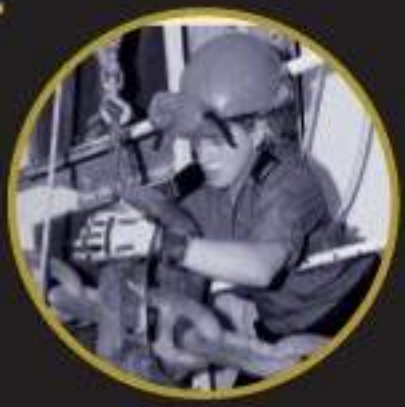
National Defence / Défense nationale

Results from Health and Lifestyle Information Survey of Canadian Forces Personnel 2008/2009

Regular Force Version

Your health speaks volumes.



Director Military Personnel Operational Research and Analysis authorizes the administration of this survey within DND/CF in accordance with CANFORGEN 145/02 ADMHRMIL 079 UNCLASS 131028Z DEC 02. Authorization number: 637/08.

Canadian Forces Health Services Group
Groupe des Services de santé des Forces canadiennes

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CONTRIBUTORS

Authors
Jennifer Born
Laura Bogaert
Elspeth Payne
Miriam Wiens

Editors
Robert Hawes
Dr. Jeff Whitehead

Survey Development
Christine Dubiniecki

Statistical Support
Hugh Gough (Statistics Canada)
Lori Stratychuk (Statistics Canada)

Administrative Support
Debbie Watkins
Jennifer Hennebury

Reviewers
Dr. Maureen Carew
Deanne Chafe
Guylaine Charbonneau
Marketa Graham
Lucie Laferriere
Lucy MacDonald
Dr. Janice Ma
Col H. Colin MacKay
Dr. Darrell Menard
Dr. Debra Reid
Dr. Elizabeth Rolland
Barbara Strauss
Francesca Taylor
Dr. Mark Zamorski

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EXECUTIVE SUMMARY

This report is a broad overview of the results of the Health and Lifestyle Information Survey 2008/9 for Regular Canadian Forces personnel. Further analysis will be completed at a later date as needed to support the needs of CF Health Services elements with prevention or treatment mandates. A Reserve Force report will be produced in the near future. The results of this survey are intended to guide the prioritization of health resource allocation; the planning, implementation, and evaluation of health promotion and disease prevention programs; and the monitoring and effectiveness of health care interventions. A summary of the findings in each section of the survey follows.

Overall Health Status: Self-rated health of CF personnel did not change significantly since 2004. 93% of respondents reported their health to be excellent, very good, or good. Self-rated health declined with age and decreasing rank. Obese CF personnel and those without a history of deployment in the past 2 years were more likely to report fair or poor health. Self-rated health did not vary by command or sex.

Health-Related Activity Limitation: Limitations to vigorous activity due to health reasons were reported by 41% of CF personnel, although only 9% were limited a lot. Health-related activity limitation increased with age and decreased with rank. The limitations did not vary by command or sex.

Chronic Conditions: More than half (57%) of CF personnel reported having at least one chronic condition. The three most common chronic conditions reported by CF personnel were non-food allergies (18%), back problems (18%), and non-back musculoskeletal problems (16%).

Psychological Distress and Depression: Psychological distress as a measure of those CF personnel likely to have serious mental illness requiring further evaluation remained unchanged from 2004 at slightly more than 2%. The prevalence of screening positive for depression at 7% had also not changed significantly over the past 4 years. Screening positive for depression was more common in females than males as is the case in the general Canadian population. There was no difference in the prevalence of psychological distress or positive depression screen by history of deployment in the previous 2 years or by CF command.

Post-Traumatic Stress Disorder (PTSD): A primary care PTSD screening question was used for the first time in the HLIS 2008/9. Approximately 8% of CF personnel screened above the cut-point suggesting they should receive further evaluation. This scale has only been used in primary care settings and has not been used for epidemiological purposes, therefore the results should be interpreted cautiously. There was no significant difference in the rate of those

screening positive between those with and without a history of deployment in the past 2 years nor were there differences by sex, age, or command.

Suicide Ideation and Attempts: There was no significant difference in suicide ideation (lifetime or in the past 12 months) between 2004 and 2008/9. Suicide ideation did not differ by sex, age, command, history of deployment in the previous 2 years, primary language, or marital status. Lifetime suicide attempts did not vary by sex, command, history of deployment in the past 2 years, primary language, or the presence of a positive screen for depression. Suicide attempts in the previous 12 months were too uncommon for meaningful analysis.

Mental Health Consultation: Approximately 15% of CF personnel consulted a health professional about their emotions, mental health, or use of alcohol or drugs in the 12 months prior to the survey. This was not significantly changed from 2004. As in previous surveys, significantly more females (26%) than males (13%) sought care. Those with a history of deployment in the previous 2 years were also more likely to seek care (20% versus 14%). Over three quarters (78%) were very satisfied or satisfied with the services or treatment received. The most common reasons for seeking care were for depression, anxiety, and/or relationship problems. Of those who sought care, 59% had stopped seeing their health professional. The most common reasons for ending consultations were they felt better (50%) and/or they had completed treatment (24%).

Barriers to Mental Health Care: 89% of CF personnel did not feel they needed mental health care or did not perceive any barriers to care. However, 11% of CF personnel did not receive help from a mental health professional when they felt it was needed. The most important factors attributed to them not getting help were they preferred to manage the problem themselves (30%), they were afraid getting help would affect their military career (24%), or reported that they did not think anything more could help them (10%). The top 5 causes of these mental health problems for which they did not receive help in decreasing order of prevalence were work or school stress, relationship problems, family problems, recent deployment, and death of a family member. The most common factor cited that would increase their likelihood of seeking care was better assurance that getting help would not affect their military career. However, among all survey respondents, only one third (34%) believed that seeking mental health care definitely or probably would affect their military career.

Relationship Satisfaction, Family Violence and Abuse: 82% of survey respondents were currently in a relationship. Of those, 91% were either extremely, very, or somewhat satisfied with this relationship. 15% of CF personnel who responded had experienced at least one type of physical or sexual abuse in their current relationship. Males reported being on the receiving end of this abuse more commonly than females while males and females were equally reported to be

perpetrators. A history of emotional or financial abuse was more common with 19% of CF personnel stating they were responsible and 25% stating their spouse was responsible.

Anger Management: 78% of CF personnel rarely or never found themselves struggling with levels of anger that interfered with their ability to do their job or with personal relationships. However, 18% reported that anger sometimes and 4% reported that anger often created this problem.

Time Away from Home, Job Satisfaction: CF personnel spent on average 7.6 months away from home in the previous 2 years. Time away from home was significantly higher among males, junior NCMs, those in the 18-29 year age group, and those under Army or Maritime command. This time away was a significant increase from the 5.5 months time away reported in 2004. The leading causes of time away from home were courses, exercises, and deployments. 81% reported being very or somewhat satisfied with their jobs in 2008/9, a significant increase from 77% reported in 2004.

Health Promotion: Awareness of the CF health promotion program "Strengthening the Forces" increased from 37% in 2004 to 56% in 2008/9. The top 3 actions which CF personnel believed would improve their health and well being were to exercise more or start to exercise, improve their diet, and lose weight. Intent to make that change for all 3 actions was over 90%.

Women's Health: Among women who had completed some cervical cancer screening in their lifetime, 95% had a Pap test within the past 3 years which was not significantly different from the proportion in 2004. The most common reason reported for not having a recent screening was that they had "not gotten around to it". Nearly 5% of CF women reported being currently pregnant at the time of the survey. Problem with urinary incontinence was an increasing problem with age, affecting 19% of those aged 40-49. This can limit physical activity, the extent of which will be examined in future surveys.

Health Care Utilization and Satisfaction: More than three quarters of CF personnel sought medical care from a CF medical facility in the year prior to the survey. 86% reported that the hours of service at the clinic met their needs. For routine non-urgent health problems such as a blood pressure check, the most frequent wait time for an appointment was between 2 weeks and one month. 26% were dissatisfied with the wait times for this type of appointment as most felt that 3 to 7 days would be more reasonable. 70% rated the quality of care at their base as being excellent or good.

Preventive Health Care: 94% of CF personnel under age 40 received a periodic health assessment (PHA) within the 5 years specified. For those 40 years of age and older, a PHA is recommended every 2 years. 79% of CF personnel in this age range received a PHA in this time

range, an improvement from the 2004 completion rate of 73%. Of those aged 50 and older, 57% were advised to complete a fecal occult blood test (FOBT) to screen for colorectal cancer. However, only 78% of those completed the test, resulting in an overall 44% completion rate, similar to that found in the general Canadian population.

Oral Health: The majority of CF personnel (90**%**) report the health of their teeth and mouth to be excellent, very good, or good. Over 80% report never or hardly ever feeling decreased life satisfaction or embarrassment or self-consciousness due to their teeth, mouth, or dentures. Less than 3% often had pain or discomfort in their teeth or gums.

Physical Activity: The physical activities which resulted in the most energy expenditure for CF personnel were individual activities such as running, jogging, or walking for exercise. The proportion of CF personnel who were physically inactive increased since 2004 from 27% to 31% while those who were moderately active decreased from 27% to 22%. CF personnel spent on average 28 hours a week doing sedentary activity such as watching TV. Over 80% of CF personnel had very sedentary jobs. Access to exercise classes at work increased from 55% to 74% between 2004 and 2008/9.

Fitness Testing: Not including those who were incentive exempt or medically excused, only 5% of CF personnel did not complete a fitness test in the year prior to the survey. The fail rate for the Battle Fitness Test was 1%, for the CF EXPRES test it was 3%.

Use of Medication and Health Products: Medications were received from a civilian pharmacy by 59% of CF personnel in the previous year. The most common reasons for obtaining medications at civilian pharmacies was that it was more convenient and the base/wing pharmacy was closed. Approximately 63% of CF personnel took a vitamin or supplement in the previous year. These were most commonly vitamins but energy drinks such as Red Bull were used by 29%.

Nutrition and Diet: 82% of CF personnel reported that their eating habits were excellent, very good, or good. Only 19% of this same group ate the recommended minimum number of vegetables and fruit per day. Although 56% of CF personnel were satisfied with the availability of healthy choices in CF eating facilities, only 7% found the same with respect to vending machines.

Obesity: Rates of obesity among CF personnel increased from 21% in 2004 to 24% in 2008. Obesity rates were higher among males (25%) than females (17%). Although misclassification due to muscle mass is often a concern, 90% of obese males and 94% of obese females considered themselves to be overweight. Obese CF personnel ate fewer vegetables and fruit and were less

likely to be able to deploy than non-obese personnel. Energy expenditure through physical activity was similar for both non-obese and obese personnel.

Tobacco Use: 23% of respondents were current smokers, down from 25% in 2004. One quarter of current smokers started smoking after joining the CF, 45% of them during basic military qualification. Cigars were smoked by 11% and cigarillos by 9% of respondents in the month prior the survey. The use of chewing tobacco at 3% was less common.

Alcohol Consumption: Approximately 48**%** of CF personnel exceeded the Low Risk Drinking Guidelines. 20% of respondents were consuming hazardous amounts of alcohol according to the WHO's AUDIT scale, this was an increase from 13% reported in 2004. 6% reported driving a vehicle in the past 12 months when they had too much to drink.

Drug Use and Gambling: Marijuana or hashish was used by 3% of CF personnel in the 12 months prior to the survey. This is less than 1/5 of the Canadian rate for those aged 18 to 56, this low rate may be partially due to a reluctance to report use on the survey despite it being anonymous. Overall, 83% of CF personnel participated in some type of gambling in the 12 months prior to the survey. Most commonly this took the form of lottery tickets or instant win/scratch tickets. Problem gambling was rare, occurring among less than 1% of CF personnel.

Deployment Health: 22% of CF personnel reported that they were not able to deploy at some point in the 2 years prior to the survey, on average for a period of 11 months. The most common reasons for being unable to deploy were musculoskeletal injury (32%) and family situation (17%). In the first 3 months following deployment, adjustment to family life and work life was difficult for 24% and 31% respectively. Females were more likely to report difficulty adjusting to work life than males. As noted earlier, those with a history of deployment in the previous two years were more likely to consult with mental health professionals but did not have increased rates of suicidal ideation or attempts nor were more likely to screen positive for psychological distress, depression, or PTSD compared to those without a recent history of deployment.

Injuries: Approximately 23% of CF personnel reported suffering a repetitive strain injury (RSI) serious enough to limit normal activity in the 12 months prior to the survey. This was a decrease from 27% reported in 2004. Similarly, acute injuries were reported by 21% in 2008, a decrease from 26% reported in 2004. The reason for the decrease in RSIs and acute injuries is unknown. 61% of CF personnel with an acute injury did not think that their injury was preventable. Of CF personnel that ride a bicycle, only 54% reported that they always wear a helmet while riding.

INTRODUCTION AND METHODS

The Health and Lifestyle Information Survey (HLIS) is the only population health survey of Canadian Forces members as national health surveys conducted by Statistics Canada specifically exclude people living on CF bases. The HLIS was previously conducted in 2000 and 2004, with considerable refinement made to both the methodology and survey design at successive iterations. The 2008/9 survey builds on the evolution of the previous two surveys, with a particular focus on the health of personnel who have recently been deployed overseas. The HLIS 2008/9 was created, administered, and analyzed by the Directorate of Force Health Protection (DFHP), Canadian Forces Health Services Group Headquarters. Separate surveys were conducted for Regular and Reserve Force personnel. This report focuses on the health and wellness of the CF Regular Force.

The HLIS 2008/9 has four goals:

a. Assess the physical and mental health status of CF members;
b. Measure the prevalence of behavioural risk factors among CF members;
c. Measure the utilization of health promotion programs and assess the potential for future programs;
d. Measure health care utilization of and satisfaction with the CF health care system.

This survey will assist DND in prioritizing health resource allocation and in monitoring the effectiveness of health promotion programs and health care interventions.

Participants

A stratified random sample was obtained from the Human Resources Management System (HRMS), often referred to as PeopleSoft. For this study, persons were eligible for inclusion if they were part of the Total Effective Strength of CF personnel on July 28, 2008. This includes all persons currently enrolled in the CF who were not on the Basic Training List, the Subsidized University Training List, on Retirement Leave, on the missing list or the Service Personnel Holding List, on LWOP, AWOA, detained, suspended or in civil custody.

Stratification was used to ensure that a sufficient number of CF personnel with three characteristics of interest were represented in the survey: females, persons deployed overseas within the previous two years, and Officers.

It was decided a priori that estimates based on sex, rank, and deployment status should not exceed an error rate of ±3%. The required sample size to achieve the maximum error rate for the survey was calculated using the exact method in consultation with Statistics Canada staff. It was determined that 1,922 personnel would need to be sampled to achieve the desired variance. Next, we adjusted the sample size for non-response, based on a 50% response rate in the HLIS 2004; this effectively doubled the sample size necessary to meet the statistical requirements of the survey. The final sample size of the Regular Force, adjusted for non-response, was estimated to be 3,844.

To ensure that key outcomes such as the prevalence of acute injury, obesity, physical activity, and mental health conditions were not unduly affected by the season in which data collection occurred, it was decided that the HLIS 2008/9 would adopt a 12-month study horizon, including three survey cycles of four months apiece. Accordingly, the estimated sample size of 3,844 was divided into three equal segments of 1,281 persons per cycle.

Once the stratified random sample of 1,281 personnel in the cycle was drawn, the list of names and service numbers was sent to HRMS to obtain the work address of each individual. From this list, 1,261 records were located and returned in the first cycle, 1,245 in the second, and 1,239 in the third for an overall sample of 3,745 persons.

In June, 2008 an interim analysis of HLIS 2008/9 respondents indicated that male NCMs were not completing the survey in acceptable numbers. Since this group comprises a considerable portion of the total CF, male NCMs who did respond were being assigned an unduly large proportional weight. This affected the stability and interpretability of some of the key survey outcomes.

To remedy this situation, a supplementary sample of male NCMs was selected from July 2008 through November 2009. One thousand male NCMs who were part of the original sampling frame but *not* selected for the HLIS 2008/9 survey were randomly selected for the supplementary sample, of which 999 records were found. Thus, the total mailing sample for the HLIS 2008/9 was 3,745 plus an additional 999 for the supplementary survey of male NCMs, for a total of 4,744 persons.

Survey Content and Distribution

The HLIS provides cross-sectional estimates of the health profile of Canadian Forces personnel, for use in policy and research applications. As a surveillance tool, the utility is increased when similar content is collected in successive surveys, and thus provides comparisons of health outcomes over time. Due to considerable differences in the methodology, survey content and response rate in the HLIS 2000 survey, this report makes use of only the 2004 and 2008/9 data. For earlier data, the reader is referred to the HLIS 2000 Regular Force Report, available for download at the following website: http://www.forces.gc.ca/health-sante/pub/hlis-sssv-eng.asp

The HLIS 2004 and 2008/9 benefitted from the inclusion of questions from the Canadian Community Health Surveys (CCHS) developed by Statistics Canada. Despite some differences in the sampling and methodology between the two surveys, the common survey questions permit tentative trend comparisons between the military and non-military populations that could not be made if vastly differing survey questions were employed. In addition, the Canadian Forces profited from the previous work of Statistics Canada personnel who developed and validated the standardized instruments used throughout the HLIS 2008/9. It is important to recognize that the expertise of Statistics Canada methodologists, biostatisticians and subject matter experts was made available to the Directorate of Force Health Protection, much to the advancement of this study.

The HLIS 2008/9 is a mail-based survey, while the Canadian Community Health Surveys capture data via telephone surveys and direct person-to-person interviews. It has been shown that different survey methods affect the way in which participants a) agree to contribute to the survey, and b) respond to survey questions.

As a result, *direct quantitative comparisons* of HLIS results to CCHS results are not provided in this report. However, *comparisons of general trends* between the Canadian Forces and the non-military Canadian public are provided, to provide some context to the results of the HLIS 2008/9.

The HLIS 2008/9 required approximately 45 minutes for completion. Four versions of this survey were developed, based on the language of the respondent (French and English) and the component of service (Regular or Reserve Force). Due to differences in the occupational and operational experience of Reserve Force personnel, some minor changes were made in the HLIS 2008/9 Reserve Force version to ensure the questions were relevant.

The authorization to conduct the survey was received from the Director Military Personnel Operational Research and Analysis) (authorization number 637/08) and from the three environmental commands. The survey was also approved by an independent external research ethics board (Ethica Clinical Research, Montreal).

The HLIS 2008/9 successfully employed a system of reminder notices and follow-up, based on techniques developed by Dillman (2000). Briefly, the survey package was mailed to the work addresses of the 4,744 persons located within the HRMS sampling frame drawn in July 2008. Included in each package was a cover letter of support from the Chief of Defence Staff to explain the purpose of the survey, a copy of the HLIS 2008/9, a pre-addressed and stamped return envelope, and a white postcard with the unique identifier of the respondent. CF personnel were asked to complete the anonymous survey and to mail the survey using the envelope provided. They were then asked to mail back the postcard separately, as the unique identifier on the postcard would allow DFHP researchers to track the participant response while maintaining the anonymity of the completed survey.

Personnel who had not responded four weeks after the initial mailing were sent reminder notices asking them to complete the survey. If a response was not provided eight weeks after the initial mailing, then a full survey package was once again delivered to the work address of the selected individual.

The first cycle of the HLIS 2008/9 was released on 15 November 2008 and was completed on 15 March 2009. The second survey cycle began on that date and concluded on 15 July 2009. Last, the third cycle was mailed at the termination of the second cycle, and was completed on 15 November 2009.

Response Rate

Regular Force surveys were mailed to 4,744 CF members, of which 2,315 responses were received for a gross response rate of 48.8%. 359 CF members did not receive their surveys for valid reasons: address was unknown despite multiple attempts; the CF member was retired, deceased or had been released, or parental leave. Correcting for surveys that could not be delivered, the response rate was 52.8%, based on 2,315 survey responses out of 4,385 surveys assumed to have been delivered.

To account for the stratified complex sampling design, an inverse proportional weight was applied to the survey responses. The individual weight was based on the sex, rank and deployment status of all survey respondents, after adjusting for non-response. Respondents who did not indicate their sex, rank, age, or deployment status in the previous two years were unable to have a proportional weight calculated and were therefore removed from the sample. As a result, 158 surveys were deleted from the 2,315 surveys received, leaving 2,157 surveys available for analysis.

Statistical Analysis

The mailed surveys were received at DFHP and entered into a database using Teleform optical character recognition software. Data processing clerks were trained to clean and check the results of the Teleform scanning process, and impute text and numeric characters where necessary. The database was then delivered to a senior epidemiologist at DFHP, who examined the data for internal consistency (e.g. skip patterns, illogical responses) and validation using the original mailed surveys.

Variables that included the option for text responses (e.g. lists of chronic conditions or physical activities in the previous four months) were then individually examined, and grouped into a new category, or re-categorized into an existing one. Effectively, this reduced the ubiquity of 'Other' responses, while maintaining the sample size for many items on the survey. Text data from the HLIS 2004 was similarly recoded to ensure comparability across the two studies.

Key demographic variables, including age, deployment status, and base or wing of employment were then derived. A variable for CF Command was also derived using the base or wing of employment, with an extra category of 'Other Command' to represent NDHQ, St. Jean, Borden, CFSU Colorado and other national and international installations.

All analyses were completed using the Complex Samples module in SPSS version 17.0, and were weighted using the inverse probability weight described above. Univariate, bivariate, and regression techniques were reviewed and validated by a team of epidemiologists prior to analysis. Significance values were established at the 5% level, and confidence intervals were computed using either normal or binomial estimation as required. Non-overlapping confidence intervals were considered to be significant to at least the 5% level; overlapping confidence intervals were more thoroughly investigated

using the exact method. In the accompanying text, “ns” refers to non-significance at the 5% level. “Ref” is used to refer to the reference category for categorical variables.

Note that for repetitive and serious acute injuries, the period prevalence presented herein is equivalent to the one-year cumulative incidence, since these questions refer only to persons who suffered an injury within the 12 months prior to completion of the survey.

Standardization of Results

For the comparison of overall rates between survey years, direct age standardization was used in which the age and sex distribution of the Canadian Forces population in 2008 was applied to the data from the HLIS 2004 survey. This standardization corrected for the varying age distributions in the 2004 and 2008/9 populations, as well as the under-representation of younger CF members among HLIS 2008/9 respondents. Small differences may be noted between the HLIS 2008/9 unstandardized and standardized results for this reason.

Demographic Characteristics

The demographic characteristics of both the sampling frame and the weighted responses are presented in Table A. The sampling frame (i.e. the CF population as of July, 2008), for example, was comprised of 87.1% males, 28.2% of persons aged 18 to 29, and 55.1% junior NCMs. Similarly, once the population weights are applied to the survey respondents, it can be seen that 86.6% of the survey sample was male, 28.0% were between the ages of 18 and 29, and 51.3% were junior NCMs. Persons in the 30 to 39 age group were slightly underestimated, and persons in the 40-49 age group were slightly overestimated in the sample. Note the discrepancy between the proportions of CF personnel with a history of deployment in the past two years in the sampling frame versus HLIS respondents. This is probably due to the delayed entry of deployment history into the sampling frame database (HRMS).

Limitations

It must be emphasized that the HLIS surveys use self-reported data to understand the health and wellness of CF personnel. The degree to which self-reported data influences the results presented herein is unknown.

Furthermore, this report provides only the results of univariate and bivariate analyses, which may oversimplify the relationship under study. In other words, it assesses the association between one factor (e.g. rank of respondent) and one health outcome (e.g. prevalence of daily cigarette use) at a time. However, most health outcomes are due to the effect of multiple risk factors and further multivariate analyses is needed to examine the independent effect of individual risk factors.

It should also be noted that associations between a risk factor and an outcome can be modified by a third factor. For example, most studies have shown that males are more prone to binge drinking than females. If one looks at the association between CF Command of service and binge drinking without controlling for other factors, one may

find that land force personnel are more likely to binge drink. However, this may be a spurious association since there are fewer females proportionately in the land forces compared to the other two services. It would also be erroneous to assume that a valid association indicates that an exposure of some type causes the outcome. For instance, there may be a clear association between coffee drinking and smoking, but that does not indicate that one causes the other. There are additional criteria of causation to be met before one should reach a conclusion of that nature.

Table A. Comparison of Survey Sampling Frame and HLIS Respondents

Variable	Characteristic	Sampling Frame (%)	HLIS 2008/9 Respondents (%)
Sex	Male	87.1	86.6
	Female	12.9	13.4
Age Group	18- 29	28.2	28.0
	30-39	32.3	28.1
	40-49	32.4	37.6
	50-60	7.1	6.2
Rank	Pte/OS to MCpl/MS	55.1	51.3
	Sgt/PO2 to CWO/CPO1	22.5	26.3
	OCDT to Capt/Lt(N)	14.0	14.0
	Maj/LCdr to Gen/Adm	8.4	8.4
Deployment	Not Deployed	92.3	75.9
	Deployed Overseas in the Previous Two Years	7.7	24.1

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CHAPTER 1 ~ HEALTH STATUS

This section of the report describes self-rated health status, chronic conditions, and activity limitations due to health issues reported by CF personnel.

Self-Rated Health Status

Self-rated health is commonly used as a proxy for overall health status and is highly predictive of mortality (Appels et al., 1996; DeSalvo et al., 2006; Idler & Benyamini, 1997). HLIS respondents were asked to self-rate their health as excellent, very good, good, fair, or poor. In 2008/9, 16.9% of CF personnel rated their health as excellent, 44.5% reported very good health, 31.2% reported good health, 6.8% reported fair health, and 0.6% reported poor health. There were no significant differences in the reporting of self-rated health status between males and females in 2008/9.

When standardized to the 2008 CF population, the estimates indicate that there have been no significant changes in the reporting of self-rated health status since 2004 (Figure 1.1).

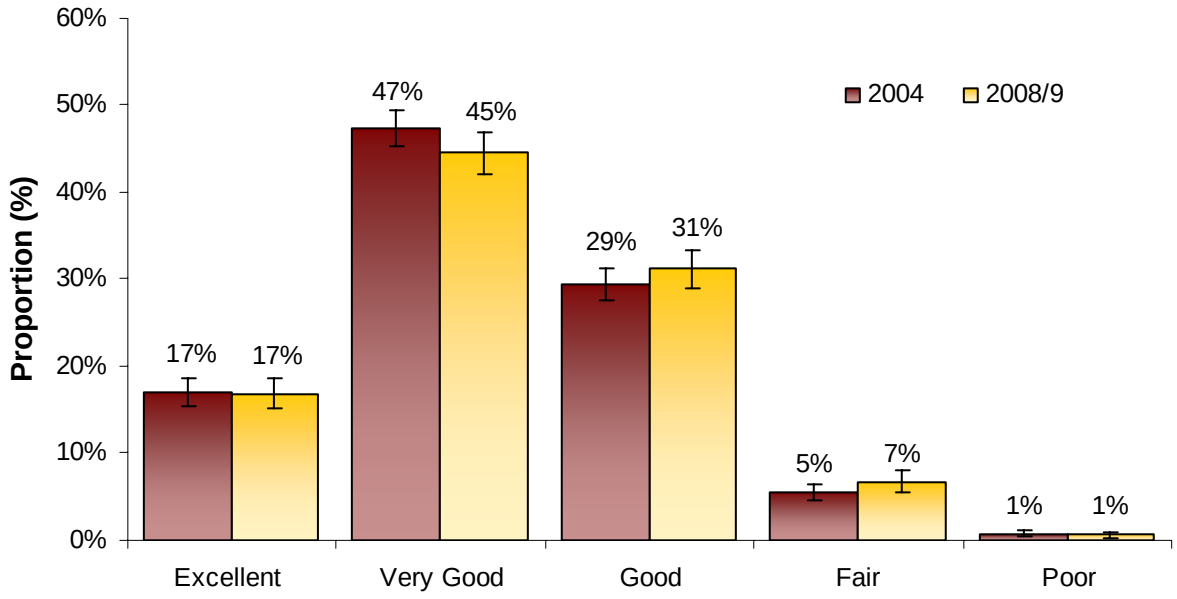

Figure 1.1: Self-Rated Health Status in the CF, HLIS 2004 and 2008/9 θ
θ Age and sex standardized to the 2008 CF population

A similar trend of self-rated health exists among the general Canadian population; very good health status is most commonly reported and a small proportion of the population rate their health as fair or poor (Statistics Canada, 2005; Statistics Canada, 2007/8).

Determinants of Health Status

Self-rated health status has been found to be related to demographic and socio-economic factors, health behaviours, and lifestyle factors among the general population (Shooshtari, Menec, & Tate, 2007; Shields & Shooshtari, 2001; Denton & Walters, 1999). A number of these determinants were analyzed for this section of the report. For the analysis of determinants of health status the 'fair' and 'poor' health categories were collapsed into one category of 'fair or poor' health due to few responses in these categories.

In the general Canadian population, self-ratings of health decline with age (Shields & Shooshtari, 2001) and the same trend is seen in the CF. As shown in Figure 1.2, younger persons in the CF are more likely to report excellent and very good health and older persons are more likely to report good and fair or poor health.

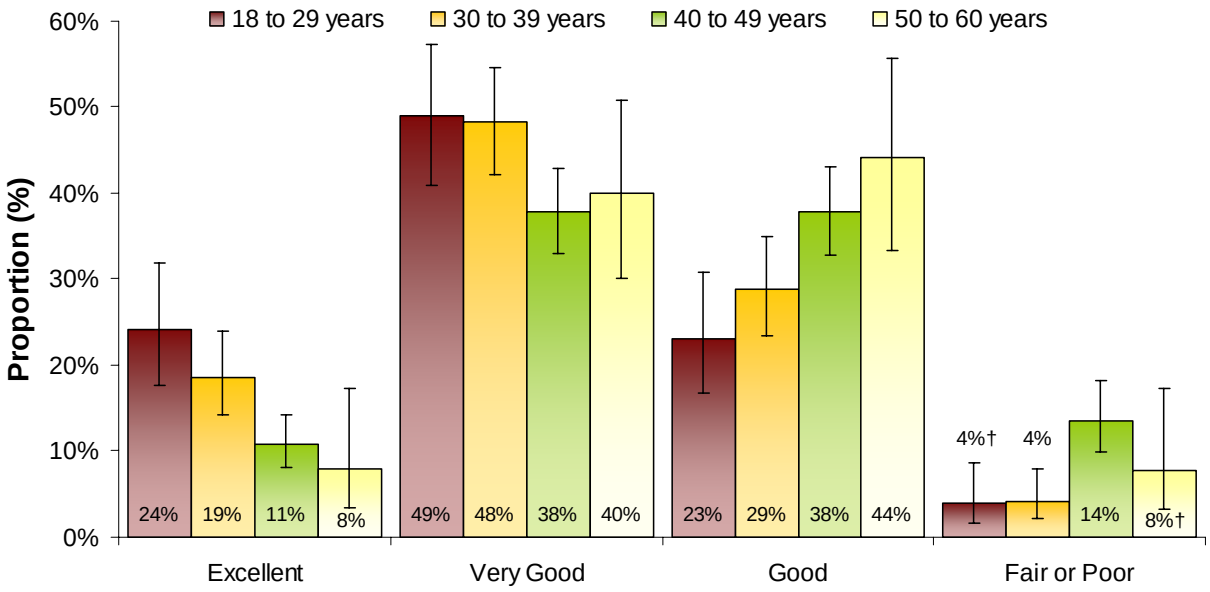

Figure 1.2: Self-Rated Health Status, Comparison of Age Categories, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

As shown in Figure 1.3, non-commissioned members (NCMs) consistently report poorer health status than Officers. Officers were significantly more likely than NCMs to report excellent health and very good health, and NCMs were more likely than Officers to report good health and fair or poor health. The differences in self-ratings of health across rank may reflect variations in occupational duties, or demographic and socio-economic factors.

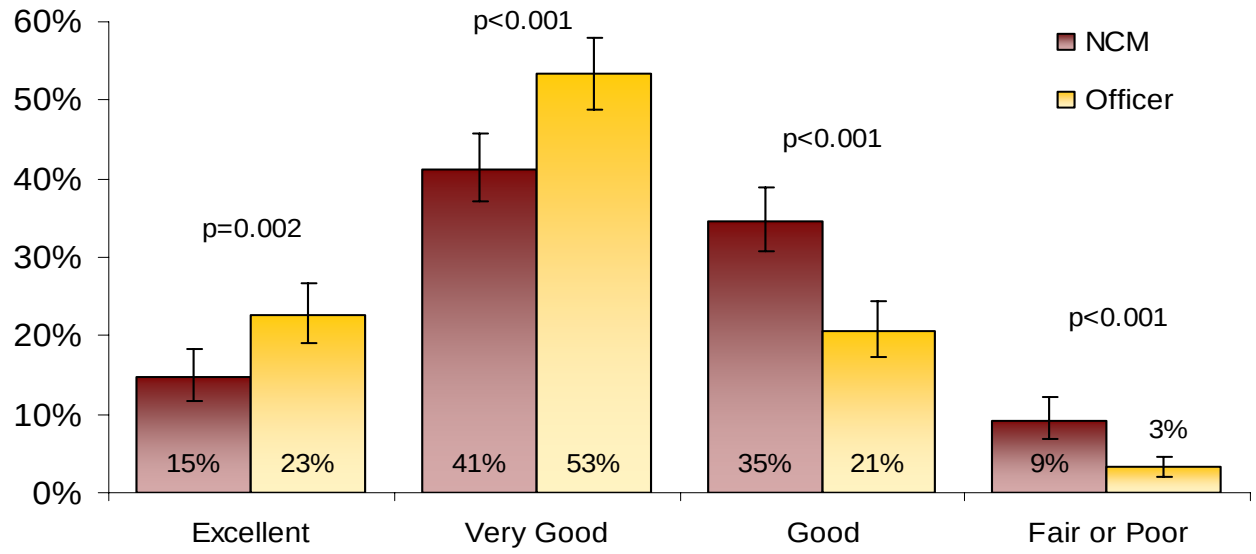

Figure 1.3: Self-Rated Health Status of NCMs and Officers, HLIS 2008/9

Table 1.1 presents information relating to deployment in the 2 years prior to completing the survey. The differences in self-reported health status were not statistically different for those who had or had not deployed in the 2 years prior to completing the survey, except with regards to those who reported fair or poor health. CF personnel who recently deployed were significantly less likely to report fair or poor health when compared to those who had not recently deployed. This difference may be expected because those who fail their fitness test and those with some severe health conditions are not typically deployed.

Table 1.1: Self-Rated Health by Overseas Deployment Status in the Previous 2 Years

	Proportion % (95% CI)			
	Excellent	**Very Good**	**Good**	**Fair or Poor**
Deployed	15.4% (12.3-19.0%)	47.9% (43.2-52.7%)	31.7% (27.4-36.3%)	5.0% (3.2-7.7%)
Not Deployed	16.9% (13.8-20.6%)	42.8% (38.5-47.3%)	31.5% (27.5-35.7%)	8.8% (6.5-11.7%)
p value	ns	ns	ns	0.035

Previous research has found that obese individuals are more likely than non-obese individuals to rate their health as poor (Ferraro & Yu, 1995). The results of the HLIS show the same relationship between obesity and self-rated health. Personnel who fell into the World Health Organization (WHO) Body Mass Index (BMI) category of Obese (BMI $\geq$ 30) consistently reported poorer health compared to those whose BMI was less than 30. As shown in Figure 1.4, 18.4% of obese personnel reported fair or poor health compared to 4.8% of non-obese personnel.

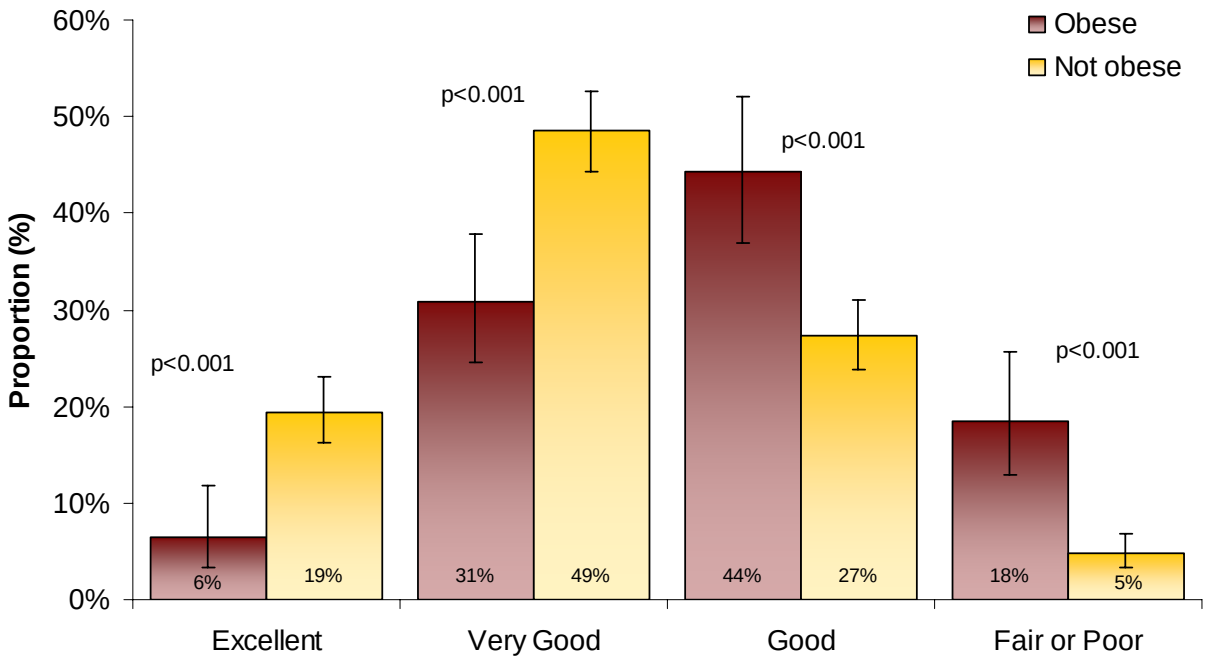

Figure 1.4: Self-Rated Health Status by Obesity Status (BMI ≥ 30), HLIS 2008/9

There were no significant relationships found between self-rated health status and other covariates including marital status, CF Command, and base/wing of service.

Activity Limitations Due to Poor Health

When asked if their health limits them in vigorous activities (including running, lifting heavy objects, and strenuous sports), 58.5% of CF personnel reported they are 'not at all limited', 32.4% reported they are 'limited a little', and 9.0% reported that they are 'limited a lot'. Men and women reported the same amount of limitation related to vigorous activities.

Experiencing vigorous activity limitations due to health is related to age in the CF; as age increases limitations in activities increase as well (see Figure 1.5). The vast majority of those aged 18-39 experience no activity limitations, while a majority of those aged 40-60 experience some activity limitation (either a little or a lot).

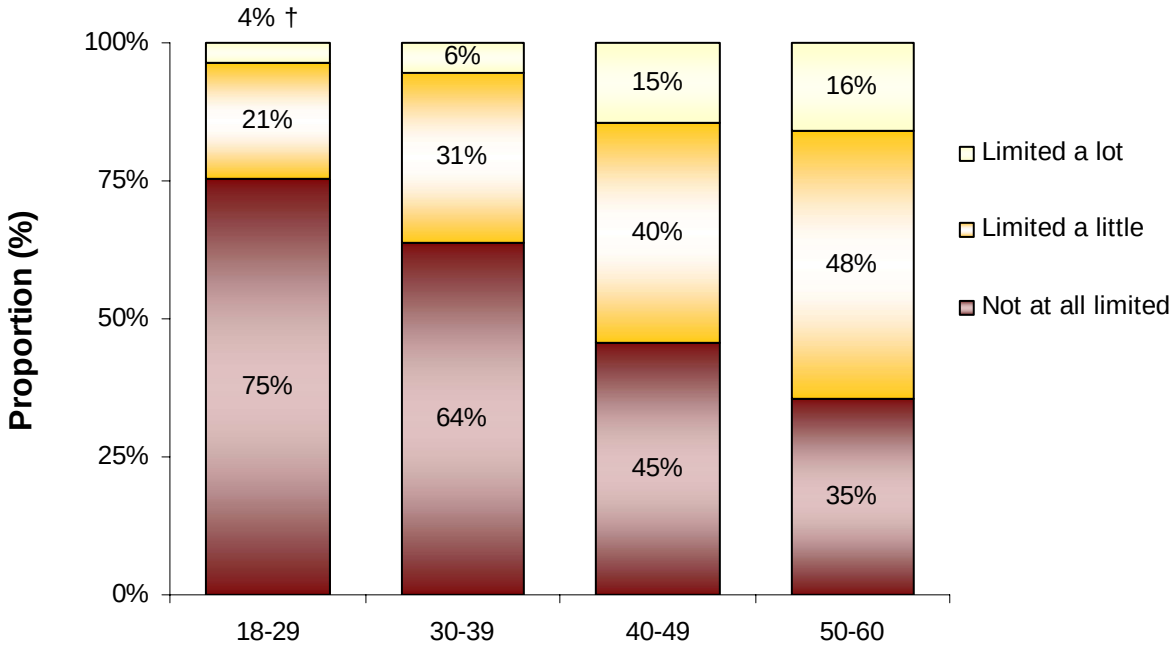

Figure 1.5: Activities Limited by Health by Age Group, HLIS 2008/9
† Fewer than 20 observations, values may be unstable; interpret with caution

Non-commissioned members and Officers experience vigorous activity limitations differently. As shown in Figure 1.7, NCMs were more likely than Officers to be limited a little and limited a lot in their vigorous activities. The reported CF Command of the respondent was not significantly related to activity limitations.

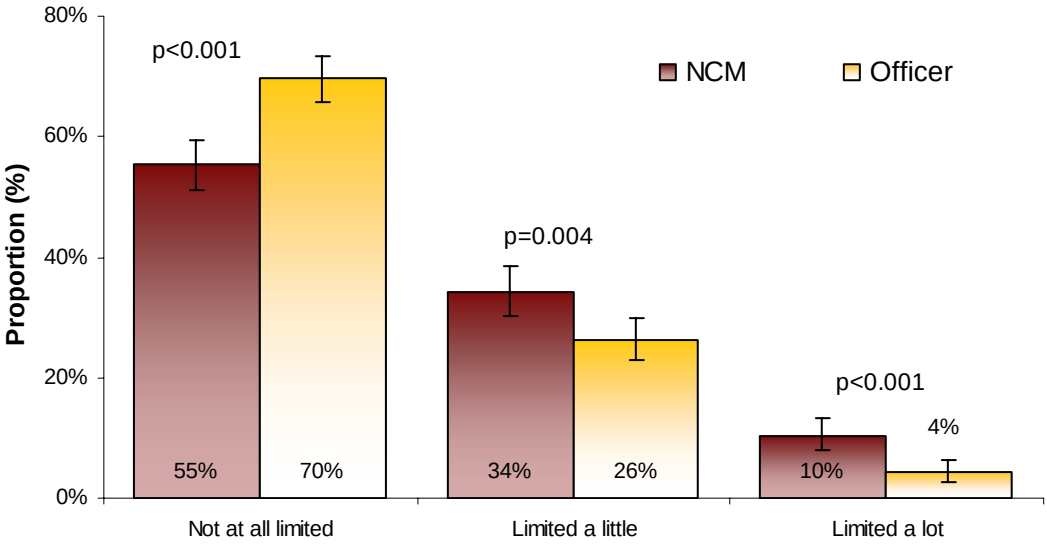

Figure 1.7: Activities Limited by Health by Rank, HLIS 2008/9

CF personnel who were classified as obese (BMI ≥ 30) consistently report greater limitations in vigorous activities due to their health compared to those whose BMI is lower than 30. As shown in Figure 1.8, 19.1% of obese personnel reported that their vigorous activities are limited a lot due to their health, compared to 6.0% of personnel who are not obese. It should be noted that it is not possible to determine from this cross-sectional data if obesity is preventing participation in vigorous activities, or if being limited in vigorous activities is contributing to obesity. Longitudinal investigations into the interplay between excess weight and activity limitations would help to clarify this relationship.

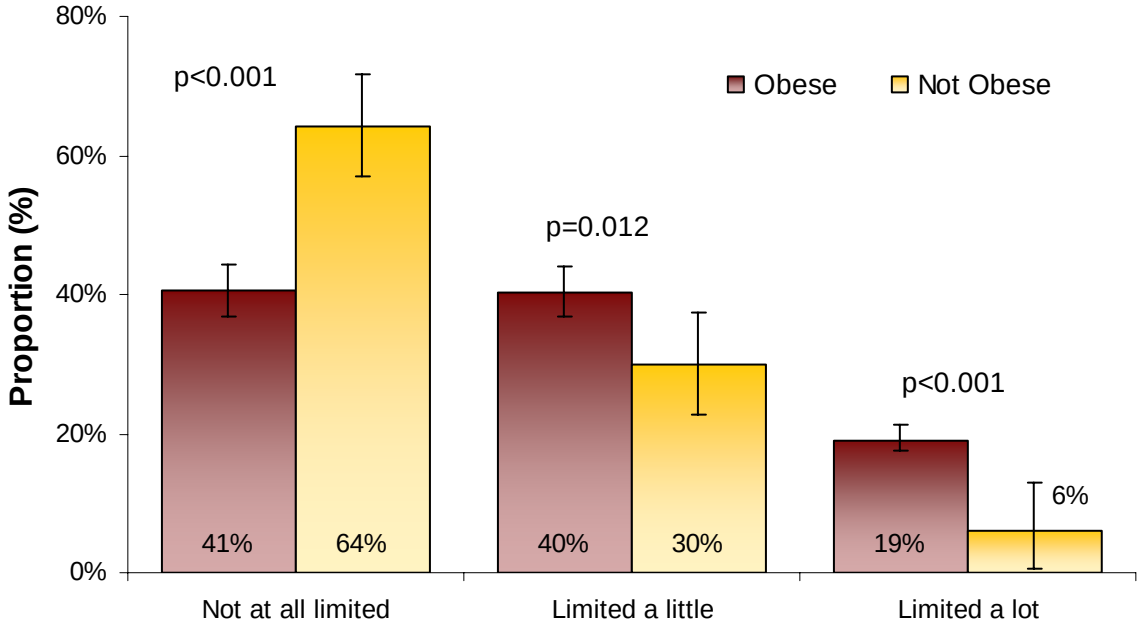

Figure 1.8: Activities Limited by Health by Obesity Status (BMI ≥ 30), HLIS 2008/9

Chronic Conditions

CF personnel were asked to indicate if they had ever been diagnosed with a chronic condition (having lasted or expected to last 6 months or more) by a health care professional. Nearly half of the Forces reported having no chronic conditions (43.1%).

As shown in Figure 1.9, there were no differences between the reporting of number of chronic conditions between males and females, except for the group reporting the most number of chronic conditions. Women were more likely than men to report having four or more chronic conditions.

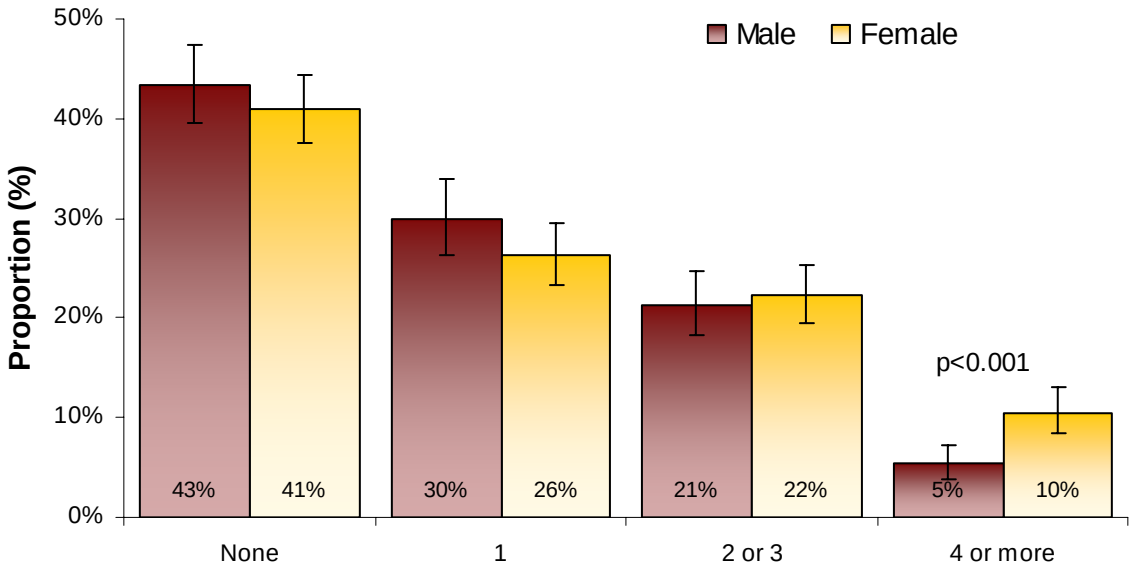

Figure 1.9: Number of Chronic Conditions by Sex of Respondent, HLIS 2008/9

The number of chronic conditions reported by CF personnel varied significantly by BMI category. Those who are categorized as obese were less likely to be free of chronic conditions and more likely to have 2 or more chronic conditions (Figure 1.10).

