control over their work circumstances and less stress related demands of the job are healthier. Workplace hazards and injuries are significant causes of health problems. And unemployment is associated with poorer health." (Federal, Provincial and Territorial Advisory Committee on Population Health, 1994, pp. 2-3)

As can be seen, identifying specifically why an individual or society is unhealthy can be complex. An important starting point is establishing meaningful measures of health.

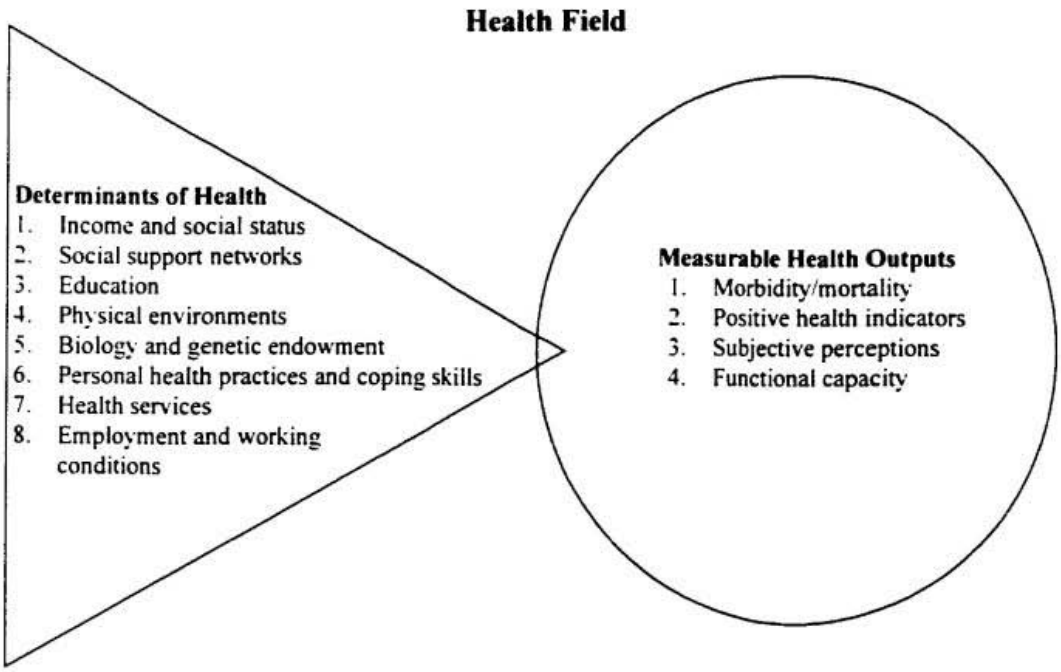
1.2.3 How Do We Measure Health?

According to this new conceptual approach, since health is no longer viewed as simply the absence of disease, there would need to be more to evaluating health status than just measuring morbidity and mortality. Raeburn and Rootman (1989) addressed these challenges of measuring health given the changes in the way health is now viewed. They argue that there is a "surprising lack of correlation between hard health measures such as disability or illness and self-reported health and well-being... and that the role of subjective measures will be of increasing importance if justice is to be done to the broad new multidimensional approach to health heralded by the Ottawa Charter" (p. 387). As a result, much of their work has been focussed on finding new ways to operationalize this new vision.

In an effort to make the new concept of health more useful as an analytical tool, Raeburn and Rootman have put forth an "expanded health field concept" (Figure 1.2.1), for the purposes of discussion and modification. It provides a template for measuring health based on the new paradigm (Raeburn and Rootman, 1989 p. 390). On the input side is the determinants of health, which replace the old health field concept. On the output side is four measurable health outputs: 1) morbidity/mortality - traditional negative and medical-model measures; 2) positive health indicators - measures of good health, fitness or mental and physical well-being (respiratory capacity, mental vigilance and locomotor agility); 3) subjective perceptions - peoples subjective appraisals of their

physical, mental, social well-being well-being, personal health status, satisfaction with life and spiritual fulfilment; and 4) functional capacity/coping - overall energy level, capacity, coping ability and stamina with which people deal effectively with the demands of everyday life. This model will be utilized to measure health in this thesis.

Figure 1.2.1: An Expanded Health Field Concept



Source: adapted from Raeburn & Rootman, 1989.

1.3 What is Occupational Health?

Employment and working conditions are important determinants of health. Occupational health is that field of public health dedicated to understanding how people deal with their work and working environment, both physically and mentally and the impact of work on workers' health. "The workplace has received increasing attention from health professionals, workers, employers, and the government, due to: concern about rising health care costs; an increased understanding of the relationship between behaviour, working conditions, and health; and the fact that many people spend more time at work than they do at home" (Winett, King and Alman, 1989).

Occupational health focuses directly on how the working environment impacts on health and on identifying ways for reducing and even eliminating occupational health risks. It is aimed at:

> the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological ability and, to summarize: the adaptation of work to man and of each man to his job (Parmeggiani, 1983, p. 1491).

Recognizing the importance of early detection, anticipating problems, changing behaviours, and the need for ongoing health monitoring, many employers today have in place occupational health and safety programs. These provide a variety of services that are offered by various experts or teams of experts with different specialties. For example,

a comprehensive occupational health and safety program might include the formulation and implementation of policy required for identifying and dealing with health and safety problems normally associated with a particular occupation. Such programs are designed to identify and address health risks before they become a problem.

1.3.1 Are There Variations in Health Between Occupations?

Certain occupations are more unhealthy than others. Meng (1991) reports that there are approximately 1,000 job-related deaths a year in Canada and that the most dangerous jobs are found in the forestry, mining, and construction occupations. Other hazardous occupations that were worth noting were air pilots, fishers, and deck crews and officers on ships.

Although the relationship between work and illness has been generally recognized, it is often difficult to link specific health problems to work-related conditions, because of long latency periods between exposure and ill health, overlap between work- and non-work-related causes of illness, and inadequate reporting systems (Winett, *et al.*, p. 286-7). There is a need to carry out research on specific occupational groups to determine the state of health of those groups and any occupational hazards that may be impacting on their quality of life.

1.3.2 Occupational Determinants of Health

Polanyi, *et al* (1996) have identified a number of external and internal factors which contribute to workplace injuries and illness (Table 1.3.1). The external influences

include increased competition and the need to increase productivity, flexibility and innovation in a global economy. This has resulted in two opposing trends occurring in the workplace: 1) firms investing in workers; 2) and, the deterioration of work conditions with the result being good and bad effects on workers' health. The internal influences include organizational structure and environment, task requirements and individual lifestyle. For further improvements in working conditions, employers will need to develop strategies that address both these external and internal influences.

Table 1.3.1: Determinants of Health in the Workplace

Level of Determinant	Sub-level of determinant	Factors related to worker health
External/societal	Sectoral National/global	Structure of business, technology Government labour and economic policies, economic competition, technological change
Organizational structure and environment	Terms of employment	Salary, hourly pay or pay by piecework (benefits, shiftwork), safety incentives for managers and employees, job security (and turnover)
	Decision making structures Approach to health and safety	Employee participation in decision making Commitment to health and safety factors (structure, support of management)
	Physical environment On-site facilities	Lighting, noise level, toxic exposures, air quality, etc. Fitness, daycare
Task requirements	Physical and psychosocial demands	Job content (lifting, turning, repetitive movements), equipment used, pace and load of work, job control, range of skills used, social support
Individual lifestyle	Basic characteristics	Age, gender, marital status, health and injury history, smoking, obesity, socioeconomic status, education, language ability
	Non work demands Personal resources	Child care and elder care needs Education, coping skills, family and social support

Source: Polanyi, *et al.* (1996)

1.4 Police Health

Law enforcement is an occupation that, by its very nature, would appear to pose a threat to the health of police officers. Police officers in carrying out their duties are often exposed to a variety of circumstances and influences that could impact negatively on both physical and psychological well-being. These contextual factors that could threaten health status includes witnessing fatal accidents; restraining agitated prisoners; or exposures to individuals infected with hepatitis, HIV or other diseases; exposure to lead, chemicals and isotopes; and so on (Trottier and Brown, 1994). Other potential occupational risks associated with police work include: working long hours and shiftwork, poor diets while on duty, being stationed in isolated communities away from family and friends, or frequent transfers. Is this appearance of a threat to health by police work real or imaginary?

A search of both Medline and Healthstar was carried out on police health and workplace hazards. To date, the research that has been done in this area suggests that there is a link between police work and higher rates of mortality, cardiovascular disease, cardiac risk factors and cancer (Trottier and Brown, 1994, 1995; Bandaranayake, Salmond and Tobias, 1991; Souter, van Netten and Brands, 1992; Violanti, Vena and Marshall, 1986; Franke, Collins and Hinz, 1998). This preliminary research also indicates that a variety of other physical and psychological conditions may be associated with police work. Yet, as Trottier and Brown (1995) acknowledge, unlike other

occupations where a specific association can be directly traced between an exposure or an action and specific pathology, the link between police work and disease is more problematic. This helps to explain the lack of research in this area and the need to develop new ways for addressing such research problems.

1.4.1 Mortality

Violanti, Vena and Petralia (1998), found in their updated cohort study of 2,693 male police officers who worked a minimum of five years for the city of Buffalo, New York, all-cause deaths for police officers showed a significantly higher rate of mortality than expected in the general U.S. white male population (standardized mortality ratio [SMR] = 110). It was highest for the 10- to 19-year range of employment and Violanti, *et al.* hypothesized that this could be due to stressful traumatic events in police work. Demers, Heyer and Rosenstock (1992) compared police and firefighters in three cities in the United States and found police to have higher rates for all causes of death combined. An overall increased rate of suicide was noted in the police, with the highest SMRs recorded for officers over the age of 65 (SMR = 301), officers with at least 30 years of service since first employment (SMR = 318), and officers with more than 30 years of employment (SMR = 318).

Violanti *et al.* (1986) in their Buffalo police study found a higher than expected mortality rate for all malignant neoplasms (SMR = 110), cancer of the esophagus (SMR = 213), cancer of the kidney (SMR = 208), Hodgkin's disease (SMR = 313), cirrhosis of

the liver (SMR = 150), and suicide (SMR = 153). Feuer and Rosenman (1986) reported that police and firefighters in New Jersey had significant increased proportionate mortality ratios (PMRs) for arteriosclerotic heart disease, digestive and skin cancers, and skin diseases.

Other studies do not claim that the overall mortality of police officers is different from the general population, but certain diseases, such as cardiovascular mortality, may be occupationally related (Sardinas, Miller and Hansen, 1986; Feur and Rosenman, 1986). In addition, there is evidence that the association may vary across jurisdictions. Pyorala, Savolainen, Lehtovirta, Punsar and Siltanen (1979) found in their prospective study of 867 Helsinki policemen aged 40-59 that the ten-year mortality rate was similar to that of the Finnish male population.

1.4.2 Morbidity

In their review of the literature, Brown and Trottier (1995) reported that some aspects of police work may increase the risk of sudden cardiac death and that the risk of a sudden cardiac event at a critical moment was 1 per 25 years in 500 police officers. In a prospective study among policemen in Helsinki, the researchers found that in a 10-year follow-up period, 10% of the study participants had developed coronary heart disease (Nirkko, Lauroma, Siltanen, Tuominen and Vanhala, 1982). Franke *et al.* (1998) in a recent study compared the self-reported incidence of cardiovascular disease among 232 male retired law enforcement officers, over 55 years of age, from the Iowa Department of

Public Safety with 817 male Iowans of similar age and found that employment as a law enforcement officer was associated with increased cardiovascular disease morbidity. However, they found in an earlier study that the 10-year probability of developing coronary heart disease (CHD) in 246 male Iowa law enforcement personnel from 30-64 years of age was similar to the Framingham population (Franke, Cox, Schultz and Anderson, 1997). Sparrow, Thomas and Weiss (1983) in a normative aging study which included 220 police officers who were followed over 10 years, found that the police officers relative to non-police officers had an adjusted risk ratio (odds ratio) of 1.4 (95% confidence interval = 0.7-2.4) for coronary heart disease and 1.0 (95% confidence interval = 0.4-2.4) for myocardial infraction which showed the differences between occupational groups were not significant.

In their review of the literature, Brown and Trottier (1995) found the risk of digestive tract cancers, such as cancer of the oesophagus, cancer of the stomach and cancer of the large bowel are reported to be elevated for police officers. Violanti, *et al.* (1998) research on an updated retrospective cohort morbidity study of male police officers over 40 years found increased rates of esophageal cancer, colon cancer, Hodgkin's disease, bladder cancer and leukemia. They also referred to an unpublished study that there was a 68% increased probability for all-cause cancer with increased exposure time to police radar (OR = 1.98, P <0.05) (Violanti, *et al.*, 1998). Davis and

Mostifi (1993) found a significant increased rate for testicular cancer among police officers who reported use of hand-held radar units inside of the police vehicle.

Low back pain is a common musculo-skeletal problem among the general population. Despite a lifetime prevalence rate of between 50% and 80%, we still know little about the causal factors involved (Brown, *et al.*, 1995; Burton, *et al.*, 1996; Deyo, 1998). Brown *et al.* (1998), in a study on back pain in a Canadian police force, found that self-reported back pain among 805 police officers was high. They revealed that the incidence of chronic or recurring low back pain was 55% and the prevalence was 42%, both of which are comparable to the general population. Brown *et al.* found that wearing a duty belt and/or driving a police vehicle did not increase the prevalence of low back pain. However, Burton *et al.* (1996) in a study comparing 1508 Royal Ulster Constabulary with 377 Greater Manchester Police reported that an increased risk of first-onset of low back trouble was associated with wearing heavy body armor and prolonged work in vehicles. Finkelstein (1995), on the other hand, in a study comparing 129 fire fighters to 346 police officers from a municipality in Ontario found a lifetime prevalence of lower back pain of 33% for police officers compared with 42% for firefighters. The author also found that back problems were associated with length of employment, cigarette smoking and parenthood.

Finally, infectious diseases that were not considered a health hazard just 10 years ago, that may be associated with police work are Acquired Immune Deficiency Syndrome (AIDS), hepatitis and tuberculosis (TB) (Trottier and Brown, 1995).

1.4.3 Individual Lifestyle Factors

Franke *et al.* (1998) found in their study of retired Iowa law enforcement officers that the prevalence of an elevated body mass index (≥27.8 kg/m) was higher than the general population. In their study of Iowa law enforcement officers between the ages of 30 to 64, Franke *et al.* (1997) found an age-associated increase in body fat which they felt may suggest that officers tend to become fatter, sooner, than the general population. Pyorala, *et al.* (1998) found that hyperinsulinemia was associated with the risk of a stroke in Helsinki policemen during the 22 year follow-up, but not independently of other risk factors, particularly upper body obesity.

In a study conducted on the prevalence of lifestyle behaviours (overweight, smoking, not exercising, excessive drinking and stress symptoms) among 852 New South Wales police, Richmond *et al.* (1998) found that 83% of the police had at least one unhealthy lifestyle behaviour and 19% had 3-5 unhealthy factors. Williams *et al.* (1987) also found that police officers had a higher prevalence of risk factors: 22% were smokers, 76% had elevated cholesterol, 26% had elevated triglycerides, 16% had elevated blood pressure, and 60% had elevated body fat.

However, these researchers discovered that increased fitness was associated with reduced risk. On the other hand, Franke and Anderson (1994) found that exercise reduced the risk factors for CHD only in law enforcement officers >48 years of age. Superko, *et al.* (1988) reported that the number of CHD events among California highway patrol personnel had been rising at a rate of 39.2% per year for four years. After implementation of a Health and Physical Performance Program (HPPP) the incidence of CHD decreased by about 11.4% per year. In the study of 1326 Helsinki Policemen, Pyorala, *et al.* (1979) found their levels of risk factors were similar to that of the general Finnish male population.

1.4.4 Workplace Hazards

"In 1996, there were more than 377,000 time-loss work injuries in Canada, a rate of 27.6 injuries for every 1,000 workers. Men had more than two and a half times as many work injuries as women" (Statistical Report on the Health of Canadians, p. 246). Police officers are especially at risk of receiving an injury at work resulting from physical confrontation, motor vehicle accidents, falls, lifting and so on. Evans (1994) in his study of the South Wales police force found that 51 percent of soft tissue injuries were a result of assaults from struggling with offenders, punches, kicks, head butts, bites, etc. and that no part of the body was spared.

While police officers are subjected to assaults during the course of operational police work, they are also exposed to other traumatic incidents which could negatively

impact on their physical and psychological well-being. Examples of such incidents include: witnessing or investigating a violent crime or traffic accident; experiencing violence and abuse from the public; or using deadly force. As a result of such experiences, police officers may experience posttraumatic stress disorder (PTSD). Carlier *et al.* (1997) found a prevalence rate of 7% of PTSD in their sample of 218 Dutch police officers, which corresponded to the current PTSD prevalence rates for trauma victims in general, crime victims and other emergency service personnel.

Mearns and Mauch (1998) found in their study of 56 police officers from two small departments in a large metropolitan area that high levels of job stress were associated with greater physical and emotional distress. In a study of undercover policing, Macleod (1995) reported that 16% of the undercover agents deployed suffered major psychological or psychiatric sequella. Violanti and Aron (1994) in a study ranking police stressors reported that of the top 20 ranked stressors, seven were organizational/ administrative and seven were inherent in police functions. The two top-ranked stressors were killing someone in the line of duty and experiencing a fellow officer being killed. The highest ranked organizational stress was shift work followed by inadequate support of the department and incompatible patrol partner.