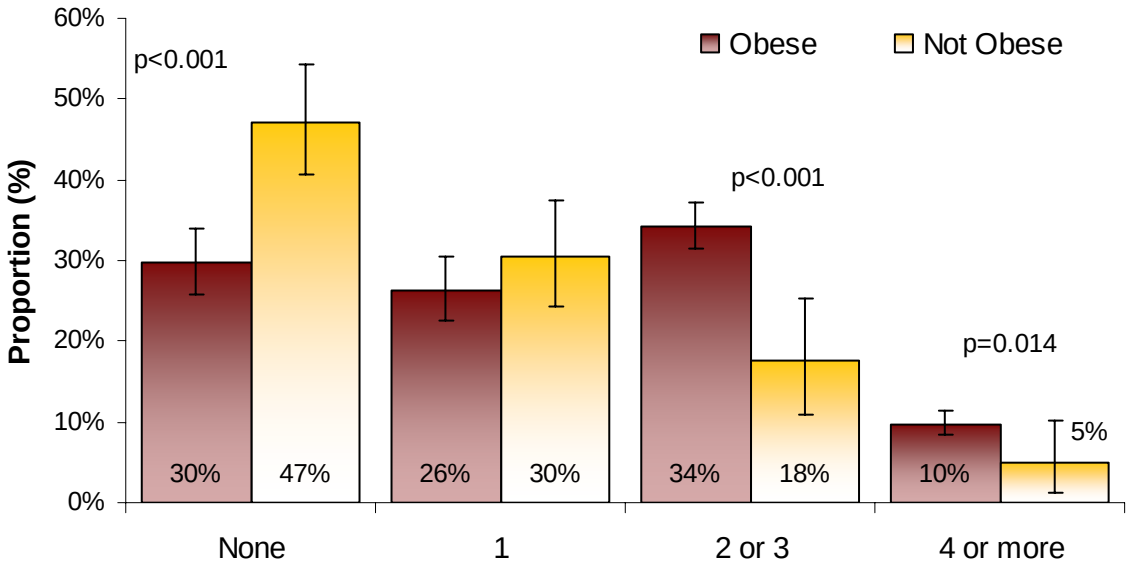

Figure 1.10: Number of Chronic Conditions by Obesity Status (BMI ≥ 30), HLIS 2008/9

The three most common chronic conditions among all CF personnel in 2008/9 were non-food allergies (17.9%), back problems (17.7%), and non-back musculoskeletal problems (16.2%).

Musculoskeletal-related chronic conditions account for a significant amount of chronic disease burden in the CF (Figure 1.10). In the 2008/9 survey, 'musculoskeletal problems' was added as a response category, whereas in 2004 participants were forced to enter this response as text in the 'Other category'. This difference in methodology may explain, in part, the increase in musculoskeletal injuries or chronic conditions observed between 2004 and 2008/9. Back problems and musculoskeletal problems were more commonly reported than arthritis.

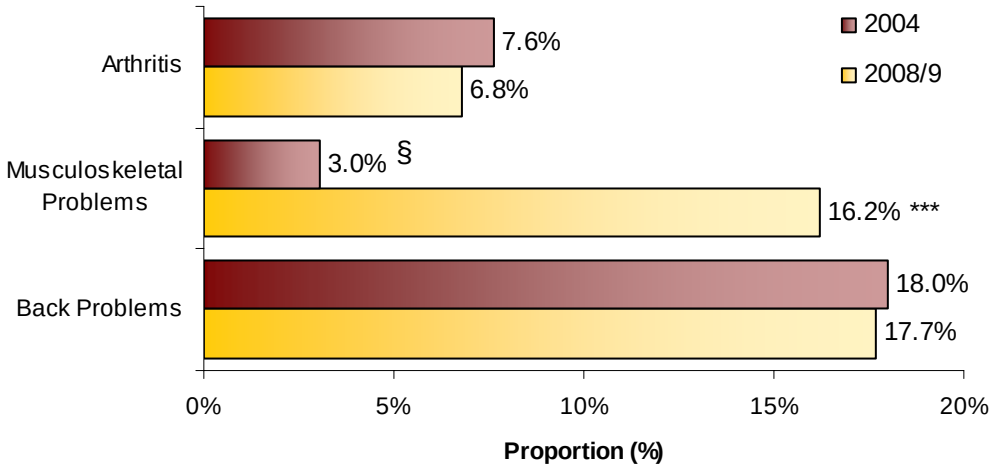

Figure 1.11: Musculoskeletal-Related Chronic Conditions, HLIS 2004 and HLIS 2008/9 θ
θ Age and sex standardized to the 2008 CF population
§The category 'Musculoskeletal problems other than arthritis' was not offered as a response category in 2004; it is populated here by recoding the text responses in the 'Other' category that would have been captured in 'Musculoskeletal problems other than arthritis' (e.g. tennis elbow, torn ligaments, plantar fasciitis, bursitis, etc)' had it been an available response category in the HLIS 2004 survey. Comparisons should be interpreted with caution.
*** $p \leq 0.001$ versus referent group

The most commonly reported chronic conditions among males and females from HLIS 2004 and HLIS 2008/9 are shown in Figures 1.12 and 1.13. Men and women reported different chronic conditions and therefore different chronic conditions are presented in the graphs.

As shown in Figure 1.11, there has been a significant decrease from 2004 in reported non-food allergies among men. There have been significant increases from 2004 to 2008/9 in reported musculoskeletal problems, post traumatic stress disorder (PTSD), and bowel disorders.

As discussed above, 'musculoskeletal problems' was added as a response category for the 2008/9 survey. PTSD was also added as a new response category for the 2008/9 survey. In the 2004 survey, participants may have chosen to enter this response as text in the 'Other category'. This difference in methodology may explain, in part, the increase in musculoskeletal injuries and PTSD observed between 2004 and 2008/9.

As shown in Figure 1.13, there has been a significant decrease in the reported prevalence of non-food allergies, and a significant increase in musculoskeletal problems in women since 2004.

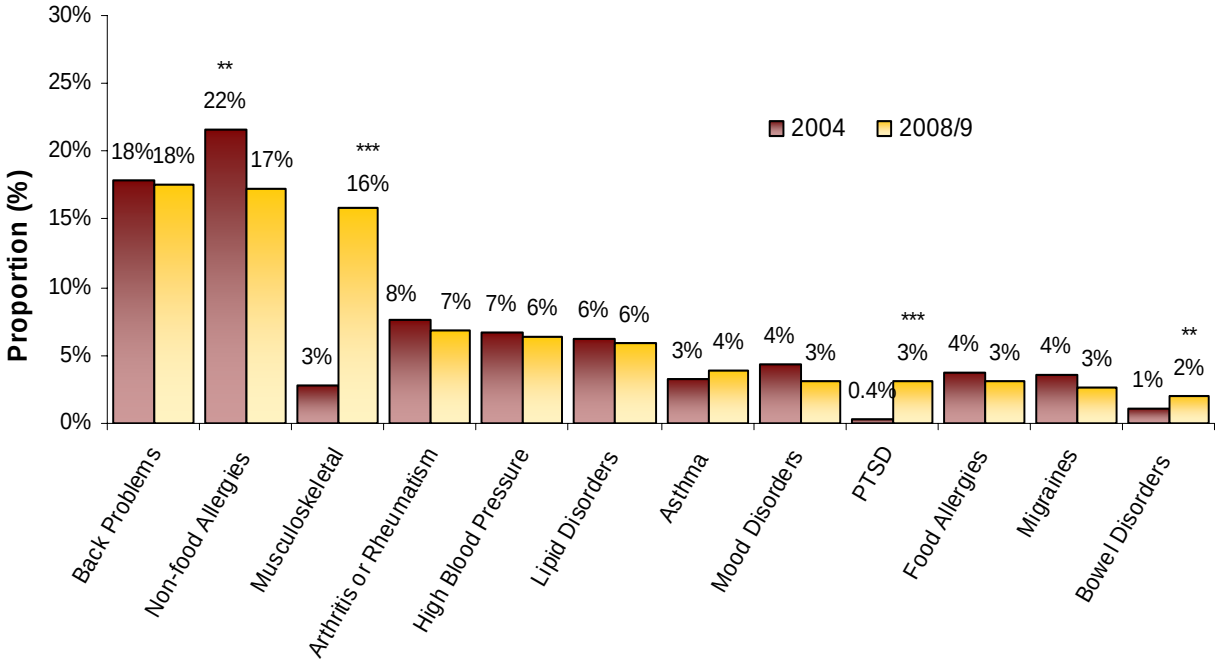

Figure 1.12: Chronic Health Conditions Most Commonly Reported by Males [θ]
θ Age and sex standardized to the 2008 CF population
** $p \leq 0.01$ versus referent group, *** $p \leq 0.001$ versus referent group

Note: Chronic conditions with reported values less than 2% for males in the HLIS 2008/9 include (in descending order of reported prevalence): stomach or intestinal ulcers, anxiety, other chronic condition, heart disease, diabetes, acid reflux/gastritis, thyroid conditions, chronic bronchitis or emphysema, fibromyalgia or myofascial pain disorder, kidney disorders, sleep disorders, cataracts, chronic fatigue syndrome, urinary incontinence, ear and hearing disorders, sinus conditions, dermatological conditions, cancer, other rheumatoid disorders, nervous systems disorders, TBI / concussion, glaucoma, endocrine disorders, epilepsy, and other neurological disorders. No males (0%) reported having: blood disorders, eye and vision disorders, liver disorders, other mental health disorders, or vascular conditions.

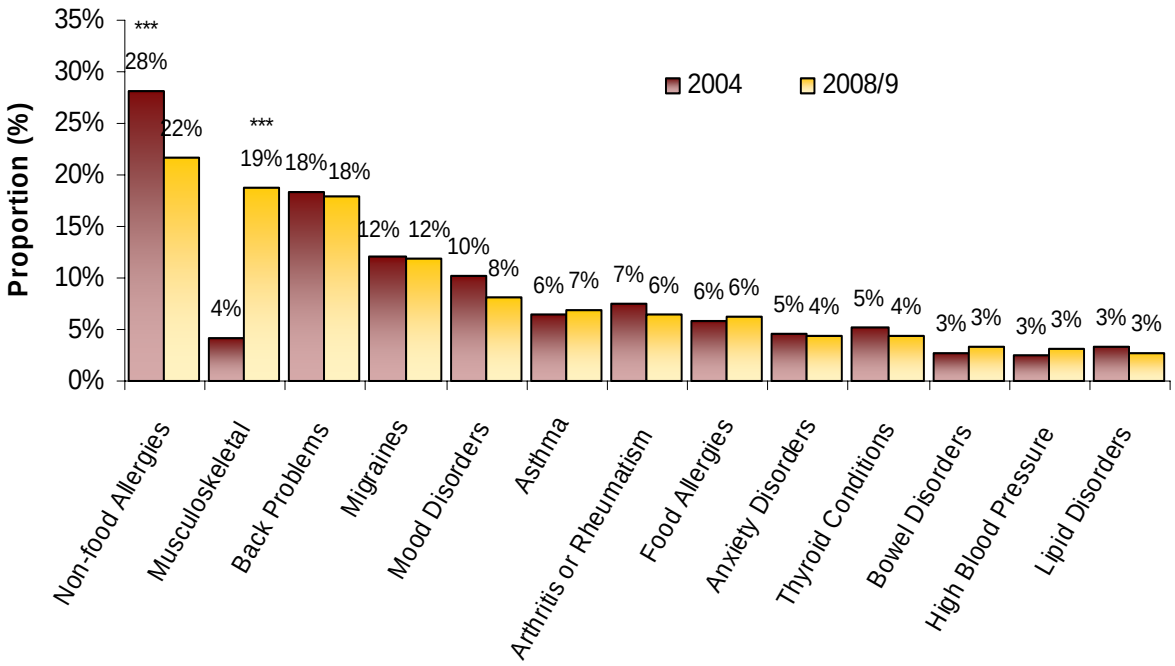

Figure 1.13: Chronic Health Conditions Most Commonly Reported by Females [θ]
θ Age and sex standardized to the 2008 CF population
*** $p \leq 0.001$ versus referent group

Note: Chronic conditions with reported values less than 2% for females in the HLIS 2008/9 include (in descending order of reported prevalence): urinary incontinence, diabetes, fibromyalgia or myofascial pain disorder, cancer, stomach or intestinal ulcers, PTSD, chronic fatigue syndrome, acid reflux/gastritis, other chronic condition, dermatological conditions, nervous systems disorders, chronic bronchitis or emphysema, cataracts, vascular conditions, heart disease, endocrine disorders, obstetrical/gynecological, sleep disorders, kidney disorders, sinus conditions, glaucoma, blood disorders, epilepsy, and other rheumatoid disorders. No females (0%) reported having: ear and hearing disorders, eye and vision disorders, liver disorders, other mental health disorders, other neurological disorders or TBI / concussion.

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Statistics Canada. 2005. Canadian Community Health Survey 3.1 Public Use Micro Data File

CHAPTER 2 ~ MENTAL & SOCIAL WELLNESS

Mental health and wellness is a state of well-being whereby an individual can realize his or her own abilities, cope with normal stresses of life, work productively, and is able to contribute to his or her community (WHO, 2005). Mental wellness in the Canadian Forces is a key concern not only in terms of supporting individuals' general well-being, but also in maintaining a stable, ready military force. Ultimately, the mental wellness of the CF has implications for health services utilization, resources and planning. This chapter characterizes the mental wellness of the CF using estimates of the prevalence of psychological distress, depression, post-traumatic stress disorder (PTSD), and suicide ideation and attempts. An expanded section on mental health services utilization in the 2008/9 Health and Lifestyle Information Survey (HLIS) provides much needed information on mental health care and related barriers in the CF.

Psychological Distress

Psychological distress level is an indicator of the general mental health of an individual. Research has shown a strong relationship between high levels of distress and a range of mental disorders (Cairney, 2007; Kessler, 2003). As such, distress is an important indicator of mental illness and those who are in need of mental health services. Psychological distress was measured using a commonly used and validated survey scale, the Kessler 6 (K6), which asks about the frequency and occurrence of six symptoms related to depression or anxiety including: nervousness, hopelessness, restlessness, depression, worthlessness and perceived effort of life activities. Using a validated cut-off, respondents were categorized as experiencing distress levels consistent with a probable case of serious mental illness, and likely needing further evaluation (Kessler, 2003). This cut-off cannot be used as an indicator of extent of need for mental health services as it does not capture all those who have a serious mental illness and could require treatment. It is useful in comparing between years to ensure that the proportion of those likely to have a serious mental illness is not changing over time.

The level of psychological distress in the CF has not changed significantly since 2004 (Table 2.1). Overall, age and sex standardized estimates from 2008/9 show that 2.3% of the CF population experienced a level of psychological distress indicative of serious mental illness. Regardless of year, the difference in distress levels between males and females was not statistically significant. Examining psychological distress by sex, rank (NCM or Officer), deployment status (deployed in last two years or not), CF command (Air, Army, Navy or Other) and base of the respondent did not show any significant differences in the level of distress.

Table 2.1**:** Psychological Distress by Sex of Respondent, HLIS 2004 and 2008/9 [θ]

Survey	Proportion (95% CI)		
	Male (95% CI)	Female (95% CI)	Overall (95% CI)
2004	2.1% (1.4-2.9%)	3.6% (2.4-4.8%)	2.3% (1.7-3.0%)
2008/9	2.3% (1.3-3.3%)	2.4% (1.3-3.5%)	2.3% (1.6-3.1%)

θ Age and sex standardized to the 2008 CF population

Depression

Depression is one of the most common mental disorders affecting western societies. It is associated with decreased quality of life, increased morbidity, an impaired ability to take care of regular responsibilities, additional mortality from suicide and other conditions, increased medical care costs and diminished job performance (Kessler, 2001; Wells, 1989).

The 2008/9 HLIS measured depression using two different scales. The first scale used was the depression component of the World Health Organization's Composite International Diagnostic Interview Short-Form (CIDI-SF). This scale is based on the definitions and criteria for depression defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (Kessler, 2006). It contains questions regarding the presence, duration, and frequency of symptoms of depression such as feeling sad, loss of interest, feeling worthless, sleep problems, low energy or concentration, changes in appetite and thoughts of death. A positive response to five or more symptoms indicates, with 90% probability, an episode of major depression. However, use of this scale to estimate prevalence of depression is no longer recommended because the instrument has not been validated. It is used here to compare to 2004 depression estimates only.

A more recently developed and valid measure of depression, the Patient Health Questionnaire-2 (PHQ-2), was also included in the 2008/9 HLIS. This scale queries participants on two key symptoms of depression: loss of interest or pleasure in doing things, and feeling down, depressed or hopeless. Analyses were based on a validated cut-off, which correctly identifies 82.9% of people with major depressive disorder as having depression (sensitivity), and 90% of people without major depressive disorder as not having depression (specificity) (Kroenke, 2003).

Using the CIDI-SF, age and sex standardized estimates for major depressive disorder in the 12 months prior to filling out the survey showed no significant difference between 2004 and 2008/9. Females were significantly more likely than males to screen positive for depression (Table 2.2) as was the case in the 2004 survey.

Table 2.2**:** Estimate of Prevalence of Major Depressive Disorder (12 month) Using the CIDI-SF Scale by Sex and Year of Survey

Variable	Category	Proportion (95% CI)
Survey	2004	7.1% (6.0-8.3%)
	2008/9	7.4% (6.1-8.7%)
Sex	Male	6.8% (5.2-8.5%)
	Female	11.0% (8.7-13.3%)

The estimate of prevalence of depression as classified with the PHQ-2 was very similar at 6.9%. Using the PHQ-2 to estimate the prevalence of depression, NCMs (7.7%) had approximately twice the prevalence of depression compared to Officers (3.9%). There were no significant differences in whether one screened positive for depression between CF Commands, whether one deployed overseas in the previous two years, respondent's base of service or marital status, or the education level of the respondent.

Post-traumatic Stress Disorder (PTSD)

Post-traumatic stress disorder (PTSD) is a serious and chronic psychiatric disorder that typically results from overwhelmingly stressful events, such as combat exposure, sexual assault, or natural disasters (Prins, 2003). PTSD in military populations has been linked to deployments; over the past few decades the CF military have been to many conflict-ridden places such as Bosnia, Rwanda and Afghanistan where they are exposed to stressful events which put them at risk for PTSD. PTSD is associated with poor physical health, decreased psychosocial and occupational functioning, decreased quality of life and can pose a significant economic burden to the military population (Zatzik, 1997; Marshall 2000). Service members are of course also exposed to traumatic events prior to military service and to traumatic events that are unrelated to their service even after they are in uniform.

The primary care PTSD screen (PC-PTSD) was used to estimate the proportion of CF Regular Force personnel who should be further evaluated for PTSD. The PC-PTSD asks four PTSD symptom-based questions and results in a score of 0-4. A cut-off of 3 or more is used to identify those likely to have PTSD and in need of further evaluation for a diagnosis (Prins, 2003). Those screening positive should then be assessed in a more formal manner for PTSD. This scale has only been validated in the primary care setting, and not for epidemiological purposes. This is also the first time that this instrument has been used in a health surveillance survey in the CF. Hence, these results should be interpreted cautiously.

The prevalence of CF personnel with symptoms suggesting the need for further evaluation for symptoms of PTSD in the past 30 days was 8.1%. However, the self-reported PTSD prevalence of physician diagnosed PTSD (as a chronic condition lasting at least six months) was only 2.9%. Estimates from the U.S. Department of Defence's 2008 report on health related behaviours among active duty military personnel found that

11% of the total population surveyed were in need of further PTSD evaluation (U.S. Department of Defence, 2009). However, these results may not be directly comparable with HLIS 2008/9 results due to differences in survey methods, measurement scales, and time periods measured. The prevalence of PTSD in the previous 30 days has been estimated to be 2.4% in the Canadian population (Van Ameringen 2008). Estimates for the prevalence of PTSD from the 2002 CCHS Canadian Forces Supplement found the prevalence of 12 month PTSD to be 2.8%. However, these results are not directly comparable to HLIS 2008/9 data because of the different instruments used to assess PTSD. Given the critical differences between the ways PTSD was assessed in the 2008/9 HLIS and the 2002 CCHS 1.2, it is essential that the difference between the prevalence reported here and the 2002 prevalence not be interpreted to mean that the prevalence of PTSD in the CF Regular Force has increased over that time period. A more detailed prevalence survey is being planned to address that important question over the next few years.

As with depression, NCMs (9.4%) were twice as likely as Officers (3.7%) to have been categorized as positive for PTSD using the PC-PTSD screen. This could be related to the fact that NCMs are often more likely than Officers to be deployed on operations, and to be in combat where they are potentially exposed to conflict and traumatic events. There were no statistically significant differences in the prevalence of a positive PTSD screen across sex, age groups, CF Commands, or base of service.

There were also no significant differences in those who screened positive with the PC-PTSD screen amongst those who deployed in the last 2 years (7.8%) and those who did not (8.2%), indicating that those who have deployed in the last 2 years are not more likely to have PTSD than those who have not. However, it is possible that those who did not deploy had already 'dagged red' due to PTSD related health problems, thus over representing the number of 'healthy' respondents who have not deployed overseas in the last 2 years. Additionally, looking solely at whether one has deployed or not deployed does not measure the extent of traumatic events witnessed while on deployment, hence the comparison may be confounded since not all who deploy are exposed to traumatic PTSD-causing events (e.g. combat, IED explosion). To fully understand the more complex relationships between deployment and PTSD, further multivariate analysis is required.

As shown in Table 2.3, those who were positively screened for PTSD symptoms were also more likely to screen positive for depression and psychological distress, and to have considered suicide or attempted suicide. This reinforces the notion that persons who suffer PTSD may also be more likely to suffer from other mental health comorbidities.

Table 2.3: PC-PTSD Screen Results by Distress, Depression, Suicide Ideation and Attempts

Mental Health Variable	Proportion (95% CI)		p value
	Need further evaluation for PTSD	Do not need further evaluation for PTSD	
Distress (K6≥13) [1]	17.9% (9.1-32.2%)	1.0% (0.4-2.3%)	$p \leq 0.001$
Depression (PHQ-2) [2]	32.2% (20.6-46.6%)	4.6% (3.2-6.6%)	$p \leq 0.001$
Lifetime suicide ideation	38.1% (25.0-53.2%)	7.2% (5.4-9.4%)	$p \leq 0.001$
12-month suicide ideation	23.4% (12.8-38.9%)	1.6% (0.9-2.8%)	$p \leq 0.001$
Lifetime suicide attempt	5.5% (1.8-15.6%) †	1.5% (0.9-2.6%)	$p = 0.03$

† Fewer than 20 observations, values may be unstable; interpret with caution
1 Based on the previous 30 days
2 Based on the previous 2 weeks

Suicide Ideation and Attempts

Table 2.4 shows the age and sex standardized estimates of self-reported suicide ideation and suicide attempts among CF Regular Force personnel. There were no statistically significant differences observed in either suicide ideation or attempts between the HLIS 2004 and the HLIS 2008/9.

Table 2.4: Self-reported Suicide Ideation and Suicide Attempts in the CF Regular Force [θ]

Variable	Survey	Proportion (95% CI)	
		Lifetime	Previous 12 months
Suicide ideation	2004	8.5% (7.4-9.7%)	3.2% (2.5-3.9%)
	2008/9	9.4% (7.9-10.8%)	3.2% (2.3-4.0%)
Suicide attempt	2004	0.9% (0.5-1.3 %)	0.5% (0.2-0.8%) †
	2008/9	1.9% (1.3-2.6%)	0.1% (0.0-0.3%) †

θ Age and sex standardized to the 2008 CF population
† Fewer than 20 observations, values may be unstable; interpret with caution

Lifetime and 12 Month Suicide Ideation

There were also no significant differences in the proportion of personnel who seriously considered suicide (lifetime and previous 12 months) by sex, age group, CF command, history of deployment in the last two years, primary language (English or French), or marital status. CF personnel who have considered committing suicide in their lifetime are more likely to screen positive for depression. Of those who considered suicide in their lifetime (9.4%), 22.6% had screened positive for depression and of those who didn't consider suicide only 4.4% had screened positive.

This association is also true for those who considered suicide in the12 months prior to completing the survey. Of those who considered suicide in that time (3.2%), 40.0% had screened positive for depression compared to 5.1% of those who screened positive and did not consider suicide in the last 12 months. Cell counts were fewer than 20 observations so this association must be interpreted cautiously.

There were significant differences in the 12 month suicide ideation between Officers and NCMs. NCMs (3.7%) were more likely than Officers (1.3%) to consider committing suicide in the past 12 months. Crosstabular analyses of suicide ideation by CF base did not have sufficient cell counts for stable estimates and are not presented.

Lifetime Suicide Attempts

There were no statistically significant differences in lifetime suicide attempts by sex, CF command, deployment history in the past two years, primary language, marital status, or presence of depression.

Paradoxically, CF personnel within the youngest age category (18 to 29 years) were more likely to have attempted suicide in their lifetime (1.5%) compared to those in the oldest age category (50 to 60 years). This seemingly contradictory result would best be explained by the aforementioned finding that persons who attempt suicide suffer concomitantly from other mental health concerns such as depression and PTSD. Presumably, these persons would be more likely to release from the CF over time, and thus consolidate a cohort of 'mentally healthy' individuals in the older age groups.

The numbers of persons who report lifetime suicide attempts are small; caution is warranted in interpreting these numbers. Cell counts for 12 month suicide attempts were also too small to be presented.

Consultation with a Health Professional about Mental Health Issues

Of all Regular Force personnel, 31.8% have seen or talked on the telephone to a health professional about their emotions, mental health or use of alcohol or drugs in their lifetime (excluding screening before or after deployment). Females were more likely than males to visit a health professional regarding mental health, emotional or drug or alcohol use problems (Table 2.5). Respondents who were between the ages of 40 and 49 were more likely to have consulted with a health professional compared to those of the youngest age group. Furthermore, compared to those who are married, persons who are widowed, divorced or separated are significantly more likely to seek help for mental health problems, whereas those who are single are significantly less likely to seek this type of help. There were no statistically significant differences in the lifetime prevalence of consultations with a mental health professional by CF command, history of deployment in the last two years, or rank.

Table 2.5: Lifetime Consultation with a Health Professional about Emotional or Mental Health, or Use of Alcohol or Drugs by Sex, Age Group, and Marital Status

Variable	Category	Proportion (95% CI)	p value
Sex	Male	29.7% (26.1-33.5%)	$p \leq 0.001$
	Female	45.6% (42.1-49.2%)	
Age Group	18-29	24.2% (17.9-31.9%)	Ref
	30-39	33.3% (27.9-39.2%)	ns
	40-49	36.8% (31.7-42.1%)	$p = 0.008$
	50-60	29.4% (21.4-38.9%)	ns
Marital Status	Married / Common Law	32.6% (28.9-36.6%)	Ref
	Widowed / Divorced / Separated	54.2% (42.9-65.1%)	$p \leq 0.001$
	Single	18.5% (13.0-25.7%)	$p = 0.001$

Figure 2.1 shows the percentage of CF personnel who consulted with a health professional in the 12 months prior to completing the survey (n= 395). In 2008/9, 14.9% of CF personnel consulted a mental health professional about a mental health related issue. This proportion has not changed significantly from 2004. However, there was a statistically significant difference in the proportion of males (13.2%) and females (25.8%) who had a consultation, indicating that females were more likely to have consulted with a health professional about an emotional, mental health or addiction problem. This trend was also present in 2004, when 23.9% of females saw a health professional and 11.4% of males visited a health professional. There was also a significant difference in mental health consultations between those who had deployed in the last two years (19.7%) and those who did not (13.5%). Comparisons between age, rank, command, and base of the respondent did not yield statistically significant differences in likelihood of a consultation with a health professional about mental health issues.

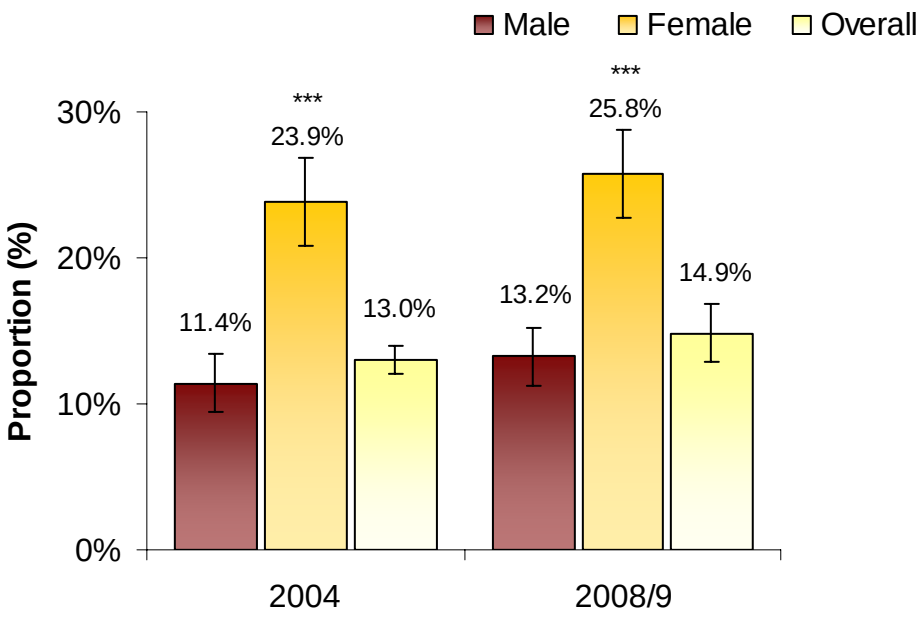

Figure 2.1: Mental Health Consultations in the Last 12 Months, Overall and by Sex, HLIS 2004 and 2008/9 [θ]

θ Age and sex standardized to the 2008 CF population

*** p ≤0.001 versus referent group

Respondents who had sought counselling about their emotions, mental health or alcohol or drug uses in the past 12 months (14.9% of all survey respondents) were asked about how satisfied they were with the treatment and services. Over three-quarters (78%) of respondents were very satisfied or satisfied with the services or treatment they received. Specifically, 32.6% were very satisfied, 45.2% were satisfied, 17.0% were neither satisfied nor dissatisfied, and 5.3% were dissatisfied or very dissatisfied with their treatment There were no statistically significant differences in satisfaction with the care received in their mental health consultation by sex, age, rank, CF command, history of deployment in the previous two years, base, or distress level of the respondent.

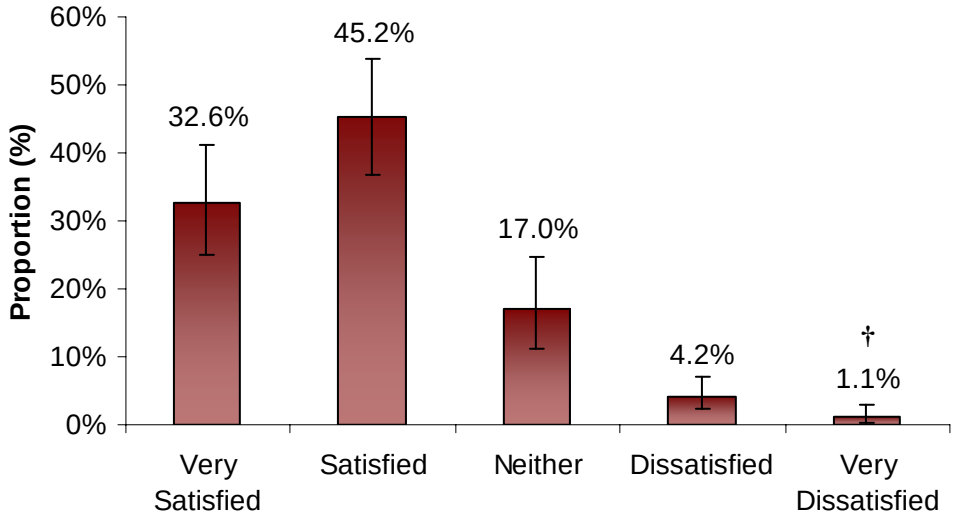

Figure 2.2: Satisfaction with Mental Health Care Services, HLIS 2008/9
† Fewer than 20 observations, values may be unstable; interpret with caution

CF personnel most commonly consulted a social worker, counsellor, or psychotherapist when they consulted a health professional about their emotions, mental health, or use of alcohol or drugs (55%). Next most common were family physicians/medical officers at 51%. Note that respondents were asked to select all that apply so these percentages will sum to greater than 100%; the average respondent saw more than one health professional. Other health professions seen were psychologists (30%), psychiatrists (23%), nurses, nurse practitioners, physician assistants or medical technicians (15%), addictions counsellors (7%) or others (2%).

The mean number of professionals that respondents saw about their mental health in the last 12 months was 2.1. In 2008/9, 43.9% of those who sought care consulted with only one professional, 28.4% consulted two professionals, and 13.3% consulted three professionals for their mental health problem.

Reasons for Seeking Help from a Mental Health Professional

Respondents who sought care for a mental health related problem (15%) were asked to select from a list of all the reasons they sought care (Figure 2.3). The most commonly reported reasons were depression (39.1%), anxiety (31.7%), and relationship problems (30.3%). A substantial number of people also sought care for stress management (22.2%), family problems (20.5%), anger management (20.2%), PTSD (16.6%), and grief (15.8%). 14.7% of those who sought help needed care for 'other' reasons and 4.9% needed care for a substance abuse related problem. The mean number of reasons for seeking care was 2.4. Traditionally these top 3 reasons for seeking care have always required significant mental health resources regardless of the operational tempo.

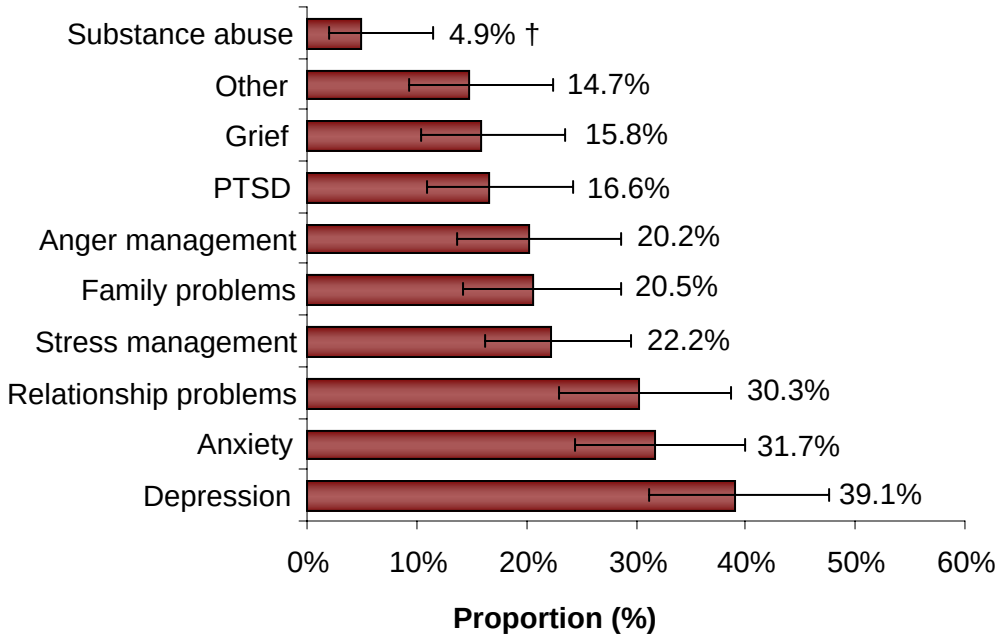

Figure 2.3: Reasons for Seeking Help from a Mental Health Professional, HLIS 2008/9
† Fewer than 20 observations, values may be unstable; interpret with caution
Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%
Note: Responses with estimates less than 5% were not shown and include: family violence, other health conditions, and work related issues

Ending Consultations for Mental Health Problems

Of the 14.9% of CF personnel who indicated that they sought help for a mental health related problem in the 12 months prior to completing the survey, 59.2% were no longer engaged in such consultations. There were no significant differences in whether one had ended the consultations across categories of sex, age group, rank, CF command, deployment in the last 2 years, level of psychological distress or presence of suicide ideation in the last 12 months. However, significant differences did exist for those with depression and PTSD (based on the PHQ-2 and PC-PTSD screening tools, respectively). Those who screened positive for depression were less likely to have reported an end to their consultations (37.7%) than those who screened negative (64.7%). Similarly, those who screened positive for PTSD symptoms (27.3%) were less likely than those who screened negative (68.0%) to report a stoppage in their mental health consultations. This finding may reflect the nature of the two disorders in terms of severity and duration of the disorders and need for care.

Reasons for Ending Consultations with a Mental Health Care Professional

The key reasons for ending consultations with a health professional are shown in Figure 2.4. Overall, the majority of people who stopped treatment attributed their stopping to either feeling better (49.6%) or because they had completed the recommended treatment (24.2%). Being too busy to continue with treatment was an important reason for

terminating treatment in 11.4% of personnel. A belief that the problem would get better without professional help (10.3%), having to go on training or deployment (8.3%), thinking that the service was not helping (8.2%), wanting to solve the problem without professional help (7.9%), the service or program no longer being available (7.6%) were also commonly reported reasons for terminating care. Respondents were not comfortable with the professional's approach in 6.7% of cases, and 5.6 % felt that the professional could not understand or relate to their problems.

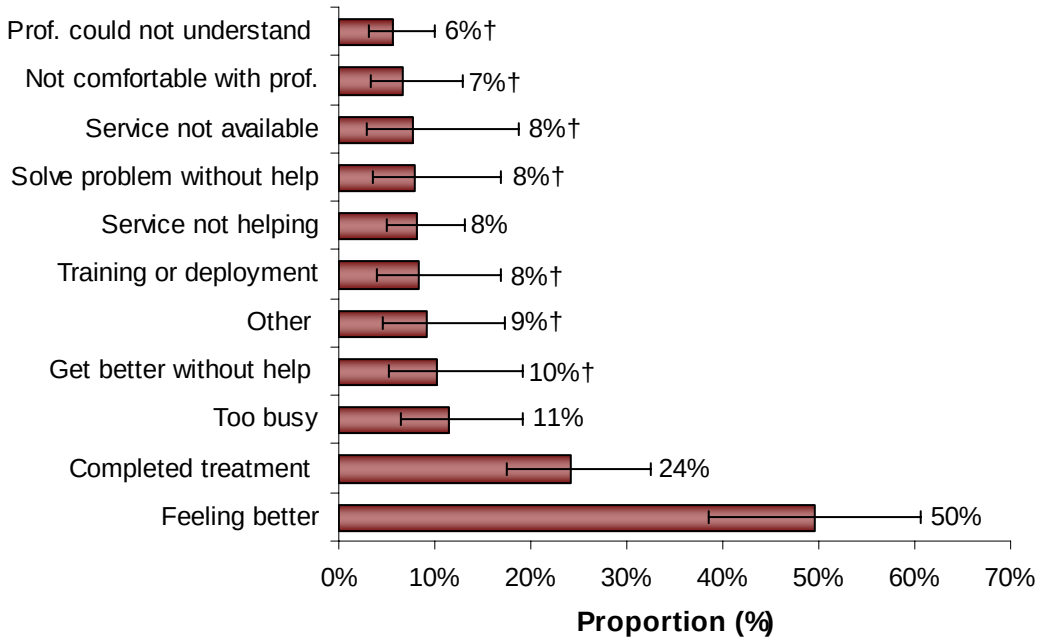

Figure 2.4. Reasons for Ending Consultations with Mental Health Professionals

† Fewer than 20 observations, values may be unstable; interpret with caution

Note: Responses with estimates less than 5% were not shown and include: transportation, child care or scheduling problems, being embarrassed to get help, and not being able to afford to get help

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

The high frequency of responses for feeling better and completing the prescribed treatment plan indicates that for a substantial proportion of the patients who get mental health care, the care is beneficial or they get better on their own. The third most commonly chosen reason for ending care was being too busy; extended working hours for certain mental health services may aid in allowing people to attend and finish treatment for mental health problems. Most of the reasons for terminating care do not appear to be related to work duties, however, 8% of those who went in for help stopped early for training or a deployment. Factors such as not being able to afford care, and transportation, scheduling and childcare issues were not often selected as the reason for terminating mental health care.

Perceived Barriers to Mental Health Care

The vast majority of CF personnel (89%) did not feel that they needed help from a mental health professional or perceived no barriers to care. In the 12 month period before survey completion, 11.3% of CF personnel felt that there was a time when they needed help from a mental health care professional but did not receive it. Of these, the average number of perceived barriers reported was 2.8. The majority of this group (55.7%) reported perceiving one or two barriers, 36.0 % perceived between three and five barriers, and 8.3% reported six to nine barriers to mental health care.

Table 2.6 illustrates that females were significantly more likely to perceive a barrier to mental health care than males. NCMs were also more likely to perceive a barrier than Officers.

Those who screened positive on the PC-PTSD were more likely than those who screened negative to have perceived a barrier to mental health care. Similarly, significantly more people who positively screened for depression (using the PHQ-2 scale) or reported seriously considering suicide over the last 12 months perceived a barrier to mental health care over the past 12 month. However, those who do not have mental health problems (such as PTSD, depression or thoughts of suicide) would be less likely to seek mental health care and thus perceive a barrier to care. In addition, the cognitive distortions of mental illness can increase some of the perceived barriers to care, such as perceived stigma. No statistically significant differences between experiencing a barrier to mental health care by age, CF command, or base of service of the respondent were found. There was also no association between whether one had deployed overseas in the last two years and perceiving a barrier to mental health care.

Table 2.6: Proportion Who Perceived a Barrier to Mental Health Care by Sex, Rank, PC-PTSD Screen, Depression, and 12-month Suicide Ideation

Variable	Category	Proportion (95% CI)	p value
Sex	Male	10.7% (8.4-13.5%)	$p \leq 0.01$
	Female	15.5% (13.1-18.4%)	
Rank	NCM	12.2% (9.6-15.3%)	$p = 0.03$
	Officer	8.3% (6.6-10.5%)	
PC-PTSD	Yes	26.2% (16.3-39.2%)	$p \leq 0.001$
	No	10.0% (8.0-12.4%)	
Depression	Yes	31.5% (19.9-45.9%)	$p \leq 0.001$
	No	9.7% (7.7-12.1%)	
Suicide Ideation (12m)	Yes	53.7% (30.9-75.0%)	$p = 0.02$
	No	20.7% (10.1-37.8%)	

Figure 2.5 shows the most common types of perceived barriers to mental health care. Of those who reported having a barrier to mental health care, 63.8% reported that they preferred to manage the problem themselves. This is an attitudinal barrier to care in that in some circumstances those who are ill do not believe that mental health problems require active treatment. Fear that seeking professional help for their mental health problem would affect their military career was reported by 37.5%. The third most commonly reported barrier was being afraid to ask for help or of what others might think (24.7%). 20.9% were afraid that their supervisor would find out that they were receiving help for their problem, 19.0% were afraid that their unit would find out, 18.3% reported that they didn't get around to getting help or didn't bother getting help, and 17.1% felt that nothing more could help them. Having to go on training or a deployment was a barrier for 11.7% of those who needed help. Less frequently chosen perceived barriers were having personal or family responsibilities, having to wait too long for an appointment, transportation and scheduling issues, there not being a professional available at the time care was required, and not knowing how or where to get help.

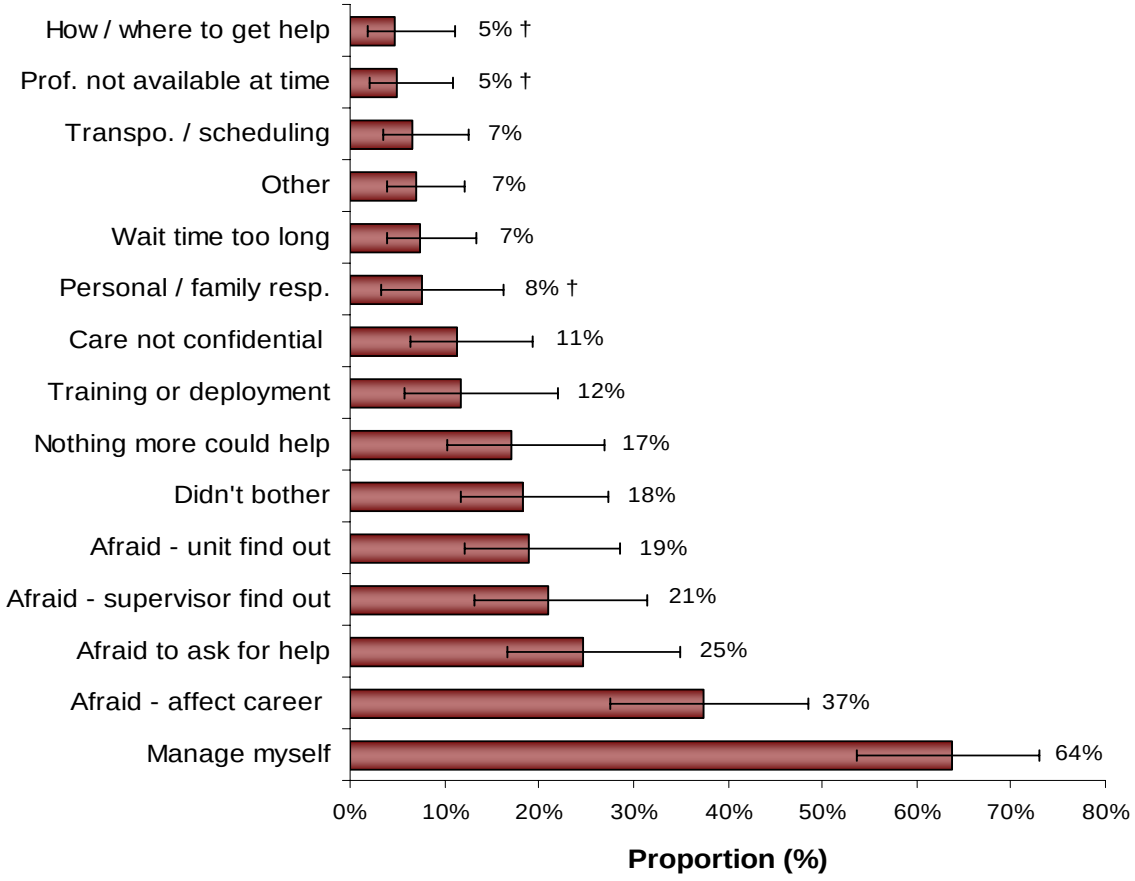

Figure 2.5: Reported Barriers to Mental Health Care, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

Note: Responses less than 5% are not shown in figure, and include: couldn't afford to pay; language problems; professional help not available in the area.

Respondents were also asked which barrier was the *most* important factor related to their not receiving help. 30.1% reported that they preferred to manage the problem themselves, 24.0% were afraid that getting help might affect their military career, 10.0% reported that they didn't think anything more could help them and 5.5% said that being afraid to ask for help or what others might think were the most important barriers to care.

Barriers to mental health care in the CF are multifaceted, and include personal (preference to self-manage), social (family responsibilities), occupational (training or deployment), informational (did not know where or how), and stigma-related (afraid to affect career, or to have unit find out) reasons. Fear of career impact as a result of having a mental health problem is in part a structural barrier to care since CF personnel who have serious mental health problems can be restricted from going on deployments and possibly released from the CF. This barrier is also likely to be in part an attitudinal barrier to care due to the stigma of mental illness, and the perception that stigma exists in the CF. The extent of the contribution of structural and attitudinal factors in forming beliefs about career impact is unknown. Clearly, additional research is needed to understand barriers related to stigma, the preference for persons to manage mental health problems on their own, and the perceived impact on the career of CF personnel. Such research will assist in determining the most promising types of interventions and policies needed to reduce barriers to care.

Cause of Mental Health Problem Where Help was Not Received

Table 2.7 presents the causes of mental health problems for which help was not received. When help was not received, the main cause of the mental health problem was work or school related stress (48.1%). The next most common causes were relationship problems (32.6%) and family problems (24.3%). A recent deployment was the cause of mental health problems for 22% of those who required help but it was not received.