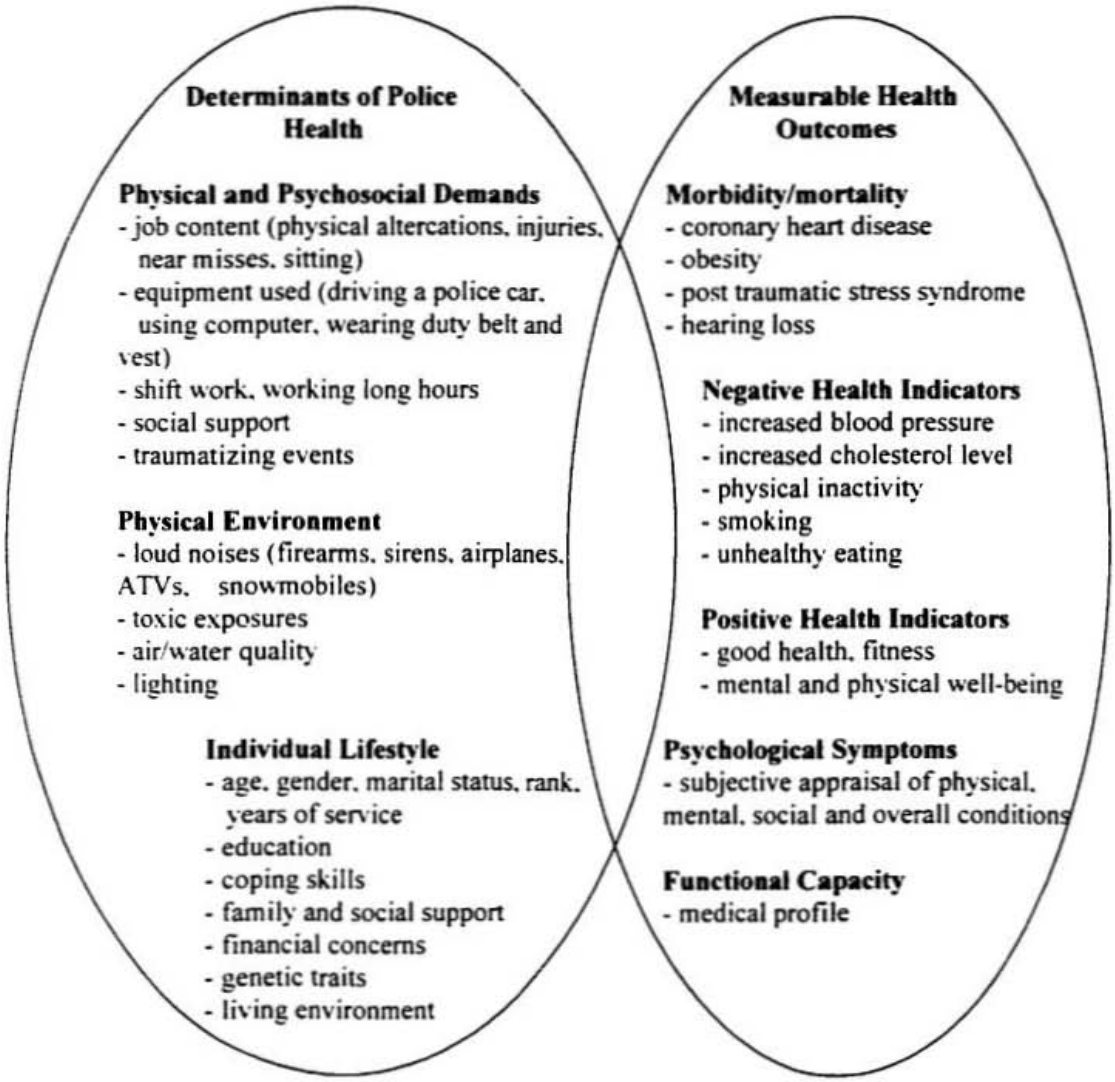
Overtime and shiftwork are two conditions associated with cardiovascular disease, Type II diabetes and obesity (Nakamura *et al.*, 1998). Ely (1995) found that rotating shift police officers reported higher levels of stress and disliked working the rotating shift. He

also found that compared to a control population, the police officers' plasma levels and diastolic blood pressure were elevated. The rotating shift police officers had even higher levels of plasma (802pg/ml) and diastolic blood pressure (90 mmhg). Phillips, *et al.* (1991) found in their study that when the Lexington Police Department changed from rotating shifts to permanent shifts, the patrol officers reported improved sleep quality, sleep hygiene and psychologic well-being.

1.4.5 Measuring Police Health

The research on police health has focussed primarily on limited measures of mortality, morbidity and lifestyle. The broader holistic definition of health and the multiple determinants of health have not been addressed in the research. The determinants of workplace health described by Polanyi (1996) in Table 1.3.1 above include individual lifestyle, physical work environment, and physical and psychosocial demands. If we integrate Raeburn and Rootman's model from Figure 1.2.1 with Polanyi's workplace health determinants we can develop a new framework that is a capable of generating new critical insights on a specialized occupational group, police (Figure 1.4.1). The proposed research aims to make use of these more extensive measures.

Figure 1.4.1: Model for Measuring Police Health



1.5 RCMP

1.5.1 "B" Division, RCMP

The RCMP is the federal police force of Canada and provides police services under the terms of the policing agreements to all provinces (except Ontario and Quebec), Yukon, Northwest Territories and Nunavut, and under separate municipal policing agreements to 191 municipalities. The Force is divided into 14 divisions, with Headquarters, Ottawa. Each division is managed by a Commanding Officer and is alphabetically designated. There are 707 detachments which range from 1 to more than 250 personnel. The detachment is the basic operational unit of the Force, and detachment personnel perform the full range of police duties (Public Affairs and Information Directorate of the Royal Canadian Mounted Police, 1996).

"B" Division refers to the province of Newfoundland and Labrador. It is responsible for contract and federal policing in the province. The Division has 42 detachments located in communities throughout Newfoundland and Labrador and employees 362 regular members (1999). It has a headquarters building located in St. John's. Members are transferred between detachments, units and other Divisions on a regular basis (every two years for isolated postings). Every detachment has a different number of employees depending on the size of the area the RCMP is responsible for policing. Depending on their rank, section and detachment size and location, the members undertake a variety of policing activities, shift schedules and workloads. As a

result. the stresses and demands will change as members are transferred from one posting to another.

1.5.2 Health Status

The RCMP employs approximately 15,000 police officers or regular members (RM) throughout Canada. The health records available on this large occupational cohort provide the opportunity for research to be undertaken on a variety of health related topics. such as health promotion; stress; suicide; back pain; physical ability, fitness and work; vision standards; and cardiac risks. To date, this research has been limited. The following is a summary of the main research findings.

The Chief Actuary of the Government of Canada conducts an evaluation of mortality rates of the RCMP and public servants' pension plans every three years and compares them to the Canadian rates published by Statistics Canada. In 1996, the RCMP had lower mortality rates at all ages than either the public servants or the Canadian population. The derived life expectancies for the RCMP were also greater. For example, a 60-year-old male RCMP could expect to live another 22.3 years, which is 2.2 years longer than a public servant and 2.7 years longer than the average Canadian male (Chief Actuary of the Government of Canada, 1996).

Research carried out by Brown, *et al.* (1998) on back pain in the RCMP found that the prevalence of chronic or recurring low back pain was 55%, which was comparable to the general population. The study also determined the following about

members (in the past year): 10% had experienced an accident; 49% had been exposed to a disturbing crime or accident; 11% had been involved in a shooting; 49% had been involved in a physical confrontation/fight/ altercation; and 96% had a good working relationship with their supervisor.

Lee and Stoneham (1993) carried out a survey of work stress in the RCMP. They found that the most frequent reasons for experiencing stress were excessive paperwork among all ranks; insufficient manpower to adequately handle a job for both commissioned officers and non-commissioned officers; and risks associated with working alone among constables.

Trottier, *et al.* (1994) found that there was a significant difference in the prevalence of respiratory symptoms among RCMP doing forensic identification work when compared to a matched control group. They also found that there was 10% more frequent occurrence of hay fever in the control group.

While research on specific areas of RCMP health has been undertaken there has been limited research on the impact of police work on the overall health status of RCMP members.

1.5.3 Periodic Health Assessment

As one might expect, the RCMP not only ensures the hiring of individuals who are healthy and fit for duty, but members are provided with extensive health care throughout their careers. Applicants applying to the RCMP must pass a written exam,

pass a security clearance, meet standard occupational health requirements that include physical and psychological evaluations. They must also pass a Physical Abilities Readiness Evaluation (PARE). PARE is a timed standardized evaluation of a person's physical abilities to perform operational police work. Beginning in 1993, the RCMP has adopted a policy that requires members undergo a Periodic Health Assessment (PHA - Appendix 1) every two years. Members must also take PARE every two years in order to complete their medical profile. For officers engaged in special duties (eg. United Nations duty, underwater recovery, emergency response team, police dog service, prime ministers duty and forensic identification) more frequent and thorough assessments are required.

The PHA was specifically designed for police work and inquires about known stressors and risks associated with this occupation through a detailed questionnaire and assesses the physical health of the police officer through a physical examination. The PHA is performed by the RCMP Health Services Officer (HSO) or by a RCMP designated physician. The purpose of the PHA is to ensure that members are fit to perform the tasks of police work, thus protecting the safety of the public, and to ensure that the health of members is not at risk (Trottier and Brown, 1993). However, there has been no evaluation done on the effectiveness of the PHA.

The RCMP, to date, has not used the data collected from the PHA to its full potential. Trottier and Brown (1995) stated that the PHA would eventually be used to

monitor trends in the health of members (such as CHD risk factors or increases in infectious diseases) and thus health maintenance and health enhancement programs could be assessed for efficacy and efficiency. Research on stress and lower back pain have been carried out by Ottawa Health Services Directorate as a result of limited sick leave data analysis. Furthermore, Superko *et al.* (1988) concluded in their research that a valid job-related physical performance test, in conjunction with a health assessment and a remedial training program, could produce significant improvements in several health parameters; including systolic blood pressures (BP), resting heart rate (HR), physical fitness and CHD event rates. Further benefits could be derived from reduced medical disability, short- and long-term sick leave, and on-the-job injuries.

1.6 Objectives of Thesis

Workplaces and occupations have a variety of health hazards. Research indicates that policing has certain health hazards. However, this research is limited and has focused on limited measures of health. Further, very little research has been conducted on the health of Canada's police. The broad aim of this thesis is to use an expanded definition of health to describe the overall health of the police officers in one division of the RCMP, to describe the occupational hazards and to determine the association. More specifically, the aims are:

1. To describe the prevalence of disease, such as obesity, loss of hearing, loss of vision, cardiovascular disease, cancer, suicide and posttraumatic stress syndrome.

2. To describe the prevalence of negative health indicators, such as, poor nutritional practices, hypertension, elevated cholesterol, smoking and alcohol overuse. To compare these indicators to similar data available from the Newfoundland Heart Health survey.

3. To describe the prevalence of positive health indicators and psychological symptoms of health.

4. To describe the prevalence of occupational hazards, such as loud noises, chemicals, physical altercations, injuries, near miss, or psychologically traumatizing events.

5. To assess the extent of change in morbidity, negative health indicators, positive health indicators, psychological symptoms and functional capacity after the introduction of the PHA.

6. To assess the link between occupational hazards and measures of health.

7. To assess the usefulness of the information gathered from the PHAs as an aid in the primary prevention of disease, development of safety measures and promotion of healthy lifestyle habits.

It is hypothesized: a) that the prevalence of various measures of health status will be higher in the RCMP than in the Newfoundland population; and b) that the exposures to occupational hazards is associated with increased risk of health problems.

Chapter 2

Methods

2.1 Periodic Health Assessment Data Base

The RCMP has been carrying out medicals called Periodic Health Assessments (PHA) on its members annually or every two years since 1993. The RCMP Health Services Directorate in Ottawa designed the assessment that includes a detailed health questionnaire, physical examination, vision and audiogram tests, urinalysis and blood tests (such as, cholesterol, gamma glutamyl transferase). It is also used as an opportunity for health education and health promotion with the member. Based on the outcomes of the assessment, the member is then assigned a Medical Profile devised to transmit information about duty limitations and restrictions to management in a manner that does not breach confidential medical information.

The PHA is carried out by a RCMP designated physician and the Medical Profile is assigned by the Health Services Officer. The vision, audiogram, urinalysis and blood tests are carried out by a public health nurse, hospital or clinic and the results are sent to the Health Services Office of the Division.

The PHA is a nine-page document (Appendix 1) which contains 45 questions concerned with what occupational hazards and injuries the member has had over the one or two year period, their lifestyle and emotional health, signs of physical disease, personal stressors and family history. It also has areas for documentation of the physical

examination results and the vision, hearing and blood tests. There are five general questions concerned with personal health and are not job related.

The RCMP developed a Health Services Information System (HSIS) for carrying out assessments of accident and sick leave reports, and for monitoring the PHAs for trends in health of the police officers. Unfortunately, throughout the RCMP, only the accident and sick leave data have been entered into the HSIS. Due to incompleteness of data and problems with data entry, this had not been kept up to date. However, a new computer program has now been designed for inputting this data, data collection problems have been addressed and the PHA is being redesigned.

For the purposes of this thesis, all the PHAs from "B" Division that were in the Health Services office during the data entry period, April 1999 to July 1999, were entered into the data base. All information contained in the PHAs was entered into the data base.

2.2 Sample

The cohort consisted of 368 male and 46 female police officers from "B" Division of the RCMP whose medical files contained at least one Periodic Health Assessment (PHA). The number of Periodic Health Assessments (PHA) for each person ranged from one to six and covered the years 1994-1998. The total number of PHAs available for analysis was 918.

It should be noted that because the members are transferred within or between Divisions on a regular basis, the medical files in the Health Services offices vary from

year to year. Also the number of PHAs on a member's medical file will vary because not all Divisions, "B" Division is an exception, have carried out PHAs on their members every two years. As a result, members' medical files may have contained no PHAs or only one.

2.3 Study Design

The sample was compared both cross-sectionally and longitudinally over a five-year period, 1994 to1998. For the cross-sectional analysis, the earliest available PHA from each male and female member was chosen for analysis. The cross-sectional data was used to analyse the overall health status of the members. The earlier PHA available on each member was chosen so the data could be compared to the Newfoundland Heart Health database. The total sample for this analysis was 414.

The questions and answers on the PHA do not easily lend themselves to analysis or comparison to other populations. There was very little comparable data available from other police forces. However, it was possible to compare some of the PHA data with data from the Canadian Heart Health Database (CHHD) (1998).

The CHHD was collected from provincial heart health surveys carried out between 1986 and 1992 as part of the federal-provincial collaboration on the Canadian Heart Health Initiative (Canadian Heart Health Surveys Research Group, 1992). The CHHD data contains cardiovascular disease risk profiles on 266 variables for a representative sample of 18,689 individuals in the 10 Canadian provinces. The

Newfoundland sample taken in 1986 of the CHHD used in this thesis was 858 males between the ages of 21 and 53. There were too few females in the RCMP sample to compare them with the females in the Newfoundland sample. Therefore, they were excluded from the comparative analysis. The variables used for comparison purposes were smoking, hypertension, elevated cholesterol, overweight and sedentary (inactive).

In the longitudinal analysis only the members who had received their PHA three times during the study period were analysed. Because the administration of the PHA was started in late 1993, there were some PHAs done in that year which were grouped with the 1994 year. As well, because data entry was started in April 1999 there were some PHAs from early 1999 that were grouped into 1998. The purpose of the longitudinal analysis was to determine if there was any change in the health status of the members over time. Therefore, by choosing members who had three PHAs done approximately every two years, allowed for a cohort who had been monitored over at least five years. The sample size was 118 which included six females. The females were retained in the sample because exclusion of them from the analysis did not affect the results.

Sex and age variables were used to look for significant differences in the measures of health within the cross-sectional population. Years of service and rank were excluded because there was a strong correlation between age and these two variables (years of service=.930, and rank=.806). In the longitudinal sample, sex was not used as a factor because there were so few females. Age was not used because the number of members in

the age categories changed between 1994 and 1998 (because the members changed age) therefore making comparisons unacceptable. Not all of the PHAs were fully completed. Therefore, the number of members (n) who answered each question varied.

2.4 Measures of Health

The variables that were extracted from the PHA to use in measuring the health of the members can be classified into five categories:

1) morbidity: diabetes, thyroid problems, prostrate/urinary infections, nervous system disorders, respiratory disease, cardiac disease, skin cancer, musculo-skeletal problems, allergies, obesity, and hearing loss;

2) negative health indicators: hypertension, elevated cholesterol, physical inactivity, smoking, alcohol overuse and unhealthy eating;

3) positive health indicators: good health, fitness, mental and physical well-being;

4) psychological symptoms: psychological stressors;

5) functional capacity: medical profile.

Table 2.4.1 provides a list of the measures of health and the variables utilized from the PHA for analysing each measure.

Table 2.4.1: Variables for Measuring Police Health

Variables	Question # from PHA
Morbidity:	
• Diabetes, thyroid, chronic infection, prostate disease, urinary infection, nervous system disorders, respiratory disease, cardiac disease, skin cancer	8, 9, 10, 14, 15, 16, 23
• Back/joint problems	17
• Allergies	41
• Obesity	Physical Examination: Use Height and Weight to determine BMI
• Hearing loss	
Negative Health Indicators:	
• Hypertension	Physical Examination: Use Systolic and Diastolic Blood Pressure
• Elevated Cholesterol	Blood Test Result: total cholesterol
• Obesity	Physical Examination: Use Height and Weight to determine BMI
• Physical Inactivity	18
• Smoking	11
• Alcohol Overuse	12
• Unhealthy Eating	27
Positive Health Indicators:	
• Lifestyle choices	19, 20, 21, 22
• Attitude about physical health	24
• Attitude about emotional health	25
• Attitude about physical fitness	26
Psychological symptoms: Psychological well-being	5, 7, 8, 9, 13, 25, 28, 29, 30, 31, 32, 33, 34, 36, 37
Functional Capacity	Medical Profile

2.5 Occupational Hazards

The PHA enquires about the types of occupational hazards that the member has been exposed to during the one or two year period between PHAs. There are six questions that address a variety of hazards that the member might encounter, such as loud noises, chemical toxins or allergens, situations that may have or caused injury, psychologically traumatizing events and physical confrontations or physically demanding situations. Table 2.5.1 lists these hazards and the questions in the PHA that address them.

Table 2.5.1: Occupational Hazards Variables

Variable	Question # from PHA
Loud noises: airport, jet engines, helicopters, firing range	1
Chemical toxins or allergens	2
Injuries: punched, knocked out, bumped, involved in motor vehicle accident	3
Situations: where injury was likely, near miss	4
Psychologically traumatizing events: shooting incidents, violent incidents, discovery of dead bodies	5
Altercation: physical confrontation or physically demanding situation	6

2.6 Data Analysis

For the purposes of this thesis, it was originally proposed that the PHAs in "B" Division would be entered into the HSIS and then evaluated. However, once data entry was began, it was determined very quickly that the HSIS was not suitable for any type of data analysis and it was not possible to transfer the data to another statistical package. Therefore, the data was entered into SPSS statistical package, version 7.0.

Descriptive statistics including frequencies and cross tabulations were used. The Pearson chi-squared statistic was used to determine the presence of associations both in the cross-sectional and longitudinal analysis. Bivariate correlations were employed to determine if there was a significant association between occupational hazards and measures of health. The level of significance used was $p<0.05$. If the significance of the test associated with a variable is not discussed in the text then it was not found to be statistically significant.

Data analysis included the following:

1. Basic demographics of the sample.
2. Prevalence of disease, such as obesity, loss of hearing, loss of vision, cardiovascular disease, cancer, suicide and posttraumatic stress syndrome.
3. Prevalence of negative health indicators, such as poor nutritional practices, hypertension, elevated cholesterol, smoking and alcohol overuse. Comparison of negative health indicators with similar data available from the Newfoundland Heart Health survey.
4. Prevalence of positive health indicators and psychological symptoms of health.

5. Prevalence of occupational hazards, such as loud noises, chemicals, physical altercations, injuries, near miss, or psychologically traumatizing events.

6. Change in measures of health between 1994 and 1998.

7. Association between occupational hazards and measures of health.

The data analysis was used to determine whether the prevalence of various measures of health status was higher or lower in the RCMP than in the Newfoundland population; and if the exposures to certain occupational hazards increased the risk of health problems. Based on the data, recommendations were made on the usefulness of the information gathered from the PHAs in the development of programs for the primary prevention of disease, safety and promotion of healthy lifestyles.

2.7 Ethical Review

This study was reviewed and approval was granted by the Memorial University of Newfoundland, Faculty of Medicine, Human Investigation Committee prior to beginning data entry (see HIC approval, Appendix 2). No personal identifiers were used in the data entry and anonymity of PHAs was assured and maintained at all times.

Chapter 3

Results

3.1 Demographics

The demographics available from the PHA on the members were age, years of service and rank. The age range classification used in the analysis was ≤30 years of age; between 31-40 years of age; and ≥41 years of age. This classification was chosen so the data could be compared with other RCMP research. The ages ranged from 21 to 53 years with a mean of 37 years. The regular members have a promotional system that is broken down according to rank. The starting level is Constable and moves onto Corporal, Sargent, Staff Sargent and Officer levels. Approximately 60% of the sample were Constables and a similar proportion had been in the RCMP for 10 years or more. Table 3.1.1 provides a breakdown of the demographics.

Table 3.1.2 shows the descriptive statistics of the physical characteristics and blood work of the population sample.

Table 3.1.1: Demographics of the RCMP Sample

Demographic	Number (%) n = 414
Age:	
• ≤30 years of age	101 (24.4)
• between 31-40 years of age	168 (40.6)
• ≥41 years of age	145 (35.0)
• mean age	37
• youngest	21
• oldest	53
Rank	
• Constable	249 (60.2)
• Corporal	80 (19.3)
• Sargent	56 (13.5)
• Staff Sargent	25 (6.0)
• Officer	4 (1.0)
Years of Service	
• 0-9 years	163 (39.4)
• 10-19 years	105 (25.4)
• ≥20 years	146 (35.3)

Table 3.1.2: Physical Characteristics and Blood Work of the RCMP Sample

Physical Characteristic	n=414	Min.	Max.	Mean ±s.d.
Heart Rate (b/min)	343	46	100	69.6±8.3
Height (m)	407	1.4	2.0	1.8±7.3
Weight (kg)	408	55.0	159.0	89.0±13.9
Respiration Rate (b/min)	275	10	80	17.6±5.1
BMI	406	20.0	59.5	28.0±3.8
Cholesterol	334	2.57	9.7	5.3±1.0
GGT	281	4	336	30.71±33.9
Systolic Blood Pressure	404	80	190	121.5±12.7
Diastolic Blood Pressure	403	45	110	78.3±8.4

3.2 Indicators for Morbidity

A number of questions on the PHA provide the designated physician with an indicator for the presence or absence of disease. The diseases screened for are: diabetes, thyroid/chronic infection, prostrate disease/urinary infection, nervous system disorders, respiratory disease, cardiac disease, skin cancer, musculoskeletal problems, allergies, obesity, and hearing loss. A physical examination and laboratory work are also used to evaluate the presence of disease. The results that are presented in Table 3.2.1 (for the cross-sectional sample) and 3.2.2 (for the longitudinal sample) are based on the disease indicator questions asked in the PHA, weight and height measurements taken during the physical exam and a hearing evaluation.

Table 3.2.1 describes the overall rates of the various reported indicators for health problems as well as age and sex differences. Fifty-seven percent of the cohort had a BMI $\geq$27 and could be labelled as obese; 35% reported that they had a change (increase) in weight (an indicator for diabetes); 33% reported they had musculoskeletal problems; while 31% reported having asthma or allergies. Significantly more of the older members reported musculoskeletal problems (χ^2=19.169, df= 2, p=0.0005), were obese (χ^2=14.496, df=2, p=0.001) and had a hearing loss (χ^2=22.394, df=2, p=0.0005). Conversely, significantly fewer of the older members reported allergies or asthma (χ^2=27.864, df=2, p=0.020). When looking at sex differences, significantly more females reported a change in their energy levels (χ^2=4.604, df=1, p=0.032) and having allergies or asthma

(χ^2=9.259, df=1, p=0.002). These were particularly pronounced among the younger women. Significantly more males were obese (χ^2=14.496, df=2, p=0.001) and this was particularly pronounced among the older men.

The longitudinal data in Table 3.2.2 shows the changes in the indicators for morbidity between 1994 and 1998. Musculoskeletal, allergies and obesity increased during this period by 5% points, 3% points and 9% points respectively. Hearing loss increased in the cross-sectional cohort by 9 percentage points between 1994 and 1998. However, the only significant change was in reported change in obesity which increased by 15% points (χ^2=6.376, df=1, p=0.012).

Correlations between the indicators for morbidity are shown in Table 3.2.3. All indicators for morbidity had statistically significant associations with a least one other indicator for morbidity. However, these correlations were mostly small. The strongest positive associations were between: change in energy level and change in weight (r=.252); change in energy level and difficulty or change in urinating (r=.259). The strongest negative associations were between joint or back problems and frequent headaches (r= -.224).

Table 3.2.1: Percentage of Population With Indicators for Morbidity by Sex and Age

Indicators for Disease (PHA Question)	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
Change in weight or waist size (indicator for diabetes/psychological - Q8)	M (125)	25.6	43.2	31.2	34.2 (365)
	F (19)	57.9	21.1	21.1	38.8 (49)
	Total	42.6 (101)	34.5 (168)	29.7 (145)	34.8 (414)
Change in energy level (indicator for thyroid, chronic infection - Q9)	M (64)	26.6	40.6	32.8	17.7 (361)
	F (15)	80.0	20.0	0	38.8 (49)
	Total	28.7 (101)	17.4 (167)	14.8 (142)	19.3 (410)
Difficulty or change in urinating (indicator for diabetes - Q10)	M (24)	16.7	37.5	45.8	6.6 (362)
	F (4)	75.0	0	25.0	8.2 (49)
	Total	6.9 (101)	5.4 (167)	8.4 (143)	6.8 (411)
Frequent headaches, vision changes, balance problems, etc. (indicator for nervous system disorders - Q14)	M (50)	8.0	30.0	62.0	13.8 (362)
	F (9)	66.7	33.3	0	18.4 (49)
	Total	9.9 (101)	10.8 (167)	21.7 (143)	14.4 (411)
Shortness of breath, cough, wheezing, etc. (indicator for respiratory disease - Q15)	M (14)	14.3	28.6	57.1	3.8 (364)
	F (5)	60.0	40.0	0	10.2 (49)
	Total	5.0 (100)	3.6 (168)	5.5 (145)	4.6 (413)
Pain, pressure or tightness in chest, neck, arm jaw, etc. (indicator cardiac disease - Q16)	M (27)	14.8	40.7	44.4	7.5 (360)
	F (7)	42.9	57.1	0	14.6 (48)
	Total	7.1 (99)	9.0 (167)	8.5 (142)	8.3 (408)
Change in mole or skin changes or persistent sore (indicator for skin cancer - Q23)	M (33)	18.2	39.4	42.4	9.2 (359)
	F (5)	80.0	20.0	0	10.4 (48)
	Total	10.1 (99)	8.4 (166)	9.9 (142)	9.3 (407)

Indicators for Disease (PHA Question)	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
Joint or back problems, muscle weakness, etc. (indicator for musculoskeletal - Q17)	M (120)	8.3	40.8	50.8	33.1 (363)
	F (15)	46.7	40.0	13.3	30.6 (49)
	Total	17.0(100)	32.7 (168)	43.8 (144)	32.8 (412)
Allergies (Q41)	M (101)	24.8	43.6	31.7	28.1 (360)
	F (23)	60.9	30.4	8.7	50.0 (46)
	Total	40.6 (96)	30.7 (166)	23.6 (144)	30.5 (406)
Obesity (BMI≥27)	M (216)	14.4	44.0	41.7	60.2 (359)
	F (16)	56.3	31.3	12.5	34.0 (47)
	Total	40.8 (98)	60.0 (165)	64.3 (143)	57.1 (406)
Hearing Loss	M (84)	9.5	34.5	56.0	23.0 (364)
	F (7)	14.3	57.1	28.6	14.3 (49)
	Total	8.9 (101)	19.6 (168)	33.8 (145)	22.0 (414)

Table 3.2.2: Percentage (%) of the Population Who Had a PHA During the Years 1994 and 1998 with Indicators of Morbidity

Indicators for Disease (PHA Question)	Year	Total % (n)
Change in weight or waist size (indicator for diabetes/psychological - Q8)	1994	37.3 (118)
	1998	22.2 (117)
Change in energy level (indicator for thyroid, chronic infection - Q9)	1994	17.8 (118)
	1998	13.0 (115)
Difficulty or change in urinating (indicator for diabetes - Q10)	1994	9.4 (117)
	1998	4.2 (118)
Frequent headaches, vision changes, balance problems, etc. (indicator for nervous system disorders - Q14)	1994	13.6 (118)
	1998	16.9 (118)
Shortness of breath, cough, wheezing, etc. (indicator for respiratory disease - Q15)	1994	3.4 (114)
	1998	2.5 (118)
Pain, pressure or tightness in chest, neck, arm jaw, etc. (indicator cardiac disease - Q16)	1994	6.8 (118)
	1998	9.6 (115)
Change in mole or skin changes or persistent sore (indicator for skin cancer - Q23)	1994	8.6 (116)
	1998	13.8 (116)
Joint or back problems, muscle weakness, etc. (indicator for musculoskeletal - Q17)	1994	31.4 (118)
	1998	36.2 (116)
Allergies (Q41)	1994	25.0 (116)
	1998	27.6 (116)
Obesity (≥27)	1994	54.7 (117)
	1998	63.6 (110)
Hearing Loss	1994	25.4 (118)
	1998	34.7 (118)

Table 3.2.3: Correlations Between Indicators for Morbidity

Indicators for Morbidity	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Change in weight or waist size (indicator for diabetes/psych - Q8)										
2. Change in energy level (indicator for thyroid, chronic infection - Q9)	.252**									
3. Difficulty or change in urinating (indicator for diabetes - Q10)	.086	.259**								
4. Frequent headaches, vision changes, balance problems, etc. (indicator for nervous system disorders - Q14)	.082	.173**	.086							
5. Shortness of breath, cough, wheezing, etc. (indicator for respiratory disease - Q15)	.035	.100*	.035	.009						
6. Pain, pressure or tightness in chest, neck, arm jaw, etc. (indicator cardiac disease - Q16)	.040	.151**	.032	.052	.151**					
7. Change in mole or skin changes or persistent sore (indicator for skin cancer - Q23)	.088	.164**	.052	.155**	.129**	.182**				

Indicators for Morbidity	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
8. Joint or back problems, muscle weakness, etc. (indicator for musculoskeletal - Q17)	-.092	-.007	-.006	-.214**	.054	-.091	.049			
9. Allergies (Q41)	-.020	.044	.135**	.005	-.046	-.082	-.019	.049		
10. Obesity (BMI≥27)	-.107*	.021	.019	-.027	.020	-.075	.045	.085	.084	
11.Hearing Loss	-.020	-.002	.020	.152**	.052	.013	.055	-.088	-.138**	-.060

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.3 Negative Health Indicators

Tables 3.3.1 describes the prevalence of the following negative health indicators: hypertension, elevated cholesterol, obesity, smoking, physical inactivity, unhealthy eating and alcohol overuse. The two negative health indicators with the highest prevalence rates were elevated cholesterol (55%) and obesity (57%). Conversely, 21% of the cohort reported not participating in regular physical activity or sports and 9% said they did not eat a healthy diet. Alcohol overuse was reported in 4% of the population. The older members were significantly more likely to have high blood pressure (χ^2=10.413, df=2, p=0.005), elevated cholesterol (χ^2=23.691, df=2, p=0.0005) and obesity (χ^2=14.496, df=2, p=0.001). There was no significant association between age and any of the other negative health indicators. The male members were significantly more likely than the females to have high blood pressure (χ^2=4.758, df=1, p=0.029) and elevated cholesterol (χ^2=10.109, df=1, p=0.001).

The distribution of risk factors for heart disease are shown in Table 3.3.2. The risk factors are broken down into major risk factors (smoking, high cholesterol (≥5.2), high blood pressure (140/90)) and other risk factors (physical inactivity and obesity). Only 19% of the population had no risk factors. Forty-two percent of the cohort had at least one major risk factor and 51% had at least one other risk factor. There were significantly more males than females with two major risk factors (χ^2=5.342, df=1, p=0.021) and one or more other risk factors (χ^2=7.262, df=1, p=0.007).

Table 3.3.3 shows the change in negative health indicators between 1994 and 1998. There was an increase in 1998 in both cholesterol (4%) and obesity (9%). However, neither were significant. Table 3.3.4 shows the change in distribution of risk factors between 1994 and 1998.

The prevalence data for male members was compared to similar data available from the Newfoundland Heart Health survey and is presented in Table 3.3.5. The RCMP had significantly higher rates of elevated cholesterol (χ^2=23.636, df=1, p=0.0005) and obesity (χ^2=17.420, df=1, p=0.0005) compared to the Newfoundland population. Significantly more of the RCMP were older males (χ^2=271.3, df=2, p<0.0005) than the Newfoundland population which may account for these higher rates. However, the RCMP had significantly fewer smokers (χ^2=37.217, df=1, p=0.0005), lower levels of hypertension (χ^2=6.899, df=1, p=0.009) and fewer sedentary males (χ^2=43.338, df=1, p=0.005). Table 3.2.6 shows the distribution of risk factors. The only significant difference in risk factors was that the RCMP had significantly more males with 1 other risk factor (χ^2=7.861, df=1, p=0.005) compared to Newfoundland.

Table 3.3.7 shows the correlations between the negative health indicators. The most significant association, although small, was between obesity and high blood pressure and obesity and cholesterol (r=.218).