Table 2.7: Causes of Mental Health Related Problems for Which Help was Not Received

Cause of Mental Health Problem	Proportion (95% CI)
Work or school stress	48.1% (37.9-58.6%)
Relationship Problems	32.6% (23.7-43.1%)
Family Problems	24.3% (16.4-34.5%)
Recent deployment	22.1% (16.0-29.7%)
Death of a Family Member	17.7% (10.1-29.3%)
Financial Difficulties	12.2% (6.3-22.2%)
Other Problems [1]	6.0% (3.7-9.4%)
Other Mental Health Problems [2]	3.2% (1.2-7.9%) †

† Fewer than 20 observations, values may be unstable; interpret with caution

1 'Other problems' included: past personal issues/trauma, general life stress, sexual abuse, legal problems, and not being able to deploy

2 'Other mental health problems' were derived from text responses within the 'other problems' category, and included: post-partum depression, depression, anger, emotional baggage, self esteem problems, and addiction

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

Enhancing Mental Health Service Utilization by Reducing Barriers to Care

In order to gather information on how to reduce barriers to mental health care from the patient's perspective, we asked respondents about factors which would have made it more likely that they would have gotten the help that they needed. The most common factor cited which would increase the likelihood that one would get mental health care for their problem was if there was no career impact associated with getting care (41.7%) (Figure 2.6). 36.0% felt that they would have been more likely to receive mental health care if services were available without needing an appointment. Many CF personnel may be unaware that they can access psychosocial services (social workers, mental health nurses, and addictions counsellors) without an appointment. 22.8% would have liked education to self-manage their own problem. This is consistent with the responses indicating that one of the most common barriers to care was a preference to manage the problem themselves. Interestingly, 21.5% would be more likely to get care if civilian mental health care services were paid for by the CF. Up to 8 sessions of civilian mental health care paid for by the CF is available through CFMAP (Canadian Forces Members Assistance Program), thus the frequency of this response may indicate a lack of knowledge of the services available. Access to mental health care provided outside of the CF other than through CFMAP requires a referral from a CF provider, so this preference for access to civilian providers may not be entirely attributable to lack of awareness of CFMAP. It could be that the current method of obtaining civilian mental health care is not acceptable, since CF personnel must first approach a CF care provider to gain a referral to civilian care potentially raising issues of stigma and confidentiality.

Concerns about a lack of confidentiality are clearly important, as 18.4% would like to see an improvement in medical confidentiality, though it is not clear how accurate their knowledge of the CF's current confidentiality protection is. Currently, the only information that can be communicated to a member's chain of command is their medical employment limitations. Information on diagnosis and the specific treatment provided cannot be divulged without the member's consent. A further 14.1% would prefer more education on the various mental health care options available, and the proper routes to access such care. Lastly, 13.8% would like after-hours mental health services to be made available.

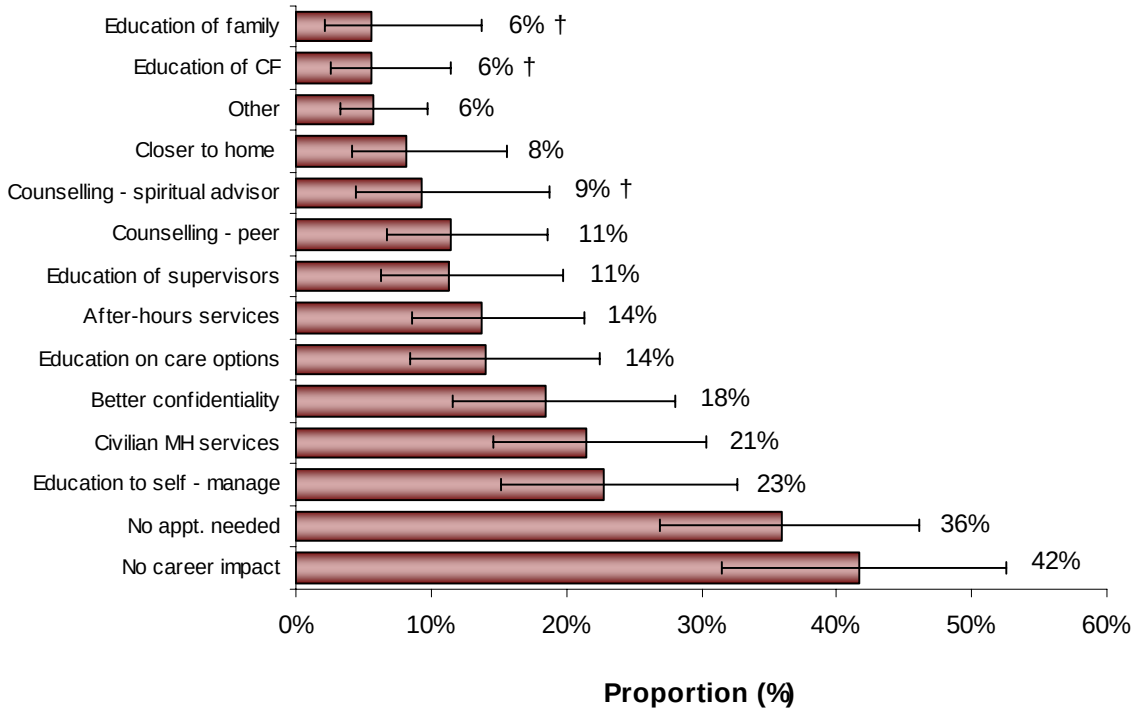

Figure 2.6: Factors Which Would Have Improved Access to Mental Health Care

† Fewer than 20 observations, values may be unstable; interpret with caution

Note: Responses with estimates less than 5% were not shown and include: counselling from another medical professional (doctor, nurse, med tech or PA), and improved access to care

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

Options to enhance mental health care for those who are facing barriers could include additional education regarding the mental health services that are available, improving perception of the confidentiality of the medical system, and reinforcing the idea that early treatment may lead to improved recovery and less of an impact on career. It is often forgotten that untreated mental illness can have very significant career impacts. Future qualitative research examining how CF personnel perceive the potential career impact due to a mental health problem and whether that perception is accurate would be valuable in targeting educational messages, and addressing issues of stigma. More in depth research exploring what factors are contributing to concerns about confidentiality and the preference to manage a mental health problem on their own will also be useful in reducing barriers to mental health care.

Career Impact and Stigma

Stigma is the negative evaluation of a person as devalued or discredited on the basis of some attribute, and in the case of mental illness the attribute is the illness itself (Link 1989, Sirey 2001). The stigma of mental illness creates substantial costs to the individual who experiences the mental illness or uses mental health services, as well as society. Stigma of mental illness was partially captured in the HLIS 2008/9 by asking the respondent whether they thought their military career would be affected, should they seek mental health care through CF health services. It is important to note that this question

only partially identifies issues of stigma since there is a real possibility of mental illness affecting one's military career through limiting deployments and, if severe enough, medical release. However, the fear of negative career impact may relate to the perception that supervisors could treat a subordinate unfairly due to negative beliefs about those who are mentally ill. Figure 2.7 demonstrates the proportion of persons who believed that obtaining mental health care would not affect their military career. Of the 2144 people who responded, 34.4% believed that if they sought care for mental health problems it would 'definitely' or 'probably' affect their career, and 56.0% thought that it would 'definitely not' or 'probably not' affect their career. This demonstrates that over one third of CF personnel feel that seeking help for mental health problems will affect their career. These beliefs are similar to those found in the U.S. military, where 44.1% thought it 'definitely or probably would' and 55.8% thought it 'definitely or probably would not' affect their career (DoD, 2006). Further investigation into the rationale behind this belief is necessary in order to disentangle the effect of stigma.

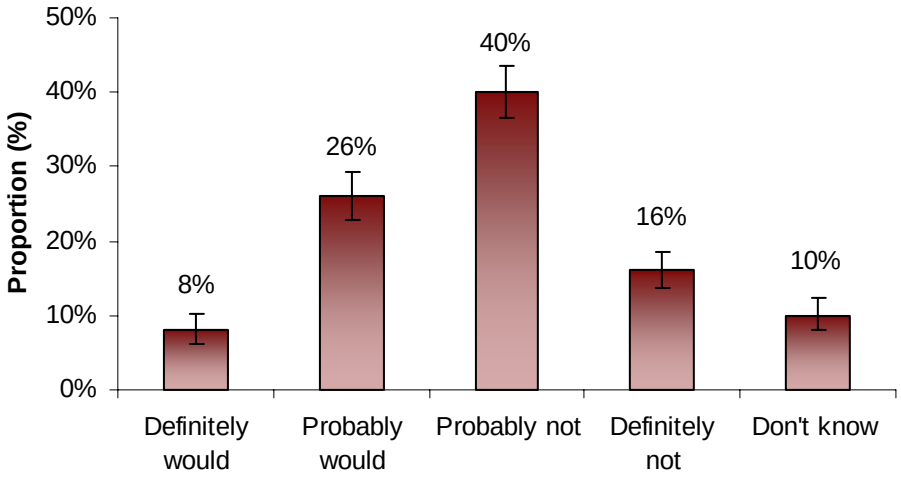

Figure 2.7: Belief that Seeking Mental Health Care through CF Health Services Would Affect Military Career

Relationship Satisfaction, Family Violence and Abuse

At the time of the survey, 81.6% of the CF reported themselves as currently being in a relationship. Males (82.7%) were more likely than females (74.1%) to report being in a relationship. Those who were between the ages of 18 and 29 (68.6%) were also less likely than those aged 30 to 39 (86.5%), 40 to 49 (86.5%) and 50 to 60 (88.9%) to be in a relationship.

The majority of the CF is extremely or very satisfied with their current relationship (Figure 2.8). 74.9% reported themselves as either extremely satisfied or very satisfied with their current relationship. 21.4% felt somewhat satisfied, mixed or unsure with their current relationship, while 3.7% were somewhat unsatisfied, very unsatisfied or extremely unsatisfied.

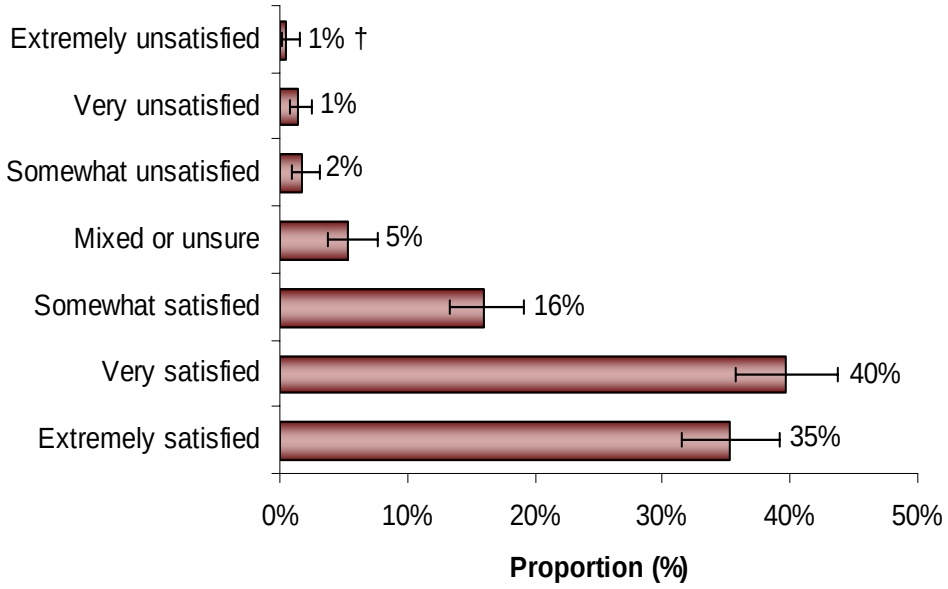

Figure 2.8: Self-reported Satisfaction with Current Relationship
† Fewer than 20 observations, values may be unstable; interpret with caution

Physical and Sexual Abuse by Spouse

There is very little data regarding spousal abuse and family violence in the CF and thus determining the extent of the problem and the effectiveness of programs aimed at preventing and reducing family violence is difficult.

Respondents who indicated they were currently in a relationship (81.6%) were asked to report whether various types of abuse had ever been inflicted upon them by their current partner. Table 2.8 shows the proportions of respondents in 2008/9 who reported physical and sexual abuse from their spouse. Unfortunately, these responses cannot be compared to the 2004 survey results as the latter asked specifically about events over the last 5 years, while the 2008/9 survey asked about the entire time period with the current partner. The percentage of people reporting 'any abuse' indicates that they had experienced at least one of the ten types of abuses listed within the current relationship.

The most commonly reported abuse by a spouse towards the CF personnel in 2008/9 was being slapped, followed by having something thrown at them, being pushed, grabbed or shoved and being threatened to be hit with something. 15% of CF personnel who responded experienced at least one type of physical or sexual abuse.

Table 2.8: Physical Abuse by Spouse of CF Respondent

Type of Physical Abuse	Proportion (95% CI)
Threatened to hit you with his/her fist or anything else	5.1% (4.2-6.7%)
Thrown anything at you that could have hurt you	6.7% (5.4-8.1%)
Pushed, grabbed or shoved you in a way that could have hurt you	6.2% (4.9-7.5%)
Slapped you	8.3% (6.8-9.8%)
Kicked you, bit you, or hit you with his/her fist	4.8% (3.7-6.0%)
Hit you with something that could have hurt you	2.1% (1.3-2.9%) †
Beaten you	---
Choked you	0.2% (0.0-0.4%) †
Threatened to use a gun or knife on you	---
Forced you into unwanted sexual activity	---
Any physical or sexual abuse	15.0% (13.0-16.9%)

NOTE: † Fewer than 20 observations, values may be unstable; interpret with caution
--- Cell counts suppressed due to insufficient numbers

Figure 2.9 illustrates the proportion of CF personnel who experienced physical or sexual abuse from their spouse by sex. Persons who reported any form of abusive behaviour from Table 2.8 were aggregated to form the variable 'any abuse' in the graph, below. More than twice as many males reported experiencing any abuse than females. Males also reported the majority of abuse types more often. The same proportion of females and males reported being pushed, grabbed or shoved.

Physical and Sexual Abuse by CF Personnel

Physical and sexual abuse by the CF respondent towards their spouse was also measured in the HLIS 2008/9. Figure 2.10 shows the proportion of CF personnel who had reported being abusive for the five most frequently reported abuses, by age and sex.

Female CF personnel reported that they slap, kick, bite or hit, and throw things at their partners more often than males. The proportion of any physical or sexual abuse was similar between males and females.

Table 2.9 describes the proportion of respondents who experienced emotional or financial abuse both from their spouse and who directed emotional or financial abuse towards their spouse. It is clear that as in the general population (Statistics Canada, 2005), a significant proportion of CF personnel are experiencing abusive relationships, a finding that has not changed meaningfully since 2004. Health promotion programs and health services for families may help decrease the proportion that experience or deliver abuse.

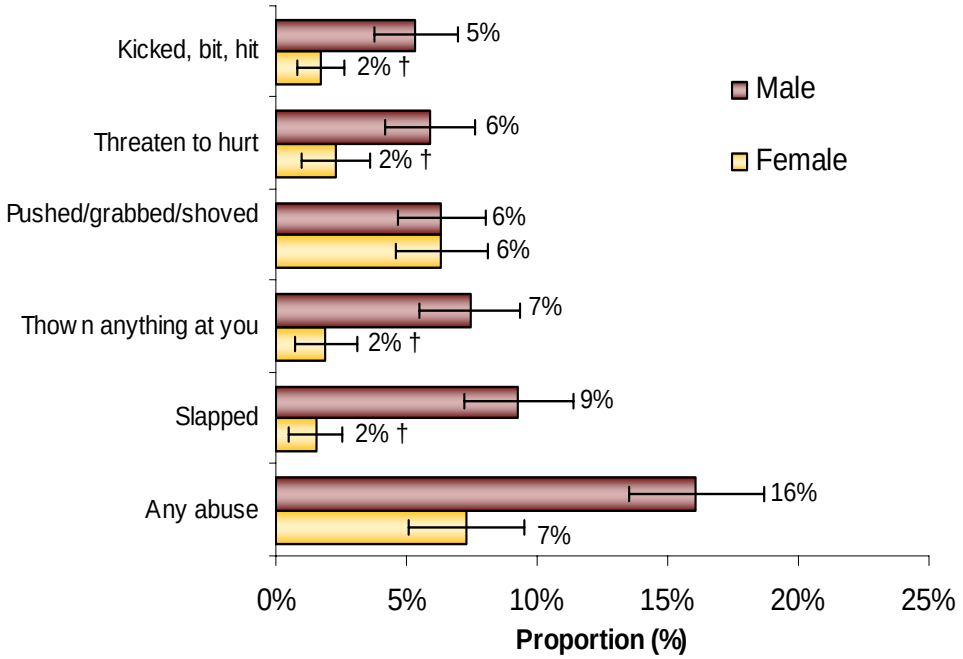

Figure 2.9: Physical and Sexual Abuse by Spouse of Respondent by Sex, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

Note: Physical and sexual abuse categories with estimates less than 1% were not shown and include: hit you with something, beaten you, choked you, used a gun or knife on you, and forced you into sexual activity

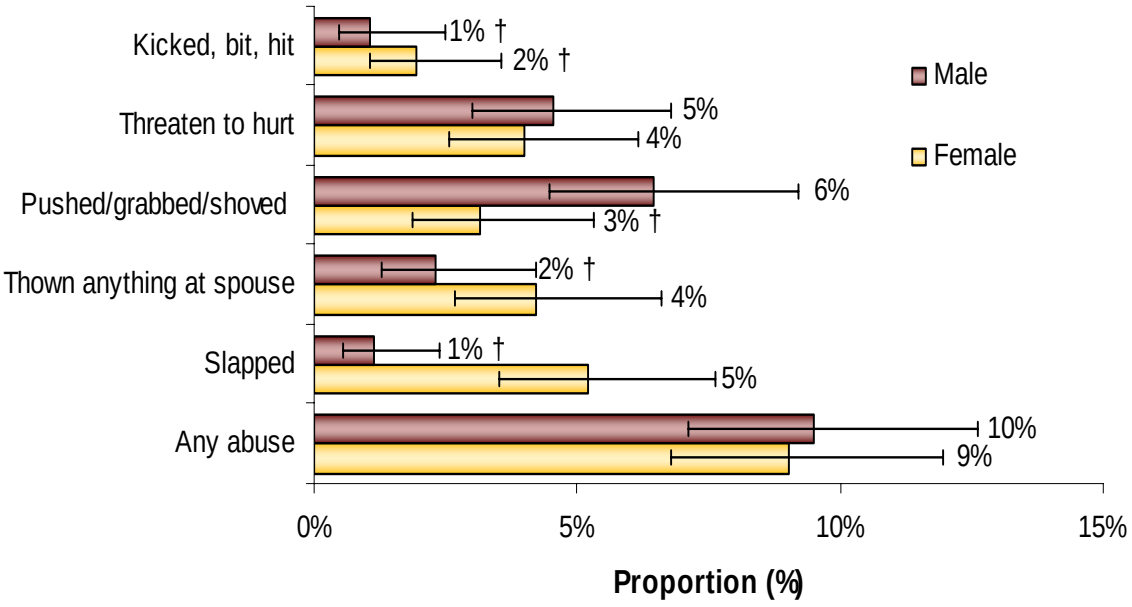

Figure 2.10: Physical and Sexual Abuse by CF Personnel towards Spouse by Sex of Respondent, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

Note: Physical and sexual abuse categories with estimates less than 1% were not shown and include: hit him/her with something; beaten him/her; choked him/her; used a gun or knife on him/her; forced him/her into sexual activity

Table 2.9: Emotional and Financial Abuse by CF Respondent and Spouse, HLIS 2008/9

Emotional and Financial Abuse	Abuse by CF personnel toward spouse % (95% CI)	Abuse by spouse toward CF personnel % (95% CI)
Limit contact with friends and family	1.2% (0.6-2.6%) †	5.6% (4.0-7.8%)
Put you down or called you names	11.3% (9.1-14.0%)	12.0% (9.7-14.8%)
Been jealous (no talking to other men or women)	7.4% (5.4-10.0%)	15.4% (12.7-18.6%)
Harmed, threatened to harm someone close to you	0.5% (0.2-1.6%) †	0.5% (0.2-1.5%) †
Demanded to know who you/they were with and where you/they were at all times	3.8% (2.4-6.2%)	7.9% (5.8-10.6%)
Damaged or destroyed possessions or property	2.8% (1.6-4.8%)	4.5% (3.0-6.6%)
Prevented access from family income even after asking	1.0% (0.4-2.0%) †	2.0% (1.1-3.6%) †
Any emotional or financial abuse	19.3% (16.3-22.8%)	24.9% (21.5-28.6%)

† Fewer than 20 observations, values may be unstable; interpret with caution

Risk-Taking Attitudes and Behaviours

Risk-taking attitudes and behaviour was measured using two content domains of the Domain-Specific Risk-Taking Scale (DOSPERT) (Weber et al, 2002). The first domain, risk-taking behaviour for recreational activities, asks respondents to rate the likelihood they would engage in six risky activities which included: going camping in the wilderness, going down a ski run that is beyond your ability, going white water rafting at high water in spring, taking a skydiving class, bungee jumping off a tall bridge, and piloting a small plane. Respondents rated each of the six activities as extremely unlikely to extremely likely (7 point Likert scale). The recreational risk-taking score is then computed as the sum of the scores (1-7) multiplied by the number of activities; the higher the score the higher the propensity for risk-taking behaviour.

The second content domain queried six health and safety aspects of risk-taking and included: drinking heavily at a social function, engaging in unprotected sex, driving a car without wearing a seat belt, riding a motorcycle without wearing a helmet, sunbathing without sunscreen, and walking alone at night in an unsafe area of town. Items were measured and scored in the same fashion as the recreational risk-taking score. For each of the two domains, the minimum score is 6 and the maximum score is 42.

Among CF personnel, the mean recreational risk-taking score was 21.0 and the mean health and lifestyle risk-taking score was 17.3. Table 2.10 presents the mean recreational and health and safety scores stratified by sex, rank, deployment status and age group. Males reported significantly greater recreational and health and safety risk-taking scores compared to females, as did Officers when compared to NCMs. There was a consistent

decline in the tendency for risk-taking as age increased, with persons in the youngest age group the most likely to report risky recreational and health and safety behaviours.

As has been shown in numerous other studies (Killgore, 2008; Fear 2008) persons who were deployed overseas in the last two years were more likely to report risky health and safety behaviours than non-deployed persons, yet there was no significant difference observed in risk-taking during recreational activities.

Table 2.10: Mean Recreation and Health and Safety Risk-taking Score by Sex, Rank, Deployment Status and Age Group of CF Personnel, HLIS 2008/9

Variable	Category	Recreational Risk-taking Score		Health and Safety Risk-taking Score	
		Mean (95% CI)	p value	Mean (95% CI)	p value
Sex	Males	21.4 (20.7-22.1)	$p \leq 0.001$	18.0 (17.4-18.6)	$p \leq 0.001$
	Females	18.4 (17.9-19.0)		13.8 (13.4-14.2)	
Rank	NCM	20.7(20.3-21.8)	$p = 0.02$	16.0 (15.4-16.6)	$p \leq 0.001$
	Officers	22.1 (20.2-22.0)		17.8 (17.2-18.5)	
Deployment	Yes	21.1 (20.2-22.0)	ns	18.3 (17.7-19.0)	$p = 0.02$
	No	20.7 (20.0-21.5)		17.1 (16.5-17.8)	
Age Group	18-29	25.6 (24.2-27.0)	Ref	21.2 (20.1-22.3)	Ref
	30-39	20.2 (20.2-22.3)	$p \leq 0.001$	17.6 (16.6-18.5)	$p \leq 0.001$
	40-49	18.3 (17.4-19.2)	$p \leq 0.001$	15.2 (14.5-16.0)	$p \leq 0.001$
	50-60	15.8 (14.4-17.2)	$p \leq 0.001$	13.1 (12.0-14.3)	$p \leq 0.001$

Anger

Anger is a strong emotion which can lead to physical or verbal aggressive behaviour. In the context of the military, anger may be associated with mental disorders such as PTSD, and can lead to difficulties with relationships, work and health. Strengthening the Forces (STF) has a health promotion program which teaches CF personnel how to deal with anger so that it does not impact their life and those around them. The HLIS 2008/9 included a set of items to measure the impact of anger on the personal and professional lives of CF personnel.

The majority of CF Regular Force personnel rarely (43.5%) or never (34.8%) found themselves struggling with levels of anger that interfered with their ability to do their job or with personal relationships. However, 17.8% of respondents reported that anger interfered sometimes and 3.8% were often affected by levels of anger which had negative effects in their life.

Whether one experiences levels of anger that impact work and relationships differed according to the age of the respondent (Figure 2.11). Eighteen to 29 year olds (43.2%) were more likely to report that they 'never' experience anger levels which interfere with life, compared to persons 30 to 39 (32.7%) and 40 to 49 years of age (29.2%). Personnel 30 to 39 years of age were also more likely to say that their anger 'sometimes' interferes

with work or personal relationships (22.8%) compared to those of 18 to 29 years (13.2%). It appears that those who are older, and in particular between the ages of 30 to 39 are more likely to have anger interfere with their work or personal life. CF personnel who deployed overseas in the last two years were significantly more likely to report that their anger 'often' or 'sometimes' interfered with work and personal relationships (26.9%) compared to those who did not deploy in the last two years (20.0%). There were no significant differences in the occurrence of anger which negatively affected the respondent's life by sex, rank, CF command, base, education level, or primary language.

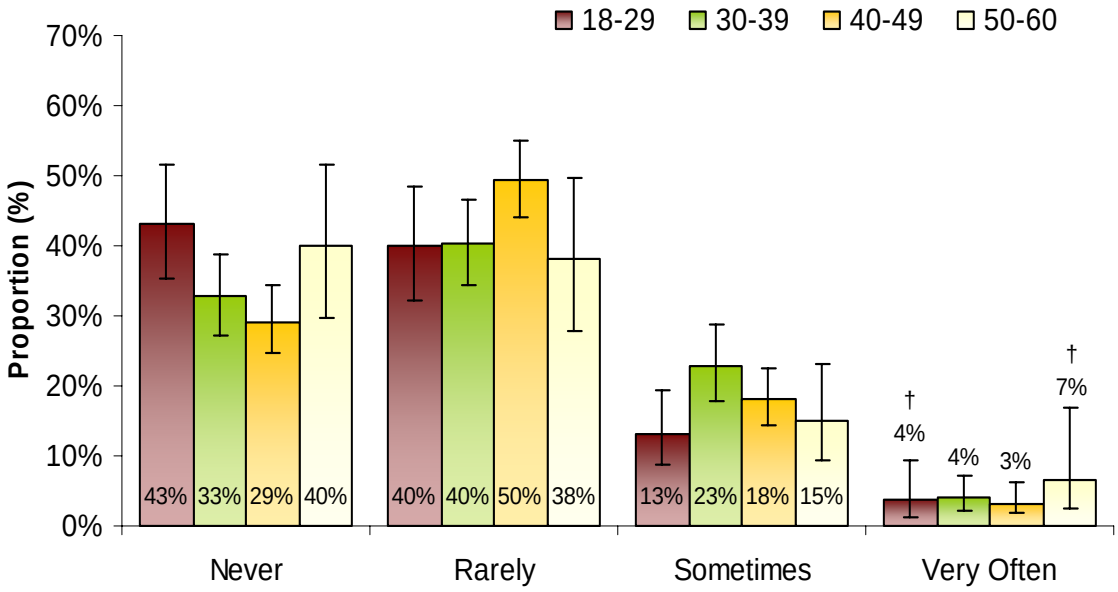

Figure 2.11: Proportion Experiencing Anger that Interferes with Work and Relationships by Age Group, HLIS 2008/9.

† Fewer than 20 observations, values may be unstable; interpret with caution

Respondents were also asked how often they found themselves staying awake at night thinking about issues that have made them angry. As seen in figure 2.12, the majority reported staying awake 'never' (33.0%) or 'rarely' (38.7%) due to anger. However, 24.7% reported sometimes and 3.7% struggle with high anger levels that keep them awake 'very often'. Females (6.3%) were significantly more likely than males (3.3%) to report staying up at night thinking about things that have made them angry 'very often'. Similarly, males (34.0%) were more likely to report staying awake 'never' compared to females (26.4%).

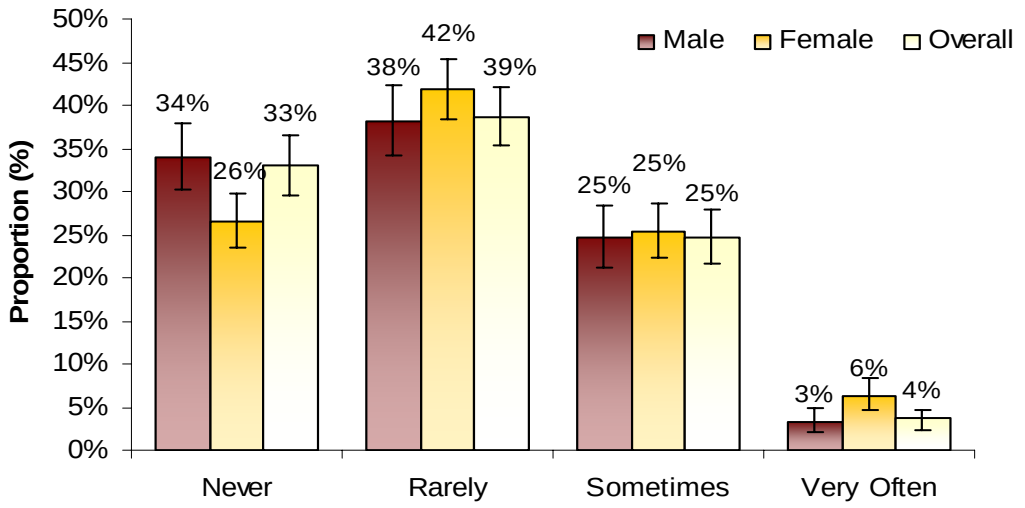

Figure 2.12: Proportion of CF Who Stay Awake at Night Due to Anger, Overall and by Sex, HLIS 2008/9

As displayed in Figure 2.13, Officers (46.0%) were more likely than NCMs (36.6%) to report that they rarely stayed up at night thinking of things that have made them angry. NCMs (26.2%) were also more likely to report staying awake due to anger 'sometimes' compared to Officers (19.5%).

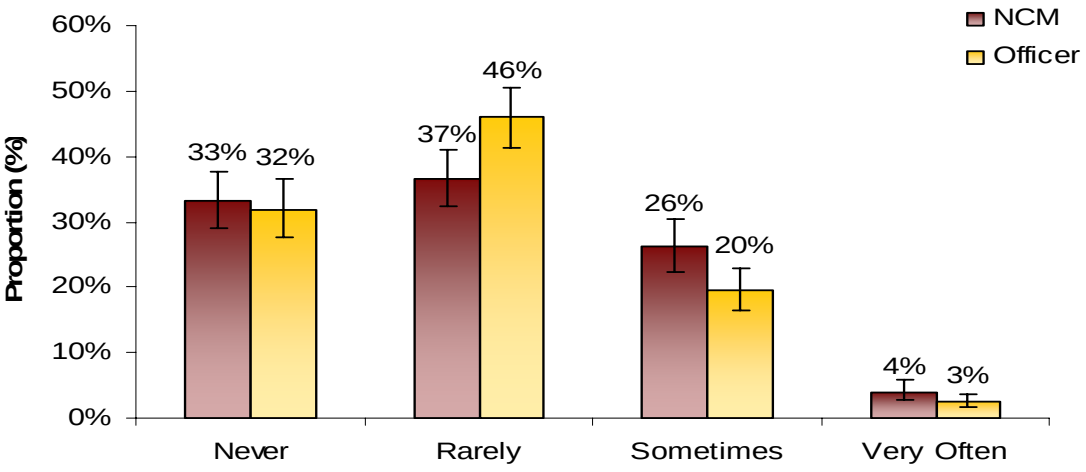

Figure 2.13: Proportion of CF who Stayed Awake at Night Due to Anger, by Rank, HLIS 2008/9

There was also a significant difference in loss of sleep due to anger according to the primary language spoken by the respondent. CF personnel whose primary language is French were more likely to report that they 'never' (40.4%) lose sleep due to anger, compared to only 29.9% of those who speak English as their primary language.

It is uncertain as to why those whose primary language is French lose less sleep due to high anger levels compared their English-speaking counterparts. It is possible that differences in the interpretation of the question may affect responses; it is also hypothesized that French-speaking personnel may use different resources to deal with levels of anger than English-speaking personnel.

There were no significant differences in loss of sleep due to anger levels across categories of deployment, age group, CF command, base of service, or education.

As seen in Figure 2.14, the underlying cause of frustration or anger reported in the HLIS 2008/9 is most commonly attributed to work or school stress (48.8%), relationship problems (30.8%), and financial difficulties (28.6%). Furthermore, 19.0% of persons reported that their anger level increased following a family problem; 16.2% due to the death or illness of a close family member or friend; 15.1% due to a recent deployment and 7.4% for other reasons.

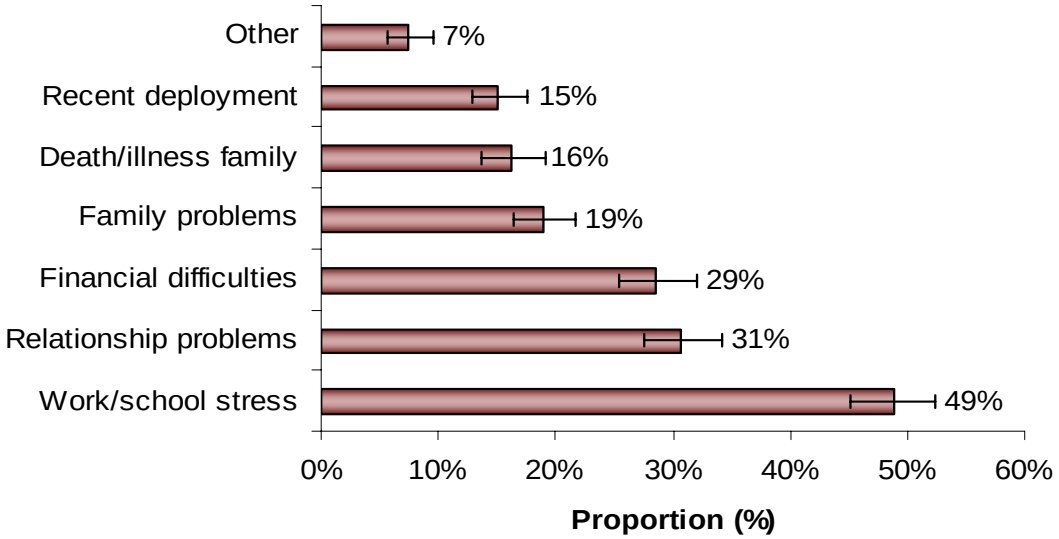

Figure 2.14: Attributions for Increased Levels of Frustration or Anger among CF Personnel, HLIS 2008/9

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

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Time Away from Home

In the Canadian Forces, separations from family are reoccurring, variable and expected throughout the career of military personnel. The amount of time away from family lasts from a few days to several months. This time away places demands and stress on all family members and can also lead to feelings of isolation and loneliness. Additionally, separations from family are generally negatively associated with individual wellbeing (Burrell, Adams, Durand & Castro, 2006).

The average time away from home for military-related activities in the last two years was 7.6 months (Table 3.1). When standardized to the 2008 CF population, this was a statistically significant increase from the 2004 survey (5.5 months). In both the 2004 and 2008/9 surveys, males tended to report significantly more months away from home for military activities than females.

It must be noted that for this question, the distribution of time away due to military activities tended to be skewed upward, where a few respondents reported greater time away from home; this increased the average number of months away.

Table 3.1: Average Time in Months Spent Away from Home Due to Military Activities in the Past Two Years, Overall and by Sex, HLIS 2004 and 2008/9 θ

Survey	Number of Months (95% CI)		
	Males	Females	Overall
HLIS 2004	5.6 (4.4-6.8)	4.7 (3.6-5.9)	5.5 (4.3-6.6)
HLIS 2008/9	7.8 (6.3-9.3)	5.7 (4.4-6.7)	7.6 (6.1-9.0)
p value	$p \leq 0.001$	$p \leq 0.015$	$p \leq 0.001$

θ Age and sex standardized to the 2008 CF population

The amount of time away from home due to military activities decreased with advancing age (Table 3.2). Persons between the ages 50-60 (4.0 months) reported less than half the number of months away compared to those in the youngest age group (10.3 months).

Junior NCMs reported more time away from home for military activities than Senior NCMs and Officers. This observation may reflect in part the decrease in time away with increasing age, as reported above.

Compared to Army personnel, those serving under the Air Force and other commands reported significantly less time away from home due to military activities. It was also observed that survey participants from Valcartier, Edmonton, Petawawa, Esquimalt and Halifax reported significantly greater time away from home for military activities compared to CF personnel serving in Ottawa.

Table 3.2: Average Time in Months Spent Away from Home Due to Military Activities in the Past Two Years [θ]

Variable	Category	Number of Months (95% CI)	p value
Age Group	18-29	10.3 (9.2-11.4)	Ref
	30-39	7.9 (7.3-8.5)	$p \leq 0.001$
	40-49	5.6 (5.1-6.1)	$p \leq 0.001$
	50-60	4.0 (3.0-4.9)	$p \leq 0.001$
Rank	Jr NCM	8.4 (7.7-9.2)	Ref
	Snr NCM	5.9 (5.3-6.5)	$p \leq 0.001$
	Jr Officer	8.2 (7.4-9.0)	ns
	Snr Officer	5.1 (4.6-5.5)	$p \leq 0.001$
Command	Army	8.7 (8.0-9.4)	Ref
	Air	6.6 (5.6-7.6)	$p = 0.001$
	Navy	7.9 (6.7-9.1)	ns
	Other	5.7 (4.8-6.5)	$p \leq 0.001$
Base	Ottawa	5.3 (4.5-6.2)	Ref
	Edmonton	10.8 (8.6-13.0)	$p \leq 0.001$
	Valcartier	10.2 (8.9-11.5)	$p \leq 0.001$
	Petawawa	9.7 (7.6-11.7)	$p = 0.001$
	Esquimalt	8.3 (6.4-10.3)	$p = 0.006$
	Halifax	7.7 (6.0-9.3)	$p = 0.01$
	Gagetown	6.6 (4.7-8.5)	ns
	Trenton	5.0 (4.0-6.0)	ns

θ Age and sex standardized to the 2008 CF population

Note: For this question, total time was calculated as the sum of time away from courses, military exercises and training, deployments, ship-based assignments, temporary duty, military sporting events, and other reasons. Age and sex standardized to 2008 CF population. Time away due to imposed restriction and other posting issues were not included in this total.

As shown in Figure 3.1, CF personnel reported various reasons for time away from home for military activities. Courses were reported by 58.6% of those surveyed, military exercises and training by 52.4% deployments by 33.0%, ship-based reasons by 9.8%, temporary duty (TD) by 8.5%, imposed restriction and other posting issues (IR) by 2.4% and other reasons by 1.5%. Less than 1% of persons reported time away due to participation in military sporting events.

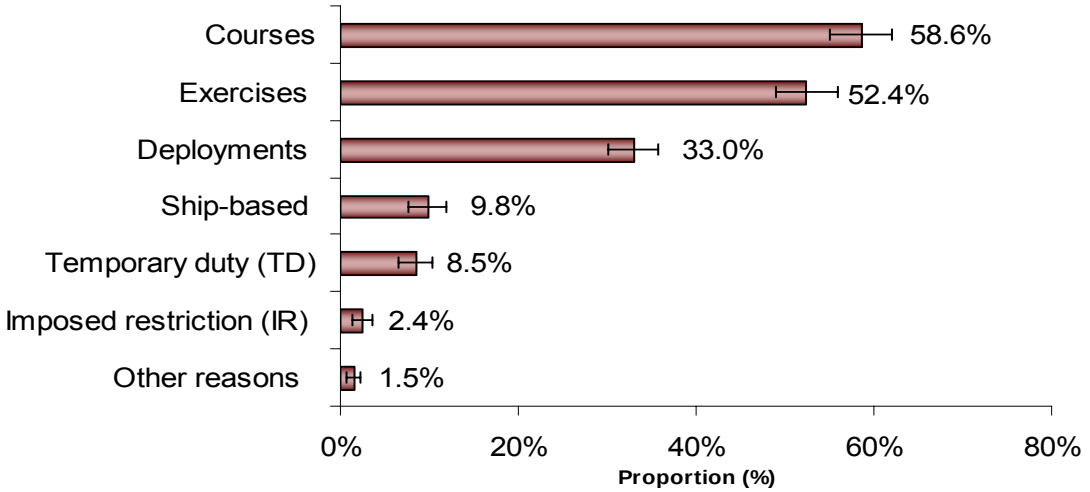

Figure 3.1: Proportion of CF Personnel Reporting Reasons for Time Away from Home
Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%
Note: Participation in military sporting events is not presented due to an insufficient number of respondents

Overall, CF personnel reported being away from home for 6.3 months due to deployment and 4.0 months due to courses in the two years prior to completing the HLIS 2008/9. Both of these results were non-significant increases from 2004 data. Males and females did not differ in their assessments of time away from home due to deployments or courses between the 2004 and 2008/9 HLIS surveys (Figure 3.2).

Aside from deployments and courses, all other reasons for time away from home for military activities in 2008 cannot be directly compared to 2004 data due to substantial changes in the response options between 2004 and 2008/9.

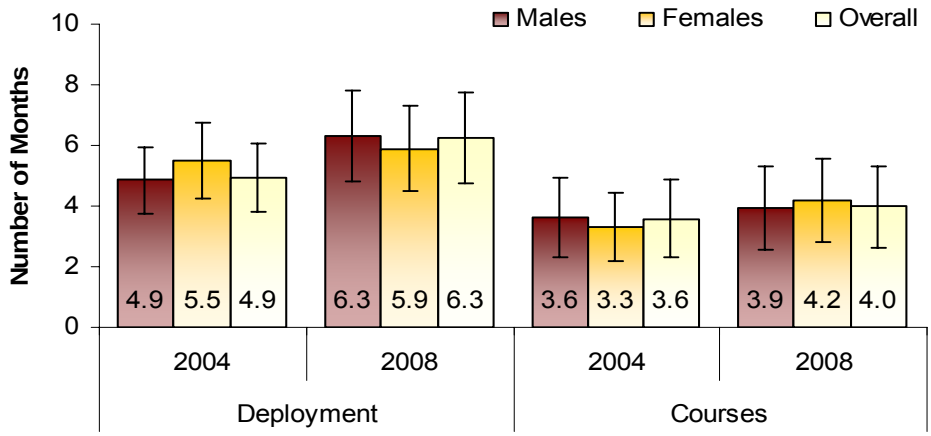

Figure 3.2: Comparison of Mean Number of Months Away from Home Due to Deployment and Courses, Overall and By Sex, HLIS 2004 and 2008/9 $^{\theta}$
θ Age and sex standardized to the 2008 CF population

Job Satisfaction

Job satisfaction can be described as a personal assessment of the degree to which the job of an individual meets personal needs and wants (Cranny Smith & Stone, 1992). Low job satisfaction has frequently been associated with increased mental and physical health problems (Locke, 1976). A recent meta-analysis of nearly 500 studies identified a strong relationship between job satisfaction and burnout, low self-esteem, anxiety, depression, physical illness, and musculoskeletal disorders (Faragher, Cass & Cooper, 2005). However, the authors of this study were careful to note that even the strongest relationship (between low job satisfaction and burnout) accounted for only 22.8% of the variation in the effect. In other words, less than one-quarter of the phenomenon of burnout may be attributed to low job satisfaction, with the remaining three-quarters of the effect attributable to unknown determinants.

Of the CF personnel surveyed, 80.5% were satisfied or very satisfied with their job in the last 12 months. Specifically, 32.2% reported being very satisfied and 48.3% were somewhat satisfied.

Of the remainder, 13.5% reported that they were not too satisfied with their job, and 6.0% were not at all satisfied. When compared to CF personnel serving in Ottawa, personnel from Gagetown and Halifax reported statistically higher job satisfaction. There were no statistically significant differences in the proportion of CF personnel that were satisfied with their job across categories of sex, age, command, rank, smoking status, alcohol use, or illegal drug use.

After standardizing the data to the 2008 CF population, respondents in 2008/9 were statistically more likely to report that they were satisfied with their job when compared to respondents in 2004.

Table 3.3: Proportion of CF Personnel Reporting Job Satisfaction Between HLIS 2004 and HLIS 2008/9 $^{\theta}$

Survey	Proportion (%) (95% CI)		
	Males	Females	Overall
HLIS 2004	77.3% (75.0-79.6%)	78.3% (75.7-81.0%)	77.4% (75.7-79.1%)
HLIS 2008/9	80.9% (78.4.-83.5%)	77.2% (47.2-80.2%)	80.5% (78.5-82.4%)
p value	$p \leq 0.02$	ns	$p = 0.008$

θ Age and sex standardized to the 2008 CF population

Job Performance

A subset of questions from the World Health Organization Health and Work Performance Questionnaire (HPQ) was used to estimate job performance. In the HLIS 2008/9, respondents completed a subset of the HPQ from which measures of absolute performance (a self-rating of work performance along a 10-point Likert scale) and relative performance (the self-assessment of work performance compared to others) were calculated.

The absolute score is calculated out of 100, with higher scores indicating better work performance. In the HLIS 2008/9, the absolute scores ranged from 10-100 with a mean of 80.4. CF respondents with poor health reported significantly lower absolute scores than healthier respondents ($p<0.001$), as did respondents with at least one chronic condition ($p=0.05$), or high risk drinking habits ($p=0.003$). Interestingly, current smokers reported significantly higher absolute scores ($p=0.04$) than their non-smoker counterparts. There was no difference in absolute performance scores across age, sex, rank, command, or illegal drug use categories.

The relative performance score is calculated as the ratio of the self-reported overall job performance of an individual compared to the perceived performance of other workers in a similar job. A score of one indicates that an individual rates their own work performance as equal to others; a score of less than one indicates that an individual rates their own performance lower than that of others, and a score greater than one indicates that an individual rates their own performance higher than that of others in a similar job.

The relative performance scores ranged from 0.10-9.00 with an average of 1.20. Overall, 61.1% of respondents reported their work performance as better, compared to other workers with a similar job. Equivalent job performance was reported by 26.6% of respondents, and 12.3% reported poorer job performance.

Compared to the youngest age group (18-29 years), older respondents (50-64 years) reported significantly ($p=0.01$) lower relative work performance. There was no statistically significant difference in relative performance across categories of sex, rank, or illegal drug use.

Self-reported overall work performance is an additional measure of job performance collected in the HLIS 2008/9. Respondents were asked to rate their overall work performance over the past four weeks using a 7-item scale to indicate if they performed better, average or worse than other workers . Overall, 68.8% of respondents reported that their overall job performance was better than other workers who have a similar job, 27.8% reported they were average, and 3.4% reported they performed worse. CF respondents who reported having poor or fair health had significantly lower performance than healthier respondents ($p<0.001$), as did respondents with high risk drinking habits ($p=0.01$) and those that admitted illegal drug use ($p=0.03$). There were no statistically significant differences in self-reported overall work performance across sex, age, rank, CF Command, base of service, the number of chronic conditions or smoking status.

This measure of self-reported overall job performance presented results comparable to the relative job performance measures. As shown in Table 3.4, when using the HPQ to calculate relative performance, the HPQ identified more than three times as many personnel that reported that their job performance as worse than others in a similar job.

Table 3.4: Comparison of Self-Reported Measure of Overall Job Performance to the Relative Performance Score, HLIS 2008/9.

	Proportion (95% CI)		
	Better than others	**Average or equal performance**	**Worse than other**
Crude overall job performance	68.8% (65.3-72.0%)	27.8% (24.7-31.2%)	3.4% (2.4-4.7%)
Relative performance	61.1% (56.4-65.6%)	26.6% (22.6-30.9%)	12.3% (9.6-15.7%)

There were statistically significant decreases in both the absolute and relative performance scores and self-reported job performance score for respondents who reported themselves in fair or poor health. Although not statistically significant across all measures, respondents who reported high risk drinking also reported generally lower job performance scores.