Table 3.3.1: Percentage of Population With Negative Health Indicators by Sex and Age

Negative Health Indicator (PHA Question)	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
High Blood Pressure (Sys/Dia ≥140/90) (Physical Exam)	M (57)	17.5	28.1	54.4	16.0 (356)
	F (2)	0.0	50.0	50.0	4.2 (48)
	Total	**10.4 (96)**	**28.8 (164)**	**54.2 (144)**	14.6 (404)
Elevated Cholesterol (≥5.2) (Blood Test)	M (57)	14.2	35.5	50.3	58.1 (291)
	F (2)	50.0	30.0	20.0	49.4 (34)
	Total	**39.2 (74)**	**48.5 (130)**	**71.9 (121)**	55.1 (325)
Obesity (BMI≥27) (Physical Exam)	M (216)	14.4	44.0	41.7	60.2 (359)
	F (16)	56.3	31.3	12.5	34.0 (47)
	Total	**40.8 (98)**	**60.6 (165)**	**64.3 (143)**	57.1 (406)
Smoking (Q11)	M (69)	13.0	47.8	39.1	19.1 (362)
	F (12)	50.0	25.0	25.0	24.5 (49)
	Total	**15.0 (100)**	**21.6 (167)**	**20.8 (144)**	19.7 (411)
Physical Inactivity (Q18)	M (80)	18.8	43.8	37.5	22.0 (364)
	F (8)	37.5	25.0	37.5	16.3 (49)
	Total	**15.0 (100)**	**21.6 (168)**	**20.8 (145)**	21.3 (413)
Unhealthy Eating (Q27)	M (29)	13.8	34.5	51.7	7.9 (365)
	F (7)	57.1	14.3	28.6	14.3 (49)
	Total	**7.9 (101)**	**6.5 (168)**	**11.7 (145)**	8.7 (414)
Alcohol Overuse (Q12)	M (17)	11.8	29.4	58.8	4.7 (365)
	F (1)	100.0	0.0	0.0	2.0 (49)
	Total	**3.0 (101)**	**3.0 (168)**	**6.9 (145)**	4.3 (414)

Table 3.3.2: Percentage of Population With Selected Risk Factors by Sex and Age

Risk Factors	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
0 Risk Factors	M (60)	23.3	18.2	10.9	16.4 (365)
	F (18)	42.9	28.6	28.6	36.7 (49)
	Total	7.0 (29)	7.7 (32)	4.1 (17)	18.8 (414)
Major Risk Factors* 1 Risk Factor	M (152)	42.5	40.3	42.8	41.6 (365)
	F (20)	39.3	50.0	28.6	40.8 (49)
	Total	10.1(42)	18.6 (79)	10.1 (61)	41.5 (414)
2 Risk Factors	M (61)	8.2	12.3	26.1	16.7 (365)
	F (2)	0.0	0.0	4.1	4.1 (49)
	Total	1.4 (6)	4.6 (19)	9.2 (38)	15.2 (414)
3 Risk Factors	M (7)	0.0	1.9	2.9	1.9 (365)
	F (0)	0.0	0.0	0.0	0.0 (49)
	Total	0.0 (0)	0.7 (3)	1.0 (4)	1.7 (414)
Other Risk Factors** 1 Risk Factors	M (194)	41.1	55.8	56.5	53.2 (365)
	F (7)	35.7	35.7	14.3	32.7 (49)
	Total	9.7 (40)	22.0 (91)	19.1 (79)	50.8 (365)
2 Risk Factors	M (51)	11.0	14.3	15.2	14.0 (365)
	F (4)	3.6	7.1	28.6	8.2 (49)
	Total	2.2 (9)	5.6 (23)	5.6 (23)	13.3 (414)

* Major Risk Factors: smoking, high cholesterol (≥5.2), high blood pressure (140/90)
**Other Risk Factors: bmi (≥27), sedentary

Table 3.3.3: Percentage (%) of the Population Who Had a PHA During the Years 1994 and 1998 with Negative Health Indicators

Negative Health Indicators (PHA Question)	Year	Total % (n)
High Blood Pressure (Sys/Dia ≥ 140/90) (Physical Exam)	1994	14.5 (117)
	1998	12.8 (109)
Elevated Cholesterol (≥ 5.2) (Blood Test)	1994	59.4 (96)
	1998	63.0 (100)
Obesity (BMI≥27) (Physical Exam)	1994	54.7 (117)
	1998	63.6 (110)
Smoking (Q11)	1994	14.5 (117)
	1998	16.4 (116)
Physical Inactivity (Q18)	1994	21.2 (118)
	1998	15.4 (117)
Unhealthy Eating (Q27)	1994	8.5 (118)
	1998	6.8 (118)
Alcohol Overuse (Q12)	1994	5.9 (118)
	1998	2.5 (118)

Table 3.3.4: Percentage of the Population During the Years 1994 and 1998 With a Combination of Selected Risk Factors

Number of Risk Factors	Year	% of Population (n=118)
0 Risk Factors	1994	18.6
	1998	18.6
Major Risk Factors* 1 Risk Factor	1994	41.5
	1998	53.4
2 Risk Factors	1994	15.3
	1998	12.7
3 Risk Factors	1994	1.7
	1998	0.8
Other Risk Factors** 1 Risk Factors	1994	51.7
	1998	49.2
2 Risk Factors	1994	11.9
	1998	12.7

*Major Risk Factors: smoking, high cholesterol (≥5.2), high blood pressure (140/90)

**Other Risk Factors: BMI (≥27), sedentary

Table 3.3.5: Comparison of the Prevalence of Risk Factors for RCMP and the Newfoundland Population*

Risk Factor	RCMP (n=368 males) Age				Newfoundland Population (n=858 males) Age			
	≤30	31-40	40+	Total	≤30	31-40	40+	Total
Smoking	0.6	4.7	13.8	19.1	16.4	12.9	7.5	36.8
Hypertension (140/90)	0.0	4.5	11.5	16.0	7.3	8.6	6.8	22.7
Elevated Cholesterol (≥5.2)	0.0	17.2	40.9	58.1	10.9	18.0	12.4	41.3
Obesity (BMI ≥27)	0.6	18.1	41.5	60.2	16.3	17.8	12.5	46.7
Sedentary	0.5	6.3	15.1	22.0	13.9	16.7	10.4	41.7

*The Newfoundland population was weighted for the risk factors and age so that they could be compared to the RCMP population.

Table 3.3.6: Percentage of the RCMP and Newfoundland Male Populations with a Combination of Selected Risk Factors

Risk Factor	RCMP (n=368 males) Age				Newfoundland Population (n=858 males) Age			
	≤30	31-40	40+	Total	≤30	31-40	40+	Total
0 Risk Factors	0.5	7.9	7.9	16.4	8.2	4.7	1.6	14.5
Major Risk Factors* 1 Risk Factor	0.5	14.5	26.6	41.6	20.0	15.0	10.0	45.1
2 Risk Factors	0.0	4.1	12.6	16.7	5.2	7.2	5.2	17.7
3 Risk Factors	0.0	0.0	1.9	1.9	0.8	2.4	1.4	4.7
Other Risk Factors** 1 Risk Factor	0.5	17.5	35.1	53.2	17.4	17.2	9.8	44.4
2 Risk Factors	0.3	3.3	10.4	14.0	5.2	7.3	6.1	18.6

*Major Risk Factors: smoking, high cholesterol (≥5.2), high blood pressure (140/90)
**Other Risk Factors: bmi (≥27), sedentary

Table 3.3.7: Correlations Between Negative Health Indicators

Negative Health Indicators	1.	2.	3.	4.	5.	6.
1. High Blood Pressure (Sys/Dia ≥140/90) (Physical Exam)						
2. Elevated Cholesterol (≥5.2) (Blood Test)	.140*					
3. Obesity (BMI≥27) (Physical Exam)	.155**	.218**				
4. Smoking (Q11)	-.043	.069	.012			
5. Physical Inactivity (Q18)	-.010	.083	.075	.084		
6. Unhealthy Eating (Q27)	.117*	.022	.057	-.002	-.014	
7. Alcohol Overuse (Q12)	-.021	.111*	.039	.051	.034	.018

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.4 Positive Health Indicators

The PHA includes a number of questions that have been defined as positive health indicators and include the following: perceptions of ideal weight, normal blood pressure, normal blood sugar, normal cholesterol, good physical health, good emotional health and good physical fitness to do front line operational policing. This section will describe the members' perceptions regarding their overall health.

Table 3.4.1 describes the prevalence of positive health indicators by sex and age. On all but one of the indicators, more than 89% of the members reported they were in good overall health and capable of performing their front line police work. However, only 44% of the members felt their weight to be ideal. In looking at age and sex difference, significantly fewer, older members felt their weight was ideal (χ^2=13.150, df=2, p=0.001), that they had normal cholesterol (χ^2=14.386, df=2, p=0.001), and that they had good physical health (χ^2=7.144, df=2, p=0.028).

Table 3.4.2 looks at the changes in the members' views of their overall health between 1994 and 1998. During this period of time, there was no significant change in the members' views.

Correlations between positive health indicators are shown in Table 3.4.3. The strongest significant associations, while small, were between the members who felt they were physically fit to do frontline operational policing and those who felt they were in good emotional health (r=.253)

Table 3.4.1: Percentage of Population With Positive Health Indicators by Sex and Age

Positive Health Indicators (PHA Question)	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
Ideal weight (Q19)	M (157)	26.1	45.2	28.7	43.7 (359)
	F (23)	60.9	30.4	8.7	46.9 (49)
	Total	**55.6 (99)**	**47.0 (166)**	**32.9 (143)**	**44.1 (408)**
Normal blood pressure (Q20)	M (321)	19.6	42.1	38.3	96.1 (334)
	F (45)	57.8	26.7	15.6	100.0 (45)
	Total	**100.0 (89)**	**97.4 (151)**	**93.5 (139)**	**96.6 (379)**
Normal blood sugar (Q21)	M (297)	18.2	43.8	38.0	98.0 (303)
	F (42)	54.8	28.6	16.7	100.0 (42)
	Total	**100 (77)**	**99.3 (143)**	**96.0 (125)**	**98.3 (345)**
Normal cholesterol (Q22)	M (266)	19.5	43.6	36.8	87.5 (304)
	F (42)	57.1	28.6	14.3	100.0 (42)
	Total	**97.4 (78)**	**91.4 (140)**	**81.3 (128)**	**89.0 (346)**
Good physical health (Q24)	M (342)	20.8	42.4	36.8	94.2 (363)
	F (47)	59.6	27.7	12.8	95.9 (49)
	Total	**99.0 (100)**	**94.6 (167)**	**91.0 (145)**	**94.4 (412)**
Good emotional health Q25)	M (354)	20.1	42.7	37.3	97.3 (364)
	F (47)	55.3	29.8	14.9	95.9 (49)
	Total	**97.0 (100)**	**98.2 (168)**	**95.9 (145)**	**97.1 (413)**
Physically fit to do front line operational policing (Q26)	M (355)	19.7	43.1	37.2	97.5 (364)
	F (49)	57.1	28.6	14.3	100.0 (49)
	Total	**98.0 (100)**	**99.4 (168)**	**95.9 (145)**	**97.8 (413)**

Table 3.4.2: Percentage (%) of the Population Who Had a PHA During the Years 1994 and 1998 with Positive Health Indicators

Positive Health Indicators (PHA Question)	Year	Total % (n)
Ideal Weight (Q19)	1994	46.2 (117)
	1998	42.2 (116)
Normal blood pressure (Q20)	1994	97.2 (108)
	1998	92.4 (105)
Normal blood sugar (Q21)	1994	95.7 (94)
	1998	98.9 (92)
Normal cholesterol (Q22)	1994	83.0 (94)
	1998	78.6 (98)
Good physical health (Q24)	1994	94.9 (118)
	1998	96.6 (116)
Good emotional health (Q25)	1994	97.5 (118)
	1998	97.4 (116)
Physically fit to do front line operational policing (Q26)	1994	96.6 (114)
	1998	97.4 (114)

Table 3.4.3: Correlations Between Positive Health Indicators

Negative Health Indicators	1.	2.	3.	4.	5.	6.
1. Ideal weight (Q19)						
2. Normal blood pressure (Q20)	.114*					
3. Normal blood sugar (Q21)	.081	-.024				
4. Normal cholesterol (Q22)	.107*	.084	.103			
5. Good physical health (Q24)	-.089	.156**	-.032	.118*		
6. Good emotional health (Q25)	-.038	-.031	-.020	.069	.156**	
7. Physically fit to do front line operational policing (Q26)	-.033	-.029	-.018	-.047	.253**	.172**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.5 Psychological Symptoms

The PHA has 15 questions that provide feedback to the designated physician about underlying psychological stressors. Table 3.5.1 shows the prevalence of members answering positively to these questions. Although only 3% of them felt they were emotionally unhealthy, 42% of the members reported being exposed to psychologically traumatizing events and 31% reported having felt tense or nervous. In analyzing the questions as a group, 58% of the members had answered positively to three or more questions. The only question which showed any significant difference between sex and age was that concerned with energy levels. The females were significantly (χ^2=4.604, df=1, p=0.032) more likely to have noticed a change in their energy levels, as well as the younger members (χ^2=8.012, df=2, p=0.018).

Table 3.5.2 shows any change in the indicators for psychological stressors between 1994 and 1998. There were no changes for the question asking about the members' perception of their emotional health. However, there was a significant decrease in the number of members answering positively to change in weight (χ^2=6.376, df=1, p=0.012), exposures to contagious diseases (χ^2=5.994, df=1, p=0.014) and feel very tense or nervous (χ^2=4.049, df=1, p=0.044).

Table 3.5.3 shows the correlations between indicators for psychological stressors. The strongest associations, while small, were between recently felt very frustrated and feel very tense or nervous (r=.286); and recently felt very frustrated and recently felt very angry (r=.338). Other significant associations were between:

- noticed any change in energy level and noticed any change in weight (r=.252);

- emotional health and serious personal problems (r=.228);

- emotional health and change in energy level (r=.248);

- helpless and personal problems (r=.202);

- helpless and emotional health (r=.230);

- recently felt very angry and feel very tense of nervous (r=.218);

- and talk to a counsellor and emotional health (r=.220).

Table 3.5.1: Percentage of Population With Indicators for Psychological Symptoms by Sex and Age

Psychological Stressors	Sex (n)	Age			Total % (n)
		≤30% (n)	31-40% (n)	≥41% (n)	
Psychological (Q5) (shooting incidents, violent incidents, discovery of dead bodies)	M (154)	20.8	44.8	34.4	42.4 (363)
	F (18)	61.1	33.3	5.6	36.7 (49)
	Total	43.4 (99)	44.6 (168)	37.2 (145)	41.7 (412)
Suffered any serious personal problems (Q7)	M (76)	21.1	39.5	39.5	21.0 (362)
	F (12)	75.0	25.0	0.0	25.0 (48)
	Total	24.8 (101)	19.8 (167)	21.1 (142)	21.5 (410)
Noticed any change in weight (Q8)	M (125)	25.6	43.2	31.2	34.2 (365)
	F (19)	57.9	21.1	21.1	38.8 (49)
	Total	42.6 (101)	34.5 (168)	29.7 (145)	34.8 (414)
Noticed any change in energy level (Q9)	M (64)	26.6	40.6	32.8	17.7 (361)
	F (15)	80.0	20.0	0.0	30.6 (49)
	Total	28.7 (101)	17.4 (167)	14.8 (142)	19.3 (410)
Overuse of alcohol (Q12)	M (17)	11.8	29.4	58.8	4.7 (365)
	F (1)	100.0	0.0	0.0	2.0 (49)
	Total	3.0 (101)	3.0 (168)	6.9 (145)	4.3 (414)
Exposure to contagious diseases (Q13)	M (97)	20.6	45.4	34.0	26.7 (365)
	F (11)	63.6	36.4	0.0	22.4 (49)
	Total	26.7 (101)	28.6 (168)	22.8 (145)	26.1 (414)
Consider yourself not to be in good emotional health (Q25)	M (10)	10.1	30.0	60.0	2.7 (364)
	F (2)	100.0	0.0	0.0	4.1 (49)
	Total	3.0(100)	1.8 (168)	4.1 (145)	2.9 (413)
Periods when you feel helpless (Q29)	M (17)	23.5	47.1	29.4	4.7 (365)
	F (4)	75.0	0.0	25.0	8.2 (49)
	Total	6.9 (101)	4.8 (168)	4.1 (145)	5.1 (414)

Psychological Stressors	Sex (n)	Age			Total % (n)
		≤30% (n)	31-40% (n)	≥41% (n)	
Feel very tense or nervous (Q30)	M (115)	17.4	46.1	36.5	31.5 (365)
	F (13)	53.8	38.5	7.7	26.5 (49)
	Total	26.7 (101)	34.5 (168)	29.7 (145)	30.9 (414)
Recently felt very angry (Q31)	M (36)	19.4	33.	47.2	9.9 (365)
	F (7)	71.4	28.6	0.0	14.3 (49)
	Total	11.9 (101)	8.3 (168)	11.7 (145)	10.4 (414)
Recently felt very frustrated (Q32)	M (69)	15.9	43.5	40.6	19.0 (364)
	F (10)	60.0	20.0	20.0	20.4 (49)
	Total	16.8 (101)	19.2 (167)	20.7 (145)	19.1 (413)
Psychological or emotional problem you may have forgotten (Q34)	M (2)	0.0	0.0	100.0	0.5 (365)
	F (1)	100.0	0.0	0.0	2.0 (49)
	Total	1.0 (101)	0.0 (168)	1.4 (145)	0.7 (414)
Talk to a counsellor or psychologist (Q35)	M (4)	0.0	100.0	0.0	1.1 (365)
	F (2)	100.0	0.0	0.0	4.1 (49)
	Total	2.0 (101)	2.4 (168)	0.0 (145)	1.4 (414)
You or family member suffer from chronic medical or psychological condition (Q36)	M (48)	22.9	37.5	39.6	13.2 (365)
	F (4)	50.0	25.0	25.0	8.2 (49)
	Total	12.9 (13)	11.3 (19)	13.8 (20)	12.6 (52)
Any aspect of your health that might restrict your capacity to safely perform your duties (Q37)	M (4)	50.0	25.0	25.0	1.1 (365)
	F (1)	100.0	0.0	0.0	2.0 (49)
	Total	3.0 (101)	0.6 (168)	0.7 (145)	1.2 (414)
Answered positively to 3 or more of the above questions	M (216)	53.4	62.3	58.7	59.2 (365)
	F (24)	53.6	50.0	28.6	49.0 (49)
	Total	53.5 (101)	61.3 (168)	57.2 (145)	58.0 (414)

Table 3.5.2: Percentage (%) of the Population Who Had a PHA During the Years 1994 and 1998 With Indicators for Psychological Symptoms

Psychological Stressors	Year	Total % (118)
Psychological (Q5) (shooting incidents, violent incidents, discovery of dead bodies)	1994	45.3
	1998	36.4
Suffered any serious personal problems (Q7)	1994	12.8
	1998	19.5
Noticed any change in weight (Q8)	1994	37.3
	1998	22.2
Noticed any change in energy level (Q9)	1994	17.8
	1998	13.0
Overuse of alcohol (Q12)	1994	5.9
	1998	2.5
Exposure to contagious diseases (Q13)	1994	30.5
	1998	16.9
Consider yourself not to be in good emotional health (Q25)	1994	2.5
	1998	2.6
Periods when you feel helpless (Q29)	1994	2.5
	1998	6.0
Feel very tense or nervous (Q30)	1994	34.7
	1998	22.9
Recently felt very angry (Q31)	1994	12.7
	1998	11.9
Recently felt very frustrated (Q32)	1994	18.8
	1998	27.1
Psychological or emotional problem you may have forgotten (Q34)	1994	0.8

Psychological Stressors	Year	Total % (118)
	1998	0.8
Talk to a counsellor or psychologist (Q35)	1994	0.8
	1998	1.7
You or family member suffer from chronic medical or psychological condition (Q36)	1994	12.7
	1998	11.9
Any aspect of your health that might restrict your capacity to safely perform your duties (Q37)	1994	0.0
	1998	2.5
Answered positively to 3 or more of the above questions	1994	59.3
	1998	51.3

Table 3.5.3: Correlations Between Indicators for Psychological Symptoms

Indicators for Morbidity	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	.14
1. Psychological (Q5)(shooting incidents, violent incidents, discovery of dead bodies)														
2. Suffered any serious personal problems (Q7)	.156**													
3. Noticed any change in weight (Q8)	.059	.126*												
4. Noticed any change in energy level (Q9)	.089	.134*	.252**											
5. Overuse of alcohol (Q12)	.121*	.004	.043	.022										
6. Exposure to contagious diseases (Q13)	.156**	.031	.040	.048	.008									
7. Consider yourself to be in good emotional health (Q25)	.059	.228**	.056	.248**	.104*	-.036								
8. Periods when you feel helpless (Q29)	.072	.202**	.109*	.195**	.113*	.088	.230**							

Indicators for Morbidity	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
9. Feel very tense or nervous (Q30)	.187**	.122*	.115*	.141**	.037	.186**	.041	.084						
10. Recently felt very angry (Q31)	.081	.098*	.051	.115*	.044	.176**	.037	.138**	.218**					
11. Recently felt very frustrated (Q32)	.158**	.181**	.187**	.172**	-.077	.075	.137**	.196**	.286**	.338**				
12. Psychological or emotional problem you may have forgotten (Q34)	-.073	-.037	-.003	.103*	-.018	.014	-.015	.110*	.004	.158**	.103*			
13. Talk to a counsellor or psychologist (Q35)	.103*	.085	-.004	.095	.172**	.112*	.220**	.156**	.094	.157**	.044	-.010		
14. You or family member suffer from chronic medical or psychological condition (Q36)	.093	.158**	.090	.093	.134**	.157**	.110*	.178**	.156**	.086	.168**	.054	-.046	
15. Any aspect of your health that might restrict your capacity to safely perform your duties (Q37)	-.049	.104*	-.034	.058	-.024	-.015	-.019	.176**	.022	.035	.002	-.009	-.013	.158**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.6 Functional Capacity

The Medical Profile of a member is assigned by the Health Services Officer of a Division and provides information on duty limitations and restrictions. Table 3.6.1 details the number of members who have limitations and restrictions. Within the Visual Acuity and Hearing categories only 1% of the members have been profiled as V4 and H4 respectively which restricts them from operational police work except in emergency situations. Under the Geographical Location category, 2% of the members had a G3 profile which required specialist care. Four percent of the members had been assigned O3 restrictions which did not prevent them from performing operational police work; however, they did have some limitations to what they could and could not do. On the other hand, 2% had been assigned O4 restrictions and were not subject to operational call out. Finally, 6% of the members were not cleared (F5) to do Physical Ability Readiness Evaluation (PARE) and therefore should have had duty restrictions placed upon them. There were no significant differences between sex and age for any of these categories of the Medical Profile variables..

Table 3.6.2 identifies the changes in the Medical Profile from 1994 to 1998. There were no significant changes.

Table 3.6.3 shows the correlations between functional capacity. The strongest associations were between members assigned restrictions for Occupation Restrictions (O4) and Geographic Availability of Health Care (G3) (r=.438); and Occupational Fitness (F5) and Geographic Availability of Health Care (G3) (r=.397).

Table 3.6.1: Percentage of Population With Indicators for Functional Capacity and Coping by Sex and Age

Medical Profile	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
Visual Acuity (V4) (Assigned to members in administrative duties in which loss of vision aids will not create a hazard to co-workers or the public and any need to perform policing duties would only be in emergency situations.)	M (2)	0.0	50.0	50.0	0.6 (358)
	F (1)	0.0	0.0	100.0	2.2 (46)
	Total	0.0 (98)	0.6 (165)	1.4 (141)	0.7 (404)
Hearing (H4) (Hearing loss not greater than 50 dbs in the better ear in the 500 to 2000 Hz frequency range.)	M (4)	0.0	25.0	75.0	1.1 (360)
	F (0)	0.0	0.0	0.0	0.0 (46)
	Total	0.0	0.6 (166)	2.1 (142)	1.0 (406)
Geographic Availability of Health Care (G3) (Applied to a member who needs a specialist care.)	M (8)	0.0	50.0	50.0	2.2 (357)
	F (1)	0.0	100.0	0.0	2.2 (46)
	Total	0.0 (98)	3.0 (166)	2.9 (139)	2.2 (403)
Occupational Restrictions (O3) (Applied to a member who suffers from a condition that may require one or more sub-speciality services and will usually require posting to an urban centre.)	M (16)	12.5	12.5	75.0	4.4 (360)
	F (1)	0.0	100.0	0.0	2.2 (46)
	Total	2.0 (98)	1.8 (166)	8.5 (142)	4.2 (406)
Occupational Restrictions (O4) (Assigned to a member who suffers from a condition which may result in an occurrence that threatens the safety of the members, a co-workers, or the public.	M (5)	20.0	20.0	60.0	1.4 (360)
	F (1)	0.0	100.0	0.0	2.2 (46)
	Total	1.0 (98)	1.2 (166)	2.1 (142)	1.5 (406)
Occupational Fitness (F5) (Not Cleared for PARE)	M (20)	15.0	30.0	55.0	5.8 (342)
	F (2)	0.0	50.0	50.0	4.2 (48)
	Total	3.1 (98)	4.6 (153)	8.6 (139)	5.6 (390)

Table 3.6.2: Percentage (%) of the Population Who Had a PHA During the Years 1994 and 1998 With Indicators for Functional Capacity and Coping

Medical Profile	Year	Total % (n)
Vision (V4) (Assigned to members in administrative duties in which loss of vision aids will not create a hazard to co-workers or the public and any need to perform policing duties would only be in emergency situations.)	1994	0.9 (116)
	1998	0.0
Hearing (H4) (Hearing loss not greater than 50 dbs in the better ear in the 500 to 2000 Hz frequency range.)	1994	0.0
	1998	0.0
Geographical Availability of Health Care (G3) (Applied to a member who needs a specialist care.)	1994	5.2 (116)
	1998	4.5 (110)
Occupational Restrictions (O3) (Applied to a member who suffers from a condition that may require one or more sub-speciality services and will usually require posting to an urban centre.)	1994	4.3 (116)
	1998	5.4 (111)
Occupational Restrictions (O4) (Assigned to a member who suffers from a condition which may result in an occurrence that threatens the safety of the members, a co-workers, or the public.	1994	1.7 (116)
	1998	0.9 (111)
Occupational Fitness (F5) (Not Clear to Do PARE)	1994	7.6 (105)
	1998	6.9 (116)

Table 3.6.3: Correlations Between Functional Capacity and Coping

Negative Health Indicators	V4	H4	G3	O3	O4
Vision (V4)					
Hearing (H4)	-.009				
Geographical Availability of Health Care (G3)	.182**	.154**			
Occupational Restrictions (O3)	.125*	.104*	.219**		
Occupational Restrictions (O4)	-.010	-.012	.438**	-.026	
Occupational Fitness (F5)	-.022	.085	.199**	.397**	.150**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.7 Occupational Hazards

Six questions on the PHA enquire about occupational hazards to which members have been exposed. Table 3.7.1 describes the prevalence of the following occupational hazards: loud noises, chemicals, injuries, near miss, psychologically traumatizing events or physical altercations. Table 3.7.2 shows a breakdown of the specific types of hazards members were subjected to. Almost half (47%) of the members reported that they had been exposed to some kind of frequent or intermittent loud noise. The most frequent type of noise exposure came from the firing range (46%) or a combination of noise exposures (40%). Forty percent of the members had been exposed to chemicals, gasses, dusts, allergens or fumes and 51% of the exposures were from the firing range. Of the 20% who reported having suffered an injury, 72% were a result of physical confrontation. Thirty-two percent of the members said they had been exposed to situations where an injury was likely to have occurred. Nearly half (46%) were reported as having occurred during the line of duty and 24% were a result of motor vehicle accidents. As regards psychologically traumatizing events 42% of the members had been exposed and 36% of these incidents were due to sudden death. Finally, 45% of the members reported that they had been in altercations that included resisting arrest (40%) and line of duty (51%).

Significantly more males than females reported being exposed to chemicals (χ^2=3.977, df=1, p=0.046). There was a significant association between age and noises (χ^2=11.161, df=2, p=0.004), injuries (χ^2=15.004, df=2, p=0.001) and altercations

(χ^2=15.272. df=2. p=0.0005). Those in the middle age category (31-40 years) reported less noise exposure. and older members reported fewer injuries and altercations.

Interestingly. when looking at the change in hazards shown in Table 3.7.3 only noise and chemical exposures increased between 1994 and 1998 by 2.5% and 11% respectively. whereas exposures to the other four hazards decreased. The largest decreases where in exposures to psychological traumatizing events (8.9%) and altercations (11.5%). However. none of these changes were significantly different.

Correlations between occupational hazards are shown in Table 3.7.4. The strongest associations were between: chemicals and noise (r=.466); altercation and psychological (r=.422); altercation and psychological (r=.338); and psychological and situation (r=.338).

Table 3.7.1: Percentage of Population With Occupational Hazards by Sex and Age

Occupational Hazards (PHA Question)	Sex (n)	Age			Total % (n)
		≤30 % (n)	31-40 % (n)	≥41 % (n)	
Noise (Q1) (airport, jet engines, helicopters, firing range, snowmobiles)	M (176)	21.6	33.5	44.9	48.2 (365)
	F (19)	73.7	21.1	5.3	40.4 (47)
	Total	52.5 (99)	37.5 (168)	55.2 (145)	47.3 (412)
Chemical (Q2) (chemical toxins or allergens)	M (151)	24.5	34.4	41.1	41.4 (365)
	F (13)	76.9	23.1	0.0	26.5 (49)
	Total	46.5 (101)	32.7 (168)	42.8 (145)	39.6 (414)
Injuries (Q3) (punched, knocked out, bumped, involved in motor vehicle accident)	M (72)	31.9	48.6	19.4	19.8 (364)
	F (11)	72.7	9.1	18.2	22.4 (49)
	Total	31.0 (100)	21.4 (168)	11.0 (145)	20.1 (413)
Situation (Q4) (where injury was likely, near miss)	M (117)	20.5	47.0	32.5	32.1 (364)
	F (13)	46.2	23.1	30.8	26.5 (49)
	Total	29.7 (101)	34.7 (167)	29.0 (145)	31.5 (413)
Psychological (Q5) (shooting incidents, violent incidents, discovery of dead bodies)	M (154)	20.8	44.8	34.4	42.4 (363)
	F (18)	61.1	33.3	5.6	36.7 (49)
	Total	43.4 (99)	44.6 (168)	37.2 (145)	41.7 (412)
Altercation (Q6) (physical confrontation or physically demanding situation)	M (170)	25.3	48.2	26.5	46.7 (364)
	F (17)	58.8	29.4	11.8	35.4 (48)
	Total	53.5 (99)	51.8 (87)	32.4 (47)	45.4 (412)

Table 3.7.2: Specific Types of Hazards Experienced by the Members

Hazard	Type of Exposure	Percent of Members
Noise (Q1) (n=224) (airport, jet engines, helicopters, firing range, snowmobiles)	Firing range	46.3
	Airport	8.9
	Jet engines	2.6
	Helicopters	2.6
	Combination	39.5
Chemicals (Q2) (n=259) (chemical toxins or allergens)	Firing range	51.0
	Gases	10.3
	Dust	8.4
	Fumes	4.5
	Chemicals	2.6
	Hobbies	4.5
	Combination	18.7
Injuries (Q3) (n=340) (punched, knocked out, bumped, involved in motor vehicle accident)	Knocked-out	1.4
	Physical-confrontation	71.6
	Motor vehicle accident	14.9
	Bumped	1.4
	Fell	2.7
	Bitten by a dog	5.4
	Snowmobile accident	1.4
	Training	1.4
Situation (Q4) (n=314) (where injury was likely, near miss)	Hostage	3.0
	Riot	3.0
	Hostage-riot	3.0
	Shooting	8.0
	Line of Duty	46.0

Hazard	Type of Exposure	Percent of Members
	Firing Range	1.0
	Motor Vehicle Accident	24.0
	Diving	2.0
	Combo	10.0
Psychological (Q5) (n=261) (shooting incidents, violent incidents, discovery of dead bodies)	Shooting	3.3
	Hostage	2.6
	Riot	.7
	Sudden-death	36.0
	Motor Vehicle Accident	4.6
	Child	5.9
	Boating accident	1.3
	Combination	32.0
Altercation (Q6) (n=289) (physical confrontation or physically demanding situation	Violent person	5.6
	Resisting arrest	39.2
	Line of duty	51.2
	Combo	4.0

Table 3.7.3: Percentage (%) of the Population Who Had a PHA During the Years 1994 and 1998 With Hazards

Occupational Hazards (PHA Question)	Year	Total % (118)
Noise (Q1) (airport, jet engines, helicopters, firing range, snowmobiles)	1994	44.1
	1998	46.6
Chemicals (Q2) (chemical toxins or allergens)	1994	33.9
	1998	44.9
Injuries (Q3) (punched, knocked out, bumped, involved in motor vehicle accident)	1994	16.9
	1998	12.7
Situation (Q4) (where injury was likely, near miss)	1994	33.3
	1998	31.4
Psychological (Q5) (shooting incidents, violent incidents, discovery of dead bodies)	1994	45.3
	1998	36.4
Altercation (Q6) (physical confrontation or physically demanding situation)	1994	47.9
	1998	36.4

Table 3.7.4: Correlations Between Occupational Hazards

Hazards	1.	2.	3.	4.	5.
1. Noise (Q1)					
2. Chemicals (Q2)	.466*				
3. Injuries (Q3)	.050	.099*			
4. Situation (Q4)	.150**	.249**	.250**		
5. Psychological (Q5)	.234**	.231**	.219**	.323**	
6. Altercation (Q6)	.138**	.195**	.259**	.422**	.338**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.8 Link Between Occupational Hazards and Measures of Health

Police health has been reported to be negatively impacted by the hazards experienced in the occupation. The following tables show the correlations between hazards and measures of health. Table 3.8.1 shows the correlation between morbidity and hazards. The largest associations were seen between change in weight and injuries (r=.130); change in weight and altercations (r=.165); joint or back problems and injuries (r=.141); and joint or back problems and situation (r=.134). However, these correlations were small.

Table 3.8.2 shows the correlation between negative health indicators and hazards. While there were a few associations, they were too small to be significant.

Table 3.8.3 shows the correlation between positive health indicators and hazards. There were no significant associations worth noting.

Table 3.8.4 shows the correlation between psychological symptoms and hazards. There were many associations found between psychological symptoms and hazards. Therefore, the questions were analyzed as a group of positive answers to three or more questions about psychological health. There were significant associations between all hazards and psychological health. The strongest association was with psychological hazards (r=.465).

Table 3.8.5 shows the correlation between functional capacity and coping and hazards. There were no significant associations worth noting.