To better understand work performance, the HLIS 2008/9 collected information regarding time spent at work. Respondents were asked to describe their experience in the last four months based on domains such as attendance, concentration and quality of work (Figure 3.3). The majority of CF personnel indicated that they had not been late for work by thirty minutes or more, they had not been limited by health problems, the quality of their work had never been lower than it should have been, their performance was higher than most workers, they had not left work early, and that they had never found themselves not working when they should have been. In terms of work performance, a majority reported that their performance was higher than most workers at least some of the time, while only a minority reported their performance was lower than most workers at least some of the time.

Of concern is that over 20% of personnel are not concentrating enough on their work and 14% do not work as carefully as they should at least some of the time. These results suggest a possible risk of workplace accidents due to a lack of attention.

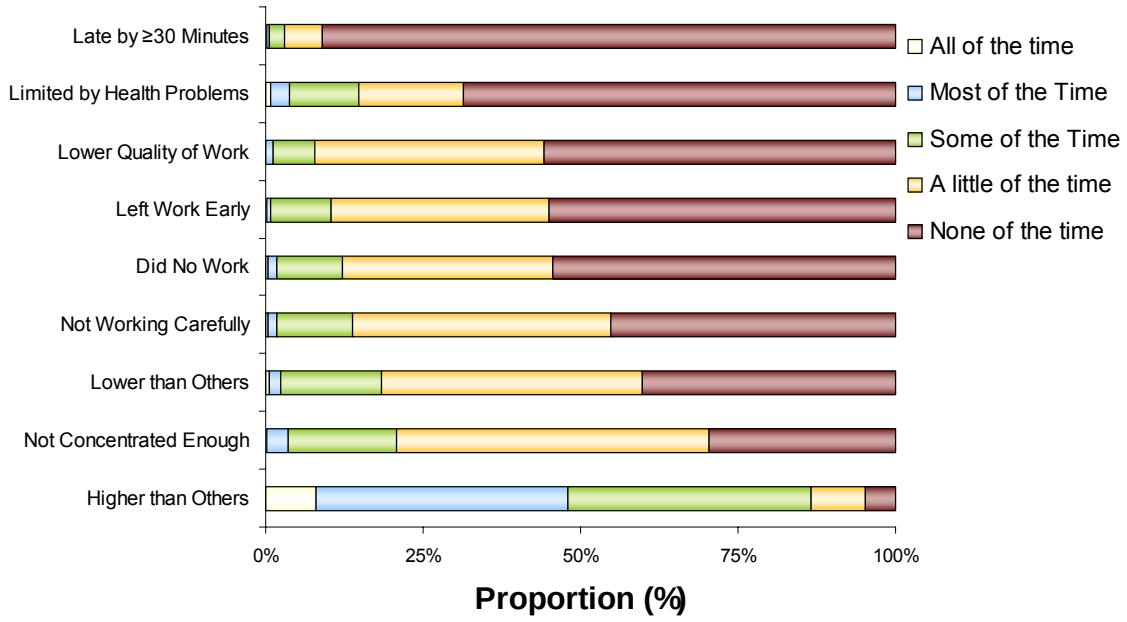

Figure 3.3: Indicators of Job Performance Reported by CF Personnel, HLIS 2008/9.

Accidents and Injuries

Military service brings with it the inherent risk of injury and death (Burrell, Adams, Durand and Castro, 2006). Yet there are many unnecessary risks that can be minimized; there is an important distinction between accidents and unsafe work behaviours (Wallace & Vodanovic, 2003).

Table 3.3: Percentage of CF Personnel that Reported Accidents and Lifting Injuries, by Age Group, HLIS 2008/9.

	Proportion within Age Group (95% CI)				Overall
	18-29	30-39	40-49	50-64	
Accident at work	4.8% (2.3-9.6 %)	5.3% (3.3-8.5%)	4.0% (2.2-7.2%)	1.1% (0.3-4.0%)	4.4% (3.1-6.2%)
Lifting injury in past 2 years	13.0% (7.2-18.8%)	18.7% (13.7-23.6%)	22.3% (17.8-26.9%)	21.0% (11.1-31.0%)	18.6% (15.8-21.4%)
Never received safe lifting training	56.8% (33.8-77.2%)	21.2% (12.2-34.3%)	22.2% (13.9-33.5%)	22.4% (7.5-50.6%)	29.0% (21.6-37.8%)

Accidents in the workplace in the last 4 weeks that caused damage, work delay, near misses or a safety risk were reported by 4.4% of CF personnel surveyed. There were no statistically significant differences in this proportion across sex, age, command, rank or base categories.

Injuries from lifting something heavy in the past two years were reported by 18.6% of CF personnel surveyed. Males were significantly more likely than females, and NCMs were significantly more likely than Officers to report an injury. There were no significant differences in this proportion across age, command or base categories.

Of those who were injured lifting something heavy in the past two years, 42.4% reported that they have received training on safe lifting within the same time frame. NCMs were significantly more likely than Officers to have received this training. There were no significant differences in the proportion who received training on safe lifting across sex, age, or CF Command. Due to the few lifting injuries, it was not possible to stratify the analysis by base of employment.

Although recent evidence has questioned the benefit of receiving training on safe lifting to reduce occupational injury (Martimo, Verbeek, Karppinen, et al., 2008), primary studies have shown that a participatory ergonomics team approach (Moloughney 2008) may be useful.

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CHAPTER 4 ~ HEALTH PROMOTION

This section of the report describes the knowledge and attendance of the health promotion programs provided through the CF.

Health Promotion in the Canadian Forces

Strengthening the Forces, the CF's health promotion program, was designed to enable CF personnel to increase control over and to improve their overall health and well-being.

There has been a significant increase in the overall number of CF personnel reporting they have heard of the Strengthening the Forces program (Figure 4.1). In 2008/9, 56.1% of CF personnel reported to have heard of Strengthening the Forces, compared to 36.8% in 2004 when age and sex standardized to the 2008 CF population. In 2008/9, knowledge of Strengthening the Forces was reported significantly less often by males (54.6%) compared to females (66.5%) (Figure 4.1).

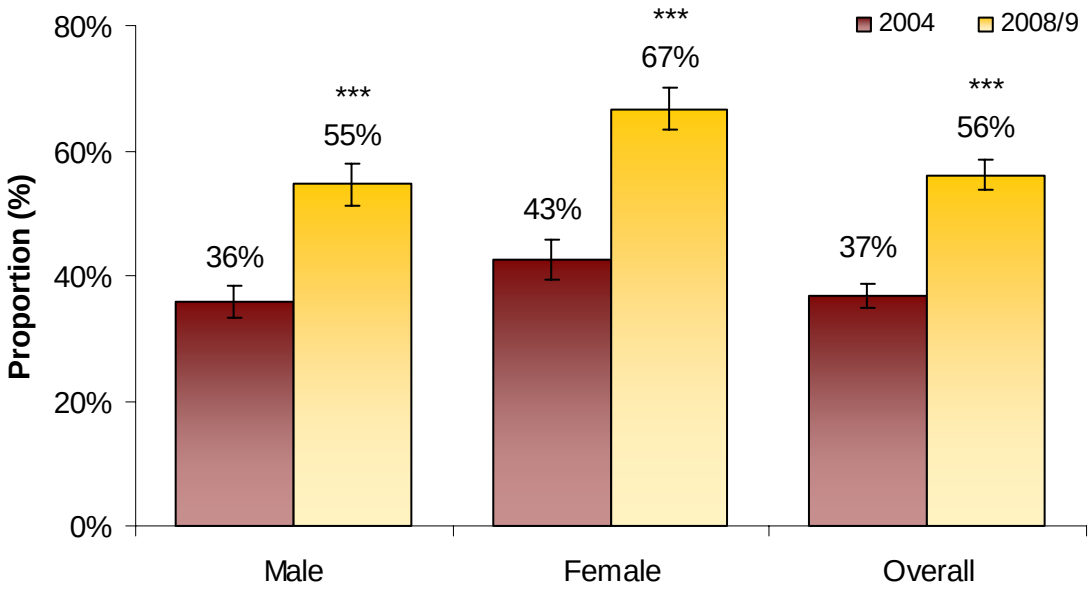

Figure 4.1: Proportion of Persons Having Heard of Strengthening the Forces by Sex of Respondent, HLIS 2004 and 2008/9 θ

θ Age and sex standardized to the 2008 CF population
*** p <0.001 versus referent group

In 2008/9, there were no differences by rank or by age group among those who had heard of Strengthening the Forces. However, Air Force personnel were the most likely to report to have

heard of the Strengthening the Forces campaign, compared to the Army, Navy, and Other CF Commands (Figure 4.2).

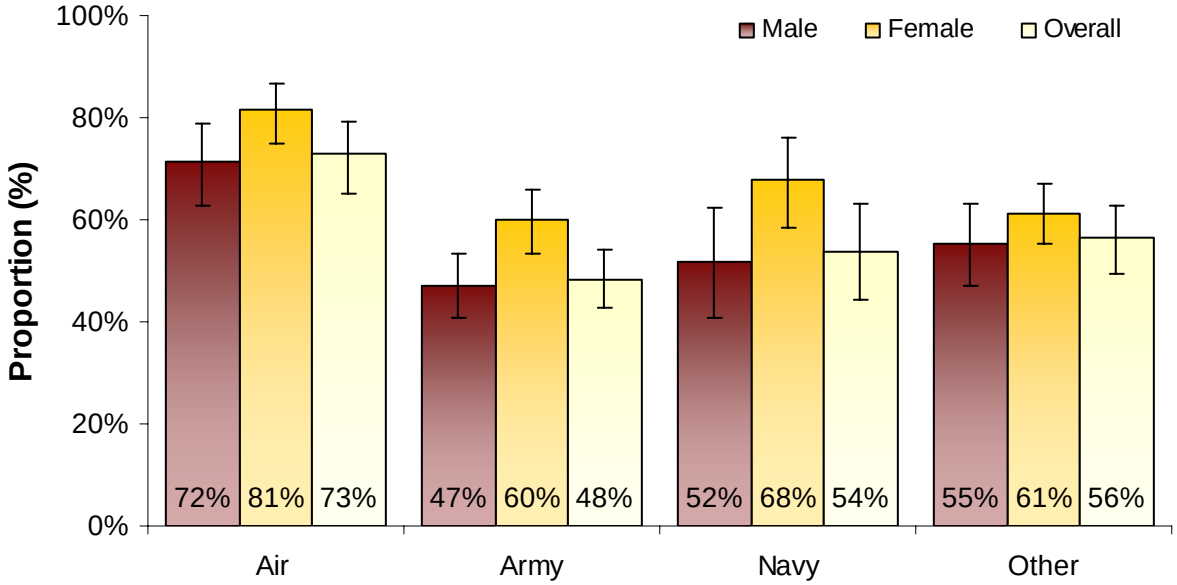

Figure 4.2: Proportion of Persons Having Heard of Strengthening the Forces by CF Command, HLIS 2008/9 θ

θ Age and sex standardized to the 2008 CF population

When those who had heard of Strengthening the Forces were asked in the 2008/9 survey to indicate how they became aware of the campaign, the most common response was pamphlets, brochures or posters (72.0%) followed by base newspapers or CF publications (39.5%), presentations or workshops (17.8%), CANFORGEN (17.4%), word of mouth (16.9%) and via Web pages (16.8%).

Health Promotion Programs and Educational Sessions

CF personnel reported in 2008/9 that the most commonly attended health promotion programs or education and awareness sessions were Alcohol, Drugs and Gambling (9.8%), ASIST Applied Suicide Intervention (8.6%), Stress Take Charge (8.1%), and Top Fuel for Top Performance (7.4%) (Table 4.1). The reported proportions who attended each program in Table 4.1 should be interpreted with caution. Course attendance records suggest that some of these figures are too high. One possible explanation is that CF members may confuse sub-components of a course for a full program. For example, anger may be discussed during relationship or addictions training and be mistaken as the full Managing Angry Moments course.

CF personnel who attended these health promotion programs and sessions were asked to rate the effectiveness of the program in either improving their own health or providing information to help others. As shown in Table 4.1, about two-thirds or more of those who attended health promotion programs and sessions found them to be helpful (either 'fairly helpful' or 'very helpful'). For the four most commonly attended programs, the proportion of CF personnel who noted a program to be helpful was as follows: Alcohol, Drugs and Gambling (66.1%), ASIST

Applied Suicide Intervention (83.3%), Stress Take Charge (76.2%), and Top Fuel for Top Performance (87.8%).

Table 4.1: Attendance of Health Promotion Initiatives and Perceived Effectiveness, HLIS 2008/9.

CF-sponsored Health Promotion Program or Session	Proportion of personnel who attended the program (95% CI)	Of those who attended, proportion who found the program to be helpful (95% CI)
Alcohol, Drugs and Gambling	9.8% (7.2-13.1%)	66.1% (50.8-78.6%)
ASIST Applied Suicide Intervention	8.6% (6.2-11.7%)	83.3% (72.0-90.7%)
Stress: Take Charge!	8.1% (5.8-11.2%)	76.2% (58.0-88.1%)
Top Fuel for Top Performance	7.4% (5.1-10.5%)	87.8% (72.6-95.1%)
Stress Talk Briefing Session	6.1% (4.2-8.6%)	72.6% (53.4-86.0%)
Butt Out	5.6% (3.7-8.3%)	74.2% (54.1-87.5%)
Family Violence Briefings	5.3% (3.6-7.7%)	70.8% (53.8-83.5%)
Managing Angry Moments	5.2% (3.4-7.8%)	63.7% (41.0-81.6%)
Weight Wellness	4.8% (3.0-7.5%)	89.5% (79.7-94.0%)
Injury Prevention	3.9% (2.4-6.3%)	82.4% (61.0-93.3%)
Basic Relationship Training	2.9% (1.5-5.4%)	78.1% (52.3-92.0%)†
Other Weight Loss Program	2.7% (1.6-4.7%)	84.2% (68.4-92.9%)
Other Smoking Cessation	2.1% (1.0-4.5%)	89.9% (70.1-97.1%)†

† Fewer than 20 observations, values may be unstable; interpret with caution

Health Promotion Campaigns

The 2008/9 survey asked respondents if they were aware of four recent Strengthening the Forces campaigns. Overall, the March 1st I Quit! Challenge most successfully reached personnel, with 57.5% reporting that they were aware of the campaign (Table 4.2). All four campaigns increased their awareness of the issue in roughly half of those who were aware of the campaign. More than 60% of those who were aware of each of the campaigns reported that the campaign made them more aware of resources available to help themselves with the issue if they needed help. More than half of respondents found that the Set Your Sights on Healthy Eating campaign helped them to make changes to improve their health.

Table 4.2: Proportion of CF Personnel Aware of the Strengthening the Forces Campaigns, HLIS 2008/09

Strengthening the Forces Campaign	Personnel who were aware of the campaign (95% CI)	Of those who were aware of the campaign, the proportion who reported that the campaign…		
		Increased their awareness of the issue (95% CI)	Increased their awareness of resources (95% CI)	Helped to make changes to improve their health (95% CI)
March 1st I Quit! Challenge	57.5% (53.8-61.2)	47.2% (42.3-52.3)	61.1% (55.9-66.1)	41.8% (32.2-52.0)
Alcohol and Drug Awareness Campaign	33.9% (30.8-37.2)	58.2% (51.8-64.2)	62.0% (55.5-68.1)	20.2% (12.3-31.4)
Take a Stand against Family Violence	22.4% (19.6-25.4)	56.5% (48.4-64.3)	65.3% (57.2-72.6)	32.7% (18.3-51.2)
Set Your Sights on Healthy Eating	12.6% (10.6-15.0)	60.7% (50.0-70.4)	66.8% (55.7-76.3)	57.2% (42.5-70.8)

The Weight Wellness Program is in place to help participants develop healthy eating and activity habits to achieve or maintain a healthy body weight. Overall, more obese individuals participated in weight-loss related programs compared to non-obese individuals in the 12 months prior to the survey (Table 4.3).

Table 4.3: Effectiveness of Weight Loss-Related Health Promotion Programming for Non-Obese and Obese CF Personnel, HLIS 2008/09

Program or Campaign	Normal / Overweight (BMI<30) (95% CI)	Obese (BMI≥30) (95% CI)
Attended Weight Wellness Program in last 12 months	3.8% (2.1-6.9%)	8.0% (4.0-15.5%)
If yes, found it helpful for making changes to improve own health or provided information to help others	91.4% (77.9-97.0%)	87.7% (69.9-95.6%) †
Attended Other Weight Loss Program in last 12 months	2.1% (0.9-4.6%)	4.8% (2.3-9.9%)
If yes, found it helpful for making changes to improve own health or provided information to help others	91.6% (66.9-98.3%) †	77.4% (49.0-92.4%) †

† Fewer than 20 observations, values may be unstable; interpret with caution

It is not possible to discern from this cross-sectional survey data the impact of weight loss related programs on the prevalence of obesity. It is possible that persons who benefitted from the respective programs may have reduced their excess body weight to a point at which they were classified in this study as non-obese; longitudinal studies and health promotion evaluation studies will be used to strengthen these results.

Beliefs and Intentions Relating to Health Behaviours

This section of the report describes the beliefs and intentions of CF personnel related to improving their health and well-being.

CF personnel were asked if they believed that making changes to various aspects of their lives would improve their health and well being. Those who indicated that they did believe that a specific action would improve their health were then asked if they intend to make that change in the next year.

As shown in Figure 4.3, more than half of CF personnel believe that exercising more, improving their diet, and losing weight would improve their overall health and well being and more than 90% of those people intend to make that behaviour change in the next year.

Note that for some of these beliefs and intentions, the responses are a direct reflection of the underlying health-related behaviour. For example, the 21% of CF personnel who believe that reducing or quitting smoking would improve their health or well-being approximates the 21% of CF personnel who consider themselves daily or occasional smokers.

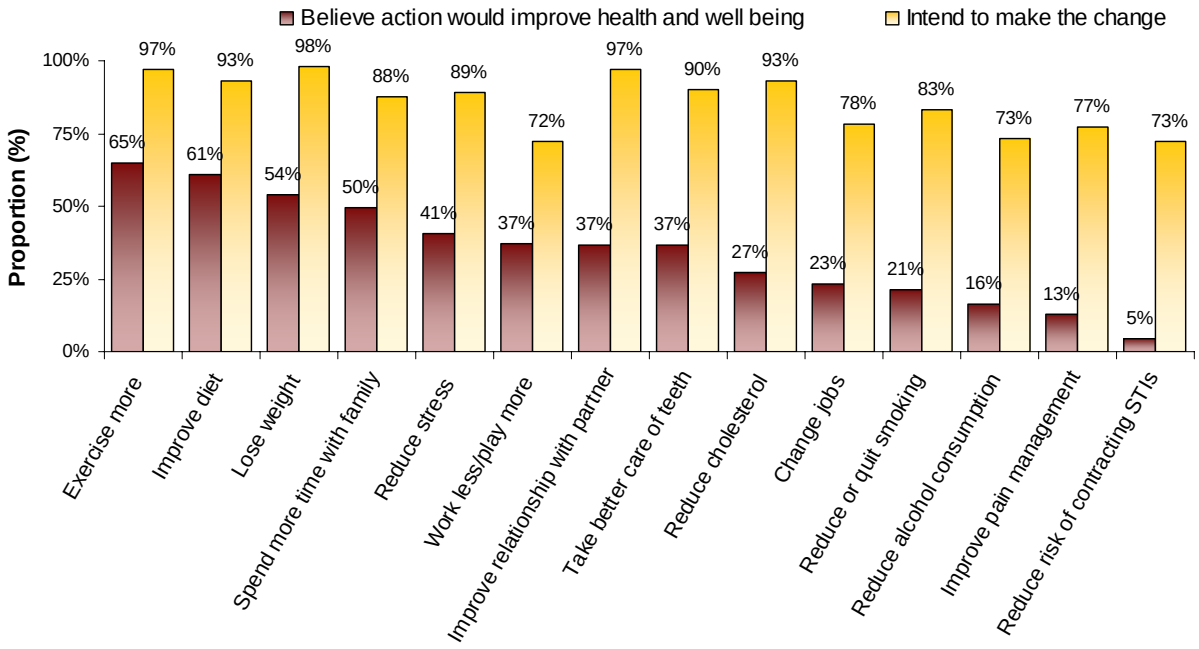

Figure 4.3: Behaviour Change to Improve Health and Well Being, HLIS 2008/09
STI: Sexually Transmitted Infections

Individuals who engage in negative health behaviours (e.g. use of nicotine products or harmful alcohol use) and who believe that changing that negative behaviour would improve their health are an important group to identify, as are those who intend to make that change in the near future. These individuals could be targeted for programs to assist them in making the necessary behavioural change.

Of the 21% of CF personnel who reported that they believe that reducing or quitting smoking would improve their health and well being (shown in Figure 4.3), 78.3% are daily cigarette smokers, 10.1% are occasional cigarette smokers, and 11.6% do not smoke cigarettes. The latter group probably misinterpreted the question as a hypothetical one.

Of those who reported that they smoke cigarettes daily, 90.0% believe that reducing or quitting smoking would improve their health and well being. The majority of these people (85.1%) intend to reduce or quit smoking in the next year (Table 4.4).

Daily smokers were more likely than occasional smokers to believe that reducing or quitting smoking would improve their health, but their intention to make the change was not significantly different from those who smoke occasionally.

Table 4.4: Reducing Smoking to Improve Health and Well Being, HLIS 2008/09

Those who have smoked at least 100 cigarettes in their lifetime and currently smoke…	**Proportion who believe that reducing or quitting smoking would improve their own health and well being (95% CI)**	**Of those who believe reducing or quitting smoking would improve their health, those who intend to make the change in the next year (95% CI)**
Every day	90.0% (83.0-94.3%)	85.1% (76.5-91.0%)
Occasionally	43.8% (27.2-61.9%)	94.1% (70.5-99.1%)

Of those who demonstrate hazardous or harmful drinking practices (based on sex-specific cut-off scores on the Alcohol Use Disorders Identification Test), 43.0% believe that cutting down on drinking alcohol would improve their health and well being, and 70.3% of those people intend to make that change in the next year (Table 4.5).

Table 4.5: Reducing Alcohol Intake to Improve Health and Well Being, HLIS 2008/09

AUDIT score classification	**Proportion who believe that reducing alcohol consumption would improve their own health and well being (95% CI)**	**Of those who believe reducing alcohol consumption would improve their health, those who intend to make the change in the next year (95% CI)**
Hazardous or harmful alcohol consumption	43.0% (34.3-52.2%)	70.3% (55.4-81.8%)
Non-hazardous alcohol consumption	10.2% (7.7-13.3%)	77.6% (63.9-87.2%)

Individuals who demonstrate hazardous or harmful drinking behaviours are more likely than others to believe that reducing their alcohol consumption would improve their health, but their intentions to make the change is not different than those who do not demonstrate hazardous drinking behaviours.

Men and women have some different beliefs about the behaviour changes that would improve their health. Figure 4.4 shows the behaviours that are different between men and women; the behaviours not shown in the figure do not differ significantly by sex. Women are significantly more likely than men to believe that losing weight and reducing or better coping with stress would improve their health. Men are significantly more likely than women to believe that taking better care of their teeth and gums, managing their cholesterol, cutting down on drinking alcohol, and changing their sexual behaviours to reduce the risk of sexually transmitted infections would improve their health. It must be stated that in the case of alcohol consumption, it is known that male CF personnel consume greater amounts of alcohol than women. It is sensible that males would be more likely to want to reduce the amount of alcohol they consume, given their increased alcohol intake.

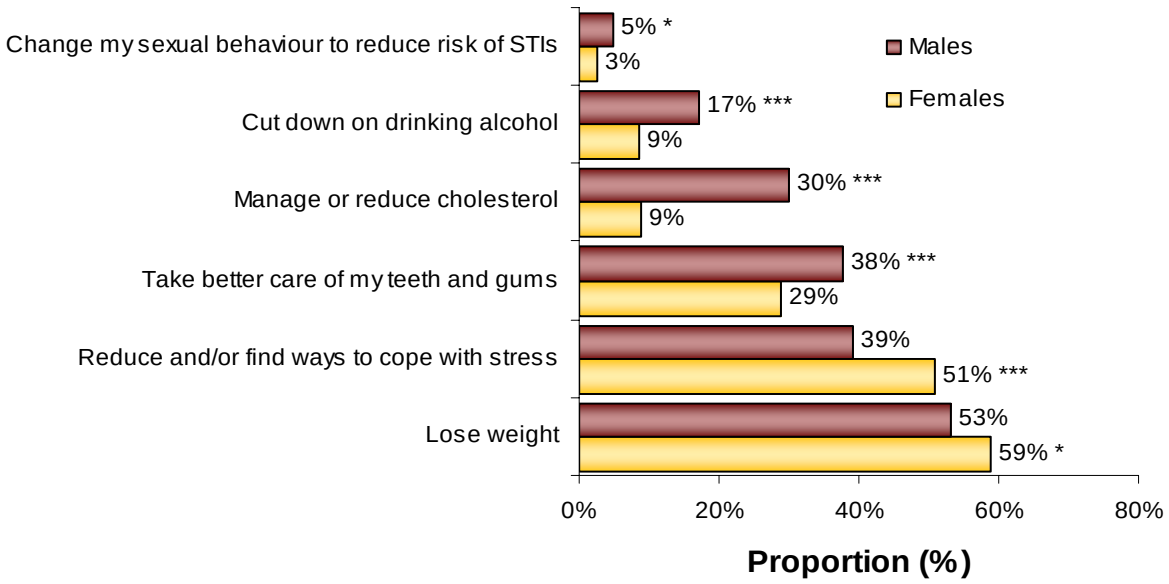

Figure 4.4: Behaviour Changes Believed to Improve Health and Well Being in Males and Females, HLIS 2008/09
* p <0.05 versus referent group; *** p <0.001 versus referent group

CHAPTER 5 ~ HEALTH OF WOMEN IN THE CANADIAN FORCES

This section of the report describes various health issues that are unique to the women who serve in the Canadian Forces.

Pregnancy in the Canadian Forces

The number of pregnancies in the CF has not changed significantly since 2004. When age standardized to the 2008 CF female population, 4.7% of women reported being pregnant at the time of the 2008/9 survey and 2.3% reported being pregnant at the time of the 2004 survey.

The vast majority of pregnant women in the CF are either married or common-law. In 2008/9, 81.0% reported being married or common-law, 19.0% reported being single, and there were no pregnant women who reported being divorced, separated, or widowed.

Cervical Cancer Screening

The current Canadian recommendations for cervical cancer screening vary by province but generally, women who have ever been sexually active or are 21 years of age or older should have a Pap test at least once every 3 years until age 70. Screening may be necessary as often as every six months depending on individual risk factors and previous Pap test results (McLachlin et al, 2005).

Almost all women in the CF have had at least one Pap test during their lifetime. When standardized to the 2008 CF population, there has been no change in the proportion of women who report having at least one Pap test during their lifetime. In 2008/9, 97.5% reported to have had a Pap test in their lifetime, compare to 96.1% in 2004. Among 18 to 59 year old women in the general Canadian population in 2007, 88.9% have had at least one Pap test in their lifetime (Statistics Canada, 2008).

Among those CF women who have had at least one Pap test in their lifetime, the amount of time since their last Pap test has not changed significantly since 2004 (Table 5.1). The vast majority (95.4% in 2008/9 and 93.6% in 2004) had their last Pap test within the recommended previous 3 years. Among women in the general Canadian population aged 18-59 who have had at least one Pap test in their lifetime, 87.2% had their last Pap test within the recommended previous 3 years (Statistics Canada, 2008).

Table 5.1: Duration of Time Since Last Pap Test, HLIS 2004 and 2008/9 θ

	Proportion (%) (95% CI)		
	Within the past year	**1 to 3 years ago**	**More than 3 years ago**
HLIS 2004	67.8% (64.7-70.9%)	25.8% (22.9-28.8%)	6.4% (4.8-8.0%)
HLIS 2008/9	69.0% (65.6-72.4%)	26.4% (23.1-29.6%)	4.6% (3.1-6.2%)

θ Age and sex standardized to the 2008 CF population

The amount of time since the last Pap test varies considerably by age group. As shown in Figure 5.1, older women in the CF were more likely than younger women to report that it has been more than three years since their last Pap test. A similar trend towards older women not being screened regularly exists among the general population as well (Kaida, 2008).

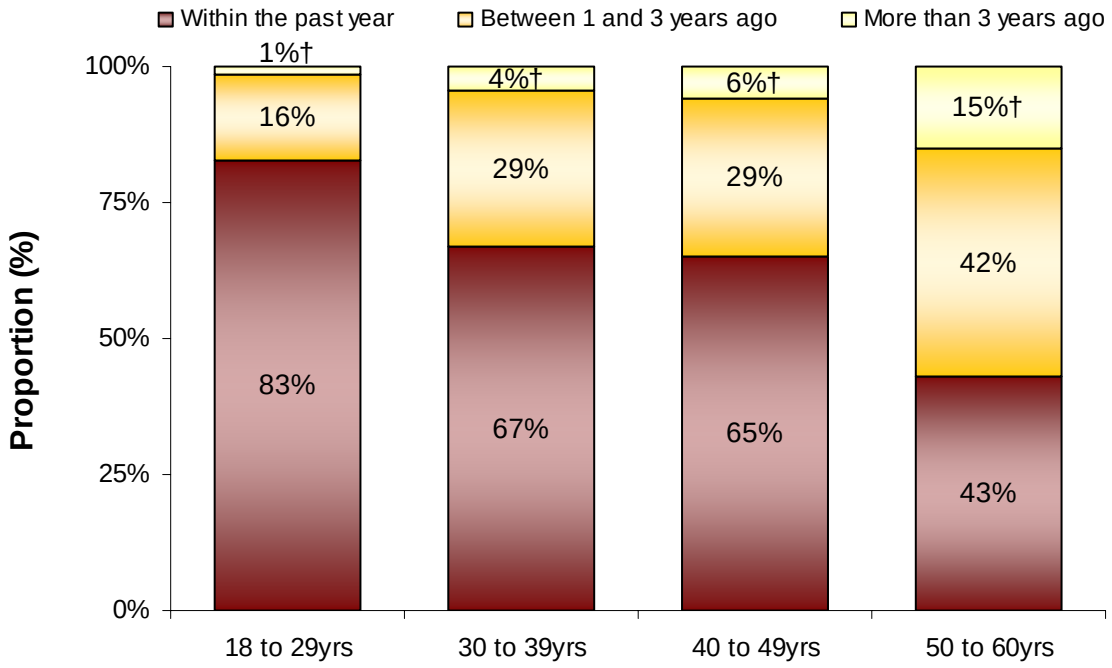

Figure 5.1: Duration of Time Since Last Pap Test by Age Group, HLIS 2008/9 θ
θ Age and sex standardized to the 2008 CF population
† Fewer than 20 observations, values may be unstable; interpret with caution

Reasons for Not Being Screened

Women in the CF who have not been screened for cervical cancer by a Pap test in the 3 years prior to the survey (4.6% of all women in the CF) were asked to select from a list all of the reasons they have not been screened. Nearly half of those women have not had a Pap test in the past 3 years because they 'have not gotten around to it' (Table 5.2).

Female respondents of the Canadian Community Health Survey (CCHS) 2007 were asked a similar question regarding their reasons for not receiving a Pap test. The three most commonly cited reasons by 18 to 59 year olds were: 'Respondent didn't think it was necessary' (32.6%), 'have not gotten around to it' (27%), and 'doctor did not think it was necessary' (15.7%).

Table 5.2: Reasons for Not Having a Pap Test in the Previous 3 Years, HLIS 2008/9

Reason for not being screened	Proportion (%) (95% CI)
Have not gotten around to it	49.6% (35.8-63.4%)
Have never been sexually active	22.7% (12.8-37.0%)
Doctor did not think it was necessary	17.3% (9.2-30.0%)
Did not think it was necessary	14.6% (7.8-25.5%)
Had a hysterectomy	14.3% (6.9-27.4%)
Was not conducted during my PHA	10.5% (4.1-24.2%)
Other	9.7% (3.9-21.9%)
Hate or dislike having one done	9.1% (4.1-19.3%)
Deployed or on training too often	8.2% (2.8-21.8%)
Not available at time required	6.8% (2.5-17.2%)
Fear (e.g. painful, embarrassing, might find something wrong)	6.5% (1.9-19.9%)

Note: The following reasons were not included because the estimates were less than 2% each: personal or family responsibilities, waiting time too long, did not know where to go, and language problems.

On the surface, the most common reason reported for not receiving a Pap test ("Have not gotten around to it") seems to reflect an incongruity between the importance of the medical exam and the time available to the respondent. As such, any efforts to increase the frequency of Pap examinations to meet provincial or federal recommendations should emphasize a recall system to ensure female personnel find the time to get this important screening test done.

However, if the tendency to respond as "Have not gotten around to it" is related to either a fear or dislike of Pap tests, then health care personnel face the dual challenge of increasing compliance with clinical examinations while also battling any stigma surrounding Pap examinations.

Certainly, the remainder of reasons most commonly reported for not being screened indicate an opportunity for making routine screening a priority within health care delivery in the CF.

Urinary Incontinence

Women were asked if urinary incontinence was a problem for them at the time of completing the survey. In 2008/9, 12.3% of females indicated that urinary incontinence was a current problem for them.

As shown in Table 5.3, older women are more likely to have problems related to urinary incontinence than younger women. Roughly 1 in 5 women aged 50-60 experience problems with urinary incontinence, while fewer than 1 in 30 women aged 18-29 experience such problems.

Urinary incontinence can limit physical activity. The extent of this problem will be examined in future surveys.

Table 5.3: Urinary Incontinence Among Women in the CF by Age Group, HLIS 2008/9

	Proportion of CF Women (%) (95% CI)			
	18-29 years	**30-39 years**	**40-49 years**	**50-60 years**
Urinary Incontinence	3.1%† (1.3-7.5%)	11.3% (7.9-15.8%)	18.9% (14.6-24.1%)	19.7%† (12.4-29.9%)

† Fewer than 20 observations, values may be unstable; interpret with caution

References

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CHAPTER 6 ~ HEALTH CARE SERVICES

Health services data is useful for identifying areas of the health system which have improved over time as well as for identifying areas which require remediation. This chapter describes the health services utilization of the CF through patient satisfaction, continuity of care, accessibility, availability and quality of care and frequency of medical exams.

In the HLIS 2008/9, questions regarding specialist care, routine ongoing care, and sexually transmitted diseases were added. Where possible, comparisons between the HLIS 2004 results and Canadian population statistics are reported.

Note that patient satisfaction surveys are carried out in every CF medical facility across the country. The local patient satisfaction surveys show higher satisfaction levels than those reported by HLIS respondents.

Health Care Utilization and Patient Satisfaction

In 2008/9, the majority (76.4%) of Regular Force personnel sought medical attention from a CF medical facility in the 12 month period prior to completing the survey. The proportion that sought care, while lower, has not changed significantly since 2004 (78.1%). The proportion of males and females seeking care between 2004 and 2008/9 has also not changed significantly (Table 6.1). Regardless of the year of survey, females were significantly more likely than males to utilize medical services from a CF medical facility.

Table 6.1: CF Health Services Utilization by Sex and Year of Survey $^{\theta}$

Survey Year	Males % (95% CI)	Females % (95% CI)	p value
2004	76.6% (74.3-78.9%)	88.4% (86.3-90.4%)	$p \leq 0.001$
2008/9	74.5% (71.6-77.3%)	89.3% (87.0-91.5%)	$p \leq 0.001$

θ Age and sex standardized to the 2008 CF population

There was a significant difference in health services use based on overseas deployment status in the last 2 years; 70.8% of those who deployed overseas in the last 2 years sought CF medical care in the last 12 months, whereas 78.3% of those who did not deploy overseas sought care. Thus, those who did not deploy overseas in the last two years have used the CF medical services more often in that last 12 months than those who have deployed. This could be due to the fact that those who deploy generally need a sufficient level of health in order to meet the requirements for deployment.

Variations in health service use by base may indicate differential levels of access to, or need for, CF health services. Respondents from CFSU-Ottawa-NDHQ (83.2%) were significantly more likely to seek health care compared to those in Halifax (67.2%) and Esquimalt (62.6%). There were no differences in health care use between Ottawa and Edmonton, Gagetown, Petawawa, Valcartier or Trenton.

There were also no statistically significant differences in the use of a CF medical facility between age groups, rank, or CF command.

When CF personnel went to a CF medical facility the practitioner they saw most often was a physician, followed by a physician's assistant and nurse practitioner. This trend has not changed since 2004 (Table 6.2). There was a significant increase between 2004 and 2008/9 in the proportion of CF personnel who consulted a physiotherapist. In the same time period, significantly fewer consultations were reported with medical technicians and other types of practitioners.

Table 6.2: Type of Health Care Practitioner Seen at CF Health Clinics by Survey Year [θ]

Type of Practitioner	2004 % (95% CI)	2008/9 % (95% CI)	p value
Physician	57.9% (55.8-59.9%)	58.3% (55.8-60.7%)	ns
Physician's assistant	17.0% (15.4-18.5%)	18.2% (16.3-20.1%)	ns
Nurse Practitioner	13.3% (11.9-14.7%)	14.0% (12.3-15.7%)	ns
Physiotherapist	0.9% (0.5-1.3%)	5.6% (4.4-6.7%)	$p \leq 0.001$
Other	5.7% (4.7-6.7%)	3.2% (2.3-4.1%)	$p \leq 0.001$
Medical Technician	3.5% (2.8-4.3%)	1.8% (1.1-2.4%) †	$p \leq 0.001$
Don't know	0.8% (0.5-1.2%)	0.6% (0.2-1.0%) †	ns

θ Age and sex standardized to the 2008 CF population

† Fewer than 20 observations, values may be unstable; interpret with caution

Patient perceptions about whether a health care provider addresses the necessary health concerns during an appointment are one aspect of care which influences patient satisfaction. Respondents who indicated that they had used a CF medical facility were asked whether they felt that the practitioner addressed all their concerns in the allotted appointment time.

Table 6.3 shows that in 2008/9 the majority of personnel reported that their practitioner did address all of their concerns. The proportion of persons who report having their concerns addressed has increased significantly since 2004, suggesting that patient satisfaction with care has improved. There were no statistically significant differences in whether health concerns were addressed in the appointment time by sex, rank, age, deployment history in the last two years, or base.

Table 6.3: Satisfaction with Health Care Practitioner and Receipt of Test Result by Year of Survey θ

Item	2004 % (95% CI)	2008/9 % (95% CI)	p value
Concerns addressed in appointment	83.7% (82.0-85.4%)	87.8% (86.0-89.6%)	p = 0.001
Test or procedure results received within given time frame	76.4% (74.4-78.4%)	84.6% (82.3-86.9%)	p ≤ 0.001

θ Age and sex standardized to the 2008 CF population

There was also a significant improvement since 2004 in the proportion of patients who have received their test or procedure result in the time frame provided. There were no significant differences between the age, rank, command, or deployment status of the respondent and the receipt of medical test results within an appropriate time period.

An examination of patients' views on the tendency to receive test results in an appropriate time frame across the eight largest bases showed that patients at CFB Gagetown (61.3%) received their test results within a given time frame less often and patients at CFB Valcartier (94.1%) more often than patients at CFSU-Ottawa-NDHQ (85.6%).

Continuity of Care

One of the goals of the Primary Care Renewal Initiative (PCRI) was to improve the continuity of patient care. Continuity of care was measured by asking all respondents about the importance of seeing the same medical practitioner or the same group of practitioners each time medical attention or follow-up was needed, and how often they saw the same medical personnel for these appointments.

This may not represent a true indication of continuity of care, as the goal of PCRI was to ensure that CF personnel were seen at the same Care Delivery Unit (CDU) at each visit rather than the same practitioner.

Figure 6.1 shows that the majority of CF personnel felt that seeing the same practitioner or group of practitioners each time they needed medical attention was very important. Significantly fewer respondents in 2008/9 (55.8%) reported that seeing the same practitioner or group of practitioners was very important compared to 2004 (61.7%).

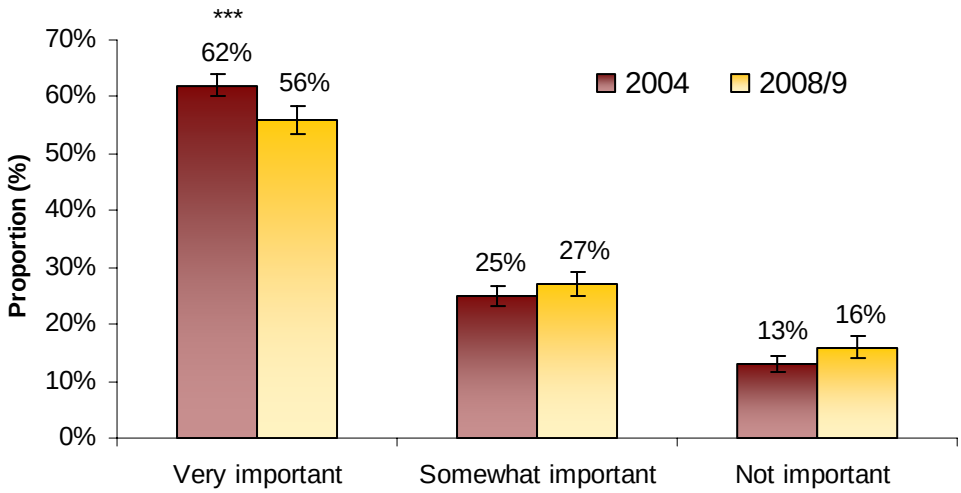

Figure 6.1: Importance of Seeing the Same Medical Practitioner or Group of Practitioners at Each Visit [θ]

θ Age and sex standardized to the 2008 CF population

*** $p \leq 0.001$ versus referent group

The reason for this decrease could be related to the relatively recent incorporation of collaborative care into CF health clinics. This inter-disciplinary approach to patient care, whereby patients are more likely to see more than one type of health care practitioner at each visit, may reflect some early successes in the adoption of a 'team-based' model of health care.

Females, older CF personnel and NCMs were more likely to report that seeing the same practitioner or group of practitioners is very important (Table 6.4). Air Force personnel were significantly less likely to report that seeing the same medical practitioner or group of practitioners at each visit is 'very important' compared to Army personnel. Whether one had deployed overseas in the last 2 years was not related to ratings of importance for consistently having the same health provider/group of practitioners.

In 2008/9, 21.7% reported to have seen the same medical personnel 'always', 61.9% reported 'sometimes', and 16.4% reported 'never'. There were no statistically significant differences in the age and sex standardized estimates of the frequency of visits during which the same medical personnel was consulted between 2004 and 2008/9.

Table 6.4: Percent of Respondents who Reported that Seeing the Same Practitioner or Group of Practitioners at Each Visit was 'Very Important' by Sex, Age Group, Rank and CF Command

Variable	Category	% (95% CI)	p value
Sex	Male	53.8% (50.5-57.1%)	p ≤ 0.001
	Female	69.4% (66.1-72.8%)	
Age Group	18 to 29	42.2% (34.4-50.5%)	Ref
	30 to 39	55.2% (48.9-61.3%)	p = 0.02
	40 to 49	65.6% (60.4-70.5%)	p ≤ 0.001
	50 to 60	69.0% (57.4-78.6%)	p ≤ 0.001
Rank	NCM	58.8% (54.4-63.1%)	p ≤ 0.001
	Officer	47.9% (43.7-52.1%)	
CF Command	Army	58.2% (52.4-63.8%)	Ref
	Air Force	45.2% (37.5-53.1%)	p ≤ 0.01
	Navy	53.6% (44.0-62.9%)	ns
	Other	65.1% (58.3-71.4%)	ns

At each visit, females (33.7%) saw the same medical personnel 'always' more often than males (19.9%) (Figure 6.2). Correspondingly, significantly fewer females (56.2%) reported seeing the same professionals 'sometimes' compared to males (62.8%).

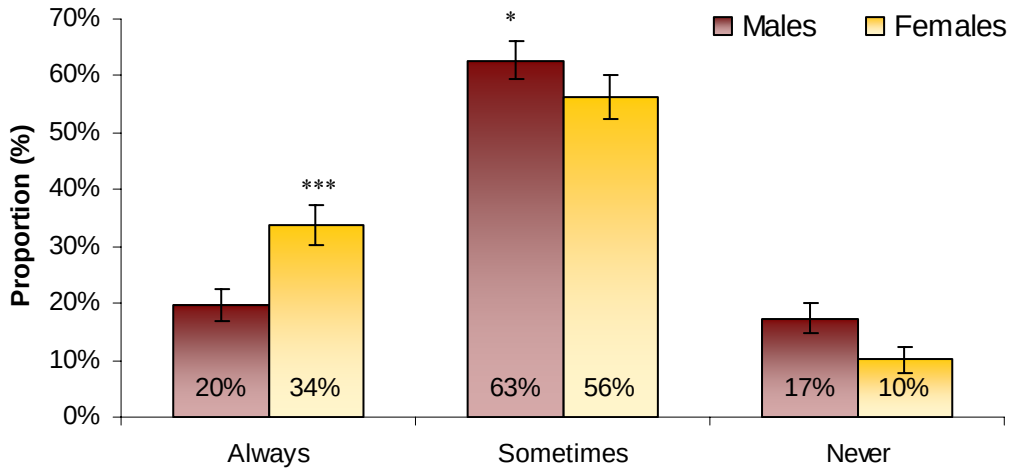

Figure 6.2: Frequency of Visits to the Same Medical Practitioner When Requiring Medical Attention by Sex of Respondent, HLIS 2008/9
* p ≤ 0.05 versus referent group, *** p ≤ 0.001 versus referent group

The tendency to see the same medical personnel at each visit to a CF clinic increased with an increase in age. Eighteen to 29 year olds (18.3%) were less likely to always see same health professional at each visit compared to 50 to 60 year olds (35.7%). Those in

the youngest age group (24.6%) were also more likely to report that they never see the same practitioner at each visit compared to 40 to 50 year olds (10.9%) and 50 to 60 year olds (8.0%). There were no significant differences in whether one saw the same medical personnel at each visit between NCMs and Officers, the different CF Commands or whether one had deployed overseas in the past two years.

Canadian Forces Health Services Hours

Satisfaction with the hours of health services is an important aspect of accessibility of health care. In the HLIS 2008/9, this domain was measured by asking whether the hours of service at the CF clinic met their needs. The vast majority (85.5%) felt that the hours of service at their health care clinic met their needs. This percentage has increased significantly since 2004 (82.3%; p=0.003). There were no significant differences in whether clinic hours met the needs of CF personnel by sex, age, rank, CF Command, or deployment history.

The 14.5% of CF personnel who indicated that the hours of the clinic did not meet their needs were asked when they would like the clinic to be open (Figure 6.3). The most common time that respondents would have liked to have a CF clinic open was on the weekends (52.8%), followed by during the evening (50.4%), and early in the morning (24.9%). Some CF members preferred the clinics to be open always (6.5%), and 4.6% wanted them to be open during all work hours. A smaller proportion indicated that they would prefer to have sick parade open all the time (2.6%).

There were no statistically significant differences in the hours respondents would like the clinic open between the HLIS 2004 and HLIS 2008/9. Considering the elapsed time between the HLIS 2004 and 2008/9, this observation appears to be quite consistent.

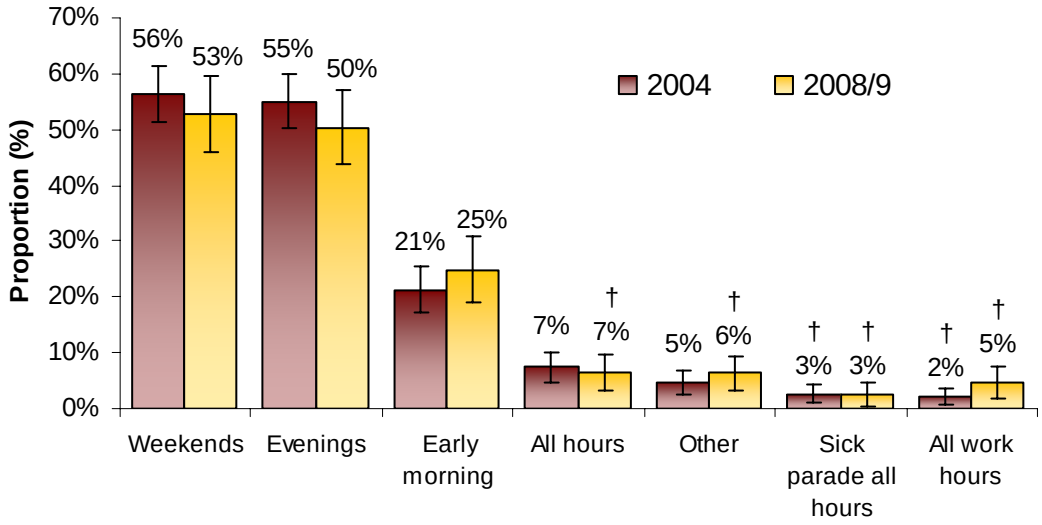

Figure 6.3: Preferred Hours of Service for CF Medical Clinics, HLIS 2004 and 2008/9 θ

θ Age and sex standardized to the 2008 CF population

† Fewer than 20 observations, values may be unstable; interpret with caution

The vast majority of the CF personnel reported that the hours of the CF health clinics met their needs; however, approximately 15% would have preferred alternate clinic hours. If changes to clinic hours are to be extended, then increasing the number of hours on weekends and in the evening would be the most helpful to CF personnel.

Health Services for Routine, Ongoing and Non-Urgent Health Problems

Wait time for appointments for routine non-urgent health care problems (such as blood pressure follow-up) is another important indicator of accessibility and quality of a health care system. Respondents were asked to report, on average, how long it takes them to get an appointment for this kind of health problem at CF Health Services (Figure 6.4).

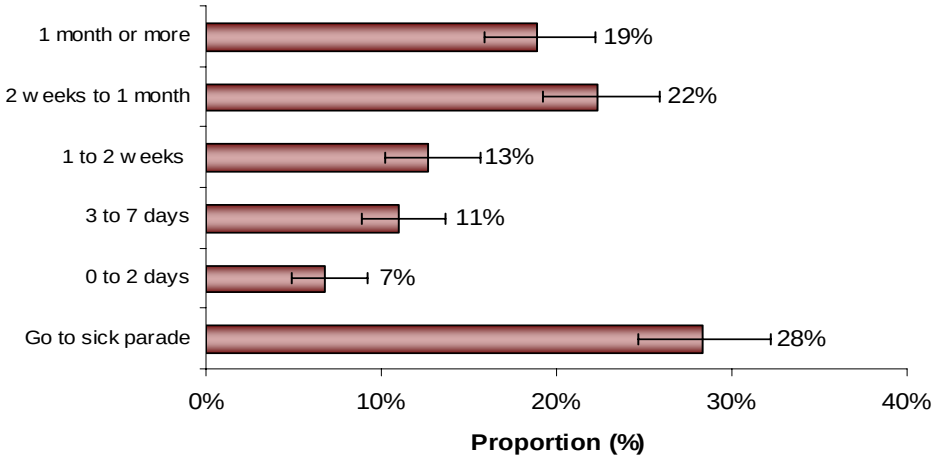

Figure 6.4: Self-Reported Wait Times for a Routine, Ongoing and Non-Urgent Health Problem at CF Health Services

It was common for CF personnel to use sick parade (28.3%) rather than wait for an appointment for a routine health problem. The most common wait time for a routine appointment was between two weeks and one month (22.4%); the second most common time was one month or more (18.9%).

In total, 54% of CF Regular Force waited over 7 days for an appointment for routine or ongoing care. Of those in the non-military Canadian population that needed routine or ongoing care, 31% waited over 7 days for an appointment for routine or ongoing care (CIHI 2009). It is critical to note that direct comparison between these two health service measurements is not recommended due to differences in the underlying population structures, geographic variations, and the population prevalence of comorbidities.

Figure 6.5 illustrates that just under half (42.9%) of the CF were very satisfied or satisfied with the wait time for routine ongoing and non-urgent health care need. 31.2% felt neutral about the wait time, and 25.9% reported feeling dissatisfied or very dissatisfied with the wait time.

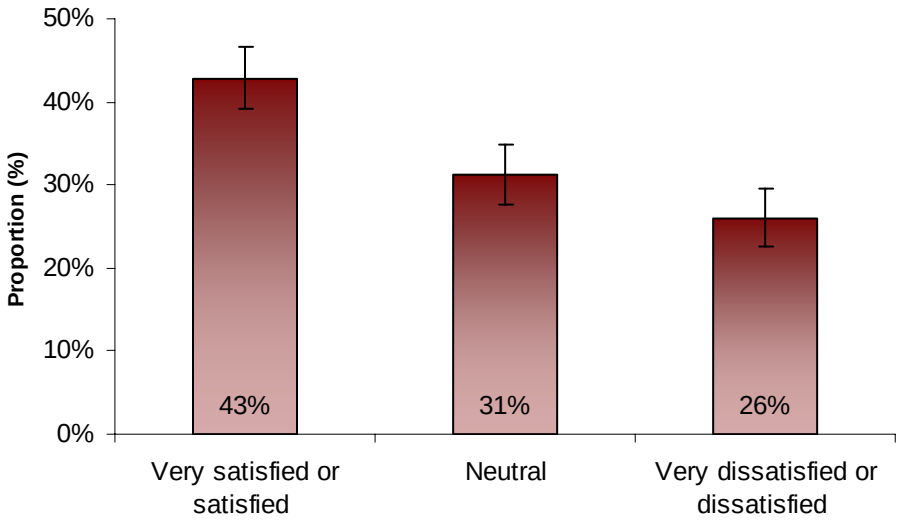

Figure 6.5: Satisfaction with Wait Time for Routine, Ongoing and Non-Urgent Health Problem at CF Health Services

Respondents were asked their opinion on what would be a reasonable maximum amount of time to wait to get an appointment for routine and ongoing non-urgent health problems (Figure 6.6).

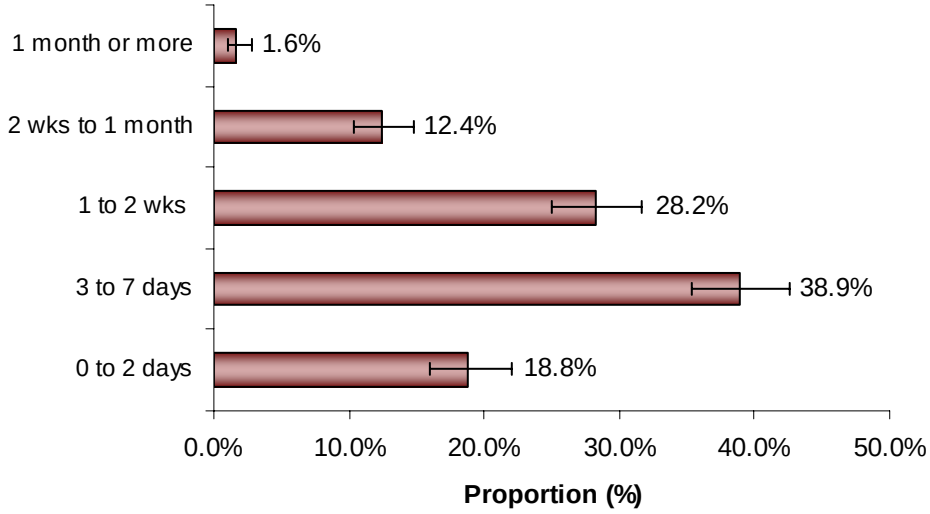

Figure 6.6: Maximum Amount of Time to Reasonably Wait for a Routine, Ongoing and Non-Urgent Health Problem at CF Health Services

Most of the CF (85.9%) would prefer to have a wait time for routine and non-urgent problems of no longer than two weeks. However, 41% reported *actually* waiting more than this period of time in the HLIS 2008/9. Hence, there is a substantial proportion of the CF who report having had a lengthy wait for health care and who are not satisfied with this duration.

Knowledge of Health Services

Almost all CF personnel (93.8%) knew where to seek help in an emergency. This proportion has not changed significantly since 2004. There were no significant differences in knowing where to get help in a medical emergency according to the sex of the respondent.

However, only a third (34.4%) of CF personnel were aware of the CF Health Info line; this too has also not changed significantly since 2004. In 2008/9 there was no significant difference between the proportion of males (33.4%) and females (39.3%) who were aware of this service.

In 2008/9, 28.3% knew there was an intranet web site that offered information on CF Health Services; of those who knew about the web site, 35.5% had visited the site. The proportion who knew about the web site has not changed significantly since 2004 (24.5%); however, there was a statistically significant increase in the percentage of respondents who have visited the site since 2004 (20.9%). Females (54.1%) were more likely than males (32.8%) to have visited the CF Health Services website.

Quality and Availability of Care

Beginning in 2008/9, patient perceptions of quality of care and availability of care at both their base and the CF in general were measured using the HLIS. Overall, respondents rated the quality and availability of health care as 'good' most often (Figures 6.7 and 6.8).

Over half (67.3%) of respondents rated the quality of health care services in the CF as excellent (13.5%) or good (53.8%); 26.5% rated it as fair and 6.6% as poor. The same trend was apparent for evaluations of the quality of health care services at the respondent's base/wing or formation. 18.2% reported that the quality of health care services at their base was excellent; the majority (52.4%) found it to be good, 23.1% thought it was fair and 6.4% reported that the quality of care received was poor.

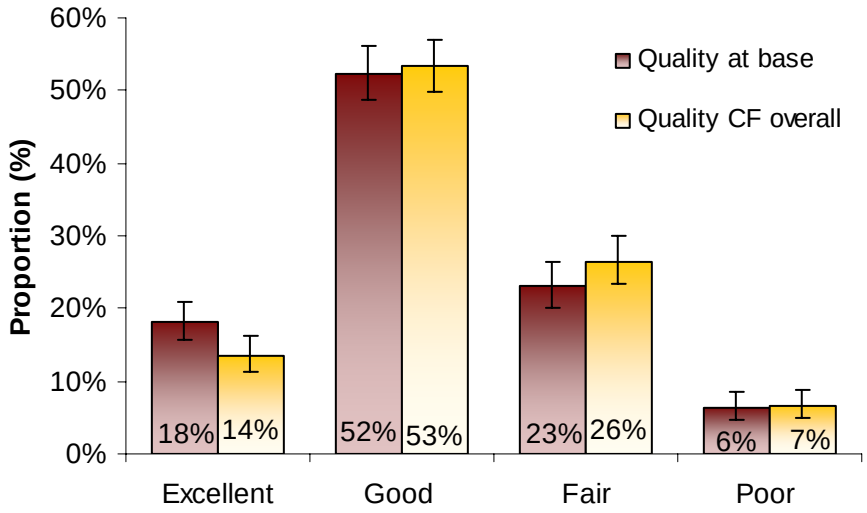

Figure 6.7: Ratings of Quality of CF Health Care Services at the Current Base, Unit or Formation of the Respondent and for the CF in General, HLIS 2008/9

Availability of health care services refers to whether the service exists and is accessible to patients, and is typically related to wait time. Of all personnel, 13.1% rate the availability of health care services in the CF as excellent, 51.7% thought it was good, 27.4% felt the availability of services was fair and 7.8% felt that the availability of services was poor. Similarly, over two-thirds of respondents felt that the availability of health care services at their current base was excellent or good (66.6%), and one-third (33.4%) reported it be fair or poor.

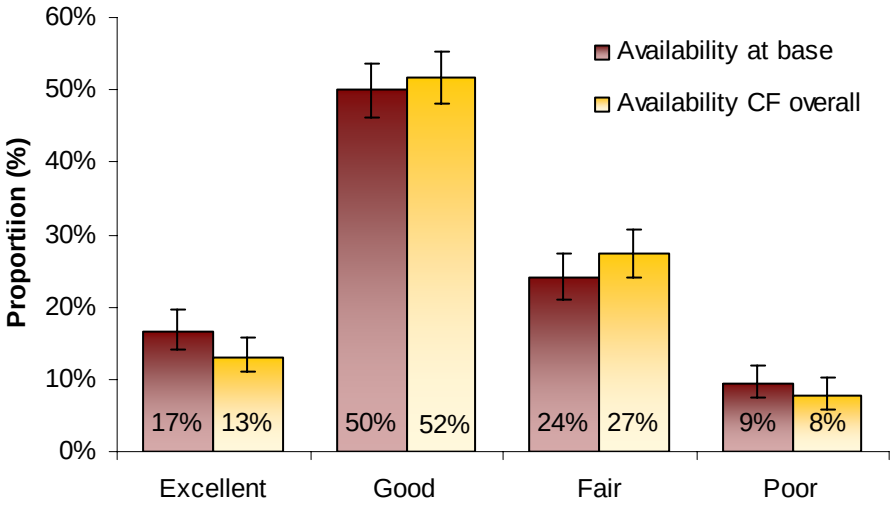

Figure 6.8: Ratings of the Availability of CF Health Care Services at the Base, Unit or Formation of the Respondent, and for the CF in General. HLIS 2008/9

Consultations with Medical Specialists

Access to health care specialists is an important factor in providing a full spectrum of quality care. One commonly used indicator of access to health care services is the amount of time that a person must wait between the initial referral by a physician to the appointment time with the required specialist. Other measures of access include the individual satisfaction with, and perceived barriers to, obtaining speciality care.

In the HLIS 2008/9, a medical specialist was defined as a health care provider such as a psychiatrist, surgeon, cardiologist or urologist. Just under half of the CF required a visit to a medical specialist for a diagnosis or consultation in the 12 month prior to completing the survey (45.4%). This percentage is much higher than the percentage of people who reported to have visited a specialist in Canada in 2005 (27%) (Nabalamba 2007).

There were significant differences in the requirement of specialist care across sex and age groupings (Table 6.5). Commensurate with the non-military population, females in the CF (59.9%) were more likely than males (43.2%) to require a consultation with a specialist (Carriere, 2010). The tendency to require specialist care also increased with age, with the lowest visitation rates among those aged 18-29 (35.1%) and the highest in the 50-60 age group (62.1%).

There were no significant differences in medical specialist consultations between NCMs and Officers, CF commands, deployment overseas in the previous 2 years, or base/wing of the respondent.

Table 6.5: Consultation with a Medical Specialist in the Previous 12 Months, by Sex and Age Group, HLIS 2008/9

Variable	Category	Prevalence (%)	p value
Sex	Male	43.2% (41.9-49.1%)	$p \leq 0.001$
	Female	59.9% (56.4 – 63.3%)	
Age Group	18 to 29	35.1% (27.4-43.6%)	Ref
	30 to 39	46.5% (40.2-52.8%)	$p = 0.03$
	40 to 49	49.3% (43.9-54.7%)	$p = 0.006$
	50 to 60	62.1% (50.5-72.5%)	$p \leq 0.001$

Barriers to obtaining specialist health care services may indicate structural, operational, or geographic limitations to care. In terms of specialist care, significant barriers were reported in 25.0% of the 45.5% of respondents who indicated that they had obtained specialist care in the preceding 12 months. In comparison, the percentage of people who required specialist care and had difficulties obtaining it in New Brunswick in 2007 was 28.4% (CCHS 4.1 PUMF). There were no significant differences in barriers to specialist care across sex, age, rank, command, overseas deployment in the last two years or base of service of the respondent.

Respondents were queried as to the type of difficulties they experienced when trying to obtain specialist care (Figure 6.9). The most commonly reported barrier to specialist care was waiting too long between the initial referral and the actual appointment (54.8%). This barrier was also the most commonly reported barrier in the Canadian population in 2005; 68% of the population had difficulties acquiring specialist services because the wait for an appointment was too long (Statistics Canada, 2005). The second and third most commonly reported barriers in the CF were difficulties getting an appointment with the specialist (49.3%), and difficulties getting a referral from the primary care provider (34.5%). In Canada in 2005, the second most common barrier to specialist care was having difficulties getting an appointment (Statistics Canada, 2005). These results suggest that CF personnel face similar barriers to attaining care by medical specialists as non-military Canadians.

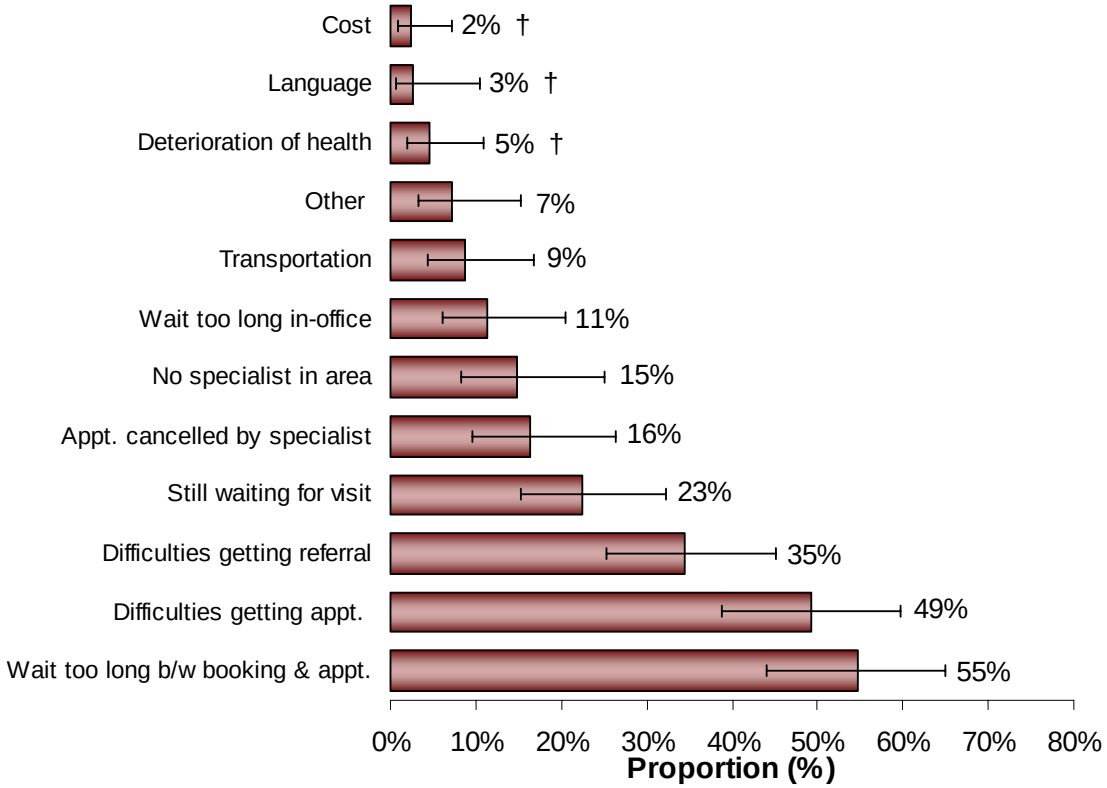

Figure 6.9: Barriers to Obtaining Health Care by Medical Specialists in the CF Health Services, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

Note: Barriers with estimates less than 1% are not shown and include: personal/family responsibilities

Just over half (51%) waited less than a month for specialist care, 34% waited one to three months and 16% waited more than three months (Figure 6.10). In 2007, 46% of civilian patients who required a consultation with a specialist waited less than a month, 40% waited one to three months and 14% waited more than three months (Carriere, 2010). Wait times for specialist care in the CF appear similar to the Canadian population, with slightly more people in the CF getting an appointment within a month from the date of referral.

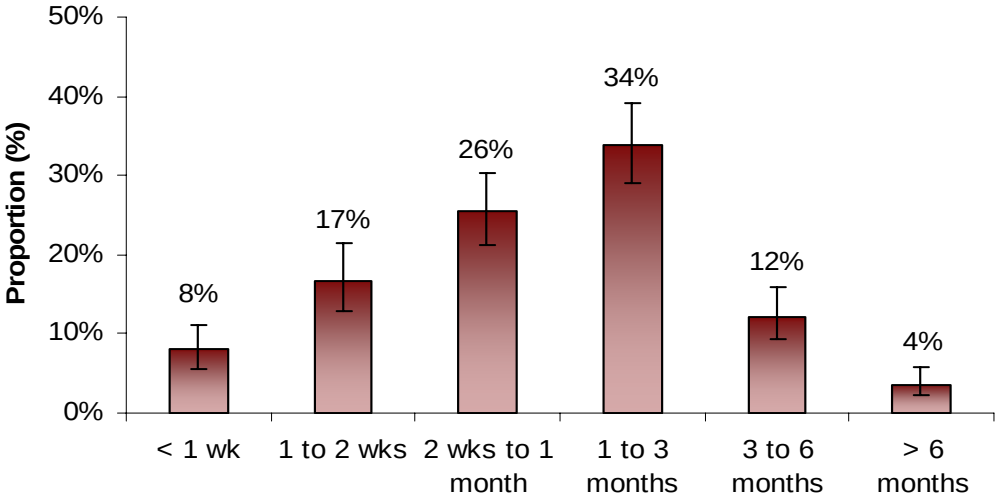

Figure 6.10: Wait Time for an Appointment for a Diagnosis or Consultation with a Medical Specialist in the CF Health Services, HLIS 2008/9

Satisfaction with the amount of time spent waiting to see a specialist is illustrated in Figure 6.11. Just over half of the respondents (53%) were satisfied or very satisfied with the wait time. However, close to one-quarter of the CF felt dissatisfied or very dissatisfied with the amount of time they had to wait for that appointment.

Note that although the CF has some clinical specialists, the vast majority of specialty care must be provided through the respective provincial or territorial health care systems. Neither DND nor the CF has any control over the availability of these specialty services across the country.

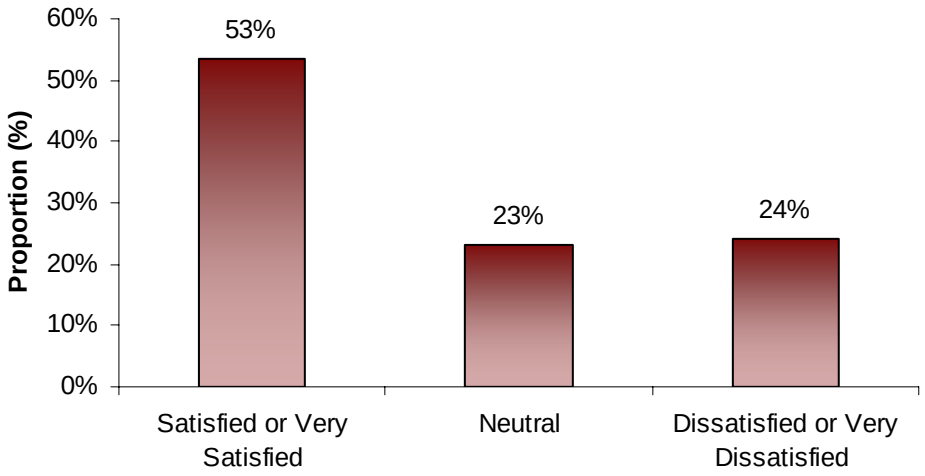

Figure 6.11: Satisfaction with Wait Time for a Consultation with a Medical Specialist in the CF Health Services, HLIS 2008/9

Respondents were also asked what would be a maximum amount of time to reasonably wait for a specialist appointment through CF health services. Waiting between two weeks and one month was most commonly reported as a reasonable maximum wait time (42%) (Figure 6.12). Approximately 50% of respondents who required a visit to a medical specialist in the last 12 months had to wait between one and six months for their appointment; however, only 22% felt that such a time period was a reasonable wait time for specialty care.

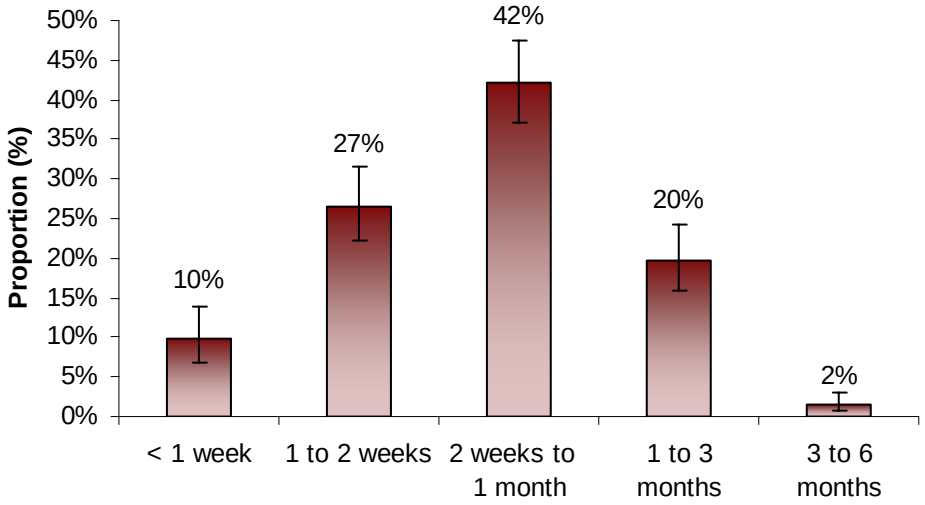

Figure 6.12: Maximum Amount of Time to Reasonably Wait for an Appointment with a Medical Specialist in the CF Health Services, HLIS 2008/9

Accessing Civilian Care

Survey respondents were asked whether they had visited a civilian physician in the past 12 months at their own expense (excluding when they had been referred by a CF clinic or needed after-hours care). Overall, the age and sex standardized estimates indicated that 7.6% of respondents had visited a civilian physician in 2008/9. This estimate did not differ significantly from the 2004 estimate. There were also no significant differences in whether one accessed civilian care by sex, age group, rank, deployment history in the past two years, CF command, or base of service of the respondent in 2008/9.

The various reasons reported for CF personnel to seek health care from a civilian practitioner are presented in Table 6.6.

Estimates from 2004 and 2008/9 show that of the 7.6% of CF personnel who accessed a civilian physician in the past 12 months, one of every five persons felt that the wait time for getting an appointment through CF Health Services was a deciding factor.

Fewer than one in ten reported in 2008/9 that they visited a civilian physician because they felt the care received in CF Health Services would be inadequate. Fewer persons reported confidentiality and job security concerns as reasons for seeking care from a civilian physician.

Table 6.7 shows the percent of the total CF sample that went to various civilian health care locations for after-hours or weekend care. Approximately 19.5% of the CF population reported accessing one of the types of civilian care. The emergency department was the most frequently chosen response, followed by civilian walk-in clinics. Fewer people received after-hours or weekend care at a family doctor's office (1.8%) or as an inpatient in the hospital (0.2%).

Table 6.6: Reasons for Visiting a Civilian Physician in the Previous 12 Months, HLIS 2008/9 θ

Item	Overall % (95% CI)	
	2004	2008/9
Waiting time	7.2 % (3.3-11.1%)	20.1% (12.8-27.4%) †
Felt care would be inadequate	27.8% (21.0-34.6%)	8.2% (3.2-13.2%) †
Transportation problems	4.1% (1.1-7.1%) †	4.8% (0.9-8.7%) †
Language problems	---	---
Personal or family responsibilities	5.8% (2.2-9.3%) †	4.3% (0.6-8.0%) †
Concerned about confidentiality	11.8% (6.9-16.6%)	5.5 % (1.3-9.6%)
Concerned if something is wrong, job in jeopardy	10.9% (6.2-15.7%)	3.7% (0.3-7.2%) †
Deployed or posted	8.9% (4.6-13.2%) †	7.8% (2.9-12.7%) †
Not funded through the CF	2.7% (0.2-5.2%) †	1.7% (0.0-4.0%) †
Other	27.8% (21.0-34.6%)	25.7% (17.7-33.6%)

θ Age and sex standardized to the 2008 CF population

† Fewer than 20 observations, values may be unstable; interpret with caution

--- Cell counts suppressed due to insufficient numbers

Table 6.7: Proportion of CF Personnel who Visited Various Types of Civilian Facilities for After-Hours or Weekend Care.

Type of after-hours / weekend civilian care	Proportion (%) (95% CI)
Emergency department	12.2% (10.0-14.9%)
Civilian walk-in clinic	4.6% (3.3-6.2%)
Family doctor's office	1.8% (1.0-3.0%)
In-patient hospital care	0.2% (0.1-0.4%) †
Other	0.7% (0.3-1.7%) †

† Fewer than 20 observations, values may be unstable; interpret with caution

Periodic Health Assessment

CF personnel under the age of 40 years are required to complete a periodic health assessment (PHA) every 5 years. In 2008/9, 93.6% were receiving their PHA within this time frame; this estimate is not statistically different from the 2004 estimate of 92.2%.

Personnel who are 40 years of age or older should be receiving a periodic health assessment every 2 years. In 2008/9, significantly more people 40 years or older completed their PHA in the last two years (78.7%) compared to 2004 (72.7%) (Figure 6.13). However, even with this increase, one of every five persons in the CF older than 40 years of age did not have a PHA within the two years prior to 2008/9.

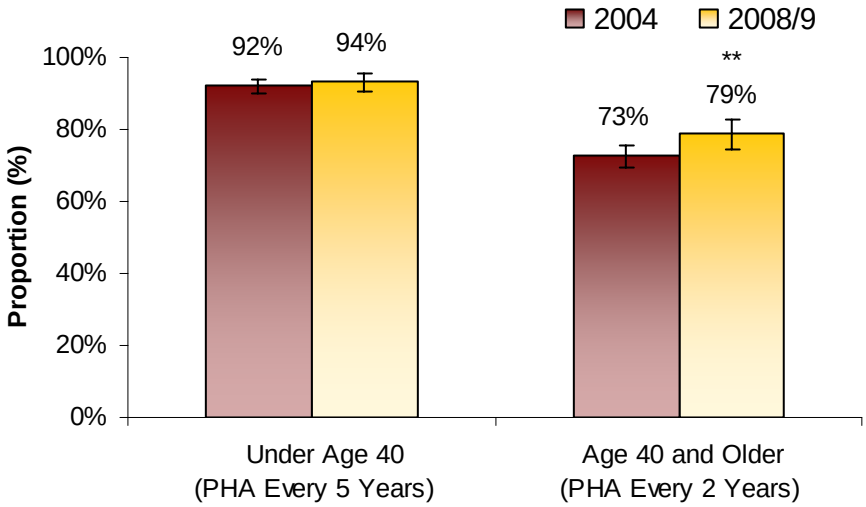

Figure 6.13: Percentage of CF Personnel who had a PHA Within the Recommended Time Frame, by Age Group, HLIS 2004 & 2008/9

The reasons for PHAs not being carried out in the required time frame for those aged 40 and older is unknown. On the provider side, there is a considerable waiting period on some bases for appointments and this may affect the ability to complete a PHA. On the patient side, the incorporation of reminder systems, call-back systems in the electronic medical record and providing information regarding the importance of health screening for those over age 40 may improve adherence to PHA guidelines.

Colon Cancer Screening

It is recommended that persons age 50 and over be screened for colon cancer every two years with a fecal occult blood test (FOBT). In 2008/9, 56.7% of those who were 50 years of age or older were advised to have a FOBT to test for cancer of the colon. This proportion has not changed significantly since 2004 (49.5%). Whether one was advised to have a FOBT did not differ significantly between males and females, NCMs and Officers, or overseas deployment in the last two years. Of those who were advised to have a FOBT, 77.7% actually completed the test at that time.

Therefore, 43.7% of those aged 50 or older completed a FOBT since their last medical exam (56.7 % recommended for FOBT multiplied by 77.7% completed). Whether one completed the actual test did not differ by sex, rank or whether one had deployed overseas in the last two years or not. In the general Canadian population, approximately 40% of those aged 50 or older had a FOBT (Wilkins 2009). Comparisons between the two populations must be made with caution, however, since the vast majority of persons leave the CF at age 60 or earlier; the impact of this truncated population distribution on the comparison of FOBT uptake is unknown.

Sexually Transmitted Infections

In the 12 months prior to completing the survey, 11.3% of the CF reported being tested for sexually transmitted infections (STIs). Females were more likely than males to get tested for STIs, as were Officers compared to NCMs (Table 6.8). Using the youngest age group as a reference group, those in either the 40 to 49 or 50 to 60 age groups were less likely to have been tested. Compared to persons who identified themselves as married or in a common law relationship, CF personnel who were single, widowed, divorced or separated were more likely to have STI testing. There were no statistically significant differences in STI testing by CF command, deployment history in the past two years, primary language or base of service.

Table 6.8: Percent of CF Personnel who were Tested for Sexually Transmitted Infections in the Previous 12 Months, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	8.7% (6.7-11.1%)	$p \leq 0.001$
	Female	28.1% (25.1-31.4%)	
Age Group	18 to 29	16.6% (12.3-22.0%)	Ref
	30 to 39	12.0% (9.2-15.7%)	ns
	40 to 49	8.3% (5.9-15.7%)	$p = 0.002$
	50 to 60	2.5% (1.0-6.1%) †	$p \leq 0.001$
Rank	NCM	10.0% (7.9-12.5%)	$p = 0.004$
	Officer	15.7% (12.6-19.4%)	
Marital Status	Married / Common Law	7.8% (6.2-10.0%)	Ref
	Widowed / Divorced / Separated	25.5% (16.8-36.7%)	$p \leq 0.001$
	Single	17.7% (12.9-23.9%)	$p \leq 0.001$

† Fewer than 20 observations, values may be unstable; interpret with caution

All respondents were asked to identify any STIs they had been diagnosed with or treated for in the 12 months prior to the HLIS 2008/9. Overall, for most STIs, less than 1% of the CF population reported being diagnosed with or treated for STIs in the previous 12 months. Genital warts / HPV, genital herpes and chlamydia were the most commonly

diagnosed and treated STIs; the same proportion (1.1%) were treated for or diagnosed with genital warts/HPV and genital herpes. The proportion who reported that they were diagnosed or treated for chlamydia, HIV, syphilis, hepatitis B, gonorrhea, and pelvic inflammatory disease (PID) was very small and thus, those estimates are not reported here since they may be unreliable. It is likely that these estimates under represent the true proportion of STIs in the CF, due to both social stigma and the fact that persons with STIs may remain asymptomatic, and might thus delay or avoid a confirmative diagnosis.

Sexual Behaviours

The majority of the CF population reported having one sexual partner in the last 12 months (79.3%). In order of decreasing frequency, 8.4% reported having two to three sexual partners, 6.3% had no sexual partner, 3.2% had four to five sexual partners and 2.8% had more than five sexual partners.

Table 6.9 describes the number of sexual partners CF personnel reported having in the last 12 months by sex, rank and deployment history of respondents. Males were significantly more likely than females to have 4 or more sexual partners in the past 12 months. NCMs were significantly more likely than Officers to have four or more sexual partners.

Those who had deployed overseas in the past 2 years were more likely (12.2%) to have either 2 or 3 sexual partners in the past 12 months than those who were not deployed (7.2%). However, there was no statistical difference between deployment and non-deployed persons and the tendency to report having 4 or more sexual partners.

Table 6.9. Number of Sexual Partners in the Past 12 Months by Sex, Rank, and Deployment History

Variable	Category	Number of Sexual Partners (12 months) Proportion (%) (95%)		
		0 to 1	2 to 3	4 or more
Sex	Male	85.6% (82.3-88.3%)	8.0% (6.0-10.6%)	6.5% (4.6-9.1%)
	Female	85.6% (83.0-88.0%)	11.1% (9.1-13.6%)	3.2% (2.1-4.9%)
	p value	ns	ns	$p \leq 0.01$
Rank	NCM	84.8% (81.3-87.8%)	8.4% (6.3-11.2%)	6.7% (4.6-9.6%)
	Officer	88.0% (84.5-90.8%)	8.3% (6.0-11.6%)	3.6% (2.3-5.7%)
	p value	ns	ns	$p \leq 0.05$
Deployed in Previous 2 Years	Yes	81.3% (77.1-84.8%)	12.2% (9.2-16.0%)	6.5% (4.3-9.7%)
	No	86.9% (83.4-89.8%)	7.2% (5.2-10.0%)	5.9% (3.9-8.8%)
	p value	$p \leq 0.05$	$p \leq 0.05$	ns

Of those who reported having two or more sexual partners in the past 12 months, 22.0% reported as always having used a condom, 38.3% used a condom most of the time, 12.1% used a condom once in a while, 9.4% used a condom hardly ever and 18.2% never used a condom.

Given that four in five persons with two or more sexual partners in the past year are not using condoms on a consistent basis, it suggests that STI prevention strategies may be underused by CF personnel. Reinforcing health promotion messages and activities surrounding condom use and STI prevention should be considered a means of addressing this issue.

Oral Health

90% of persons in the CF rated the health of their teeth and mouth as very good, good or excellent (Table 6.10). Considerably fewer personnel rated their oral health as fair (8.2%) or poor (1.7%). These proportions were statistically similar to what was reported in the HLIS 2004.

Table 6.10. Self-rated Dental Health in 2004 and 2008/9 θ

Self-rated Dental Health	2004 % (95% CI)	2008/9 % (95% CI)
Excellent	13.6% (12.1-15.0%)	13.0% (11.4-14.6%)
Very Good	41.9% (39.8-43.9%)	40.7% (38.8-43.1%)
Good	34.1% (32.1-36.0%)	36.5% (34.1-38.8%)
Fair	9.3% (8.1-10.5%)	8.2% (6.8-9.5%)
Poor	1.2% (0.0-1.7%)	1.7% (0.0-2.3%)

θ Age and sex standardized to the 2008 CF population

Figure 6.14 shows that the majority of the CF (60.0%) reported that the health of their teeth, mouth and/or dentures have never negatively impacted their quality of life. Less frequently, dental health was reported to have impacted the lives of CF personnel hardly ever (26.1%), occasionally (11.1%), fairly often (2.2%), or very often (0.7%).

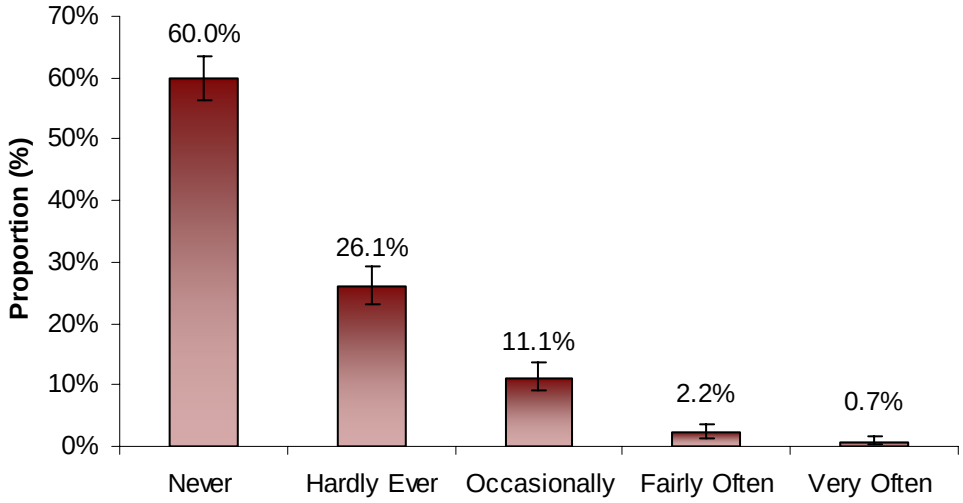

Figure 6.14: Self-Reported Decreases in Quality of Life Due to Problems with Teeth, Mouth or Dentures, HLIS 2008/9

Similarly, 59.9% reported that in the last 12 months they had never felt embarrassed or self-conscious about their teeth, mouth or dentures (Figure 6.15); 23.8% reported feeling hardly ever, 11.7% occasionally 2.9% fairly often and 1.8% reported feeling embarrassed or self-conscious very often.

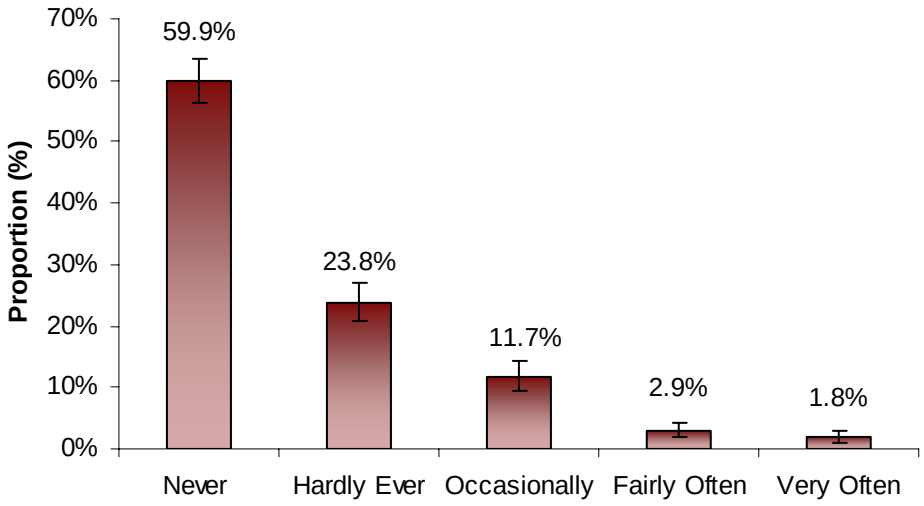

Figure 6.15: Frequency of Feelings of Embarrassment or Self-consciousness Due to Teeth, Mouth or Dentures, HLIS 2008/9

Table 6.11 shows the self-reported frequency of pain or discomfort in their teeth or gums over the last month. Since 2004, there was a significant increase in those reporting that they never experienced pain or discomfort in their teeth or and a corresponding statistically significant decrease in the number reporting that they rarely experienced pain or discomfort.

Table 6.11: Self-reported Frequency of Pain or Discomfort in Teeth or Gums $^{\theta}$

	2004 % (95% CI)	**2008/9 % (95% CI)**	**p value**
Often	2.2% (1.6-2.8%)	2.7% (2.0-3.5%)	ns
Sometimes	14.7% (13.2-16.1%)	15.0% (13.2-16.7%)	ns
Rarely	37.3% (35.3-39.3%)	31.3% (29.0-33.5%)	$p \leq 0.01$
Never	45.8% (43.8-47.9%)	51.0% (48.6-53.5%)	$p \leq 0.01$

θ Age and sex standardized to the 2008 CF population

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CHAPTER 7 ~ PHYSICAL ACTIVITY

"Military personnel must possess a higher degree of health and fitness than the general Canadian population to function in complex and demanding environments where strength and endurance could be the difference between success and failure of an operation."
~ General R.J. Hillier (Ret.), Chief of the Defence Staff

Physical activity is of particular relevance to the Canadian Forces since physical fitness is a key component of operational readiness (VCDS, 2005). CF personnel are required to be certified as medically fit, and physical fitness is a specific condition for career advancement.

The Health and Lifestyle Information Surveys are a valuable resource for benchmarking the progress of physical activity within the CF. Conceptual and cultural aspects of physical activity, including satisfaction with exercise facilities, perceptions of leadership, and risk factors related to injury during physical activity are not captured in medical records or human resource data. Accordingly, this chapter will explore the many dimensions of physical activity within the CF, including participation in sports and leisure, occupational physical activity, sedentary behaviours, sports-related injuries and physical fitness testing among CF personnel.

It must be emphasized that changes in the method of data collection between the HLIS 2004 and 2008/9 may have a particular influence on the reported rates of physical activity. In the former, the data collection cycle ran from April 15th to November 15th 2004 and from November 30th 2008 to November 30th 2009 in the latter. This change in format was instigated by the desire to examine the seasonal effects of physical activity on the health of CF personnel; later analyses will explore these topics in depth. However, for comparisons of physical activity levels made herein between 2004 and 2008/9, no seasonal adjustment has been made; the reader is advised to interpret such results with this caveat in mind.

Participation in Sport and Physical Activity

The HLIS 2008/9 collected information on the frequency and duration of participation in 35 different physical activities. Respondents also had the option to add a text response for activities that were not listed. These text entries were individually coded and either amalgamated within an existing category (e.g. 'tae kwon do' was combined with 'martial arts') or formed within an entirely new category of activity if warranted (e.g. snowshoeing, horseback riding, yoga / Pilates). Activities for which there were not enough responses to create a new category were grouped together under 'Other'. Figure 7.1 presents the proportion of CF personnel that participated in each physical activity at least once in the previous 4 months.

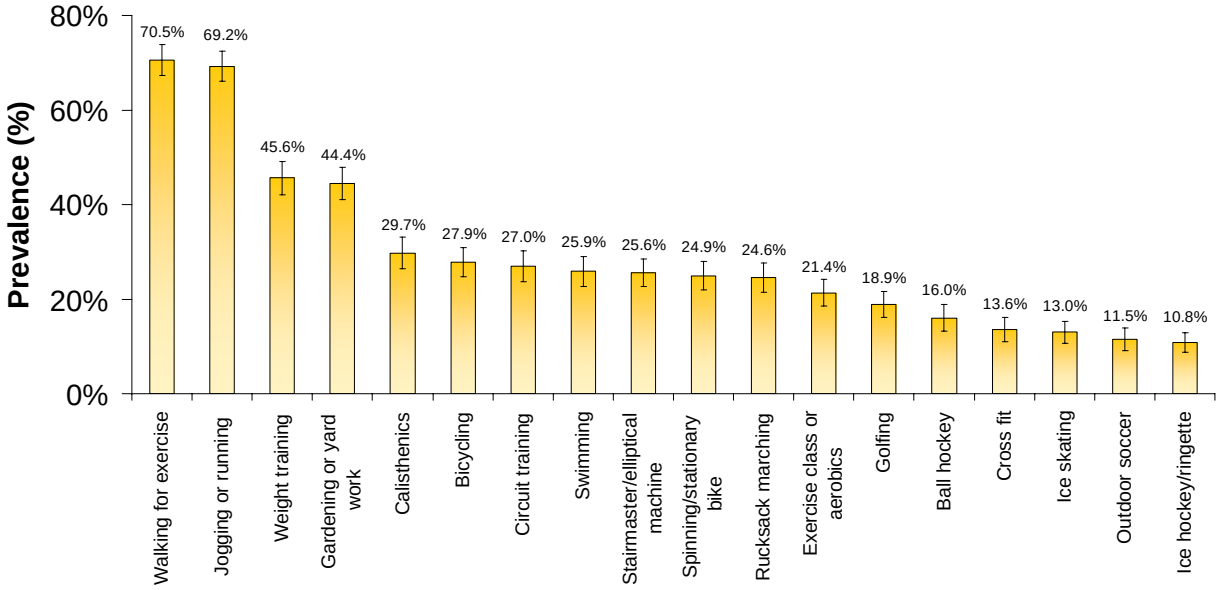

Figure 7.1: Participation in Select Physical Activities in the Previous 4 Months, HLIS 2008/9.
Note: Activities with participation rates less than 10% are not shown and include (in descending order of reported prevalence): rowing/kayaking/canoeing, tennis/squash/racquetball/handball/badminton, volleyball, baseball/softball, bowling, basketball, popular/social dance, indoor soccer, martial arts, downhill skiing, in-line skating/rollerblading, ultimate Frisbee, football/rugby, cross-country skiing, snowboarding, obstacle course, other, broomball, rock climbing, yoga, curling, hiking, snowshoeing, handball, sledding, sailing, horseback riding, badminton, trampoline, surfing, fencing, archery, billiards, boxing, fishing, hunting, lacrosse, and skateboarding.

The four most common physical activities (those with the highest proportion of CF personnel who reported participating in at least once in the last four months) include walking for exercise (70.5%), jogging or running (69.2%), weight training (45.6%) and gardening or yard work (44.4%).

Energy Expenditure from Physical Activities

Using the formula developed by the Canadian Fitness and Lifestyle Research Institute (CFLRI), the average daily energy expenditure per kilogram of body weight (kcal/kg/day) was calculated using the reported frequency of activity in the previous four months, and the average duration of the activity in minutes (CFLRI, 2007). Metabolic equivalencies (METs), a measure of physical work, were assigned to each activity based on the Compendium of Physical Activities Tracking Guide (Ainsworth, 2002). If more than one MET value was listed for a given activity (e.g. walking, walking briskly uphill), the listing that included the description 'general' or 'moderate effort' was chosen. In keeping with the methodology of the Statistics Canada Canadian Community Health Surveys, all activities coded as 'other' were assigned a MET value of four. Finally, daily energy expenditure was calculated by dividing the annual physical activity score by 365 days (Figure 7.2).

Individual activities were the only physical activities that reported daily energy expenditure greater than 0.15 kcal/kg/day. Team sports, such as hockey or soccer, presented much lower energy expenditures per activity when compared to individual activities (such as running or weight training).