Table 3.8.1: Correlation Between Morbidity and Hazards

Morbidity	Hazards					
	Noise	Chem.	Injuries	Situa.	Psych.	Alter.
Change in weight or waist size (indicator for diabetes, depression - Q8)	.105*	.041	.130**	.117*	.059	.165**
Change in energy level (indicator for thyroid, chronic infection - Q9)	.008	.010	.064	.052	.089	.106*
Difficulty or change in urinating (indicator for diabetes- Q10)	.073	-.042	.080	.003	-.014	.043
Frequent headaches, vision changes, balance problems, etc. (indicator for nervous system disorders - Q14)	.088	.094	.001	-.008	-.024	-.040
Shortness of breath, cough, wheezing, etc. (indicator for respiratory disease - Q15)	.001	-.059	.006	.101*	.073	.102*
Pain, pressure or tightness in your chest, neck, arm jaw, etc. (indicator cardiac disease - Q16)	.088	.082	.008	.101*	.025	.020
Joint or back problems, muscle weakness, etc. (indicator for musculoskeletal - Q17)	.095	.101*	.141**	.134**	.050	-.017
Change in more or skin changes or persistent sore (indicator for skin cancer - Q23)	.054	.036	.053	.077	.040	.064
Allergies (Q41)	-.032	.006	.025	.040	-.001	.090
Obesity (BMI≥27)	-.012	-.018	-.047	-.028	.001	-.052
Hearing Loss	.116*	.107*	-.048	.042	.000	-.062

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.8.2: Correlation Between Negative Health Indicators and Hazards

Negative Health Indicators	Hazards					
	Noises	Chem.	Injuries	Situa.	Psych.	Alter.
High Blood Pressure (Sys/Dia ≥140/90) (Physical Exam)	.028	-.032	-.068	-.024	-.036	-.012
Elevated Cholesterol (≥5.2) (Blood Test)	.072	-.009	-.051	.016	-.065	-.139*
Obesity (BMI≥27) (Physical Exam)	.012	-.018	-.047	-.028	-.001	-.052
Smoking (Q11)	.056	.061	-.049	.020	.052	-.008
Physical Inactivity (Q18)	-.018	.040	.052	.048	.029	-.046
Unhealthy Eating (Q27)	.120*	.101*	-.026	.123*	-.001	-.006
Alcohol Overuse (Q12)	.083	.045	.041	.085	.121*	.020

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.8.3: Correlation Between Positive Health Indicators and Hazards

Positive Health Indicators	Hazards					
	Noises	Chem.	Injuries	Situa.	Psych.	Alter.
Ideal weight	-.036	-.020	-.022	-.069	-.063	.022
Normal blood pressure	-.119*	-.002	.054	.058	-.024	.076
Normal blood sugar	-.016	.008	.063	.036	.018	-.018
Normal cholesterol	-.017	-.063	.027	-.077	.000	-.046
Good physical health	-.025	.002	-.011	-.041	-.075	.009
Good emotional health	-.010	.022	.014	-.008	-.059	.042
Physically fit to do front line operational policing	.008	.019	-.009	-.007	.059	.036

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.8.4: Correlation Between Psychological symptoms and Hazards

Psychological symptoms	Hazards					
	Noises	Chem.	Injuries	Situa.	Psych.	Alter.
Answered positively to 3 or more of the questions related to psychological health	.201**	.219**	.134**	.251**	.465**	.292**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3.8.5: Correlation Between Functional Capacity and Coping and Hazards

Medical Profile	Hazards					
	Noises	Chem.	Injuries	Situa.	Psych.	Alter.
Vision (V4)	.032	-.070	.028	-.058	-.073	-.021
Hearing (H4)	.055	-.030	-.051	-.014	-.034	.008
Geographic Availability of Health Care (G3)	.023	-.020	-.077	-.030	-.026	-.070
Occupational Restrictions (O3)	.120*	-.045	-.076	.036	-.078	-.069
Occupational Restrictions (O4)	-.076	.025	-.012	.005	-.021	-.072
Occupational Fitness (Not clear for PARE)	-.077	-.066	.018	-.043	.024	-.085

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Chapter 4

Discussion

The overall aim of this study was to describe the health of the police officers in "B" Division of the RCMP, whether their health had changed since the introduction of the PHA and whether there was an association between exposures to occupational hazards and an increased risk of health problems. The results of this investigation suggest that: the members had a high level of health on most measures; which there was little change between 1994 and 1998; and that certain aspects of police work were associated with poorer health. Further, the results showed that the older police officers were at risk of having elevated risk factors for cardiovascular disease. Equally significant, was the finding that male police officers had higher levels of elevated cholesterol and obesity than the general male Newfoundland population. The following discussion will evaluate the findings in more detail. It will also address limitations of the study and provide recommendations for further research.

4.1 Health

On evaluating the PHAs, the members themselves (89%) reported being in good overall health, which is in line with Newfoundlanders (91%) perception of their health as being good to excellent (National Population Health Survey, 1996/97). Ninety seven percent also reported being in good emotional health and being happy with their job. Job satisfaction was much higher within this cohort compared to the Canadian average of 50% (National Population Health Survey, 1996/97). Another large study of the Canadian

police also found high levels of work satisfaction (Brown, *et al.*, 1998). The evaluation of functional capacity and coping confirmed that the cohort was healthy and able to perform operational police work. For example, only 1.5% of the cohort had duty restrictions. Further, there were no new reported cases of diabetes, cardiac disease, skin cancer, and post traumatic stress syndrome. However, the results suggest that members are at risk for developing cardiac disease and diabetes, and/or may suffer from chronic conditions.

The risk factors for cardiac disease considered in this study were high blood pressure, elevated cholesterol, smoking, obesity, physical inactivity, unhealthy eating and alcohol overuse. The risk of developing cardiac disease increases synergistically as the number of these risk factors increases (MacDonald, Joffres, Stachenko, Horlick and Fodor, 1992; Pyörälä, *et al.*, 1998). In this study of "B" Division RCMP, multiple risk factor analysis was done for the major risk factors high blood pressure, elevated cholesterol and smoking; and other risk factors: obesity and physical inactivity. Only 19% of the population had no risk factors.

Research has shown that individuals who have excess weight, are physically inactive, use alcohol, or have excessive salt intake are more likely to develop high blood pressure (Campbell, *et al.*, 1999). This work found that there was a significant association between those individuals with high blood pressure and cholesterol, obesity and unhealthy eating. The prevalence of high blood pressure in the members was 15% (16% of males and 4% of females) which is less than the Canadian average of 22% (26%

of males and 18% of females) (Heart Health Surveys, 1985-90). It is also much less than the 39% found by Franke, *et al.* (1998) in their study of an Iowa law enforcement cohort. However, the RCMP's data may be under-represented because those individuals with high blood pressure which is controlled by medication could not easily be identified and confirmed.

Elevated cholesterol is another major risk factor for heart disease. The rate was found to be high within our RCMP population (55%) and significantly higher among the older members. The male RCMP population had a significantly higher rate of elevated cholesterol than the male Newfoundland population. MacDonald, *et al.* (1992) reported that the risk of ischemic heart disease doubles as the level of blood cholesterol increases from 5.2 to 6.2 mmol/L, risks double again for those who smoke and again doubles in the presence of elevated blood pressure. Therefore, more than half the male RCMP population appears to have a significant risk of developing ischemic heart disease.

The rate of smoking (19%) for our RCMP male population was lower than the 37% for the Newfoundland male population (Newfoundland Heart Health Survey, 1990). The rate of smoking (20%) for all the cohort was also less than the Canadian average of 29% (National Population Health Survey, 1996/97). However, it was similar to the 22% and 23% found in Williams, *et al.* (1987) and Franke, *et al.* (1996) studies respectively.

Within the RCMP population, 41% had one major risk factor, 15% had two major risk factors and 2% had three major risk factors. The male population was at greater risk than the females as there were significant differences between the multiple risk factors.

Elevated cholesterol was also significantly associated with obesity and alcohol use, further adding to the synergistic effect of multiple risk factors discussed by MacDonald, *et al.* (1992).

The prevalence of obesity among the cohort was high at 57% (60% for males and 34% for females) with significantly more males and older members being obese. The rate also increased between 1994 and 1998 by 9% although this was not statistically significant. The prevalence of obesity for males was significantly higher than the Newfoundland rate for males which was 47% (Newfoundland Heart Health Survey, 1990). However, the results are similar to those reported by Franke, *et al.* (1998) in their study of retired Iowa law enforcement officers where they found that 55% of the officers had a BMI >27. Frank, *et al.* (1997) also reported in another 10-year study of Iowa law enforcement personnel that there was a trend showing an increase in body fat with aging. Pyörälä, *et al.* (1998) found that hyperinsulinemia was associated with the risk of a stroke in Helsinki policemen during the 22-year follow-up, but not independently of other risk factors, particularly upper body obesity. In the RCMP population, obesity was significantly associated with cholesterol.

There are limitations to using BMI alone to screen for obesity as it does not take into account muscle or bone mass. In the case of the RCMP, the BMI may be overestimated because the population is predominantly male and males tend to have increased muscle and bone mass. Further, 79% of the members reported participating in regular physical activity and 91% of the members reported eating healthy which would

also support the argument for an increased muscle and bone mass in the population. There was also a significant decrease in the number of members (15%) who reported that there weight had increased between 1994 and 1998.

Less than 1% of the members had diagnosed diabetes which is less than the Canadian average of 3% (Federal, Provincial and Territorial Advisory Committee on Population Health, 1999). Franke, *et al.* (1998) reported that 13% of the Iowa law enforcement officers had diabetes. Once again, looking at multiple risk factors, 57% of the members had a BMI of ≥27, 35% reported they had a change in weight and 55% had elevated cholesterol, all of which may contribute to the development of diabetes. Further concerns arise because the mean age of the members is 37, and significantly more of the older members were obese, had elevated cholesterol and high blood pressure.

However, there may be some protection from diabetes since only 21% of the population reported being physically inactive. This is far below the Canadian average of 57% and the Iowa law enforcement personnel average of 50% (National Population Health Survey, 1996/97; Franke, *et al.* (1997). However, it is similar to the 23% found by Richmond, *et al.* (1998) in their study of New South Wales police and to the 30% found by Williams, *et al.* (1987) in their study of male police officers.

There are two reasons that the level of reported physical inactivity in this population is unlikely to be under estimated. First, the members have been well educated on what regular physical activity means, both during their training to become a police officer and in subsequent health promotion opportunities. Second, similar findings were

found in a back pain study done on the RCMP, in which 75% of the members reported that they accumulated 3 or more hours/week of physical activity (Brown, *et al.*, 1998).

Contrary to popular belief, overuse of alcohol was reported to be at 4% which was similar to the Canadian average of 8% (National Population Health Survey, 1996/97). It is also considerably lower than that found by Richmond, *et al.* (1998) in their study of New South Wales police where they reported that 44% of police officers drank alcohol excessively.

There were three indicators for chronic conditions which are worth noting. First, 30% of the members reported suffering from allergies or asthma. There is no breakdown of the type of allergies or asthma. However, in the study of the respiratory symptoms of RCMP forensic identification group by Trottier, *et al.* (1994), they reported that 3% of the control group had asthma or lung problems prior to joining the force and that 26% of the control group had hay fever. The rate is higher than the Newfoundland average for non-food/food allergies of 19% (National Population Health Survey, 1996/97).

Second, 33% of the members reported having developed a joint or back problem whereas in a previous study done on back pain in the RCMP, 76% of the members reported suffering from a chronic or recurring low back problem within the past year (Brown, *et al.* 1998). However, the prevalence of back pain in the Newfoundland population is only 11% (National Population Health Survey, 1996/97).

Finally, the prevalence of hearing loss in the cohort was 22% and significantly more of the older members had a hearing loss. The prevalence of hearing loss in Canada

is approximately 4% (Statistics Canada, 1992). In the United States, the prevalence of hearing loss of individuals between the ages of 45 and 64 years is 14% (Benson and Marano, 1998). Therefore, it appears that the RCMP has a significant amount of hearing loss. However, age may be a confounding variable which makes the loss appear more significant.

Although all three chronic conditions increased during the period 1994 to 1998, none were significant. However, given that the population is aging this would be an expected trend over the coming years.

4.2 Occupational Hazards

On reviewing the literature there are few studies that provide details on the types of occupational hazards to which police are exposed. One of the few studies was conducted in New South Wales by Evans (1994). This study provides an opportunity to add to the literature. The majority of noise (46%) and chemical exposures (51%) came from the firing range. Members are required to requalify for their firearms on a yearly basis and it is recommended they practice with their firearms regularly. The PHA does not identify the police car as a potential noise exposure and therefore members did not identify it. However, the police car has two sources of noise exposure and one source of chemical exposure which should not be overlooked. The siren and radio are both sources of loud noise which the members are exposed too on a regular basis. The radar is a hazard which the highway patrol members are exposed too regularly and other members less frequently.

The prevalence of injuries in this cohort was 20% as compared to the New South Wales Police Force whose injury rate was 40% while on duty (Evans, 1994). The majority (72%) of the injuries were a result of physical confrontation which is higher than that reported by Evans (1994) which was 51%. Fourteen percent of injuries reported were a result of motor vehicle accidents while Evans (1994) reported 21%. The accident report files within the Division were not up to date for the period of this study so no comparison could be made.

Thirty two percent of the members were subjected to situations where they could have been injured or had a near miss. The New South Wales Police Forces report a 20% chance of an officer being assaulted (Evans, 1994). While the majority of the situations were reported as in the line of duty (46%), 14% were a result of a motor vehicle accident. Brown, *et al.* (1998) reported that 10% of the RCMP members in their study experienced an accident in the police car. In many respects, it is surprising that there are not more motor vehicle accidents given the fact that the police spend so much time in their cruisers. It will be interesting to see if the incidence of motor vehicle accidents increases given that the members now carry lap tops in their cars and are expected to spend the majority of their time working from their vehicles.

The prevalence of "B" Division's exposures to psychologically disturbing events was 42% which is close to that reported by Brown *et al.* (1998) for the RCMP of 47%. The types of exposures were varied but the most cited reason was sudden-death (36%). The types of psychological exposures would vary across the RCMP, depending on the

whether the member was stationed in a northern posting, small community or large urban centre.

Finally, the last exposure was altercations which may involve physical confrontation or physically demanding situations. Once again the reported prevalence of "B" Division members was 45% which is similar to that reported by Brown *et al.* (1998) in their study of RCMP of 49%. In comparing the altercations to injuries, any member involved in an altercation had a 60% chance of being injured.

While there were no significant changes in exposures to occupational hazards between 1994 and 1998, there may be trends to watch for in the future which could have a negative or positive impact on the health of the members. For example if noise and chemical exposures continue to increase then diligence on the part of the members in wearing protective equipment will be important.

4.3 Relationship Between Occupational Hazards and Health

One of the aims of this study was to determine if a link could be made between occupational hazards and health. In carrying out correlations between the occupational hazards and measures of health the one area of health which had a large number of associations was psychological symptoms. When the psychological symptoms were grouped into 3 or more positive answers to the questions and analyzed for associations with hazards there was a significant association among all. The strongest association was with psychological hazards. This suggests that police work may have a negative effect on the psychological health of the members. Mearns and Mauch (1998) in their study of

police officers did find that high levels of job stress were associated with greater physical and emotional distress. However, self-reported emotional health of this cohort was reported to be good by 97% of the members and only 1% of the members asked to be referred to a counsellor or psychologist. Health Services of "B" Division report an increase in the costs of psychological services and in the number of members seeking counselling. As well, the RCMP offers critical incident stress debriefing after every critical incident and they psychologically test all members and families being posted to isolated detachments.

As discussed earlier, 33% of the members reported joint or back problems. There were a number of significant associations between these problems and exposures to noises, injuries, situations and altercations. As Evans (1994) reported in his study of South Wales police force, there is a 40% chance of being injured while on duty. Given the nature of police work being injured while on duty would be expected and very difficult to avoid.

Hearing loss was significantly associated with exposure to noises and chemicals and older members were significantly more likely to report a hearing loss. Exposure to the firing range may be associated with the hearing loss since it was the major type of exposure for both noises and chemicals. Since the 1970s, the RCMP has required members to wear hearing protection while on the firing range. This may be one reason why the older members had a higher level of reported hearing loss.

Finally, determining if there is a link between the prevalence of cardiac and diabetes risk factors is challenging. Generally, these factors are related to individual lifestyles. However, there is increasing evidence that shiftwork and stress may contribute to cardiovascular disease, Type II diabetes and obesity (Ely 1995; Glazner, 1991; Harma, 1996; Nakamura, *et al.* 1998; Phillips 1991; Siebenaler, 1991). However, there were significant associations between changes in weight and noises, injuries, situations and altercations; unhealthy eating and noises, chemicals and situations; and shortness of breath and situations and altercations. These associations do suggest that perhaps occupational hazards do have a negative impact on the risk factors for cardiac disease and diabetes.

4.4 Other Factors Influencing Police Health

As noted earlier, an individual's health is determined by many factors, such as employment and working conditions, health services, income and social status, social support networks, education, physical environments, biology and genetic endowment, and personal health practices and coping skills. The results of this study found that employment and working conditions had limited associations with the health of the RCMP. Therefore, it is important to consider other determinants of health to gain further insight into why the members had a high level of health.