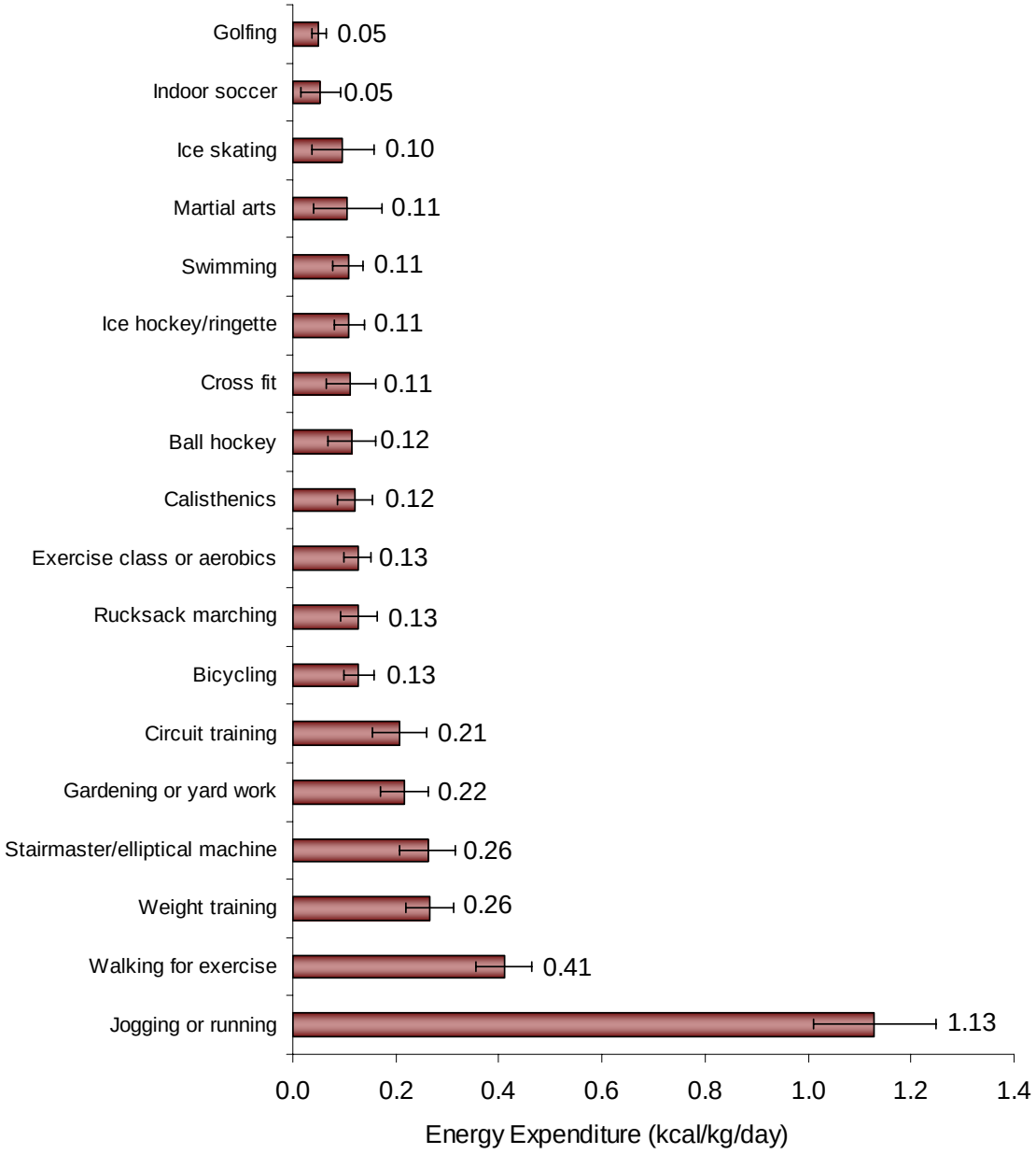

Figure 7.2: Mean Energy Expenditure (kcal/kg/day) for Physical Activities in the Previous 4 Months, HLIS 2008/9

Note: Activities with energy expenditures below 0.05 kcal/kg/day are not shown and include (in order of decreasing energy expenditures): tennis/squash/racquetball/handball/badminton, outdoor soccer, popular/social dance, rowing/kayaking/canoeing, basketball, in-line skating or rollerblading, football/rugby, volleyball, indoor soccer, downhill skiing, cross-country skiing, ultimate Frisbee, snowboarding, obstacle course, bowling, rock climbing, other, broomball, yoga, hiking, curling, snowshoeing, sailing, horseback riding, fencing, handball, sledding, badminton, and trampoline. No measurable energy expenditure was reported for archery, boxing, fishing, hunting, lacrosse, billiards, and skateboarding.

Level of Physical Activity

The total physical activity energy expenditure (kcal/kg/day) of CF personnel was then grouped into three categories:

a) Inactive: <1.5 kcal/kg/day, equivalent to walking less than 30 minutes a day

b) Moderately active: 1.5 to <3.0 kcal/kg/day, equivalent to walking 30 to 60 minutes a day

c) Active: ≥3.0 kcal/kg/day, equivalent to walking more than 60 minutes a day

As shown in Table 7.1, 31.1% of respondents were inactive, 21.9% were moderately active and 46.9% were active. The significant differences in the overall age- and sex-standardized rate of physical activity levels between the HLIS 2004 and 2008/9 surveys are shown graphically in Figure 7.3. Fewer CF personnel reported themselves as moderately active in 2008/9 compared to 2004. Correspondingly, a greater number of CF personnel were classified as inactive in 2008/9 compared to 2004. There was no significant change in the proportion of active CF personnel between 2004 and 2008/9.

Furthermore, physical activity tended to decrease with increasing age (Figure 7.4). There were no significant differences in activity levels across sex, rank, or CF Command.

Table 7.1: Comparison of Physical Activity Levels by Sex, HLIS 2004 and 2008/9 θ

Level of Activity	Year of Survey	Proportion (95% CI)			Overall p value
		Males	Females	Overall	
Active	2004	46.6% (43.9-49.3%)	41.3% (38.2-44.5%)	46.0% (43.9-48.0%)	ns
	2008/9	47.0% (43.8-50.3%)	46.3% (42.7-49.8%)	46.9% (44.5-49.3%)	
Moderately active	2004	26.3% (23.9-28.7%)	26.9% (24.1-29.7)	27.0% (25.2-28.8%)	p = 0.001
	2008/9	22.4% (19.7-25.1%)	18.8% (16.0-21.6%)	21.9% (19.9-23.9%)	
Inactive	2004	26.3% (23.9-28.7%)	31.8% (28.8-34.7%)	27.0% (25.2-28.9%)	p ≤ 0.001
	2008/9	30.6% (27.6-33.6%)	34.9% (31.5-38.3%)	31.1% (28.9-33.4%)	

θ Age and sex standardized to the 2008 CF population

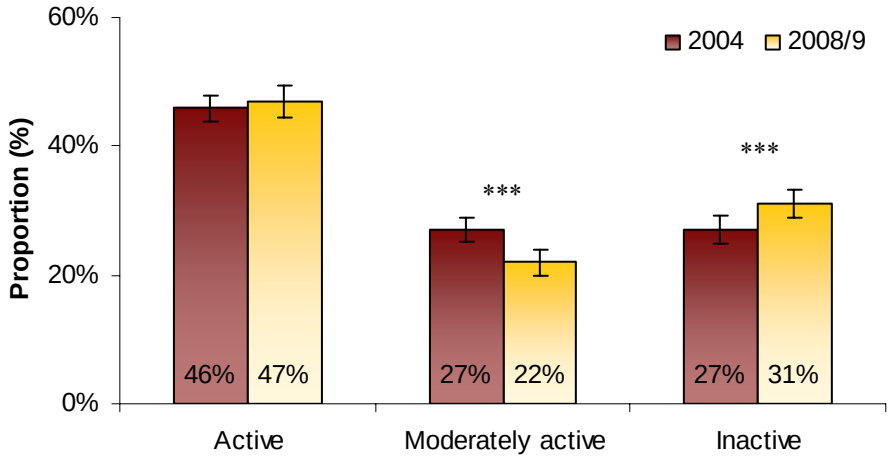

Figure 7.3: Physical Activity Level, HLIS 2004 & 2008/9 θ
θ Age and sex standardized to the 2008 CF population
*** p ≤0.001 versus referent group
Note: 2004 data was collected from April to November 2004, 2008/9 data was collected from November 2008 to November 2009; values are not seasonally adjusted.

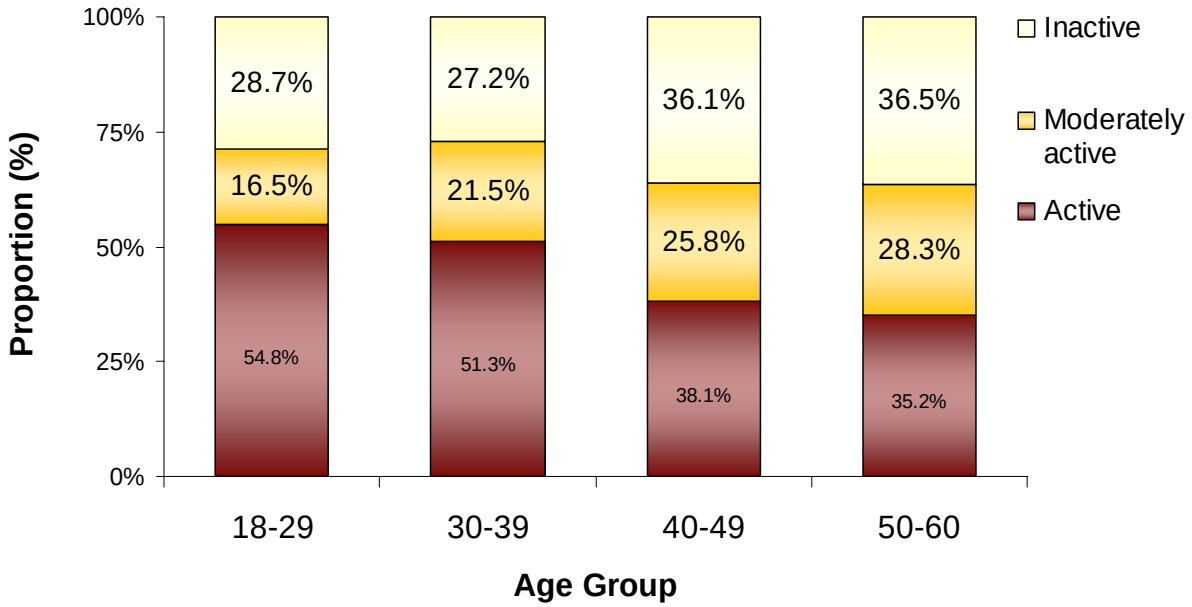

Figure 7.4: Distribution of Physical Activity Level by Age Group of Respondents, HLIS 2008/9

In 2005, Statistics Canada reported that 27% of Canadians were active in their leisure time (Gilmour, 2007). This Statistics Canada estimate is not directly comparable to the HLIS data because of temporal, demographic and methodological differences; however, it does suggest that the CF population may be more active than the non-military Canadian average. Data from the CFLRI website indicates that no significant change has occurred in the combined levels of moderate and active physical activity among Canadians since 2002.

Injuries Due to Physical Activity

Participation in physical activity brings with it the inherent risk of physical injury. In the HLIS 2008/9, the frequency of serious injuries suffered during various activities was queried. Once participation in a particular activity was determined, participants were asked if in the past year they injured themselves seriously enough during the activity to limit their normal activities for at least one week. Respondents were permitted to select all activities that applied. Note that the activity was based on the four months prior to survey completion, whereas the sport-related injury was based on a one year timeline. Thus, the prevalence of sport-related injury could exceed the rate of participation in the given sport; this could result in some spurious associations.

As per the reclassification procedure for participation in physical activities, any injury reported by the respondent in the 'Other' category of activity was realigned to an existing or newly created activity category as applicable. For instance, an injury attributed to 'aikido' was recoded as a 'martial arts' injury, whereas an injury during 'rappelling' or 'Hatha Yoga' were recoded to 'climbing / rock climbing' and 'yoga / Pilates', respectively.

As shown in Figure 7.5, running / jogging was the most common activity during which a serious injury was sustained by CF personnel. In 2008/9, 10.4% of CF personnel injured themselves by running or jogging seriously enough to limit their normal activities for a minimum of one week. Other serious injuries sustained during physical activity were further attributed as follows: walking for exercise (3.7%), rucksack marching (3.1%), weight training (3.0%), outdoor soccer (1.5%), gardening or yard work (1.3%), cross fit (1.3%), circuit training (1.3%), ice hockey / ringette (1.3%), calisthenics (1.2%), and martial arts (1.0%). The prevalence of serious injury does not take into account the duration of time that the respondent engages in the respective activity. Thus, it may seem self-evident that running and walking were considered to be the most injury-inducing activities, given the high rates of participation.

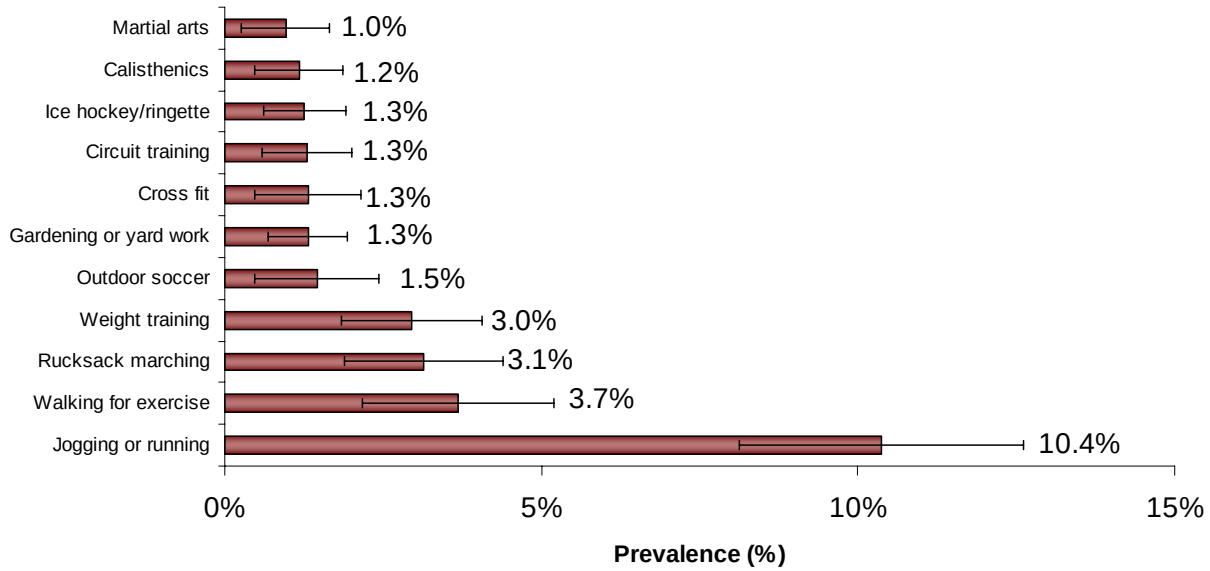

Figure 7.5: Prevalence of Serious Injuries Attributed to Physical Activities in the Previous 12 Months in the Canadian Forces, HLIS 2008/9.
Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%
Note: Serious injuries attributed to activities with less than 1% prevalence are not shown

Whereas the previous example demonstrated a 'population focus' on injuries in the CF, health promotion staff may wish to identify the physical activities that contribute the greatest risk of injury to the individual. A finer measure of injury risk could be obtained by examining the reported risk of injury *only among those who participate in the activity*. Thus, the interpretation shifts from "In the CF, what is the burden of injury for a given activity?" to "What is the risk of injury for *an individual* who partakes in a given activity?".

As illustrated in Figure 7.6, it is not always the most frequently reported activity that carries the greatest amount of injury risk. For example, only 2.7% of respondents participated in football (American) in the past 4 months, yet 19.1% of these persons reported an injury due to football in the last 12 months serious enough to limit their normal activities for at least one week. Similarly, 5.8% of CF personnel have engaged in some form of martial arts in the past year, with 13.8% of these participants attributing a serious injury to that sport. Running or jogging (12.7%), outdoor soccer (11.0%) and ice hockey or ringette (8.8%) were the next most commonly reported activities during which a serious injury was sustained.

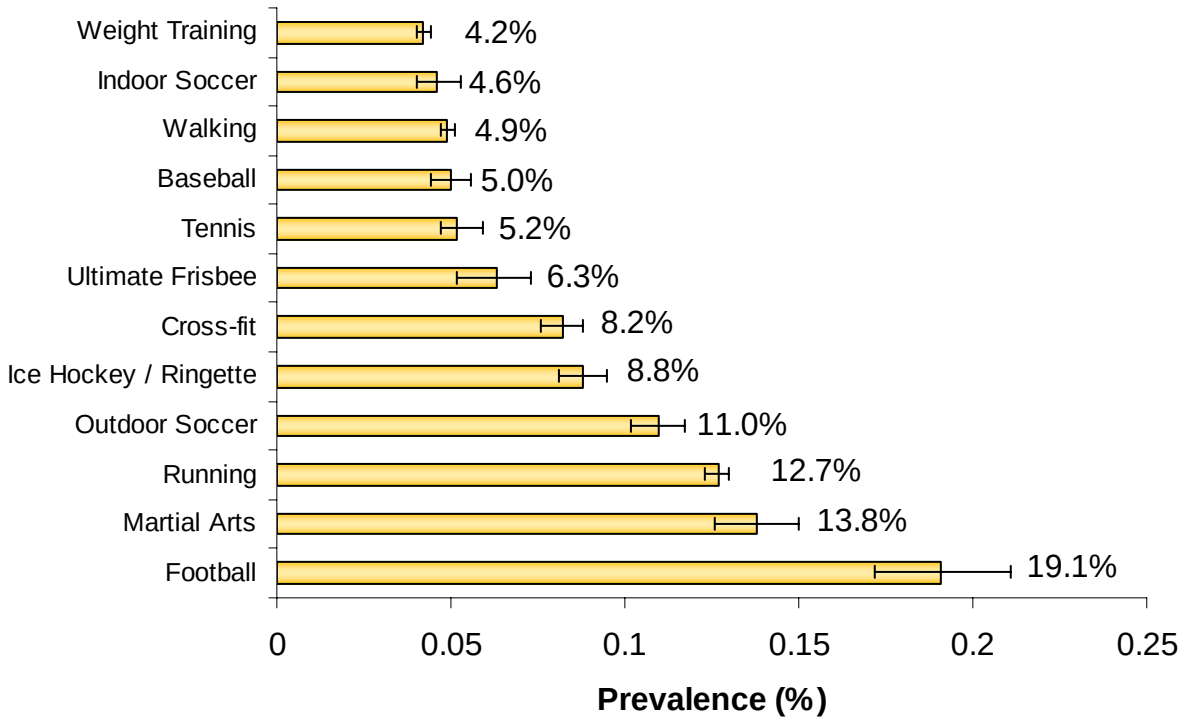

Figure 7.6: Prevalence of Serious Injury in the Previous 12 Months Among CF Personnel who Participate in Various Physical Activities, HLIS 2008/9

It should be noted that neither the type of injury (e.g. concussion, fracture, sprain) nor the severity of injury (e.g. mild, moderate, severe) were qualified as part of this question. Hence, it is not known if injuries sustained between various activities are comparable, only that the injuries were at least serious enough to limit normal activities for a minimum of one week.

As part of the HLIS 2008/9, respondents were also asked to indicate if they had participated in specific activities that are inherent to higher injury rates based on scientific literature or expert opinion (Figure 7.7). The most commonly risky activity reported at 44.9% was exercise without a proper warm up. Having exercised without adequate food or fluid intake (31.1%) and rucksack march with more than one-third of the respondent's body weight (29.4%) were also commonly reported. It is interesting to observe that running in combat boots was reported by 21.4% of the respondents while a CANLANDGEN is in place to discourage such practices in fitness training.

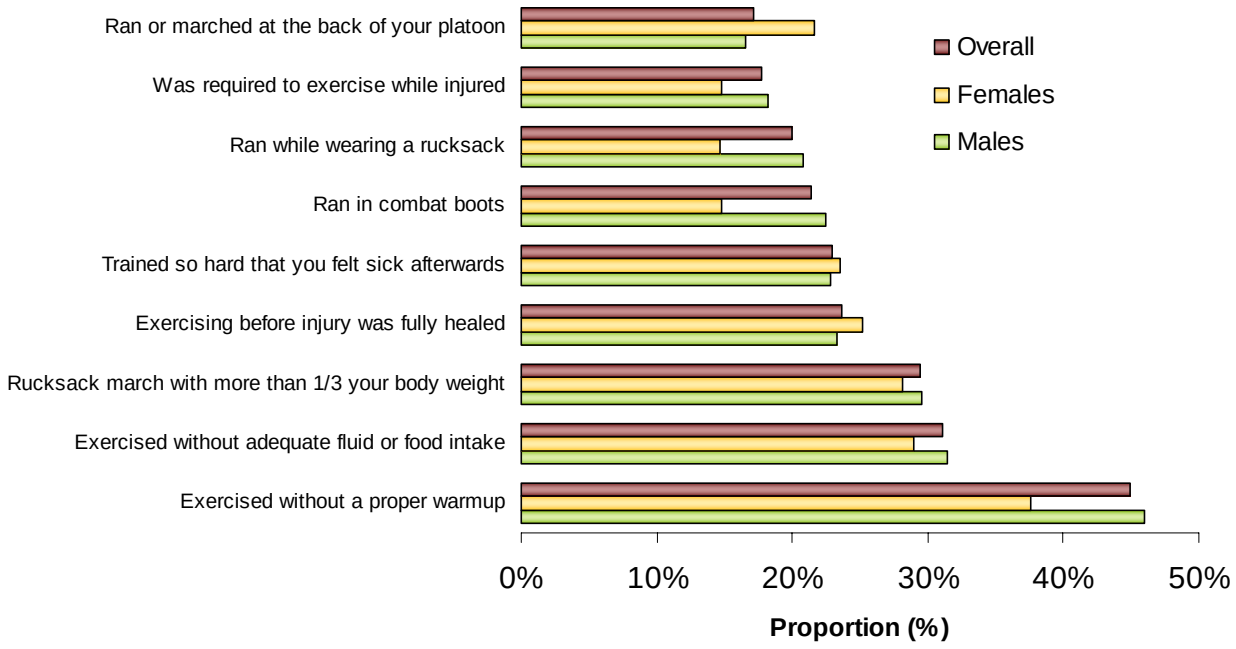

Figure 7.7: Risk Factors for Injury During Physical Activity, by Sex, HLIS 2008/9.
Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

Sedentary Activities Among Canadian Forces Personnel

Physical inactivity is associated with an increased risk of obesity and health problems related to excess weight (WHO, 2003). The Canadian Population Health Initiative (CPHI) has recognized that the average Canadian has increased the amount of time spent doing sedentary activities such as using the Internet and playing video games (CPHI, 2004).

CF personnel spend an average of 27.7 hours a week doing sedentary activities[1] including watching television, playing video games, using the internet and reading. Males reported significantly more time spent in sedentary activities per week (28.2 hours) than females (23.9 hours). This difference is potentially fuelled by the increased time males spend playing video games and using the internet, as shown in Table 7.2. Additionally, NCMs reported significantly more time spent sedentary per week (28.1 hours) than Officers (25.5 hours).

When compared to Ottawa, Petawawa was the only one of the eight largest bases to report significantly higher average time spent engaged in sedentary activities. There was no significant difference in the time spent engaged in sedentary activities per week between 2004 and 2008/9, or across categories of age, or CF Command.

[1] The HLIS 2008/9 did not specify whether the sedentary activities were in leisure time, work time or both. Therefore the estimates should be interpreted with the understanding that they may include or exclude work time depending on how the question was interpreted.

Table 7.2: Weekly Hours Spent in Sedentary Activities by Sex, HLIS 2008/9

Activity	Hours (95% CI)		
	Males	Females	Overall
Watching TV	12.0 (11.3-12.8)	11.0 (10.4-11.6)	11.9 (11.3-12.6)
Playing video games	3.3 (2.8-3.8)	0.82 (0.5-1.1)	3.0 (2.5-3.4)
Using Internet	7.2 (6.6-7.8)	5.0 (4.6-5.4)	6.9 (6.4-7.4)
Reading	5.5 (5.0-6.0)	7.1 (6.6-7.7)	5.7 (5.3-6.2)

In an increasingly knowledge-based society, the potential for occupational physical activity is greatly diminished. Canadian Forces personnel must strive to maintain their level of physical fitness in the context of sedentary job requirements. When asked to describe their usual daily work activities, 42.6% of CF personnel reported that they mostly sit, 41.3% stand or walk a lot, 13.7% carry or lift loads or climb stairs, and 2.5% do heavy work. As shown in Table 7.3, females are significantly more likely than males to sit during the day, as are Officers compared to NCMs. The tendency to remain sedentary during the work day also increased with advancing age.

Table 7.3: Proportion of CF Personnel That Report Usually Sitting During the Work Day, HLIS 2008/9

Variable	Category	Proportion (95% CI)	p value
Sex $^{\theta}$	Males	40.1% (36.9-43.4 %)	$p \leq 0.001$
	Females	55.9% (52.3-59.5%)	
Rank	NCM	35.3% (31.3-39.6%)	$p \leq 0.001$
	Officer	67.4% (62.8-71.7%)	
Age Group	18-29	31.7% (24.9-39.4%)	Ref
	30-39	42.7% (36.8-48.7%)	$p = 0.02$
	40-49	48.3% (43.0-53.5%)	$p \leq 0.001$
	50-64	55.9% (44.4-66.7%)	$p \leq 0.001$

θ Age and sex standardized to the 2008 CF population

The Physical Activity Environment

It has been shown that the built environment, defined as roads, homes, schools, recreation facilities, businesses, and work area, has a measurable impact on the level of physical fitness in a population (Cerin 2009; Heart and Stroke Foundation of Canada, 2007). The built environment can affect health through various pathways, including opportunities for physical activity, the risk of acute injury, and nutritional and diet-related behaviours (Thorton, Bentley & Kavanagh, 2009).

In the HLIS 2008/9, information was gathered on the environmental context in which the participant lived and worked, including the walking distance to nearby amenities, and the 10-item Neighbourhood Environment Walkability Scale.

Walking Distance to Amenities

Figure 7.8 summarises the average walking distance (in minutes) for CF personnel from home to various facilities and services. When compared to CF Personnel not living on base, those living on base reported significantly shorter walking distances from their home to their job, to the gym, to the post office and to the library. Conversely CF personnel living on bases reported higher walking distances to supermarkets. There were no statistically significant differences in walking distance to other amenities.

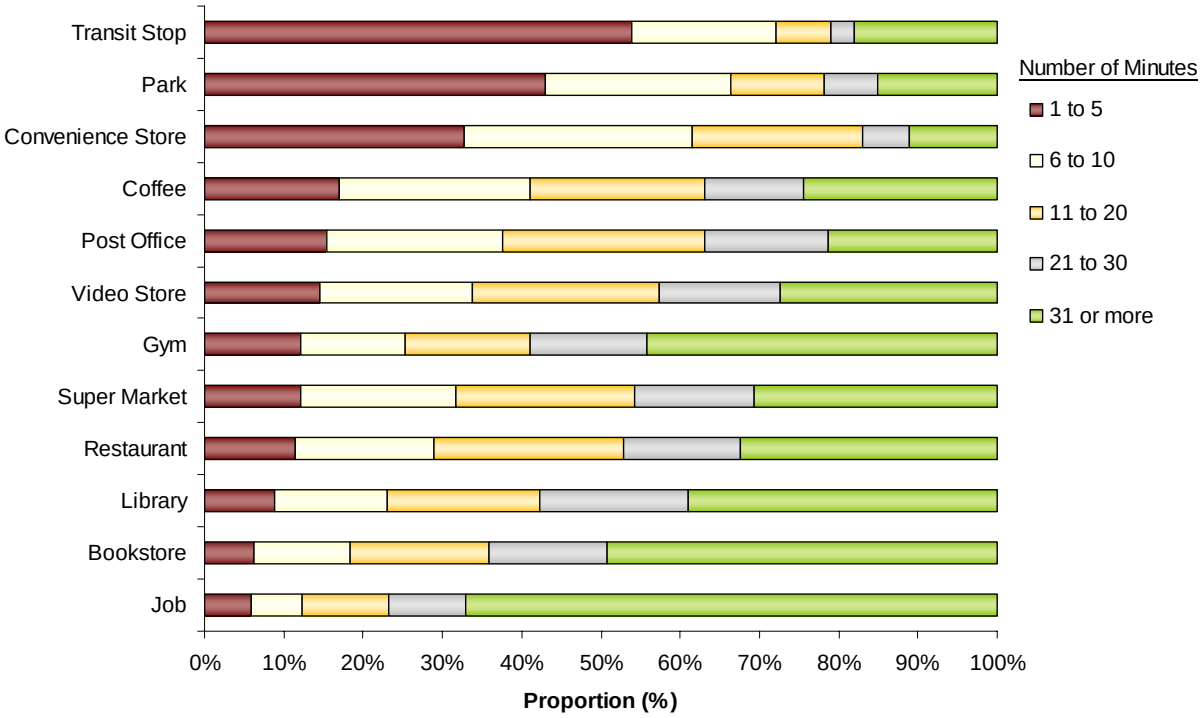

Figure 7.8: Walking Distance from Home to Select Amenities in Minutes, HLIS 2008/9.

Neighbourhood Environment Walkability Scale (NEWS)

The Neighbourhood Environment Walkability Scale (NEWS) (Cerin, 2009) is a list of neighbourhood factors that are believed to positively affect physical activity. In the HLIS 2008/9, respondents were asked how much they agreed[2] that NEWS items described a series of locations within a 10 to15 minute walk from their home. Figure 7.9 shows that CF personnel living on bases consistently scored equally or better than non-base neighbourhoods across most items on the Neighbourhood Environment Walkability Scale (NEWS).

Although CF personnel living on bases scored higher on the Neighbourhood Environment Walkability Scale (NEWS), there was no significant difference observed in either the proportion of obesity or level of physical activity between personnel who live on or off base.

[2] Agreement with NEWS items was based on a 5 point scale: strongly agree, somewhat agree, neutral, somewhat disagree, and strongly disagree.

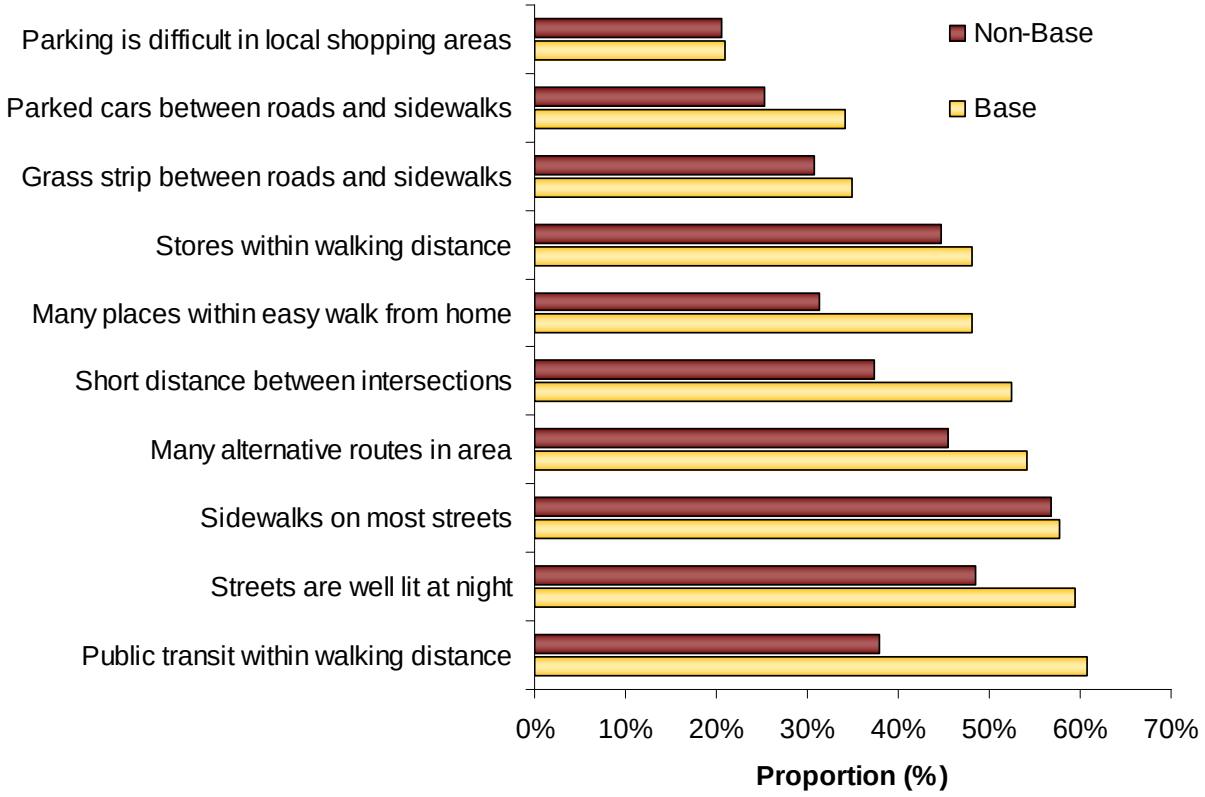

Figure 7.9: Positive Neighbourhood Factors for Base and Non-Base Residents, HLIS 2008/9
Note: Proportions reflect persons who either somewhat agree or strongly agree that the item describes the neighbourhood in which they live.

Physical Activity and Exercise in the Workplace

To promote physical activity among all personnel, the CF supports programs related to workplace wellness and physical activity. Moreover, CF personnel must routinely pass fitness examinations, and maintain a level of personal health suitable for a variety of battle- and non-battle-related tasks. The HLIS 2004 and 2008/9 collected similar information on workplace factors that influence physical activity; comparisons between these surveys are provided in Table 7.4.

Between 2004 and 2008/9, there was a statistically significant increase in the proportion of personnel with access to exercise facilities and classes at work. Overall, nearly 90% of CF personnel reported having access to exercise facilities and classes in 2008/9. There was no observable difference in access to shower and locker facilities between 2004 and 2008/9.

Table 7.4: Workplace Factors that Influence Physical Activity, HLIS 2004 and 2008/9 θ

	Proportion (95% CI)			
	Males	**Females**	**Overall**	**p value**
Access to exercise classes at work				
HLIS 2004	55.1% (52.4-57.8 %)	54.3% (51.1-57.5 %)	55.0% (52.9-57.1 %)	$p \leq 0.001$
HLIS 2008/9	73.6% (70.7-76.5 %)	72.8% (69.6-76.0%)	73.5% (71.3-75.6%)	
Access to shower and locker facilities at work				
HLIS 2004	90.6% (89.0-92.2 %)	86.8% (84.6-88.9%)	90.1% (88.9-91.4%)	ns
HLIS 2008/9	89.0 % (87.0-91.1%)	89.4% (87.2-91.6%)	89.1% (87.6-90.6%)	
Access to an exercise facility at work				
HLIS 2004	86.2% (84.4-88.1%)	80.9% (78.3-83.4 %)	85.6% (84.1-87.0 %)	$p \leq 0.001$
HLIS 2008/9	89.9% (88.0-91.9 %)	87.7% (85.4-90.1%)	89.6% (88.2-91.1%)	

θ Age and sex standardized to the 2008 CF population

Additional items were added to the HLIS 2008/9 regarding other structural and cultural determinants of exercise in the workplace (Table 7.5). On average, CF personnel reported participating in group physical training (PT) 1.80 times per week. Excluding group PT, 64.8% of CF personnel reported that they are given time to exercise during work hours. A further 78.9% reported that the CF leadership encourages them to be physically active.

Table 7.5: Workplace Factors that Influence Physical Activity, HLIS 2008/9

	Proportion (95%CI)
Given time to exercise during work hours (excluding group PT)	64.8% (61.3-68.2%)
Satisfied with exercise facilities at work	74.0% (70.7-77.1%)
Agree that CF leadership encourages you to be physically active	78.9% (75.5-81.6%)

Physical Fitness Testing

Physical fitness is a requirement for all CF personnel, and all personnel are required to perform regular fitness testing to ensure universality of service. As outlined in DAOD-5023-2, all physical fitness standards are based on, and have been scientifically validated against, the performance of general, environmental, occupational, and operational duties.

The five Minimum Physical Fitness Standards (MPFS), or the common tasks that personnel may be expected to perform in a time of emergency, include:
1. Sea evacuation
2. Land stretcher evacuation
3. Low-high crawl
4. Entrenchment dig
5. Sandbag carry

Individual readiness to perform these duties is evaluated using either the CF EXPRES test or the Battle Fitness Test (BFT). Personnel are obligated to pass one of these tests annually, unless an exemption was earned in the previous round of testing, or the person is excused for medical reasons. Failure to pass either of these fitness tests may have negative career consequences since personnel who are not certified as physically fit cannot be promoted or operationally deployed.

The CF EXPRES test includes three measures of physical fitness: a 20m shuttle run (VO_2 max), hand grip (muscular strength), and push ups and sit-ups (muscular endurance) (CFPSA, 2005). The BFT includes a timed 13km march, a 100m fireman carry and a simulated trench dig. Note that there were no questions on the BFT in the HLIS 2004.

Overall, 77.4% of CF personnel completed physical fitness testing: the CF EXPRES (38.0%), the BFT (22.7%) or both tests (16.7%). Persons considered to be incentive exempt (due to exceptional performance on a previous fitness test) comprised 11.4% of the sample. Medical exemptions were granted to 6.7% of CF personnel, and 4.6% of respondents did not complete either the CF EXPRES or BFT in the previous 12 months for reasons unknown. Female personnel were significantly more likely than their male counterparts to report both a medical exemption and an incentive exemption in 2008/9.

Table 7.6: Participation in the CF EXPRES and the Battle Fitness Test (BFT) in the Previous 12 Months, Overall and by Sex, HLIS 2008/9

Item	Proportion (95% CI)		
	Male	Female	Overall
CF EXPRES only	38.4% (34.5-42.5%)	35.0% (31.6-38.5%)	38.0% (34.5-41.5%)
Battle Fitness Test only	23.7% (20.2-27.5%)	16.4% (13.9-19.3%)	22.7% (19.7-26.0%)
Both tests	16.8% (14.0-19.9%)	16.1% (13.7-18.8%)	16.7% (14.2-19.4%)
Incentive exempt	10.5% (8.3-13.2%)	17.0% (14-6-19.7%)	11.4% (9.4-13.7%)
Medically excused	5.9% (4.1-8.5%)	12.0% (9.7-14.7%)	6.7% (5.1-8.9%)
Did not complete a test	4.7% (3.2-6.9%)	3.6% (2.5-5.1%)	4.6% (3.3-6.4%)

As shown in Table 7.7, personnel aged 30 to 39 were statistically more likely to perform the CF EXPRES compared to persons in the 18 to 29 year age group. Age did not seem to be a factor in whether or not an individual completed the BFT.

Army personnel (37.2%) were substantially less likely to perform the CF EXPRES Test than personnel within the Air (70.6%), Navy (71.0%) or other (60.1%) Commands. However, Army

personnel reported the highest rates of BFT participation (67.8%) than any other Command. While there was no difference in the proportion of persons who completed the CF EXPRES across sex or rank, NCMs and males were significantly more likely than Officers and females to report having completed the BFT in the 12 months prior to the survey. Note that survey numbers were only large enough to compare test participation at larger bases.

Table 7.7: Participation in CF EXPRES and Battle Fitness Test in the Previous 12 months, HLIS 2008/9

Variable	Category	CF EXPRES Test § % (95% CI)	p value	Battle Fitness Test § % (95% CI)	p value
Sex θ	Males	55.5% (50.7-60.3%)	ns	62.2% (59.0-65.4%)	$p \leq 0.001$
	Females	50.9% (47.3-54.6%)		51.5% (47.9-55.2%)	
Rank	NCM	53.5% (49.0-58.0%)	ns	62.6% (58.2-66.9%)	p = 0.006
	Officer	58.3% (53.7-62.9%)		53.7% (49.1-58.3%)	
Age Group	18-29	47.9% (39.6-56.3%)	Ref	60.3% (50.2-68.0%)	Ref
	30-39	63.0% (56.7-68.9%)	p = 0.005	65.2% (59.1-70.8%)	ns
	40-49	53.7% (48.3-59.0%)	ns	59.7% (54.3-64.8%)	ns
	50-64	51.2% (40.062.3%)	ns	47.3% (36.2-58.7%)	ns
Command	Army	37.2% (32.0-42.7%)	Ref	67.8% (62.1-73.0%)	Ref
	Air	70.6% (62.8-77.4%)	$p \leq 0.001$	55.1% (46.9-63.0%)	p = 0.01
	Navy	71.0% (61.6-78.9%)	$p \leq 0.001$	64.7% (55.2-73.1%)	ns
	Other	60.1% (53.2-66.6%)	$p \leq 0.001$	50.3% (43.5-57.2%)	$p \leq 0.001$
Base	Ottawa	58.2% (49.2-66.7%)	Ref	41.5% (33.2-50.3%)	Ref
	Gagetown	23.9% (14.1-37.6%)	$p \leq 0.001$	69.1% (54.2-80.9%)	p = 0.002
	Petawawa	26.0% (15.3-40.7%)	$p \leq 0.001$	73.7% (59.5-84.3%)	$p \leq 0.001$
	Edmonton	29.4% (17.6-44.9%)	p = 0.002	69.0% (53.8-81.0%)	p = 0.003
	Valcartier	55.7% (44.0-66.7%)	ns	67.5% (55.7-77.4%)	p = 0.001
	Trenton	67.6% (52.0-80.1%)	ns	59.1% (43.7-72.8%)	ns
	Halifax	68.0% (56.0-78.1%)	ns	64.3% (52.2-74.8%)	p = 0.003
	Esquimalt	76.2% (59.5-87.4%)	ns	64.3% (48.0-77.9%)	p = 0.015

θ Age and sex standardized to the 2008 CF population
§ Includes CF personnel who performed both fitness tests in the previous 12 months

Of those who completed the CF EXPRES Test in 2008/9, 97.1% reported that they had passed. Likewise, 99.1% of personnel who were not incentive or medically exempt passed the Battle Fitness Test. Due to the few number of CF EXPRES and BFT failures, it was not possible to stratify the analysis by the sex, age, rank, CF Command or base of survey participants.

As shown in Table 7.8, there were no statistically significant differences in the rates of CF EXPRES failures between 2004 and 2008/9.

Table 7.8: Completion and Failure Rates of CF EXPRES by Sex, HLIS 2004 and 2008/9 θ

		Proportion (95%CI)		
		Males	**Females**	**Overall**
HLIS 2004	Completed test	76.5% (74.2-78.9%)	68.9% (65.9-71.9%)	75.5% (73.7-77.3%)
	Fail rate §	3.5% (2.1-4.8%)	11.0% (8.1-13.9%)	4.4% (3.3-5.6%)
HLIS 2008/9	Completed test	55.5% (50.7-60.3%)	50.9% (47.3-54.6%)	54.9% (52.0-57.8%)
	Fail rate §	2.5% (1.0-4.0%)	6.7% (3.9-9.5%)	3.0% (1.8-4.3%)

θ Age and sex standardized to the 2008 CF population

§ Proportion of CF personnel who participated in the CF EXPRES *and* failed one or more components

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CHAPTER 8 ~ MEDICATIONS & HEALTH PRODUCTS

This section of the report provides information about the use of prescription and non-prescription medications by CF personnel. The use of supplements and other health products are also described in this section.

Use of a Civilian Pharmacy by Canadian Forces Personnel

More than half of survey respondents (59.1%) indicated that they received medications (prescription or non-prescription) from a civilian pharmacy in the year prior to the survey.

As shown in Table 8.1, women were more likely than men to report receiving medications from a civilian pharmacy. CF personnel who indicated that French is their first official language were more likely than those who indicated English to report use of a civilian pharmacy. Those who reported that they are widowed, separated, or divorced were significantly more likely to report use of a civilian pharmacy than those who reported being married at the time of the survey. There was no difference in use of civilian pharmacy between ranks, commands, or bases/wings.

Table 8.1: Use of Civilian Pharmacy for Prescription and Non-Prescribed Medications, HLIS 2008/9

Variable	Category	Use of a Civilian Pharmacy (95% CI)	p value
Sex	Male	57.3% (53.2-61.3%)	p ≤ 0.001
	Female	70.6% (67.3-73.8%)	
Language	English	53.8% (49.5-58.2%)	p ≤ 0.001
	French	71.4% (65.3-76.8%)	
Marital Status	Married	58.6% (54.4-62.7%)	Ref
	Widowed/Separated/Divorced	72.0% (61.5-80.5%)	p = 0.021
	Single	54.6% (45.4-63.4%)	ns

Among those who reported obtaining medications from a civilian pharmacy in the year prior to the survey, the most common reason reported for doing so was that it was more convenient (61.7%)(Table 8.2).

Table 8.2: Reasons CF Personnel Sought Medications from a Civilian Pharmacy, HLIS 2008/9

Response	Proportion (%) (95% CI)
It was more convenient to go to a civilian pharmacy	61.7% (57.2-66.0%)
The base/wing pharmacy was closed	32.4% (28.2-36.9%)
I prefer the selection of products at a civilian pharmacy	19.2% (15.7-23.2%)
No base pharmacy at my location	10.6% (8.3-13.5%)
I prefer to deal with pharmacist(s) at a civilian pharmacy	7.8% (5.7-10.5%)
Other	4.4% (3.1-6.4%)

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

The reasons for obtaining medications from civilian pharmacies are not statistically different by sex or official language; however, they differed according to the rank of the respondent. As shown in Figure 8.1, Officers were significantly more likely to have received medications from a civilian pharmacy because it was more convenient, and because there was no base pharmacy at their location. NCMs were significantly more likely to receive medications from a civilian pharmacy because the base/wing pharmacy was closed, and because they prefer the selection of products that are available at civilian pharmacies (also see Appendix 8.1).

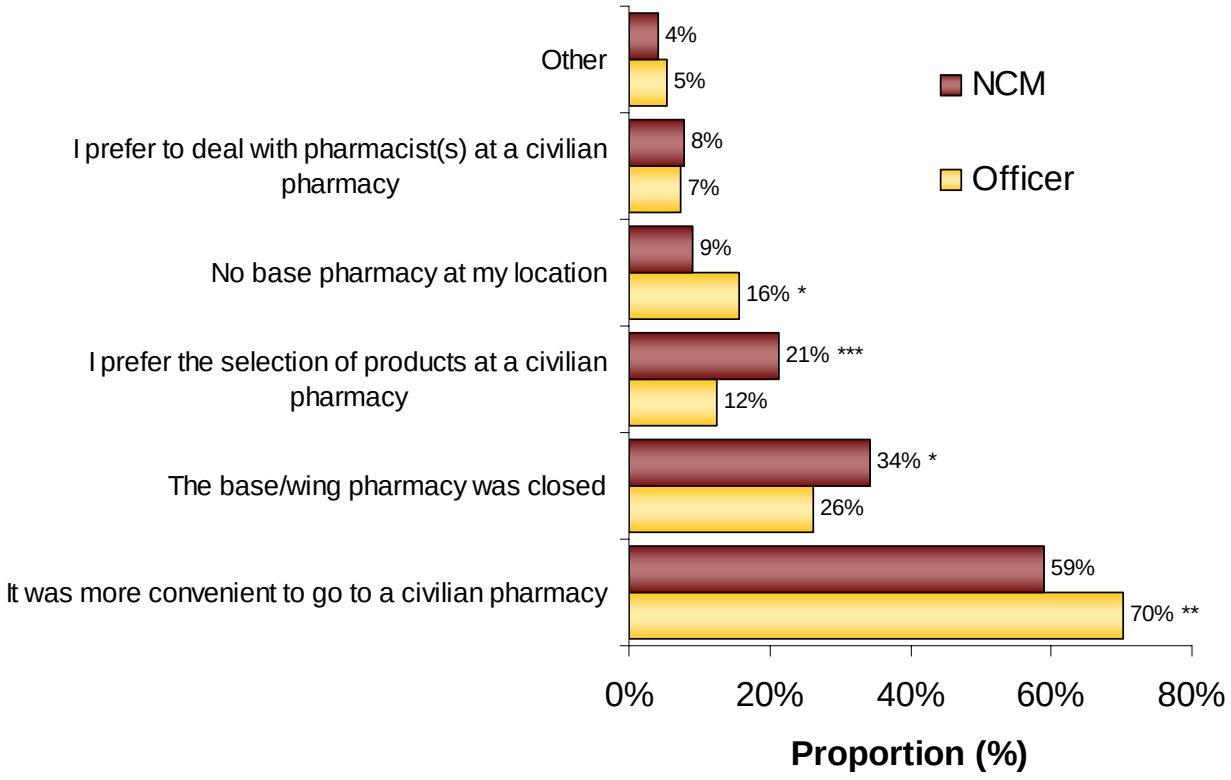

Figure 8.1: Reasons NCMs and Officers Sought Medications from a Civilian Pharmacy, HLIS 2008/9

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

* p <0.05 versus referent group; ** p <0.01 versus referent group; *** p <0.001 versus referent group

Non-Prescription Medication Use Among Canadian Forces Personnel

More than half of survey respondents (57.0%) indicated that they received non-prescription medications directly from a military or civilian pharmacy without seeing a physician in the 6 months prior to the survey. Women more commonly receive non-prescription medications without seeing a physician (67.2%) compared to men (55.5%).