4.4.1 Health Services

The RCMP is a federal police force in Canada which has in place a Health Services Section that is responsible for health monitoring and delivery of services. The

system of delivery is organized on a Divisional or provincial level, and each division has a Health Services Section responsible for ensuring RCMP officers are "fit for duty and fit for life." Each occupational health team is made up of a health services officer (physician), a psychologist, a health and safety advisor, an occupational health nurse, a fitness and lifestyle advisor and a member/employee assistance coordinator. The Health Services Sections operate separately, but they follow policy set by the RCMP Health Services Directorate that is housed in Ottawa. The Directorate has a similar make-up to the Health Services in the Divisions. Therefore, members have access to exceptional health care, although their health is not always monitored regularly on a consistent basis throughout the RCMP.

4.4.2 Income and Social Status

Clearly, since the most important determinant of health is 'income and social status', and the fact that members are fairly high up the income and social hierarchy scale, the consequences for health should be positive. The average salary of a constable rank member is $56,000/year and officer rank member is $83,000/year. This is well above the Newfoundland average income of $19,710 (National Population Health Survey, 1996/97). The RCMP is one of Canada's national symbols and they tend to be respected.

4.4.3 Social Support Networks

Because of the nature of the RCMP, members are transferred throughout the Force on a regular basis (as often as every six months, 2 years, 5 years, to some staying in one place for many years). Therefore, members are continually uprooted from family and

friends. The RCMP as an organization does try to create close social support networks for its members and close links with surrounding communities. However, while some members and their families thrive on this type of lifestyle, others find it more disruptive, isolating and challenging.

4.4.4 Education

Health status is also linked with level of education. In an unpublished study of health practices in one Division of the RCMP, 64% of survey respondents had a university/college level of education compared with only 10% of the Newfoundland population having completed university. The RCMP, has a Training Section in Ottawa and in each Division, that is responsible for the continuing education of its employees. This training is multi-faceted and includes a wide range of topics, such as drug investigative techniques, forensic identification, intelligence analysis, major case management and so on. There is also support for university training. Such educational opportunities likely enhance health status.

4.4.5 Physical Environments

The RCMP has an Occupational Health and Safety Section dedicated to enforcing the Canada labour code laws and improving the 'physical environments' members live and work in. The physical environments, such as air, water and soil quality; and housing and workplace safety are not always ideal because of the isolated communities detachments and force housing are situated in. Where possible the RCMP will try to ensure the environments are improved and at acceptable standards. However, there are

times when this has not happened and members and their family's health has deteriorated because of it. Yet, overall, these services that do not exist for the general population likely do have a positive impact on health of the members of the RCMP.

4.4.6 Biology and Genetic Endowment

An individual's biology and genetic endowment are screened during the application process to join the RCMP. Any person with predisposing factors (colour blindness, hearing loss, etc.) which may impact on their ability to perform operational police work is prevented from joining. At one time, the Force also had height and gender restrictions. However, these have long since been changed. When a member does develop a health problem, such as diabetes, hearing or vision loss or musculoskeletal problems which would impact their ability to perform police work, they are medically discharged from the RCMP.

4.4.7 Personal Health Practices and Coping Skills

Despite these advantages, the actual health practices of some police officers may produce negative health outcomes. Living in isolated communities and working shiftwork do not always make it easy for some individuals to cope, be physically active or eat healthy. Recognizing these challenges, the Health Services Section has staff who carry out a variety of health promotion efforts designed to enhance healthy choices and lifestyles.

4.5 Limitations

There are a number of limitations with this study which should be addressed. The PHA, as noted earlier, was not designed for statistical analysis. It was designed to evaluate the occupational health of police officers to determine their fitness for duty. Therefore, not all of the data on the PHA was suitable for data analysis or provided sufficient detail to provide useful information. These limitations were not readily apparent because the PHAs had not been entered into the HSIS. A considerable amount of time was spent inputting the questionnaires into SPSS and then filtering and manipulating the data for analysis. Information on some aspects of the health of the members may have been lost because of the inability to do analysis on it.

Because the PHAs were not consistently administered to all members, one year could not be chosen to evaluate the cohort. To overcome this problem, one PHA from each member was used in the analysis of the cohort as a whole. This also greatly reduced the numbers of PHAs available for the longitudinal study. The reduced numbers and timeframe of five years may have accounted for the limited number of demonstrable changes over time in the health of the members.

A comparative study with other police forces may be difficult because of restricted access to medical files. The data available from other police forces may not be similar thus making comparisons' difficult.

Are the results transferrable across to other Divisions? Previous research by the RCMP tends to support that the results are transferrable. The members can be transferred

between Divisions on a regular basis (minimum of every two years) and the population in "B" Division therefore is not homogenous to just Newfoundland. However, given that the type of police work and the communities policed between Divisions is different, there may be variances in the findings.

Since there was multiple testing of differences, certain of the significant findings may have emerged due to chance. However, this study was not concerned about particular individual differences, but rather about the general pattern which indicated that while the members of the Division are generally healthy, a certain population have a number of CHD risk factors which increased with age.

One must also consider that there may be a selection bias in the study. The earliest PHAs were used for the cross-sectional study which may have reduced the opportunity to identify the effects of work exposure on the health of the participants. Also the longitudinal study was limited to those members who had PHAs carried out three times and therefore, the number of sample to be analysed was smaller and may not have been as representative as it could have been if there had been more numbers.

4.6 Recommendations

Establishing what measures of health would be used in this study of police health was challenging. However, by using Raeburn and Rootman's expanded health field concept and incorporating the measures of health into Polanyi, *et al.*'s model for determinants of health in the workplace a model for measuring police health was developed. It is recommended that the model proposed in Figure 1.3.1 for measuring

police health be used by other investigators when carrying out research in this area. It would ensure that there were systematic collection, analysis and interpretation of police health data and determinants of police health.

Is it worthwhile and cost effective for the RCMP to be administering PHAs every two years? Given that there were few changes in the overall health of the members in the five years of this study further evaluation is recommended. It may be worthwhile to do PHAs less often except for isolated postings and speciality teams.

Recommendations have been made to help improve the PHA for data analysis and provide further details on health and occupational hazards. Waist girth measures should be added to the physical examination because this would provide greater information in counselling members who are obese. It would also provide further data for analysing the extent of obesity within the RCMP. In the section on occupational hazards, the exact types of exposures the member has encountered should be recorded along with the types of injuries or trauma they experienced.

Analysis of the sick leave and accident reports could not be carried out because the information was not readily available or up to date. This is being rectified and it is recommended that it be completed as quickly as possible and kept up to date. Any trends in sick leave use or accidents should be investigated.

Since there is only anecdotal information from Health Services that the sick leave and psychological services for stress related problems are increasing, it is recommended

that the sick leave and psychological services costs be analysed to determine if in fact there is a problem.

The PHAs serve as screening tool for health problems among the RCMP. Therefore, it is imperative that all members receive their PHA every two years. If this does not happen then the purpose of the PHA is ineffective. Because there were a significant number of members with risk factors for heart disease and diabetes and chronic conditions and that the population is aging, it is recommended that all PHAs be evaluated by Health Services nurse or HSO as they are received and compared to previous PHAs. This can easily be done once PHAs are being entered into the HSIS on a regular basis. Until this occurs, manual review of the PHAs is recommended. Members with any indicators for health problems or number of risk factors for diabetes, thyroid problems and cardiovascular disease should be notified and their medical files flagged for follow-up. They should be referred to the appropriate health professional within the Health Services unit or too outside agencies where needed.

There are a number of areas where further research is recommended. First, research into the impact of shiftwork (including the impact on sleep, exercise habits, eating habits and work habits), on the health, especially cardiovascular risk factors, of the members should be undertaken. Further research into the extent of obesity, elevated cholesterol and high blood pressure to confirm the findings of this thesis is needed. A thorough evaluation of the musculoskeletal health (including etiology) of the members would provide Health Services information on the extent of musculoskeletal problems,

common work related problems and needed for any rehabilitative services. Finally, the Health Services units provide health promotion programs to the members. Research into the impact of their programs on the health of the members should be carried out and any required changes to improve the programs be made.

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Appendices

Appendix 1

PERIODIC HEALTH ASSESSMENT
ÉVALUATION PÉRIODIQUE DE SANTÉ

PIB BRP	CMP/P - PE GRC/P - PE	- 808

Reg. No. - Matr.	Surname - Nom de famille	Given Name - Prénom

Location - Lieu de travail	Duty - Fonction

INSTRUCTIONS FOR DESIGNATED PHYSICIANS

The attached form for periodic health assessment is designed as an instrument to measure the occupational health of members of the RCMP

The questions are designed to be asked by the physician in order to promote a dialogue where required. They are not questions to be filled out by the member. ***This is not a questionnaire.***

A guide to the interpretation of responses and a rationale for the questions is provided separately in the book entitled ***"Police Health: A Physician's Guide for the Assessment of Police Officers"***.

The PARE test referred to may be considered, from the medical point of view, as equivalent to a maximal exercise test. The test parallels the sorts of things that members of the RCMP may be required to do at any time, without warning, in the course of their duties. Members undergoing ***PARE*** are not monitored during the test.

If a physician decides that the member is unfit to take the PARE test then he/she is saying, in effect, that the member is unfit for police work. Because of the potential career implications of such a statement it is requested that full justification be supplied and that specific occupational limitations and restrictions be provided.

Police work impacts directly on the safety of the public. A member involved in policing must be capable of doing the job in a manner that does not pose any preventable threat to him/her self, to a co-worker or to the general public.

INSTRUCTIONS POUR LES MEDECINS DÉSIGNÉS

La formule ci-jointe conçue pour l'évaluation périodique de santé vise à mesurer la santé au travail des membres de la GRC.

Les questions ont été conçues pour être posées par le médecin afin d'encourager le dialogue au besoin. Cette formule ne doit pas être remplie par les membres. ***Il ne s'agit pas d'un questionnaire.***

Un guide pour l'interprétation des reponses et une justification des questions sont fournis separement dans le livre intitulé ***«La santé du policier - Guide du médecin charge de l'examen médical des agents de police».***

Le ***TAPE*** mentionné peut être considéré, du point de vue médical, comme l'équivalent d'une épreuve d'effort maximale. Le test se compare aux genres de choses que le membre de la GRC doit faire n'importe quand, à l'improviste, dans l'exercice de ses fonctions.
Les membres qui subissent le TAPE ne sont pas surveillés durant le test.

Si le médecin décide que le membre n'est pas en état de subir le ***TAPE***, il déclare en fait que le membre est inapte au travail policier. En raison des répercussions qu'une telle déclaration pourrait avoir sur la carrière du membre, le médecin doit fournir des justifications et indiquer les limites précises et les restrictions de travail.

Le travail policier influe directement sur la sécurité du public. Le membre qui fait du travail policier doit être capable de le faire d'une façon qui ne menace aucunement sa sécurité, ni celle d'un collègue ou du grand public.

Name of HSO or designated physician - Nom du médecin-chef ou du médecin désigné	Telephone - Téléphone	Date of examination Date de l'examen

Address - Adresse

Royal Canadian Mounted Police / Gendarmerie royale du Canada

Canada

3380 (1995-05)

1 Since your last RCMP health assessment have you been exposed to frequent loud noises or intermittent loud noises? (such as at an airport, around jet engines, aboard helicopters, on the firing range, etc.)

Yes / Oui ☐ No / Non ☐

1 Depuis votre dernière évaluation de santé avec la GRC, avez-vous été exposé à des bruits intenses fréquents ou intermittents? (tel qu'à un aéroport, autour de moteurs à réaction, à bord d'hélicoptères, sur un champ de tir, etc.)

Explain - Expliquez

WHAT PROTECTIVE DEVICE WERE YOU WEARING? - QUEL APPAREIL DE PROTECTION PORTIEZ-VOUS?

2 Since your last RCMP health assessment have you been exposed to chemicals, gasses, dusts, allergens, or fumes? (including the firing range, industrial accidents or hobbies)

Yes / Oui ☐ No / Non ☐

2 Depuis votre dernière évaluation de santé avec la GRC, avez-vous été exposé à des produits chimiques, des gaz, de la poussière, des allergènes ou des vapeurs? (y compris le champ de tir, les accidents industriels ou les passe-temps)

Explain - Expliquez

WHAT PROTECTIVE DEVICE WERE YOU WEARING? - QUEL APPAREIL DE PROTECTION PORTIEZ-VOUS?

3 Since your last RCMP health assessment have you suffered any injuries in the line of duty? (Been punched? Knocked out? Bumped? Involved in a motor vehicle accident?)

Yes / Oui ☐ No / Non ☐

3 Depuis votre dernière évaluation de santé avec la GRC, avez-vous subi des blessures dans l'exercice de vos fonctions? (reçu des coups de poing? été assommé? bousculé? été victime d'un accident de voiture?)

Explain - Expliquez

---

4 Since your last RCMP health assessment have you been exposed to situations where injury was likely even if it did not occur? (Near miss)

Yes / Oui ☐ No / Non ☐

4 Depuis votre dernière évaluation de santé avec la GRC, avez-vous été exposé à des situations où il y avait possibilité de blessures même si ce n'est pas arrivé? (presque manqué)

Explain - Expliquez

---

5 Since your last RCMP health assessment have you been exposed to psychologically traumatizing events such as shooting incidents, particularly violent incidents, discovery of dead bodies or other disturbing cases?

Yes / Oui ☐ No / Non ☐

5 Depuis votre dernière évaluation de santé avec la GRC, avez-vous été exposé à des événements psychologiquement traumatisants comme une fusillade, des incidents particulièrement violents, la découverte d'un cadavre ou autres incidents troublants?

Explain - Expliquez

---

6 Since your last RCMP health assessment have you been involved in any altercation that included physical confrontation or that was physically demanding?

Yes / Oui ☐ No / Non ☐

6 Depuis votre dernière évaluation de santé avec la GRC, avez-vous été impliqué dans une altercation qui comprenait une confrontation physique?

Explain - Expliquez

---

7 Since your last RCMP health assessment have you suffered any serious personal problems? (Marital difficulties? Death of a loved one? Divorce? Financial problems?)

Yes / Oui ☐ No / Non ☐

7 Depuis votre dernière évaluation de santé avec la GRC, avez-vous eu des problèmes personnels sérieux? (difficultés matrimoniales? la mort d'un être cher? un divorce? des problèmes financiers?)

Explain - Expliquez

---

8 Since your last RCMP health assessment have you noticed any change in your weight or waist size?

Yes / Oui ☐ No / Non ☐

8 Depuis votre dernière évaluation de santé avec la GRC avez-vous remarqué un changement dans votre poids ou tour de taille?

Explain - Expliquez

---

9 Since your last RCMP health assessment have you noticed any change in your energy level such as an increase or decrease in fatigue or change in sleeping pattern?

Yes / Oui ☐ No / Non ☐

9 Depuis votre dernière évaluation de santé avec la GRC, avez-vous remarqué un changement dans votre niveau d'énergie, tel qu'une augmentation ou diminution de fatigue ou un changement d'habitude de sommeil?

Explain - Expliquez

---

10 Have you had difficulty urinating, unusual frequency of urination, had to get up to urinate during the night?

Yes / Oui ☐ No / Non ☐

10 Avez-vous des difficultés à uriner, avez-vous remarqué des changements dans la fréquence ou avez-vous à vous lever pendant la nuit pour uriner?

Explain - Expliquez

---

11 Do you smoke tobacco? Have you or has anyone close to you become concerned about your current use of tobacco or other medications?

Yes / Oui ☐ No / Non ☐

11 Est-ce que vous fumez du tabac? Vous inquiétez-vous ou est-ce que quelqu'un près de vous s'inquiète de votre consommation régulière du tabac ou autres médicaments?

Explain - Expliquez

---

12 In the last 12 months have you

Yes / Oui — No / Non

12 Au cours des 12 derniers mois, avez-vous

a) felt you should cut down on your drinking? ☐ ☐ a) ressenti le besoin de diminuer votre consommation d'alcool?

b) been annoyed by people criticizing your drinking? ☐ ☐ b) Est-ce que les personnes vous exaspèrent quand elles critiquent votre consommation d'alcool?

c) felt bad or guilty about your drinking? ☐ ☐ c) Vous êtes senti coupable à cause de votre consommation d'alcool?

d) had a drink first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)? ☐ ☐ d) consommé de l'alcool en vous levant le matin pour calmer vos nerfs ou pour vous débarrasser de votre gueule de bois?

---

13 Have you any concerns about exposure to contagious diseases such as tuberculosis, AIDS, or hepatitis?

Yes / Oui ☐ No / Non ☐

13 Avez-vous des préoccupations face à l'exposition à des maladies contagieuses telles que la tuberculose, le SIDA ou l'hépatite?

Explain - Expliquez

---

14 Have you developed frequent headaches, vision changes, balance problems, hearing difficulties, seizures, fainting, or fits?

Yes / Oui ☐ No / Non ☐

14 Ressentez-vous de fréquents maux de tête, un changement de vision, problèmes d'équilibre, des difficultés d'ouie, des convulsions, évanouissements ou des crises?

Explain - Expliquez

---

15 Have you developed any shortness of breath, cough, wheezing, coughing of sputum or blood?

Yes / Oui ☐ No / Non ☐

15 Avez-vous eu des difficultés respiratoires, une toux, un sifflement gras ou crachez-vous des expectorations ou du sang?

Explain - Expliquez

---

neck, arm, jaw, or any ankle swelling?	Yes / Oui ☐	No / Non ☐	16 Avez-vous remarqué des douleurs, pression ou serrement dans votre poitrine, cou, mâchoire ou des enflures aux chevilles?