Among those who reported receiving non-prescription medications in the 6 months prior to the survey, pain relievers and products to treat cough and cold symptoms were by far the most commonly reported non-prescription medications (76.4% and 62.7%, respectively) (Figure 8.2).

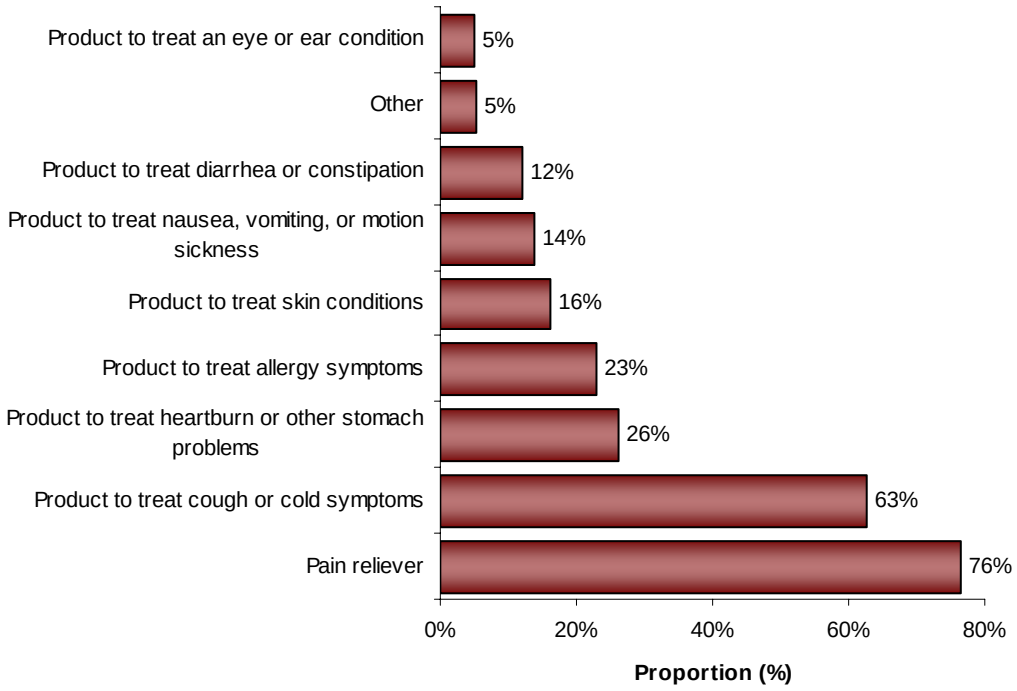

Figure 8.2: Non-Prescription Medications Received Without Seeing a Physician, HLIS 2008/9
Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

For most types of non-prescription medications, the proportion of men and women who received them without seeing a physician was the same. Men, however, were more likely than women to receive a product to treat skin conditions (17.3% of men compared to 11.3% of women), and women were more likely than men to receive a product to treat nausea, vomiting, or motion sickness (20.4% of women compared to 12.5% of men). Type of non-prescription drug use does not differ between NCMs and Officers.

Consultations with Pharmacists

Among CF personnel who reported receiving non-prescription medications in the 6 months prior to the survey, roughly half of respondents recall speaking to a pharmacist before the medication was given to them (Table 8.3). Similar proportions of males and females spoke to a pharmacist before receiving non-prescription medication from a pharmacy.

Table 8.3: Proportion of CF Personnel who Spoke to a Pharmacist the Last Time they Received Non-Prescription Medications from a Pharmacy, HLIS 2008/9

	Proportion (%) (95% CI)		
	Males	**Females**	**Overall**
Spoke to a pharmacist	50.0% (44.6-55.3%)	46.8% (42.6-51.0%)	49.5% (44.9-54.1%)
Did not speak to a pharmacist	46.0% (40.7-51.4%)	49.9% (45.6-54.1%)	46.6% (42.1-51.2%)
Don't remember	4.0% (2.3-6.7%)	3.3% (2.3-4.9%)	3.9% (2.4-6.1%)

Among CF personnel who received non-prescription medication in the 6 months prior to the survey and who spoke to a pharmacist the last time they received non-prescription medication, 68.4% reported that the pharmacist recommended that they see a physician if their symptoms did not improve; this did not differ significantly between males (68.5%) and females (68.0%).

Prescription Medication for Weight Loss

The Canadian clinical practice guidelines on the management and prevention of obesity in adults and children (CMAJ, 2007) recommend an energy-reduced diet and regular physical activity as the first treatment option for overweight and obese adults. It states that one can utilize selected pharmacological agents for overweight or obese patients who are not attaining or who are unable to maintain clinically important weight loss with dietary and exercise therapy, however it is unclear if the benefits outweigh the risks.

CF personnel were asked if they were aware that medications are available in Canada that have been developed specifically to help people lose weight. Overall, just less than half (49.2%) were aware that such medications were available. Women in the CF were more likely to know of such medications than men (Table 8.4). Personnel who were categorized as obese (BMI $\geq$ 30) were less likely than normal weight personnel (BMI <25) to be aware of these medications.

Table 8.4: Knowledge of Prescription Weight Loss Medication Availability in Canada, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	48.5% (44.3-52.6%)	p = 0.04
	Female	54.2% (50.5-57.9%)	
WHO BMI Category	Normal weight (BMI<25)	51.0% (44.2-57.8%)	Ref
	Overweight (BMI 25-29.9)	52.9% (47.6-58.2%)	ns
	Obese (BMI ≥30)	39.7% (32.4-47.0)	p = 0.027

Approximately half of all CF personnel believe that some people require prescription medications to help control their weight (51.0%). As shown in Table 8.5, females are more likely than males to believe that some people require medication to control their weight. Persons who were classified as obese (BMI ≥30) were more likely than persons of normal weight (BMI<25) to believe that some people require prescription medication to control their weight.

Table 8.5: Belief that Some People Require Prescription Medication to Help Control Their Weight, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	49.1% (45.2-53.1%)	p ≤ 0.001
	Female	63.6% (60.2-66.9%)	
WHO BMI Category	Normal weight (BMI<25)	41.2 (34.7 – 47.6)	Ref
	Overweight (BMI 25-29.9)	49.3 (44.0 – 54.6)	ns
	Obese (BMI ≥30)	65.5 (58.0-73.0)	p ≤ 0.001

When asked if they thought that prescription medications would help them personally in maintaining or losing weight, only 37.3% of CF personnel indicated that it would help. As displayed in Table 8.6, there was no statistically significant difference between males and females in this regard.

CF personnel who were classified as obese were statistically more likely to believe that prescription medications would help some people achieve or maintain a healthy weight than those who were not classified as obese. However, persons categorized as overweight were not any more likely to believe that prescription medications would help them achieve or maintain a healthy weight than persons of normal weight.

Table 8.6: Belief that Prescription Medication Would Help Control or Maintain Their Own Weight, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	37.0% (34.0-40.1%)	ns
	Female	39.0% (36.2-41.8%)	
WHO BMI Category	Normal weight (BMI<25)	42.0% (38.0 – 46.0%)	Ref
	Overweight (BMI 25-29.9)	38.2% (34.3-42.2%)	ns
	Obese (BMI ≥30)	30.7% (24.3-37.0%)	p = 0.003

Vitamin and Supplement Use

CF personnel were asked if they had taken any vitamins or supplements on a regular basis (i.e. most days of the week) in the 12 months prior to the survey. Overall, 63.1% indicated that they had taken some form of supplement regularly during the 12 months prior to the survey. Males (62.0%) were less likely to report taking supplements when compared to females (70.1%).

The most commonly used supplements reported to have been used in the previous 12 months were multi-vitamins (38.0%), energy drinks (28.6%) and individual vitamins, minerals, or anti-oxidants (27.5%) (Figure 8.3).

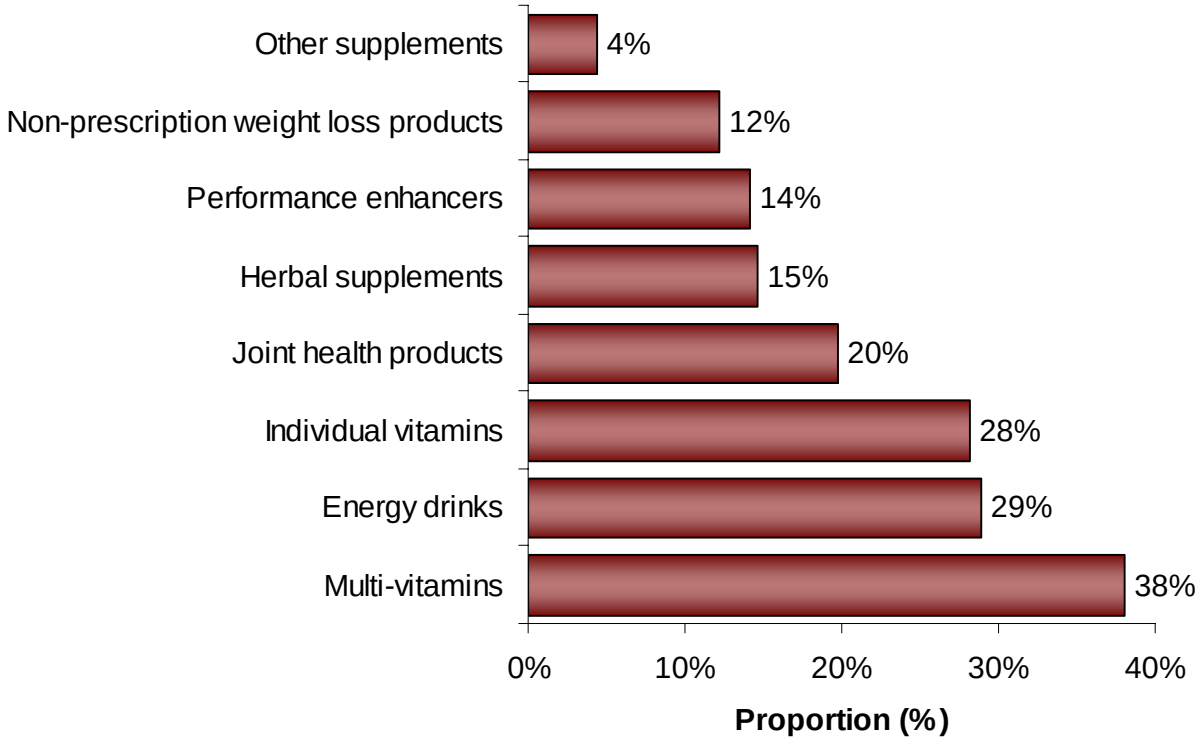

Figure 8.3: Regular Supplement Use in the Previous 12 Months, HLIS 2008/9
Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

CF personnel who reported using vitamins and / or supplements in the previous 12 months were asked to rate the effectiveness of the product. As shown in Figure 8.4, between 10 and 45% of CF personnel did not know if the supplement they used regularly is effective. Roughly half of CF personnel reported that the supplements they used were either very or moderately effective, with the exception of those using non-prescription weight loss products and other supplements, who were less likely to report that these products were moderately or very effective.

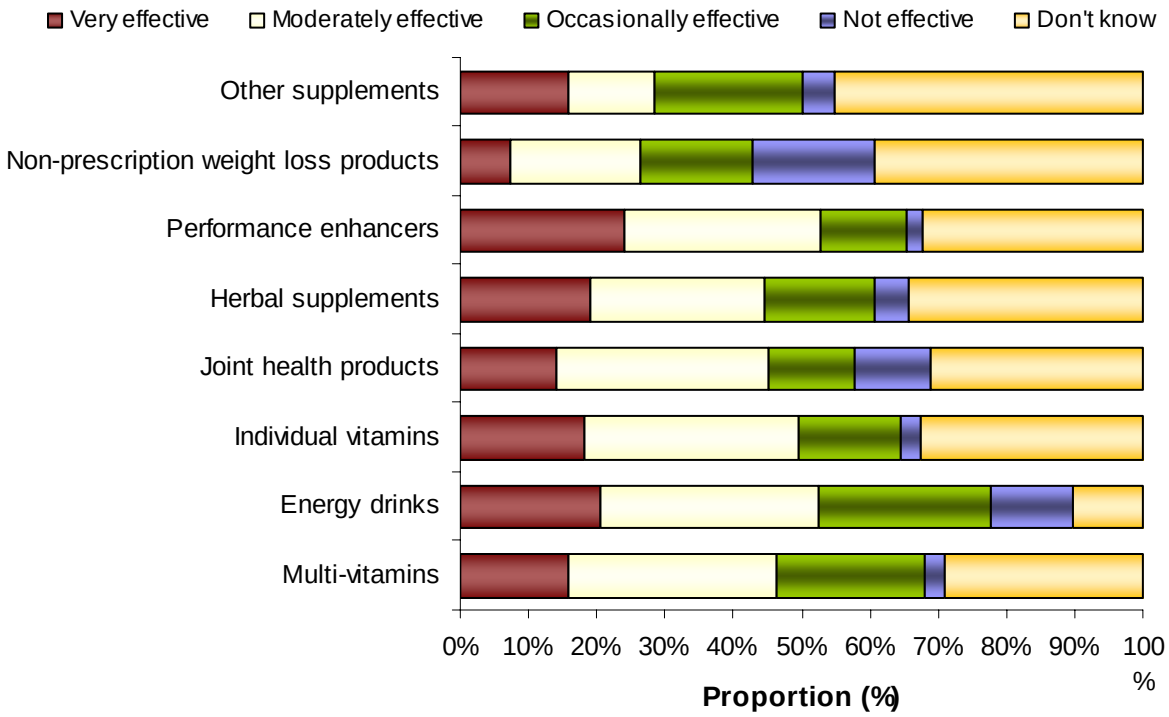

Figure 8.4: Self-Reported Ratings of Supplement Effectiveness, HLIS 2008/9

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CHAPTER 9 ~ HEALTHY WEIGHT, DIET & NUTRITION

HEALTHY AND EXCESS WEIGHT

Excess weight is associated with many well recognised health consequences, including type 2 diabetes, cardiovascular disease, high blood pressure, osteoarthritis, cancers and other chronic conditions. Excess weight has also been associated with psychosocial problems, functional limitations and disabilities (Statistics Canada, 2005). Clearly, the Canadian Forces has a vested interest in promoting a healthy body weight among its personnel in order to maintain operational readiness (CANFORGEN 198/05).

Numerous measures are available to discern the body composition of an individual. Some of these measures, including hydrostatic weighing, bioelectrical impedance, air displacement, skinfold measurements and dual energy x-ray absorptiometry are only possible in a controlled clinical setting. Other measures of body composition are more suited for population-based studies, including waist-to-hip ratios, waist circumference, height-to-weight ratios and Body Mass Index (BMI). Each of these measures provides either direct or indirect assessment of the amount of body fat of a person.

BMI is an often used measure of excess weight in a population, owing to both its ease of use and reasonable correlation with standardized assessments of body fat. In the HLIS 2008/9, respondents were asked to report both their height (in metres or feet and inches) and weight (in kilograms or pounds). The BMI of each individual was then calculated using the ratio of weight in kilograms to the square of height in metres (kg/m^2). This ratio has been shown to be highly correlated with the percent body fat of an individual (Health Canada, 2003), and predictive of mortality from all causes, cardiovascular disease, and cancer (Calle et al., 1999). An increased BMI is further associated with the severity of chronic conditions, physical disabilities, mental health conditions and lower overall self-rated health (WHO, 2003).

A recent prospective study of nearly 900,000 adults on the relationship between BMI and mortality reported an optimum BMI of between 22.5 and 25 kg/m^2, and 30% higher overall mortality for each additional 5 kg/m^2 (Prospective Studies Collaboration, 2009).

BMI is further used to classify adults as either underweight, normal weight, overweight or obese. The World Health Organisation (WHO) defines a BMI of less than 18.5 kg/m^2 as underweight, between 18.5 kg/m^2 and 24.9 kg/m^2 as normal weight, between 25 kg/m^2 and 29.9 kg/m^2 as overweight and over 30 kg/m^2 as obese (WHO, 2003).

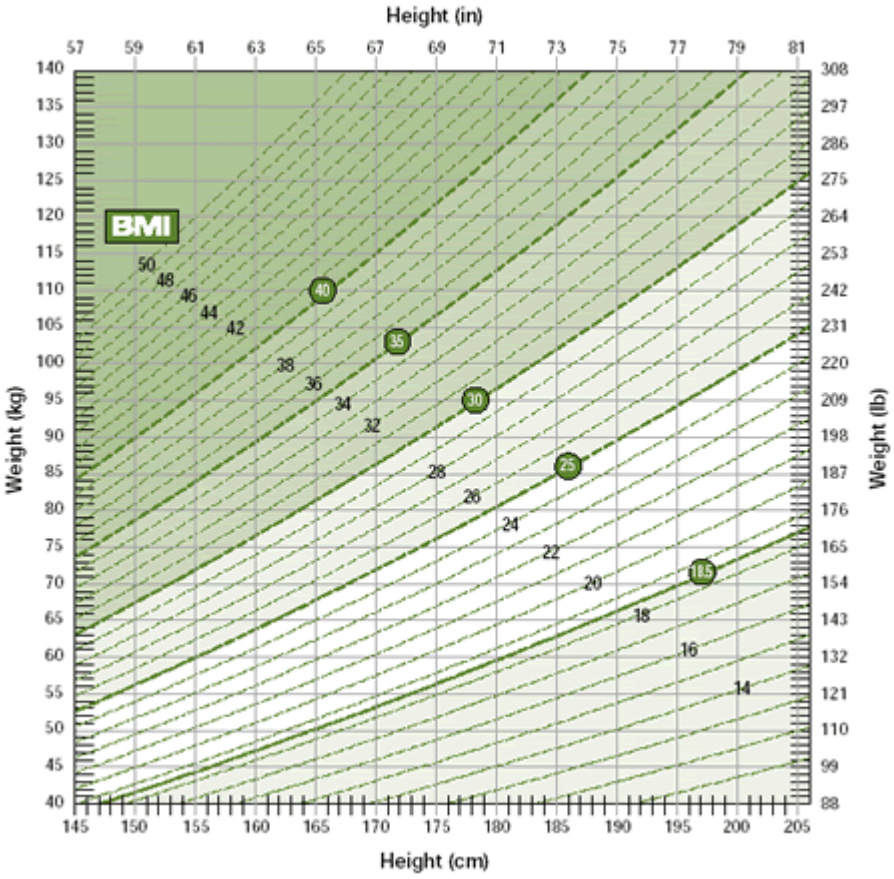

Figure 9.1: Body Mass Index Nomogram Developed by Health Canada (2003)

It should be noted that BMI is significantly correlated with total body fat and is therefore an indicator of health risks associated with being underweight, overweight or obese. However, BMI does not provide any information regarding body fat distribution, and research clearly demonstrates that excess abdominal fat is associated with increased health risks (Health Canada 2003). Further, it is suggested that the use of BMI as a body classification system may have some limitations for certain groups such as young adults who have not attained full growth, adults with a very lean build, very muscular body builds, adults over the age of 65 years of age, and certain ethnic and racial groups (Douketis et al., 2005; Health Canada, 2003; WHO, 2004).

It has also been shown that self-reported data often underestimates the prevalence of overweight and obesity in a population (Booth, 2000; Roberts 1995; Shields et al., 2008). Recent data from the Canadian Community Health Survey (CCHS) showed that self-reported height and weight data underestimated the prevalence of obesity by nearly 7% when validated with measured height and weight data. This effect was further differentiated by sex, with the obesity rate underreported by 9% among males, and by 6% among females (Connor-Gorber & Tremblay, 2009).

In the general Canadian population, the increasing trend of excess weight for height has been well established. Between 1981 and 2007/9, the average BMI of males increased by 2.2 kg/m^2 and by 1.7 kg/m^2 for females (Statistics Canada, 2010).

Body Mass Index in the Canadian Forces

Using self-reported height and weight data, the average BMI in the HLIS 2008/9 was 27.4 kg/m^2. As shown in Table 9.1, the mean age-and sex-standardized BMI was significantly greater for males (27.6 kg/m^2) than females (25.7 kg/m^2). Consistent with data from the general population, the average BMI was significantly greater in older age groups compared to persons 18 to 29 years of age. Despite having a younger age profile, NCMs (27.7 kg/m^2) reported significantly elevated BMIs compared to Officers (26.7 kg/m^2). When compared to Ottawa, Valcartier was the only one of the eight largest bases to have reported significantly lower average BMI. There were no differences in the average BMI across CF Command.

Table 9.1**:** Body Mass Index of CF Personnel by Select Characteristics, HLIS 2008/9

Variable	Category	BMI (kg/m^2) (95% CI)	p value
Sex $^{\theta}$	Males	27.6 (26.4-28.9)	$p \leq 0.001$
	Females	25.7 (24.4-27.0)	
Age Group	18-29	26.1 (25.5-26.7)	Ref
	30-39	27.5 (27.0-27.9)	$p = 0.001$
	40-49	28.3 (27.9-28.7)	$p \leq 0.001$
	50-64	27.7 (26.9-28.6)	$p = 0.004$
Rank	NCM	27.7 (27.3-28.0)	$p \leq 0.001$
	Officer	26.7 (26.4-27.0)	

θ Age and sex standardized to the 2008 CF population

As shown in Table 9.2, the mean self-reported BMI of CF personnel did not increase significantly between 2004 and 2008/9, though the direction of the effect was consistent with that of the non-military Canadian population.

Table 9.2: Comparison of Body Mass Index Between HLIS 2004 and 2008/9 $^{\theta}$

Category	Year of Survey	BMI (kg/m^2)	Difference (kg/m^2)	p value
Females	2004	25.2 (24.4-26.3)	0.5	ns
	2008/9	25.7 (24.4-27.0)		
Males	2004	27.4 (26.4-28.5)	0.2	ns
	2008/9	27.6 (26.4-28.9)		
Overall	2004	27.1 (26.1-28.2)	0.3	ns
	2008/9	27.4 (26.1-28.6)		

θ Age and sex standardized to the 2008 CF population

Profile of Obesity and Overweight in the Canadian Forces

A statistically significant increase in the overall proportion of CF personnel categorized as obese (BMI≥30) was observed between 2004 (20.5%) and 2008/9 (23.5%) (Figure 9.2). Overall, 28.8% of CF personnel were normal weight, 47.7% were overweight and 23.5% were categorized as obese in 2008/9. There were no significant changes reported in the proportion of males classified as normal or underweight, overweight or obese during this time (Figure 9.3). However, a significant decrease in the proportion of females classified as normal or underweight, and an increase in the proportion of obesity was observed between 2004 and 2008/9 (Figure 9.4).

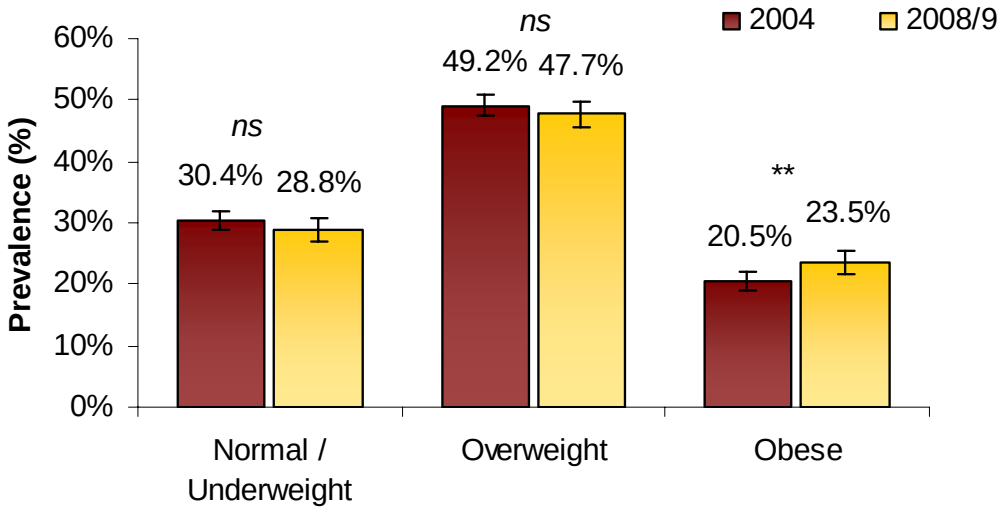

Figure 9.2: BMI Categories of Overall CF Personnel, HLIS 2004 and 2008/9 θ
θ Age and sex standardized to the 2008 CF population
** p ≤0.01 versus referent group

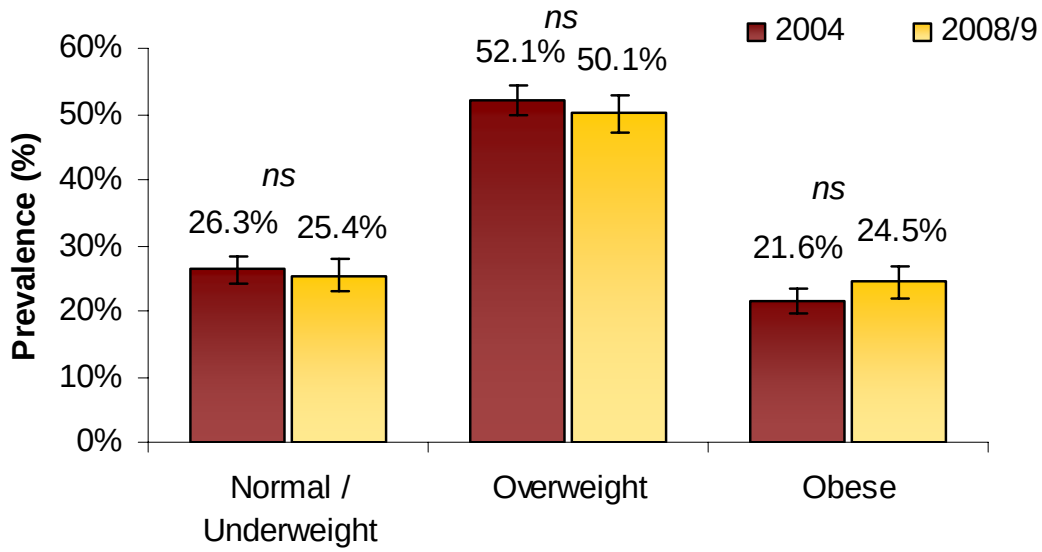

Figure 9.3: BMI Categories of Male CF Personnel, HLIS 2004 and 2008/9 θ
θ Age standardized to the 2008 CF population

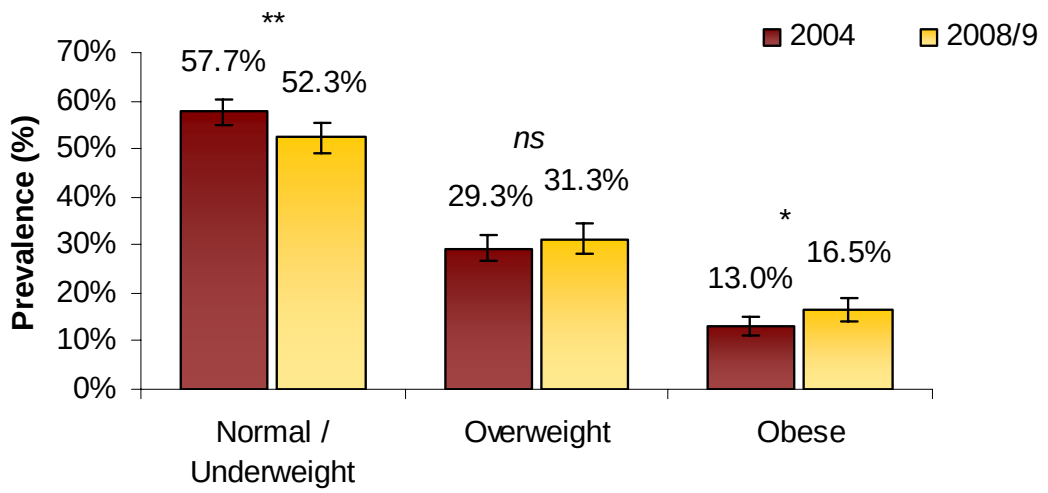

Figure 9.4: BMI Categories of Female CF Personnel, HLIS 2004 and 2008/9 θ
θ Age standardized to the 2008 CF population
* p ≤0.05 versus referent group, ** p ≤0.01 versus referent group

As shown in Figure 9.5, CF personnel are more likely to be overweight or obese with increasing age. The prevalence of obesity ranged from a low of 12% among 18 to 29 year olds, to a maximum of 30% among 40 to 49 year olds.

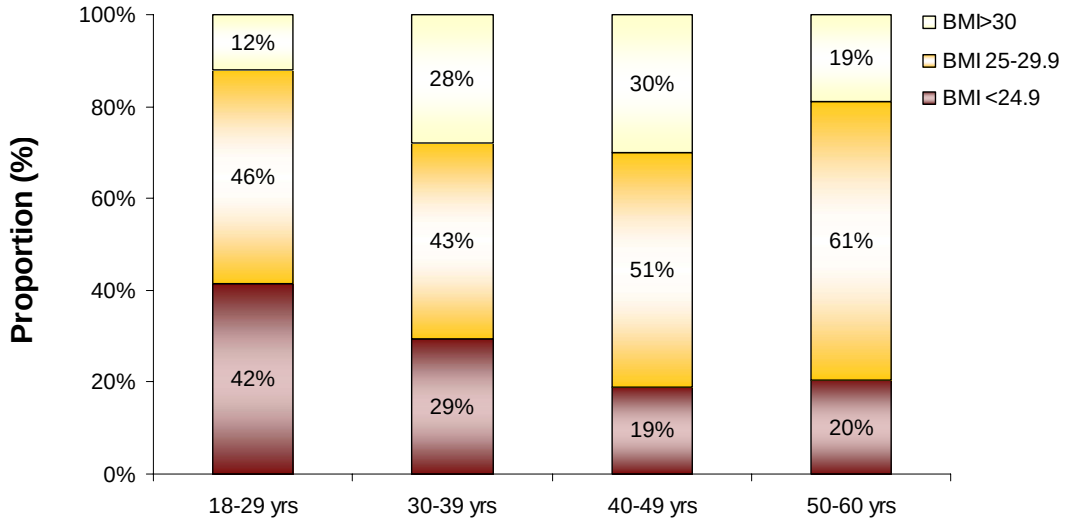

Figure 9.5: Body Mass Index (BMI) Categories by Age Group, HLIS 2008/9.

As shown in Table 9.3, obesity was significantly higher in personnel reporting poor self reported health. There were no statistically significant differences in obesity across CF Command (Figure 9.6), or smoking status categories.

Table 9.3: Prevalence of Obesity in CF Personnel by Age Group, Rank, and Self-Rated Health, HLIS 2008/9

Variable	Category	Proportion (%)	p value
Age Group	18-29	12.1% (7.5-19.0%)	Ref
	30-39	28.0% (22.4-34.4%)	p = 0.003
	40-49	29.9% (25.1-35.3%)	p ≤ 0.001
	50-60	19.0% (12.3-28.2%)	ns
Rank	NCM	26.2% (22.6-30.2%)	p ≤ 0.001
	Officer	15.2% (12.4-18.4%)	
Self-Reported Health	Poor or Fair	54.5% (40.9-67.5%)	p ≤ 0.001
	Excellent, Very Good, or Good	21.0% (18.1-24.2%)	

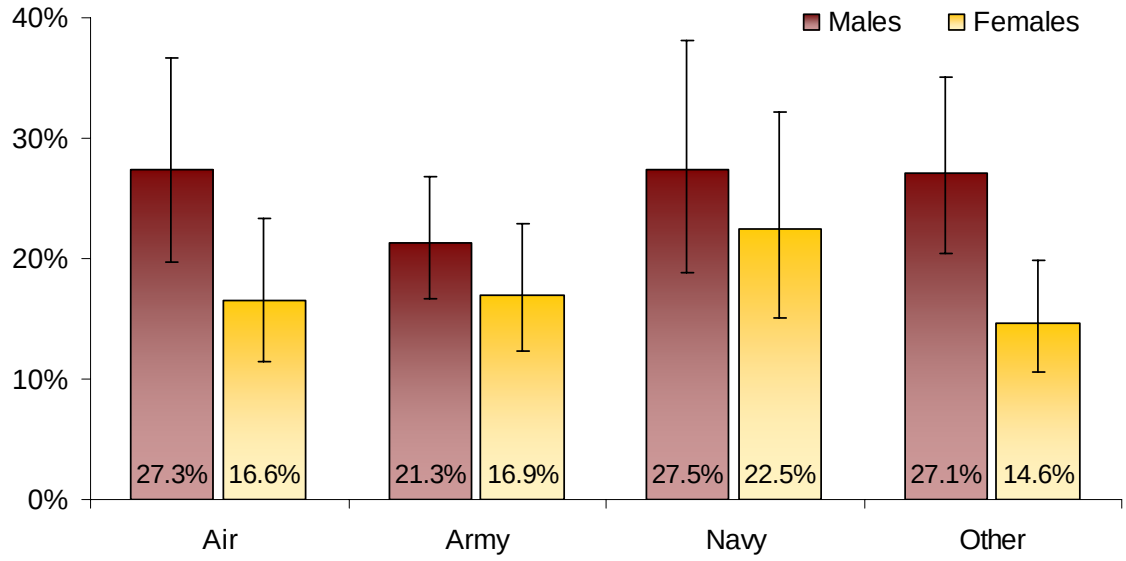

Figure 9.6: Prevalence of Obesity (BMI ≥30) by CF Command and Sex of Respondent, HLIS 2008/9

Perceived Weight Status

The perception of personal weight may influence diet, exercise, and sedentary activity habits. In the HLIS 2008/9, respondents were asked if they considered themselves to be overweight, underweight, or just about the right weight.

Compared to their self-reported BMI, CF personnel within the WHO BMI categories of underweight, normal weight and obese tended to perceive their weight with modest accuracy (Table 9.4). Persons in the overweight category though, fared less well in perceiving their weight. In evidence, 89.5% of males and 93.5% of females categorized as obese (BMI ≥30) perceived themselves to be overweight. Similarly, 93.8% of males

categorized as normal or underweight by BMI perceived their weight to be underweight or just about right. The 23.6% of normal or underweight females who perceive themselves as overweight is a finding that may warrant a more in-depth investigation. Conversely, 62.9% of overweight males perceive their weight to be just about right, compared with only 21.0% of females.

Classifications of excess body weight which rely on BMI may potentially overestimate the true health risk among persons with a greater proportion of muscle mass compared to subcutaneous and visceral body fat. It is tempting, of course, to attribute this systematic error to the 23.5% of CF personnel who were categorized as obese in 2008/9. However, the high degree of concordance in self-reported and perceived weight categories among obese males (89.5%) and obese females (93.9%) suggests that the observed increase in excess weight is more likely due to excess body fat, and not increased musculature in this group.

Table 9.4: BMI Categories Stratified by Perceived Weight of CF Personnel, HLIS 2008/9

Sex	Perceived Weight	Proportion (95% CI)		
		Normal / Underweight (BMI <25)	Overweight (BMI 25-29.9)	Obese (BMI ≥30)
Males	Underweight	13.1% (8.0-20.8)	0.1% (0-0.1) †	--
	Just about right	80.7% (72.4-86.9)	62.9% (57.3-68.2)	10.5% (6.6-16.4)
	Overweight	6.2% (3.1-12.0)	36.9% (31.6-42.6)	89.5% (83.6-93.4)
Females	Underweight	2.1% (1.0-4.6) †	--	--
	Just about right	74.2% (69.5-78.4)	21.0% (16.0-26.9)	6.1% (2.6-13.5)
	Overweight	23.6% (19.6-28.2)	79.0% (73.1-84.0)	93.9% (86.5-97.4)

† Fewer than 20 observations, values may be unstable; interpret with caution
-- Cell counts suppressed due to insufficient numbers

Physical Activity and Excess Body Weight

When compared to normal or underweight individuals (3.9 kcal/kg/day), overweight (4.5 kcal/kg/day) and obese (3.4 kcal/kg/day) personnel reported similar energy expenditures. Furthermore, there were no significant differences observed in the proportion of persons categorized as active, moderately active or inactive across BMI strata (Figure 9.7). The average amount of hours dedicated to sedentary activities also did not vary significantly by BMI category.

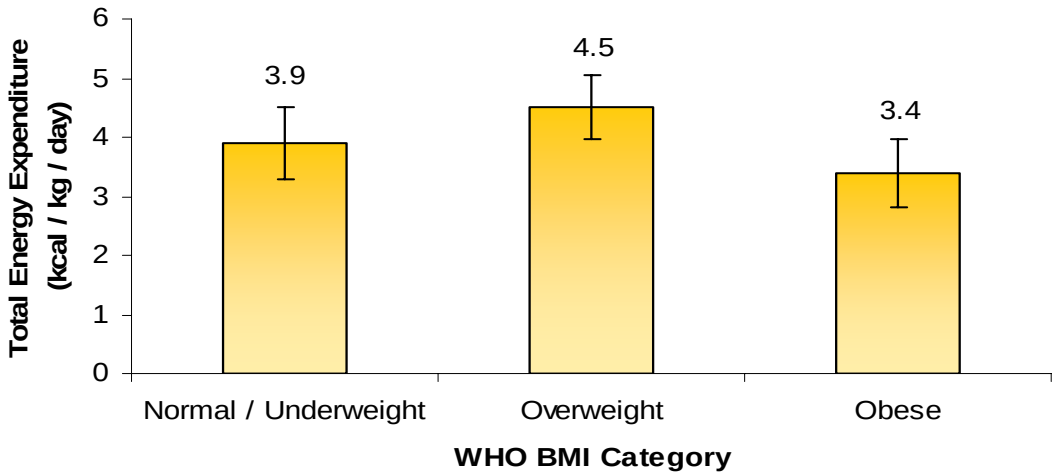

Figure 9.7: Total Energy Expenditure (kcal / kg / day) by Body Mass Index Category and Sex of Respondent, HLIS 2008/9

Body Mass Index and CF Fitness Testing

As provided in Table 9.5, CF personnel categorised as obese (BMI≥30) were three times more likely to fail the CF EXPRES Test than persons in the overweight, normal or underweight categories of BMI. There were too few respondents that reported having failed the BFT to report statistical differences across BMI categories.

Table 9.5: CF Fitness Test Fail Rates by BMI Categories, HLIS 2008/9

Variable	Category	Proportion (95% CI)	p value
CF EXPRES Test	Normal/Underweight	1.4% (0.6-3.5%) †	Ref
	Overweight	1.9% (0.5-7.5%) †	ns
	Obese	6.4% (3.2-12.3%) †	p = 0.006
Battle Fitness Test	Normal/Underweight	2.0% (0.8-5.0%) †	Ref
	Overweight	--	--
	Obese	--	--

† Fewer than 20 observations, values may be unstable; interpret with caution
-- Cell counts suppressed due to insufficient numbers

Impact of Obesity on Operational Readiness and Deployment

The elevated rate of failure during fitness testing among obese personnel has substantial implications for operational readiness. Military personnel are required to be physically fit as defined by DAOD 5023-1, *Minimum Operational Standards Related To Universality of Service,* and must pass annual fitness tests to be considered for deployment.

As shown in Table 9.6, a third of obese CF member indicate that they could not deploy in the previous two years, while a quarter of obese personnel report that they dagged red during pre-deployment screening (see Chapter 11 for definition of terms).

With increasing categories of BMI, the proportion of CF personnel who self-identified as not able to deploy in the previous two years increased for both males and females. Interestingly, the number of months a person was unable to deploy in the previous two years did not vary according to categories of BMI. Hence, persons categorized as obese were more likely to report being unable to deploy, but the amount of time they were unable to deploy for did not differ from non-obese persons.

It is worthwhile to ask if the presence of excess weight impacts the pre-deployment screening process, regardless of the eventual decision to deploy. Among males, those in the overweight BMI category were nearly eight times more likely to report dagging red in pre-deployment screening (9.5%) than persons in the normal / underweight category (1.2%). Alarmingly, males categorized as obese were more than 20 times more likely to report dagging red in the previous two years (25.4%) than their normal or underweight counterparts. A considerable proportion of females in the normal or underweight category also dagged red in the previous two years (20.1%), along with 23.8% of overweight females and 44.6% of obese females.

Table 9.6: Indicators of Deployability in the Previous Two Years by BMI Categories and Sex of Respondent, HLIS 2008/9

Sex	Indicator	Proportion (95% CI)		
		Normal / Underweight (BMI<25)	**Overweight (BMI 25 to 29.9)**	**Obese (BMI ≥ 30)**
Males	% unable to deploy	15.4% (8.9-22.0%)	15.0% (10.9-19.2%)	33.3% *** (25.4-41.2%)
	Number of months unable to deploy §	11.0 (6.5-15.6)	12.7 (9.7-15.6)	9.3 (7.2-11.5)
	% Dag red	1.2% (0-2.7%)	9.5% ** (2.9-16.0%)	25.4 % *** (14.0-36.8%)
Females	% Unable to deploy	29.1% (24.5-33.7%)	39.9% ** (33.3-46.5%)	51.0% *** (41.6-60.3%)
	Number of months unable to deploy §	14.0 (12.3-15.7)	12.4 (10.6-14.3)	13.0 (10.8-15.2)
	% Dag red	20.1% (12.2-28.0%)	23.8% (11.4-36.2%)	44.6% *** (27.8-61.5%)
Overall	% unable to deploy	18.7% (13.6-23.8%)	17.1% (13.3-20.9%)	34.9% *** (27.6-42.1%)
	Number of months unable to deploy §	12.2 (9.3-15.0)	12.6 (10.2-15.1)	9.8 (8.0-11.7)
	% Dag red	5.0% (2.9-7.3%)	10.5% (4.4-16.6%)	26.7% *** (16.1-37.4%)

§ Number of months unable to deploy based on self-report by participant
** p ≤0.01 versus normal / underweight group, *** p ≤0.001 versus normal / underweight group

Overall, 34.9% of CF personnel categorized as obese reported being unable to deploy in the previous two years, whereas only 18.7% of normal or underweight personnel were unable to deploy during that time (Figure 9.8). In addition, 26.7% of obese personnel reported having dagged red in the two years prior to the survey, compared to 5.0% of normal or underweight respondents.

In the interpretation of the dag red results, it should be considered that personnel with health limitations or other issues detrimental to operational fitness are less likely to be called for pre-deployment screening than persons without such known limitations. Thus, the results from the dag red analysis are likely to be an underestimate of the true proportion of personnel unavailable for deployment.

Furthermore, as a cross-sectional survey, the HLIS cannot determine which of the factors in this association occurred first. Non-deployable CF personnel with health problems may end up gaining weight as they are unable to exercise. Alternatively, CF personnel who do not exercise or eat properly may gain weight and develop health problems which prevent deployment.

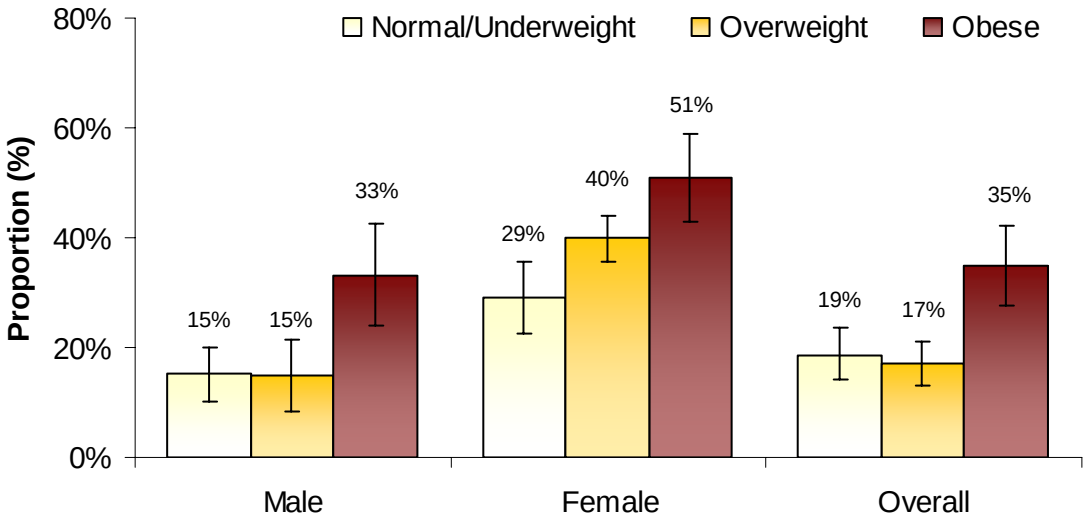

Figure 9.8: CF Personnel Unable to Deploy in Previous 2 Years, by Body Mass Index Category and Sex of Respondent, HLIS 2008/9

Excess Body Weight and Behaviour Change

Body mass index (BMI) is related to the three most commonly reported behaviour changes that CF personnel believe would improve their overall health, namely improving their diet, exercising more, and losing weight.

As shown in Figure 9.9, 94.7% of those who are categorized as obese (BMI ≥ 30) believe that losing weight would improve their health and well being, compared to 54.6% of overweight (BMI 25-29.9) and 15.9% of normal or underweight (BMI<25) personnel.

Of those who are obese, 86.9% felt that exercising more would improve their health and well-being, versus 62.5% of overweight individuals and 50.7% of normal or underweight persons.

Lastly, making changes to their diet to improve health was reported by 84.2% of obese personnel, 61.2% of overweight personnel, and 39.5% of normal or underweight personnel.

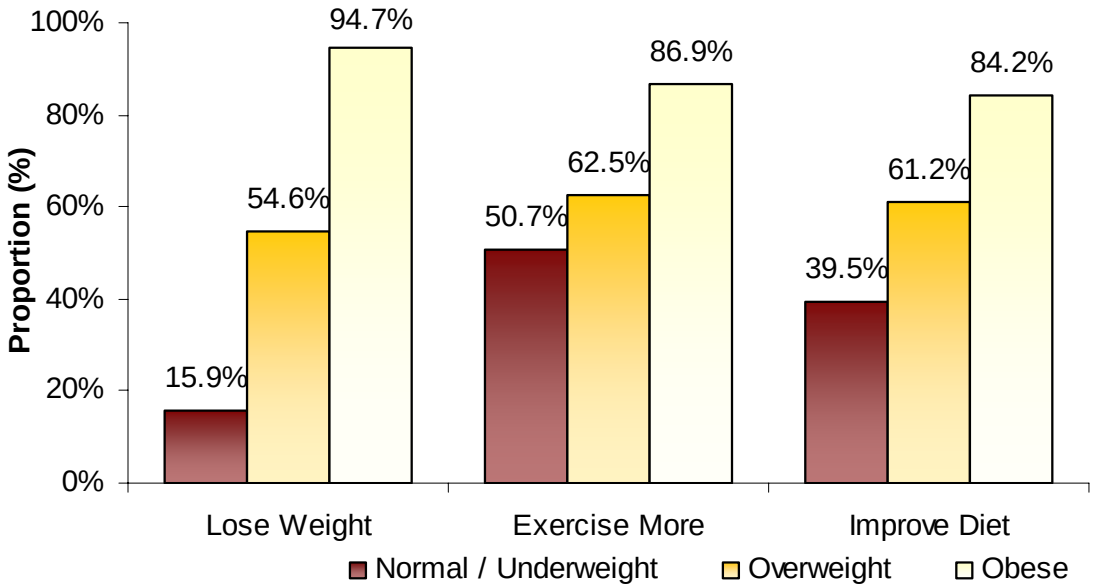

Figure 9.9: Behaviour Change to Improve Health and Well Being Among Obese and Non-Obese CF Personnel, HLIS 2008/09

Limitations of Self-Reported Height and Weight Data

The reliance on self-reported height and weight data to understand the health risk profile of the Canadian Forces has a number of limitations.

When relying on cut points to define categories of BMI, a small shift in the mean of the variable can translate into comparatively large shifts in the proportion of individuals within a given BMI category. For instance, although no significant change was observed in the mean BMI between 2004 and 2008/9, there was a significant increase in the proportion of obese females during that period.

As previously noted, the use of self-reported height and weight data to calculate BMI may lead to an underestimate of the true population prevalence of obesity (Shields et al., 2008). For example, the adult obesity rate in the general Canadian population was estimated to be 16% using self-reported data. However, measured data from the same survey demonstrated that the actual prevalence of obesity in Canada was 25.3% (Statistics Canada, 2009c). Furthermore, the 2007-2009 Canadian Health Measures Survey calculated a similar national estimate using measured height and weight data, and reported the prevalence of adult obesity to be 24% (Statistics Canada, 2010).