Explain - Expliquez:

17 Have you developed any joint or back problems? Any muscle weakness? Any numbness, tingling or loss of sensation? Yes / Oui ☐ No / Non ☐ 17 Avez-vous un problème d'articulations ou de dos? Avez-vous une faiblesse musculaire? Éprouvez-vous des engourdissements, des picotements ou une perte de sensation?

Explain - Expliquez:

18 Do you currently participate in any regular activity, sports or program, either on your own or in a formal class, designed to maintain your physical fitness? Yes / Oui ☐ No / Non ☐ 18 Participez-vous régulièrement à des activités, à des sports ou à des programmes destinés à maintenir votre condition physique, soit par vous même ou dans une classe?

Explain - Expliquez:

19 Is your current weight above or below ideal weight for you? Yes / Oui ☐ No / Non ☐ 19 Est-ce que votre poids actuel est au-dessus ou endessous de votre poids idéal?

Explain - Expliquez:

	Yes / Oui	No / Non	
20 Is your blood pressure too high?	☐	☐	20 Est-ce que votre tension artérielle est trop élevée?
21 Is your blood sugar too high?	☐	☐	21 Est-ce que votre taux de sucre est trop élevé?
22 Is your cholesterol too high?	☐	☐	22 Est-ce que votre niveau de cholestérol est trop élevé?

23 Have you noticed any change in a mole, or any skin changes or persistent sores? Yes / Oui ☐ No / Non ☐ 23 Avez-vous remarqué un changement d'une tache de naissance ou autres changements de peau ou des plaies qui ne guérissent pas?

Explain - Expliquez:

24 Do you consider yourself to be in good physical health? Yes / Oui ☐ No / Non ☐ 24 Vous considérez-vous en bonne santé physique?

Explain - Expliquez:

25 Do you consider yourself to be in good emotional health? Yes / Oui ☐ No / Non ☐ 25 Vous considérez-vous en bonne santé émotionnelle?

Explain - Expliquez:

26 Do you consider yourself to be physically fit to do front line operational policing if required? Yes / Oui ☐ No / Non ☐ 26 Vous considérez-vous en assez bonne forme physique pour faire le travail d'un policier de ligne de contact si demandé?

Explain - Expliquez:

27 Do you eat a healthy diet? (e.g. plenty of fibre and not too much fat?) Yes Oui ☐ No Non ☐ 27 Avez-vous une bonne alimentation? (ex. beaucoup de fibres et pas trop de matières grasses?)

Explain - Expliquez

28 Are you happy with your job? Yes Oui ☐ No Non ☐ 28 Êtes-vous heureux(se) à votre travail?

Explain - Expliquez

29 Do you have periods when you feel helpless, or worthless, or very depressed? Yes Oui ☐ No Non ☐ 29 Avez-vous des périodes où vous vous sentez délaissé(e), dévalorisé(e), déprimé(e)?

Explain - Expliquez

30 Do you feel very tense and nervous in some situations? Yes Oui ☐ No Non ☐ 30 Vous sentez-vous très tendu et nerveux dans certaines situations?

Explain - Expliquez

31 Have you recently felt very angry? Yes Oui ☐ No Non ☐ 31 Vous êtes-vous senti très fâché récemment?

Explain - Expliquez

32 Have you recently felt very frustrated? Yes Oui ☐ No Non ☐ 32 Vous êtes-vous senti très frustré récemment?

Explain - Expliquez

33 Is there any medical problem that you may have forgotten about at the time of your last medical that you now remember? Yes Oui ☐ No Non ☐ 33 Y a-t-il un problème médical que vous auriez oublié lors de votre dernier examen médical dont vous vous souvenez maintenant?

Explain - Expliquez

34 Is there any psychological or emotional problem that you may have forgotten about that you now remember? Yes Oui ☐ No Non ☐ 34 Y a-t-il un problème psychologique ou émotionnel que vous auriez oublié dont vous vous souvenez maintenant?

Explain - Expliquez

35 Would you like to talk to a counsellor or psychologist? Yes Oui ☐ No Non ☐ 35 Voulez-vous consulter un conseiller ou un psychologue ?

Explain - Expliquez

psychological condition that is affecting you?

Yes / Oui ☐ No / Non ☐

Explain - Expliquez:

Souffrez-vous ou quelqu'un de votre famille souffre-t-il d'un problème médical ou psychologique chronique?

37 Is there any aspect of your health either medical or psychological that might restrict your capacity to safely perform your duties?

Yes / Oui ☐ No / Non ☐

Explain - Expliquez:

37 Y a-t-il un aspect de votre santé, soit médical ou psychologique, qui pourrait diminuer votre capacité de remplir vos fonctions de façon sécuritaire?

38 Is there any family history of heart disease, high blood pressure, diabetes, or cancer?

Yes / Oui ☐ No / Non ☐

Explain - Expliquez:

38 Est-ce qu'il y a des antécédents familiaux: maladie du coeur, tension artérielle élevée, diabète ou cancer?

39 Do you have any personal history of serious or chronic medical, psychological, or physical disorders?

Yes / Oui ☐ No / Non ☐

Explain - Expliquez:

39 Avez-vous déjà eu des troubles médicaux graves ou chroniques, soit physiques ou psychologiques?

40 What medication do you take regularly?

Explain - Expliquez:

40 Quel médicament prenez-vous régulièrement?

41 Allergies:

41 Allergies:

42 Previous occupations within or outside the RCMP

42 Nature des fonctions passées à l'intérieur ou à l'extérieur de la GRC

43 Have you been immunized and had boosters for:
Avez-vous été immunisé et avez vous eu vos injections de rappel pour:

	Yes / Oui	No / Non	Date
TETANUS/DIPHTHERIA (Td) - TÉTANOS/DIPHTÉRIE (Td)			
POLIO - POLIO			
HEPATITIS B - HÉPATITE B			

44 Have you had the following immunization once in your life - Avez-vous déjà eu les immunisations suivantes:

	Yes / Oui	No / Non	Date
MEASLES (born after 1956 who have not had the measles) ROUGEOLE (né après 1956 et qui n'a pas eu la rougeole)			
MUMPS (if no history of mumps) OREILLONS (si pas d'antécédents d'oreillons)			
RUBELLA (susceptible women between menarche and menopause) RUBÉOLE (personne de genre féminin)			

45 Have you had a TB test - Avez-vous eu un examen pour la tuberculose?

Positive / Positif	Negative / Négatif	Date

PHYSICAL EXAMINATION - EXAMEN PHYSIQUE

BLOOD PRESSURE TENSION ARTÉRIELLE	HEART RATE FRÉQUENCE CARDIAQUE	HEIGHT - TAILLE (cm)	WEIGHT - POIDS (kg)	RESPIRATORY RATE FRÉQUENCE RESPIRATOIRE	COMPLEXION (jaundice, pallor, etc.) TEINT (jaunisse, pâleur, etc.)

GENERAL APPEARANCE - APPARENCE GÉNÉRALE

Indicate any Skin Lesions-Indiquer toute lésion cutanée

HEAD / EARS / EYES / NOSE / THROAT - TÊTE / OREILLES/ YEUX / NEZ / GORGE

(√) for normal - pour normal	R - D	L - G	ABNORMALITIES NOTED - ANOMALIES NOTÉES
Pupils Pupilles			
Extraocular Movements Mouvements extraoculaires			
Fundi Fundi			
Conjunctiva Conjonctive			
Tympanic Membranes Membranes tympaniques			
Nasal Septum Septum nasal			
Nasal Polyps Polypes nasaux			
Sinus Tenderness Sinus sensible			
Throat Gorge			
Cervical Nodes, Thyroid Ganglions cervicaux, Thyroïde			
Cervical Mobility Mobilité cervicale			

CRANIAL NERVES - NERFS CRÂNIENS

(√) for normal - pour normal	R - D	L - G	ABNORMALITIES NOTED - ANOMALIES NOTÉES
I			
V			
VII			
IX			
X			
XI			
XII			

VISUAL ACUITY - ACUITÉ VISUELLE

Uncorrected Non corrigée	OD	OS
Corrected Corrigée	OD	OS
Fields to Confrontation Champs visuel	OD	OS
Colour Vision Perception des couleurs	OD	OS

AUDIOGRAM - AUDIOGRAMME

	250	500	1000	2000	3000	4000	6000
Right Droite							
Left Gauche							

CHEST - SYSTÈME PULMONAIRE

	(√) for normal - pour normal	ABNORMALITIES NOTED - ANOMALIES NOTEES
Inspection Inspection	( )	
Palpation Palpation	( )	
Percussion Percussion	( )	
Auscultation Auscultation	( )	

CARDIOVASCULAR SYSTEM SYSTÈME CARDIO-VASCULAIRE		ABNORMALITIES NOTED - ANOMALIES NOTÉES
Inspection Inspection	( )	
Palpation Palpation	( )	
Auscultation Auscultation	( )	

Evidence of: - Signes de:	Yes Oui	No Non	
Cerebro vascular disease Maladie cérébro-vasculaire			
Coronary disease Maladie coronarienne			
Peripheral arterial disease Maladie artérielle périphérique			

	Yes Oui	No Non	ABNORMALITIES NOTED - ANOMALIES NOTÉES
Scars Cicatrice			
Ascites Ascites			
Aneurysm Anévrisme			
Organomegaly Organomégalie			
Hernia Hernie			
Masses Masses			

EXTREMITIES AND BACK - EXTRÉMITÉS ET DOS	Yes Oui	No Non	ABNORMALITIES NOTED - ANOMALIES NOTÉES
[illegible]			
Flexibility normal Flexibilité normale			
Pain on movement Douleur au mouvement			
UPPER EXTREMITIES EXTRÉMITÉS SUPÉRIEURES			
Strength normal Force normale			
Movement normal Mouvement normal			
Joints normal Articulations normales			
Reflexes normal Réflexes normaux			
Sensory normal Perception sensorielle			
Circulation normal Circulation normale			
LOWER EXTREMITIES EXTRÉMITÉS INFÉRIEURES			
Strength normal Force normale			
Movement normal Mouvement normal			
Joints normal Articulations normales			
Reflexes normal Réflexes normaux			
Sensory normal Perception sensorielle normale			
Circulation normal Circulation normale			
Gait normal Démarche normale			

Further questions are directed toward the personal health of the member and are not job related. Do you wish to continue?
Des questions additionnelles sont directement reliées à la santé personnelle du membre et ne sont pas reliées au travail. Désirez-vous continuer?

Yes Oui ☐ No Non ☐ If reply is negative go to laboratory tests.
Si la réponse est négative, passer aux épreuves de laboratoire.

Signature of Member - Signature du membre

1 Have you experienced difficulty swallowing, abdominal pain, change in bowel habits or appearance of stools, vomiting, nausea, bleeding from the mouth or rectum? Yes Oui ☐ No Non ☐

1 Avez-vous éprouvé des difficultés à avaler, des douleurs abdominales, des changements d'habitudes intestinales ou d'apparence de selles, vomissements, nausées, des saignements de la bouche ou de rectum?

Explain - Expliquez

2 If you are female have you noted any changes in your menstrual cycle? Yes Oui ☐ No Non ☐

2 Si vous êtes du sexe féminin, avez-vous remarqué des changements dans votre cycle menstruel?

Explain - Expliquez

3 Have you noticed any lumps in your breasts, any discharge from the nipples, any pain in your breast? Yes Oui ☐ No Non ☐

3 Avez-vous remarqué une masse dans vos seins, un écoulement des mamelons, une douleur dans un sein?

Explain - Expliquez

4 Have you experienced any difficulty in sexual performance? Any discharge from vagina/penis? Any difficulty urinating or change in the appearance of the urine? Yes Oui ☐ No Non ☐

4 Avez-vous éprouvé des difficultés de performance sexuelle? Des écoulements du vagin/pénis? Des difficultés à uriner ou des changements dans l'apparence de l'urine?

Explain - Expliquez

	Yes Oui	No Non	
5 Have you developed a sore throat that won't heal or hoarseness of voice?	☐	☐	5 Avez-vous attrapé un mal de gorge qui ne guérit pas ou un enrouement de la voix?

Explain - Expliquez:

Further examination is not required for occupational reasons but is recommended for the health of the member and includes examination of:	Un examen plus complet n'est pas requis pour des raisons de travail mais il est recommandé pour la santé du membre et il inclut un examen de:

(√) for normal - pour normal	Yes Oui	No Non	ABNORMALITIES NOTED - ANOMALIES NOTÉES
Breasts (female) Seins (femmes)			
Pelvic (internal or vaginal) Pelvien (interne ou vaginal)			
Pap Smear (Female) Test Pap (femmes)			
External Genitalia (men) Organes génitaux (hommes)			
Rectum (men and women) Rectum (hommes et femmes)			

Would you like the HSO or designated Physician to perform these examinations or arrange for them to be done?
Désirez-vous que le médecin-chef ou le médecin désigné exécute ces examens ou qu'il(elle) fasse les arrangements pour les faire faire?

Yes Oui	No Non	Signature of Member - Signature du membre
☐	☐	

REQUIRED TESTS (ALL MEMBERS) - EXAMENS REQUIS (TOUS LES MEMBRES)

	ANY ABNORMALITIES - ANOMALIES
Audiogram Audiogramme	
Urinalyse Analyse d'urine	
Cholesterol Cholestérol	
Gamma Glutamyl Transferase Gamma glutamyl transferase	

THE FOLLOWING TESTS ARE RECOMMENDED FOR THE HEALTH OF THE MEMBER BUT NOT REQUIRED BY THE FORCE:
LES EXAMENS SUIVANTS SONT RECOMMANDÉS POUR LA SANTÉ DU MEMBRE MAIS NE SONT PAS EXIGÉS PAR LA GRC:

TESTS:
- mammography (females, at appropriate frequency)
- pap test (females, every year)
- prostate specific antigen (males at appropriate age)
- flexible sigmoidoscopy (males and females over 50)

EXAMENS:
- mammographie (femmes - à fréquence appropriée)
- test Pap (femmes, annuellement)
- prostate antigène spécifique (hommes - (âge approprié)
- sigmoïdoscopie flexible (hommes et femmes au-dessus de 50)

Do you want the HSO or designated Physician to arrange these tests for you?
Désirez-vous que le médecin-chef ou que le médecin désigné fasse pour vous les arrangements pour ces tests?

Yes Oui	No Non	Signature of Member - Signature du membre

Other tests may be requested if the HSO or designated physician feels they are indicated.

D'autres examens peuvent être exigés si le médecin-chef ou le médecin désigné les jugent indiqués.

Notes:

Oui ☐ Non ☐

Init.

2 In my opinion, this member needs to see the detachment fitness coordinator or other lifestyle counsellor (dietician, nurse, etc.)

Yes / Oui ☐ No / Non ☐

2 À mon avis, je considère que ce membre devrait voir le coordonnateur du conditionnement physique ou un autre conseiller en promotion de la santé (diététicienne, infirmière, etc.)

Init.

3 In my opinion this member does/does not suffer from a medical condition that would prevent him/her from safely performing the *PARE* test as outlined in "*Police Health*".

Does / A ☐ Does Not / N'a pas ☐

3 À mon avis, ce membre a ou n'a pas un état médical qui l'empêcherait de subir en toute sécurité le *TAPE* tel qu'il est indiqué dans le livre intitulé «*La santé du policier*».

Init.

4 If yes, explain and give limitation and restrictions of duty.

4 Dans l'affirmative, indiquer les restrictions relatives aux fonctions leurs durées et les expliquer.

Signature of HSO or designated physician - Signature du médecin-chef ou du médecin désigné

Referrals Recommended - Consultations suggérées:

MEMBER'S COMMENTS COMMENTAIRES DU MEMBRE

Signature of member - Signature du membre

HSO COMMENTS COMMENTAIRES DU MÉDECIN-CHEF

COMMENTS PERTAINING TO LIMITATION OR DUTY RESTRICTIONS MUST BE TRANSFERRED TO FORM 2158
LES COMMENTAIRES PORTANT SUR LES LIMITES OU LES RESTRICTIONS RELATIVES AUX FONCTIONS, DOIVENT ÊTRE REPORTÉS SUR LA FORMULE 2158.

Signature of HSO - Signature du médecin-chef	Date	PARE Time - Durée du TAPE

Memorial
University of Newfoundland

Office of Research and Graduate Studies (Medicine)
Faculty of Medicine
The Health Sciences Centre

1999 03 22

TO: Ms. Lesley Tomblin

FROM: Dr. Verna M. Skanes, Assistant Dean
Research & Graduate Studies (Medicine)

SUBJECT: **Application to the Human Investigation Committee - #99.28**

The Human Investigation Committee of the Faculty of Medicine has reviewed your proposal for the study entitled **"Health Trends in a Canadian Police Force: A Cross Sectional and Longitudinal Study"**.

Full approval has been granted for one year, from point of view of ethics as defined in the terms of reference of this Faculty Committee. For a hospital-based study, it is **your responsibility to seek necessary approval from the Health Care Corporation of St. John's**.

Notwithstanding the approval of the HIC, the primary responsibility for the ethical conduct of the investigation remains with you.

Verna M. Skanes, PhD
Assistant Dean

cc: Dr. K.M.W. Keough, Vice-President (Research)
Dr. R. Williams, Vice-President, Medical Services, HCC
Dr. M. Murray, Supervisor