One cannot assume that the HLIS data similarly underestimates the overall rate of obesity, since the HLIS is a mail-based survey whereas the Statistics Canada surveys use personal interviews. Survey mode differences can have profound effects on survey responses, which inhibit the direct comparison of results.

There is no data available to compare the self-reported and measured height, weight and BMI of CF personnel. However, it is foreseeable that since CF personnel are routinely measured as part of mandatory physical exams, this population may report height and weight with higher accuracy than the general Canadian population. Therefore, although national estimates of the prevalence of adult obesity are provided for contextual support, the results from the Canadian Forces Health and Lifestyle Information Surveys should not be directly compared to other national health surveys, due to differences in both the survey methodology and the underlying CF population.

NUTRITION AND DIET

There is substantial evidence that the energy balance of an individual, defined as the difference between caloric intake and expenditure, has a direct and causal relationship with excess weight and obesity. Dietary behaviours, including the skipped or rushed meals, eating meals away from home, and the frequency, amount and temporal distribution of eating have all been shown to moderate the caloric balance of an individual (Ma et al., 2003). The HLIS 2008/9 collected data on the eating habits, knowledge and attitudes about nutrition among CF personnel. The use of professional counselling and educational services to support personal nutrition was also investigated.

Self-Reported Eating Habits

In 2008/9, CF personnel reported that their eating habits were either excellent (6.2%), very good (30.4%), good (44.7%), fair (15.0%) or poor (3.6%). As shown in Table 9.7, there was a statistically significant decrease in the proportion of CF personnel who reported that their eating habits were excellent, very good or good between 2004 (85.8%) and 2008/9 (81.7%). This decrease may be attributed to the decline in self-reported eating habits among males between 2004 (85.6%) and 2008/9 (81.0%), since a significant change was not observed in females during this time.

Females (86.1%) were significantly more likely to report their eating habits as excellent, very good or good compared to males (81.0%) in 2008/9.

Table 9.7: Self-Reported Excellent, Very Good, or Good Eating Habits by Sex of Respondent, HLIS 2004 and 2008/9 θ

Survey	Proportion (95% CI)		
	Males	Females	Overall
HLIS 2004	85.6% (83.7-87.5%)	87.2% (85.1-89.3%)	85.8% (84.4-87.2%)
HLIS 2008/9	81.0% (79.8-83.5%)	86.1% (83.6-88.6%)	81.7% (79.8-83.5%)
p value	p = 0.002	ns	p ≤ 0.001

θ Age and sex standardized to the 2008 CF population

NCMs (79.5%) were significantly less likely to report having excellent, very good, or good eating habits than Officers (87.8%). Additionally, respondents that were categorised as either overweight (BMI 25 to 29.9) or obese (BMI ≥ 30) reported good, very good or excellent eating habits statistically less often than respondents categorised as normal or underweight (BMI < 25). There were no differences in self reported eating habits across age groups, nor were there any significant differences observed across CF Command.

Skipped Meals

Skipping meals is a dietary behaviour associated with poorer nutrition, but the causative process has not been clearly established. Intuitively, fewer meals should lead to a decrease in caloric intake; however, a recent study by Ma and colleagues (2003)

demonstrated that skipping breakfast was associated with increased caloric intake as well as a four-fold increase in the rate of obesity. Shaw (1998) also showed that skipping meals resulted in a lower intake of vitamins and minerals, a higher intake of fat, and higher serum cholesterol levels.

On average, CF personnel skipped 2.6 meals per week; breakfast was skipped (1.9 meals) more often per week than lunch (0.72 meals). Males skipped significantly more meals than females and NCMs skipped significantly more meals than Officers. There was no significant difference in the number of meals skipped per week across age groups.

Rushed Meals

The tendency to rush through meals is associated with an increase in the likelihood of obesity (Kim et al., 2002), typically attributed to the consumption of energy-dense yet nutritionally deficient food. On average, CF personnel felt too rushed to eat regular meals on 1.1 days in the previous week.

Feeling too rushed to eat regular meals tended to increase with BMI. When compared to normal weight personnel, overweight personnel reported feeling rushed significantly more often; however this difference was not significant in obese personnel.

When standardized to the 2008 CF population by age and sex, there was a statistically significant decrease in the average number of times in a week CF personnel reported feeling too rushed to eat regular meals between 2004 and 2008/9 (Table 9.8). The majority of this effect is attributable to male personnel, who reported significantly fewer rushed meals per week between 2004 (1.5) and 2008/9 (1.1). There were no significant differences in the reporting of rushed meals across age group, rank, or CF Command.

Table 9.8: Number of Times Per Week Too Rushed to Eat Regular Meals by Sex of Respondent, HLIS 2004 and 2008/9 $^{\theta}$

Survey	Proportion (95% CI)		
	Males	Females	Overall
HLIS 2004	1.5 (0.8-2.2)	1.5 (0.8-2.2)	1.5 (0.8-2.2)
HLIS 2008/9	1.1 (0.2-1.9)	1.4 (0.5-2.2)	1.1 (0.2-2.0)
p value	p = 0.025	ns	p = 0.03

θ Age and sex standardized to the 2008 CF population

Servings of Vegetables and Fruit per Day

Insufficient intake of vegetables and fruit is correlated with many negative health outcomes including cancers and cardiovascular disease (Marmot & Wilkinson, 2006), and is inversely correlated with overall diet quality according to the Canadian adaptation of the American Healthy Eating Index (Garriguet, 2009). In 2007, Health Canada updated Canada's Food Guide to recommend that men and women over the age of 51 eat seven servings of vegetables and fruit per day. Men less than 51 years of age are recommended to eat eight to ten servings per day while women of similar age are recommended to eat

seven to eight servings of vegetables and fruit per day. The HLIS employed a six-item vegetable and fruit food frequency questionnaire (FFQ) tool, which is a validated proxy for servings of vegetable and fruit at the population level (Traynor, 2006).

On average, CF members reported eating 5.5 servings of vegetables and fruit per day in 2008/9. This average is below the Canada Food Guide recommendations for vegetables and fruit intake for all relevant age and sex groups. As shown in Table 9.9, compared to persons 18-29 years, respondents aged 30-39 and 40-49 ate significantly fewer vegetables and fruit. There was no significant difference in vegetables and fruit consumption across sex, rank, CF Command or base of service.

Table 9.9: Daily Intake of Vegetables and Fruit by Age Group, HLIS 2008/9 $^{\theta}$

Age Group	Number per Day (95% CI)	p value
18-29	6.4 (5.8-7.1)	Ref
30-39	5.6 (5.1-6.0)	$p \leq 0.001$
40-49	4.8 (4.5-5.2)	$p = 0.02$
50-60	5.5 (4.7-6.3)	ns

θ Age and sex standardized to the 2008 CF population

Respondents categorised as obese ate significantly fewer vegetables and fruit (5.2 servings per day) than normal or underweight persons (6.2 servings per day). Although normal weight personnel ate more vegetables and fruit than obese personnel, both of these averages were below Canada's Food Guide recommended daily intake. Fewer than one in five CF personnel (18.6%) are meeting Health Canada's updated recommendations for vegetables and fruit intake.

As shown in Figure 9.10, males less than 51 years of age were the least likely (16.7%), and females age 51 years and older were the most likely (40.7%) to meet Canada's Food Guide recommendations for vegetables and fruit intake.

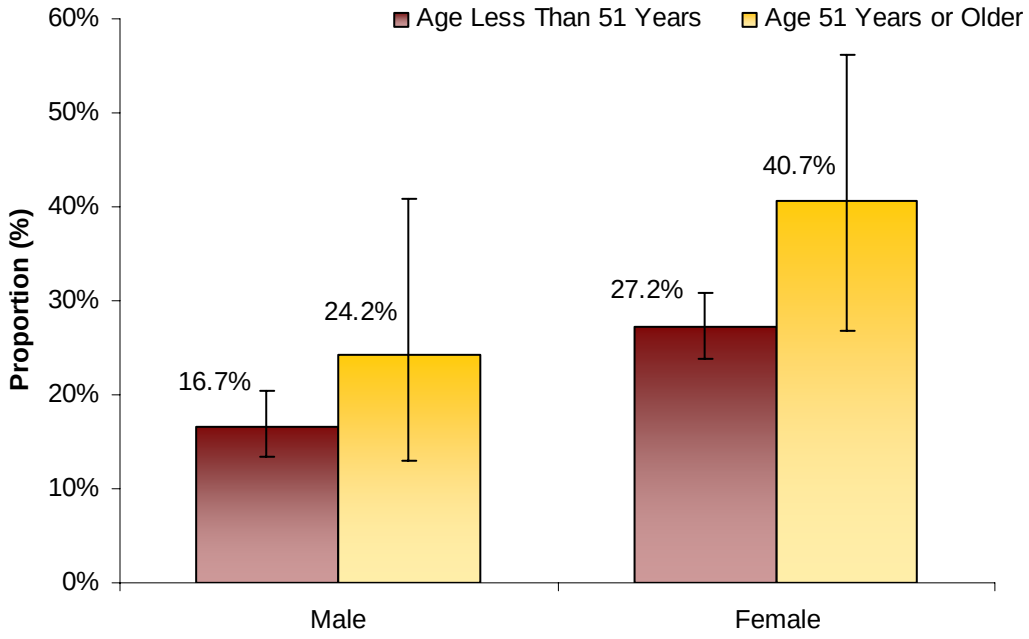

Figure 9.10: Adequate Daily Consumption of Vegetables and Fruit According to Canada Food Guide Recommendations by Age and Sex of Respondent, HLIS 2008/9

Participants in the HLIS 2008/9 estimated that government and health agencies recommend they consume 5.8 servings of vegetables and fruit each day (Table 9.10). However, respondents also estimated that 5.1 servings of vegetables and fruit were required daily to maintain their own health. The difference of two and a half servings of vegetables and fruit per day between the recommended and individual intake among younger males suggests that health promotion programs that target attitudes or beliefs of healthy eating are needed to counter these disparities.

The number of CF personnel who meet or exceed the current recommendations for daily vegetables and fruit intake was not compared across survey years, due to changes in the Canada's Food Guide in 2007.

Table 9.10: Healthy Eating Indicators Stratified According to Canada's Food Guide by Age Group and Sex, HLIS 2008/9

Indicator	Age < 51 Years		Age ≥ 51 Years		Overall
	Males	Females	Males	Females	
Daily Servings of Vegetables and Fruit Recommended by Canada's Food Guide	8 to 10	7 to 8	7	7	--
Calculated Mean Daily Servings of Vegetables and Fruit	5.5 (5.2-5.7)	5.6 (5.3-5.8)	5.3 (4.3-6.3)	6.7 (5.7-7.7)	5.6 θ (4.4-6.8)
Estimated Servings of Vegetables and Fruit Thought to be Recommended by Government	5.7 (5.4-6.0)	6.8 (6.5-7.1)	5.0 (4.3-5.8)	6.5 (5.9-7.1)	5.9 (4.7-7.0)
Estimated Servings of Vegetables and Fruit Thought to be Needed for Personal Health	5.0 (4.7-5.3)	5.8 (5.6-6.1)	4.3 (3.6-5.0)	5.9 (5.3-6.5)	5.1 (3.9-6.3)
Proportion who Report Their Eating Habits as Excellent, Very Good or Good.	80.2% (76.4-83.5%)	86.1% (83.3-88.5%)	88.9% (74.4-95.6%)	83.7% (70.9-91.6%)	81.7% θ (79.8-83.5%)

θ Age and sex standardized to the 2008 CF population

As shown in Table 9.11, there was a statistically significant increase in the age- and sex-standardized mean number of vegetables and fruit consumed per day between 2004 and 2008/9. There were no statistically significant differences during this time with respect to overall self-reported eating habits.

Table 9.11: Daily Number of Servings of Vegetables and Fruit Consumed by Sex of Respondent, HLIS 2004 and 2008/9 θ

Survey	Number of Servings (95% CI)		
	Males	Females	Overall
HLIS 2004†	4.9 (4.0-5.8)	5.5 (4.6-6.5)	5.0 (4.1-5.9)
HLIS 2008/9†	5.6 (4.4-6.8)	5.6 (4.6-6.7)	5.6 (4.4-6.8)
p value	$p = 0.024$	ns	$p \leq 0.05$

θ Age and sex standardized to the 2008 CF population

On average, CF personnel reported eating 5.6 servings of vegetables and fruit per day. Of those surveyed in the HLIS 2008/9, 48.0% reported eating more than 5 servings of vegetables and fruit per day. In context, 43.7% of Canadians aged 12 or older reported having consumed vegetables and fruit five or more times per day in 2008 (Statistics Canada, 2009b). Note that temporal, demographic and methodological differences may

prohibit the direct comparison of results between the HLIS and Statistics Canada health surveys.

Barriers to Eating Vegetables and Fruit

When asked to identify the factors that prevented one from eating more vegetables and fruit, 33.7% reported that they simply forgot to eat them. As shown in Figure 9.11, barriers related to cost, time, and preference also influence the amount of vegetables and fruit consumed.

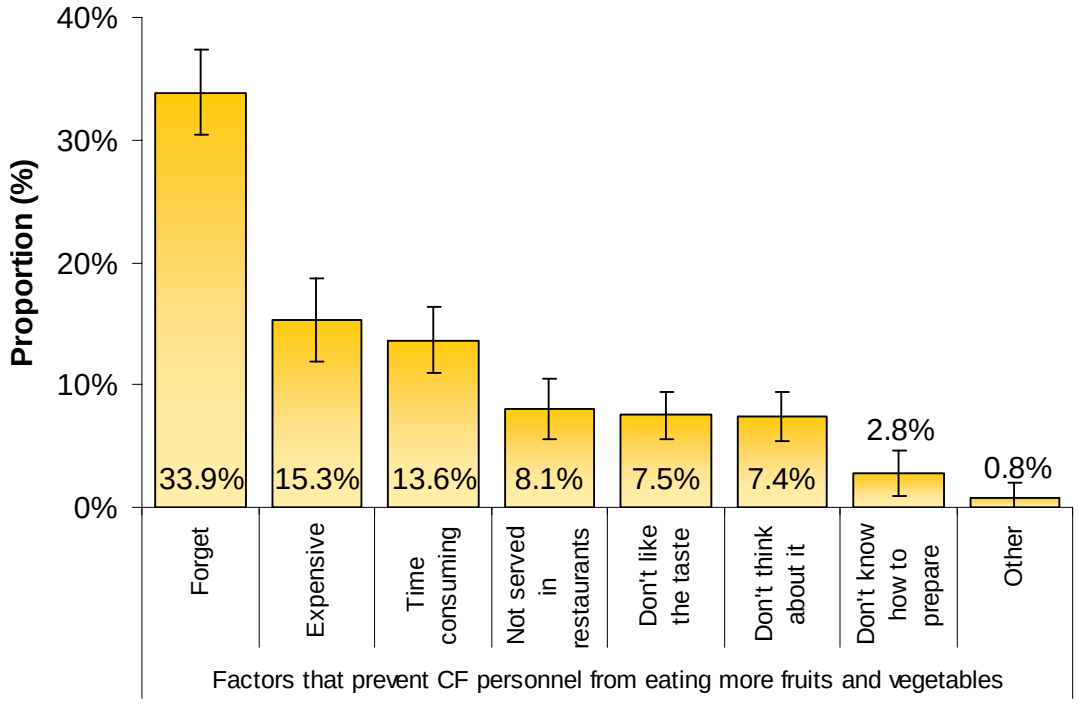

Figure 9.11: Factors that Prevent CF Personnel from Eating More Servings of Vegetables and Fruit, HLIS 2008/9.

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

Canadian Forces Food Services

The CF has limited control over the diet of its personnel, since the food choices that personnel make especially at home are largely outside of the direct influence of the CF. However, there are situations where the CF can more directly influence eating habits of its personnel. In the HLIS 2008/9, 39.9% of CF personnel reported eating at least one meal a month at a CF food services site (including contracted facilities), and 11.7% eat more than 20 meals per month at a CF food services site. Hence, there is a subgroup of CF personnel who can benefit considerably from the provision of healthy choices at CF food services.

On average, CF personnel report eating a meal at a CF food services site 5.5 times per month. As shown in Table 9.12, males eat at CF food services sites significantly more often than females. Furthermore, persons within the 18-29 age group eat at CF food

service sites significantly more often than the oldest age group. There were no statistically significant differences in the number of meals eaten at CF food services sites per month across rank or CF Command.

Table 9.12: Monthly Frequency of Eating Meals at CF Food Services by Sex and Age Group, HLIS 2008/9

Variable	Category	Number per Month (95% CI)	p value
Sex	Males	5.8 (4.6-7.0)	p = 0.002
	Females	3.6 (2.9-4.3)	
Age	18-29	6.9 (4.1-9.7)	Ref
	30-39	6.2 (4.2-8.2)	ns
	40-49	4.2 (3.1-5.3)	ns
	50-60	3.3 (1.6-5.1)	p = 0.03

Portion Sizes

Respondents in the 2008/9 HLIS survey were asked what they thought of portion sizes of meals served by CF food services. Of the CF personnel surveyed, 37.0% thought that the portions were just right, 10.6% reported that the portions were too large, and 7.4% responded that the portions were too small. The remaining 45% had no opinion (14.0%) or did not use CF food service sites (31.0%).

Availability of Healthy Choices

When asked, 49.4% of CF personnel did not use vending machines at their place of work. Of those who did use vending machines, only 7.3% were satisfied with the availability of healthy choices in the vending machines.

Overall, 62.2% of respondents reported eating meals at CF dining halls or cafeterias. Of those who did use CF eating facilities, 56.2% of personnel were satisfied with the availability of healthy choices in the facilities. There were no significant differences in satisfaction with CF vending machine or CF eating facilities across sex, age group, rank, CF Command or BMI categories.

Improvements to Diet

CF personnel were asked to indicate the actions they had taken to improve their diet in the 12 months prior to the survey. The most commonly reported action that was taken was a change in the diet of the respondent in order to lose weight, reported by 44.5% of CF personnel surveyed (Table 9.13). This was a statistically significant increase from the 39.7% of CF personnel who reported such a change in 2004. Females were significantly more likely than males to report such a change.

In addition, Army personnel were more likely than personnel from the Air and Other Commands to have reported a change in diet for the purpose of losing weight. Rank was not associated with a change in diet to lose weight. All other actions to improve diet were reported by fewer than 10% of respondents.

Table 9.13: Proportion of CF Personnel Reporting on Actions Taken to Improve their Diet in the Previous 12 Months, HLIS 2004 & 2008/9

Improvement to Diet	Proportion (95% CI)		p value
	HLIS 2004	HLIS 2008/9	
Changed my diet on my own to lose weight	39.7% (37.7-41.7%)	44.5% (42.1-47.0%)	p = 0.001
Nutrition counselling from registered dietician	6.9% (5.8-7.9%)	8.35% (7.0-9.7%)	p = 0.05
Nutrition counselling from health care provider	4.7% (3.8-5.6%)	5.8% (4.7-7.0%)	ns
Attended a military nutrition program or class	1.3% (0.8-1.7%)	5.9% (4.7-7.0%)	p ≤ 0.001
Attended a civilian nutrition program or class	1.9% (1.3-2.4%)	2.0% (1.3-2.7%)	ns
Attended a diabetes education class	1.1% (0.6-1.5%)	1.7% (1.1-2.4%)	p = 0.05

† Note that values for 2004 and 2008/9 are standardized to the 2008 Canadian Forces population; reported estimates may vary from earlier publications

However, there were statistically significant differences in actions taken to improve diet across BMI categories (Figure 9.12). Overweight and obese individuals were more likely to report that they had changed their diet on their own to lose weight than normal or underweight persons. Additionally, obese persons were more likely to report that they had received nutrition counseling from a health care provider, compared to normal and underweight personnel.

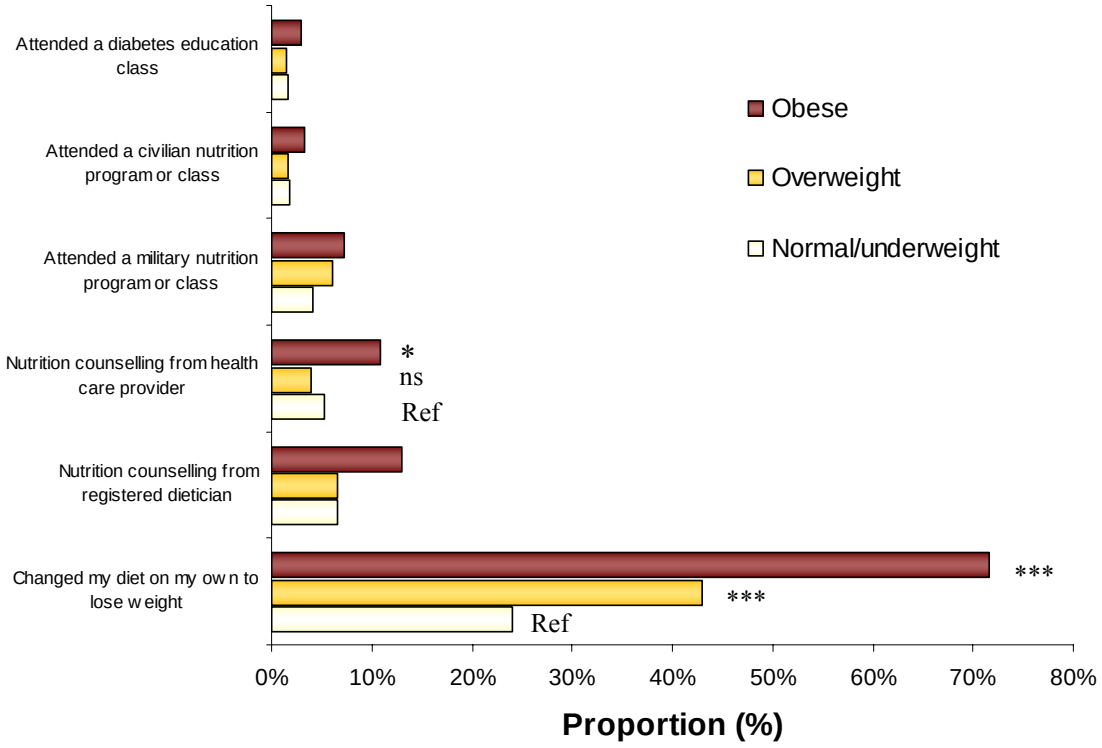

Figure 9.12: Proportion of CF Personnel Reporting an Improvement in Their Diet in the Previous Year, by WHO BMI category, HLIS 2008/9
* p ≤0.05 versus referent group, *** p ≤0.001 versus referent group

Attitudes and Beliefs about Nutrition

Attitudes, beliefs, and locus of control are important psychosocial predictors of weight change (Adolfsson et al., 2005). To better understand the intricacies of attitudes and beliefs about nutrition and weight change, CF personnel were first asked to indicate if they considered themselves to be overweight, underweight, or just about the right weight. Those individuals who self-perceived themselves as overweight were then asked to rate how strongly they agreed or disagreed with a number of statements regarding nutrition, exercise and weight.

Of the 43.9% who self-perceived themselves to be overweight, 86.9% believe that gaining or losing weight would improve their health (strongly agree: 60.1%; somewhat agree: 26.8%) (Figure 9.13). Ninety-eight percent of the self-perceived overweight group agreed that diet and exercise were important to gaining or losing weight (strongly agree: 79.2%; somewhat agree: 18.3%). Interestingly, a greater proportion of the self-perceived overweight group strongly agreed that they could gain or lose weight by exercising more (56.0%) than by changing their eating habits (46.6%). This stronger agreement could be due to a greater preference for exercise than for changing eating habits.

More than one-third of those who perceived themselves as overweight indicated that additional nutrition information would help them lose or gain weight (38.6%), and a similar proportion reported that they needed additional support at work to lose or gain

weight (34.3%). Officers were also more likely than NCMs to agree that additional information would help them lose or gain weight. There were no other statistically significant differences in these beliefs and attitudes of diet, exercise and weight across age group, sex, rank or CF Command.

It is important to note that this question did not ask respondents about their *current* satisfaction with nutritional information or occupational support related to gaining or losing weight. It is plausible that the approximately two-thirds of personnel who felt that additional information or support at work was not required to help them gain or lose weight could reflect either satisfaction with the status quo, or a disbelief in the effectiveness of such programs. More detailed information is required to elucidate the meaning behind such patterns of health beliefs.

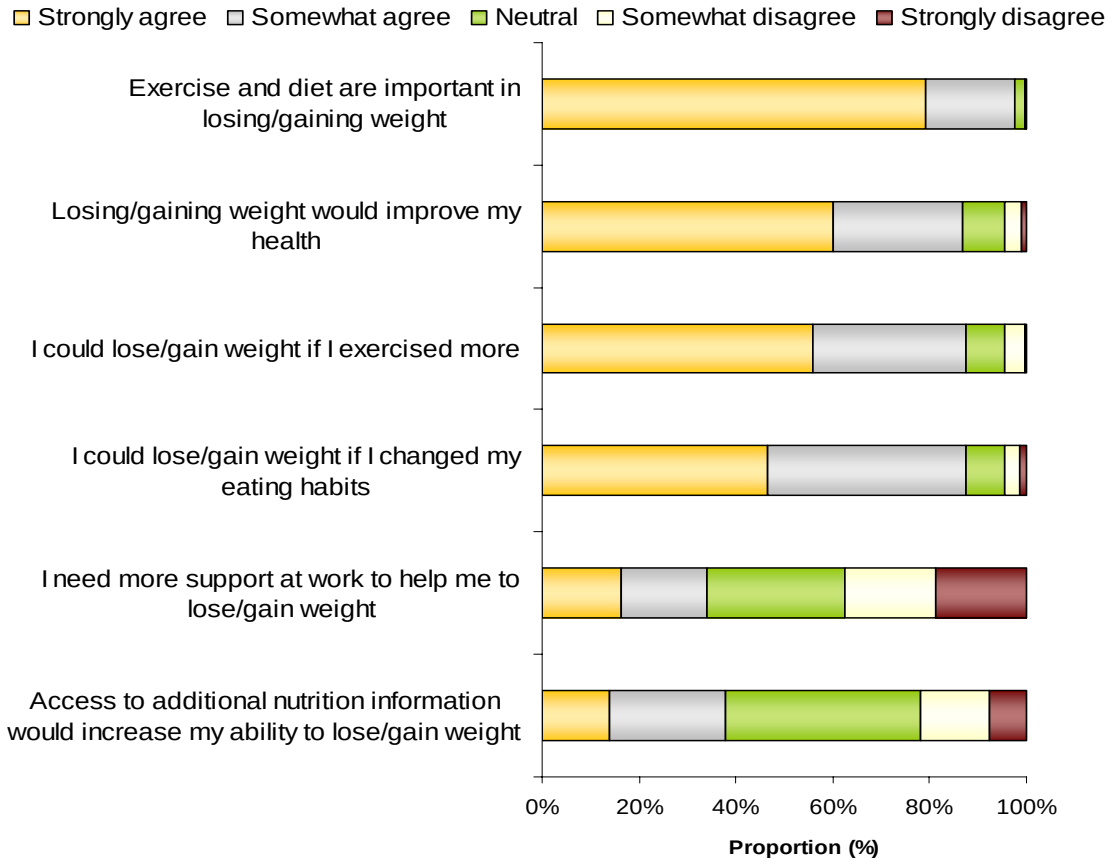

Figure 9.13: Attitudes, Beliefs, and Perceived Locus of Control Regarding Nutrition, Exercise and Weight Change, HLIS 2008/9

Civilian Weight Loss Programs

Approximately one-third (32.0%) of the self-perceived overweight group indicated that they were interested in attending a civilian weight loss program such as Weight Watchers. An additional 17.6% indicated that they were maybe interested, whereas 50.4% reported no interest at all. Females in this group (47.7%) were more likely than males (28.7%), and NCMs (33.8%) were more likely than Officers (23.0%) to be interested in attending a civilian weight loss program.

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TOBACCO USE

Smoking tobacco is strongly associated with a variety of serious negative health consequences including death (Jha, 2009). Smoking initiation and habit formation usually occurs prior to the age of 18, and early smokers are less likely to quit than individuals that initiate smoking later in life (Jason et al, 1999). Among the general Canadian population, 20.6% of Canadians aged 18-59 were daily smokers in 2008, while 5.6% were occasional smokers and the remaining 73.8% were non smokers (CCHS 2008 dataset available from Statistics Canada). The results from the 2008 Canadian Tobacco Use Monitoring Survey (CTUMS) of Canadians aged 15 and older found a lower overall prevalence; 18% of respondents were smokers (daily or occasional). The difference in smoking estimates between CCHS and CTUMS sources is probably due to differences in the population age group surveyed. Results from the CTUMS 2008 also demonstrated that there was a higher prevalence of smoking in younger age groups. Among Canadians aged 20-24, the prevalence of smoking was 27% (CTUMS, 2008).There has been an overall trend of decreasing daily and occasional smoking between 1994 and 2005 (Canadian Chronic Disease Infobase, 2005).

Smoking in the Canadian Forces

For this survey, having ever smoked was defined as having smoked at least 100 cigarettes (approximately 4 or 5 packs) in your lifetime. CF personnel that had never smoked 100 cigarettes were considered lifetime non-smokers. Among CF personnel that had ever smoked, the average age of smoking initiation was 16.5 years and 68.0% had started smoking before age 18.

Current smoking status findings are displayed in Figure 10.1. A majority of CF personnel were non-smokers (76.8%) while 4.9% smoked occasionally and 18.3% smoked every day. There were no significant differences in frequency of smoking between 2004 and 2008/9. The estimates were age and sex standardized to the 2008 CF population to facilitate comparison.

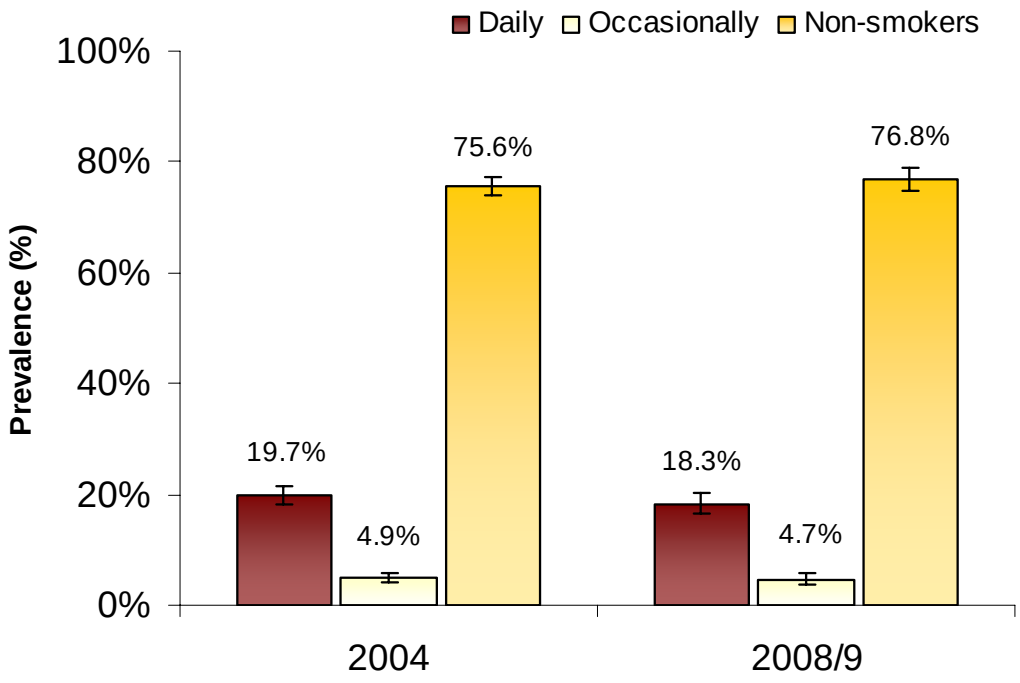

Figure 10.1: Smoking Frequency Among CF Personnel, HLIS 2004 and 2008/9 θ

θ Age and sex standardized to the 2008 CF population

Overall, 23.2% of respondents were current smokers (either daily or occasional). Smokers did not vary significantly from non-smokers in terms of sex, command or recent deployment. Contrary to expectations, there was also no significant difference between smokers and non-smokers in terms of age. It was expected that there would have been a decrease in smoking prevalence with increasing age as those who attempt to quit smoking were successful over time. A possible explanation for this lack of finding is that the current older cohorts may have had much higher initial smoking rates when they were younger compared to present day younger age group.

Statistical differences in the prevalence of daily or occasional smoking status are shown in Table 10.1. NCMs were significantly more likely to be smokers than Officers. Smoking was significantly less common among CF personnel with post-secondary education compared to those that had some/completed secondary education. Finally, smoking was more common among those who were widowed/separated/divorced compared to those who were married.

Table 10.1: Demographics of CF Smokers (Daily or Occasional) by Rank, Marital Status, and Education, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Rank	Officer	10.1% (7.6-13.4%)	$p \leq 0.001$
	NCM	26.6% (22.8-30.8%)	
Marital Status	Married / Common Law	20.8% (17.5-24.6%)	Ref
	Single	25.0% (17.8-33.8%)	ns
	Widowed / Separated / Divorced	36.3% (25.6-48.5%)	$p = 0.006$
Education	Some / Completed Secondary Education	29.4% (23.9-35.4%)	Ref
	Completed College / Some University	24.3% (19.3-30.2%)	ns
	Post-secondary Education	8.7% (5.9-12.8%)	$p \leq 0.001$

In 2008/9, the majority of ever (current and former combined) smokers (74.8%) reported that they started smoking before joining the CF. This may not be surprising, given that the majority (68.0%) of ever smokers reported starting before age 18. An additional 3.2% of ever smokers had not smoked since joining the CF. The remaining 22.0% of ever smokers reported that they started smoking after joining the Forces.

Among CF personnel that have smoked at some point while in the CF, smoking initiation after joining did not vary significantly by sex, age group, rank, recent deployment, command, education, marital status, or official language.

When the analysis was limited to current smokers, 24.5% started smoking after they joined the CF.

Among current smokers who started smoking after joining the CF, 44.7% started during basic training, 22.4% during occupational training, 20.1% while on deployment, and 12.4% during another time (Figure 10.2). Some examples of another time are during a divorce, field exercises, regular work, school or education.

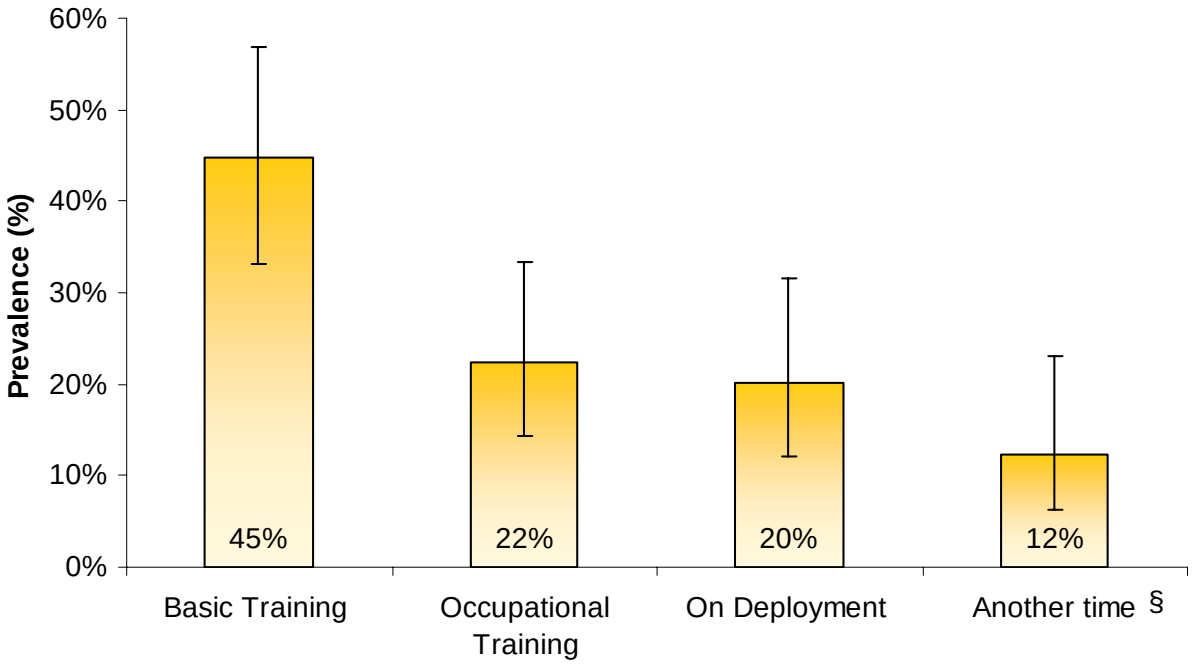

Figure 10.2: Periods of Smoking Initiation While in the CF, HLIS 2008/9
§ Examples include during divorce, field exercises, regular work, school or education

It is a serious concern that nearly a quarter of all smoking initiation is occurring after joining the Forces, specifically during basic and occupational training periods. If smoking initiation following enrolment in the CF were eliminated, there would be 3,383 fewer daily or occasional smokers currently enrolled in the CF, and the overall prevalence of smoking would be reduced to 17.5% (Table 10.2). Previous research has established that 50% of persistent cigarette smokers, or in this case 1941 CF personnel who started smoking after joining the CF, will die prematurely due to their nicotine addiction if they are unable to quit (Doll et al, 2004).

More specifically, if smoking initiation during basic training was eliminated, the proportion of current smokers among CF personnel would be reduced from 23.2% to 20.7%. Since smoking initiation during basic training is directly responsible for 10.8% of current smokers in the CF, this represents 1512 current daily or occasional smokers in the current force. Using the aforementioned figure of 50% premature mortality among persistent smokers, it is postulated that 756 of current CF personnel who started smoking during basic training will suffer a premature death due to nicotine addiction if they are unable to quit.

Table 10.2: Impact of Eliminating Smoking Following Enrolment in the CF

Population	Equation	Population Proportion	Number of Persons
CF Population	100%	100%	59,520 §
Proportion of current smokers	23.2%	23.2	13,809
Of CF personnel, those who initiated smoking after joining CF	23.2% x 24.5%	5.7%	3,383
Subcategories of Initiation:			
Basic training	(23.2% x 24.5%) x 44.7%	2.5%	1,512
Occupational training	(23.2% x 24.5%) x 22.4%	1.3%	758
While on deployment	(23.2% x 24.5%) x 20.1%	1.1%	680
During another time	(23.2% x 24.5%) x 12.4%	0.7%	419

§ Data based on Total Effective Strength of Regular Force personnel, obtained from the CF Human Resource Management System (HRMS) on July 28, 2008

The proportion of CF personnel that initiated smoking during basic training did not vary significantly by sex, age group, rank, recent deployment, or command. There was no difference in smoking initiation during basic training by years of service. This would seem to indicate that, over time, a consistently high percentage of the smoking initiation that occurs after joining the CF takes places during basic training.

Among current smokers who started smoking after joining the CF, NCMs were significantly less likely to initiate smoking during occupational training (18.8%) than Officers (48.8%). Smoking initiation during occupational training did not vary significantly by sex, age group, or command. There was no difference in smoking initiation during occupational training by years of service. The proportion of CF personnel initiating smoking during deployment or another time was too small to compare across demographic variables.

Smokers were asked if, since the time they joined the CF, they had ever re-started smoking after quitting or increased their amount of smoking. Respondents were permitted to select as many options as were applicable, thus responses may sum to more than 100%. As shown in Figure 10.3, the most common responses were during deployment (43.3%), occupational training (29.5%), and basic training (26.4%). For 20.6% of respondents, their smoking amount had not changed since joining the CF. Categories with less than 3% are not shown in Figure 10.3 but included responses such as another time, regular work, social reasons, divorce, posting, alcohol use, birth of a child, health condition, death of family or friend, or no reason.

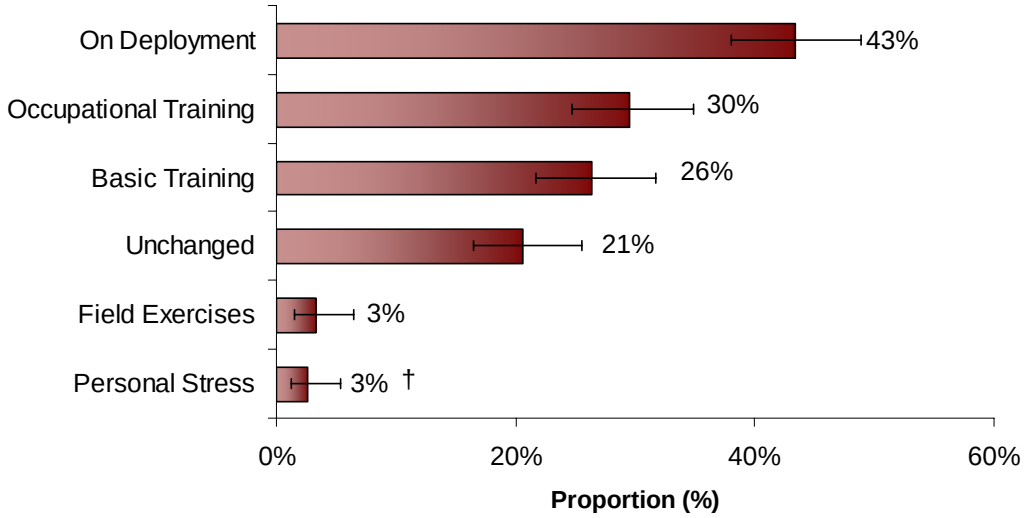

Figure 10.3: Periods of Re-starting or Increasing Smoking, while in the CF, HLIS 2008/9
† Fewer than 20 observations, values may be unstable; interpret with caution

Among those CF personnel that currently smoke, 46.6% were light smokers (0-10 cigarettes a day) 26.0% were moderate smokers (11-19 cigarettes per day) and the remaining 27.4% were heavy smokers (20 or more cigarettes per day). Heavy smokers did not differ significantly from light smokers in terms of age, sex, rank, deployment or command. The amount of cigarettes smoked per day by CF smokers is similar to rates among smokers in the Canadian population. Among Canadian smokers aged 18-59, 50.4% were light smokers, 21.4% were moderate smokers and 28.3% were heavy smokers (CCHS 2008 dataset available from Statistics Canada).

The amount of time from waking in the morning to smoking the first cigarette has been shown to predict plasma and urinary cotinine (Muscat et al, 2009) and is a commonly used measure of nicotine dependence in population-based studies (Haberstick et al., 2007). In the HLIS 2008/9, this measure was used to assess the degree of nicotine dependence. Approximately half (51.5%) of CF smokers reported having their first cigarette of the day within 30 minutes of waking, and were thus considered to be highly or moderately highly dependent on nicotine. There was no statistically significant difference observed between the urgency for nicotine after waking and age, sex, rank, deployment or command.

Alternative Tobacco Products

In 2008/9, cigars were smoked by 10.7% of CF personnel in the previous month; cigarillos were smoked by 8.6% and chewing tobacco was used by 2.9% in the same time frame. Less than 1% of CF personnel reported using other alternative smoking products (pipe, snuffing tobacco, SNUS, shisha). Overall, 16.7% of all survey respondents reported using any form of alternative tobacco products in the previous month. Use of cigars and cigarillos is lower in the general Canadian population, where only 3% reported

smoking cigars or cigarillos in the previous 30 days, and even smaller proportions had smoked a pipe, or used chewing tobacco (Canadian Tobacco Use Monitoring Survey (CTUMS), 2003). Information on cigar and cigarillo use by age and sex was not available from CTUMS.

As shown in Table 10.3, users of alternative tobacco products were significantly more likely to be male and younger. There were no significant differences in use of alternative tobacco products in the past month by rank, deployment or CF Command.

Table 10.3: Use of Any Alternative Tobacco Products in the Past Month, by Sex and Age Group, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p values
Sex	Male	18.2% (15.2-21.7%)	$p \leq 0.001$
	Female	6.7% (5.0-8.8%)	
Age Group	18-29	25.1% (18.5-33.0%)	Ref
	30-39	19.5% (14.8-25.3%)	ns
	40-49	10.1% (7.4-13.6%)	$p \leq 0.001$
	50-60	5.8% (2.3-13.6%)	$p = 0.001$

The pattern of significantly higher alternative tobacco use among males and those in the younger age groups is also consistent for two specific products: cigars and cigarillos (Table 10.4). Use of all other alternative tobacco products was too rarely reported to establish stable comparisons by demographic variables. There were no significant differences in use of cigars or cigarillos by rank, deployment or CF Command.

Table 10.4: Use of Cigars and Cigarillos in the Past Month, by Sex and Age Group, HLIS 2008/9

Variable	Category	Cigars (%) (95% CI)	p values	Cigarillos (95% CI)	p values
Sex	Male	11.9% (9.5-14.9%)	$p \leq 0.001$	9.4% (7.1-12.3%)	$p < 0.001$
	Female	3.0% (2.0-4.6%)		3.2% (2.1-4.8%)	
Age Group	18-29	15.2% (9.3-21.1%)	Ref	13.3% (7.4-19.2%)	Ref
	30-39	12.5% (8.0-17.1%)	ns	10.1% (5.9-14.2%)	ns
	40-49	7.0% (4.4-9.7%)	$p = 0.006$	4.6% (2.4-6.9%)	$p = 0.002$
	50-60	4.8% (0.1-9.7%)	$p = 0.034$	4.2% (0.7-9.1%)	ns

Smoking Cessation

Among current smokers, 29.4% received help or information on quitting smoking from a CF health care practitioner in the last two years. Receiving help or information on quitting smoking did not vary significantly by age, sex, rank, recent deployment, CF Command or official language.

Of those that smoke, 50.3% were considering quitting in the next 6 months. Among smokers that were considering quitting in the next 6 months, 64.7% were considering quitting in the next 30 days. Among respondents that were attempting to quit, 51.2% had quit for a 24 hour period in the previous 12 months.

Among respondents that have quit smoking, the majority quit more than a year ago (86.0%), while 11.2% quit within the previous 6 months and 2.8% had quit between 6-12 months previously.

Current smokers and those who had quit smoking within the past year were asked about use of specific smoking cessation aids. The most common aid reported was Nicorette gum, used by 6.8%, while 6.1% used a Nicorette patch, 3.7% used Champix, and 2.3% quit without using any cessation aids. Less than 2% of CF personnel used Zyban, laser therapy, hypnosis or other forms of smoking cessation aids in the past year. Only 26.2% of current smokers did not attempt to quit smoking in the past 12 months. Of note, it was possible for respondents to select more than one smoking cessation aid.

The transtheoretical model (also referred to as "Stages of Change") for smoking cessation is an established model used to identify readiness to make a behavioural lifestyle change. In theory, this Stages of Change approach can be used by health promoters and health care personnel to target smoking cessation programs depending on the smoker's readiness to quit, with interventions targeted towards people in the precontemplation or contemplation stages of smoking cessation (Aveyard et al, 2009). The rationale for focussing on smokers in precontemplation and contemplation stages are that more smokers fall into these two categories compared to the proportion in the preparation stage and require different types of interventions (Etter et al, 1997). Smokers in the preparation stage have made a commitment to quit smoking and require advice on how to proceed. Conversely, smokers in the precontemplation and contemplation stages require interventions that address their current attitude toward smoking (Etter et al., 1997). The definitions used to indicate stage of smoking behaviour change are contained in Table 10.5 (Prochaska et al, 1992).

Table 10.5: Stages of Change Definitions for Readiness to Quit Smoking

Stage of Change	Definition
Precontemplation	Not seriously considering quitting in the next six months
Contemplation	Seriously considering quitting in the next six months but not in the next 30 days *or* is planning to quit in next 30 days but did not quit for 24 hours in past year
Preparation	Plans to quit in the next 30 days and did quit for 24 hours in the past year
Action	Former smokers who quit in the past six months
Maintenance	Former smokers who quit over six months ago

The distribution of CF personnel across the Stages of Change indicates that a majority of ever smokers had quit, and were in the maintenance stage of their behavioural change (Figure 10.4). A further 30.0% were in either the precontemplation or contemplation stages, which represents an opportunity for support and health promotion activities. The final 20.0% were in the preparation or action stages of their smoking behaviour. This distribution across the Stages of Change was similar to the distribution observed among Canadians aged 15 and over. The 2008 CTUMS found that 15.0 % of current and former smokers were in precontemplation, 13.4% in contemplation, 14.5 in preparation, 1.3% in the action stage and 59.9% in the maintenance stage of cessation.

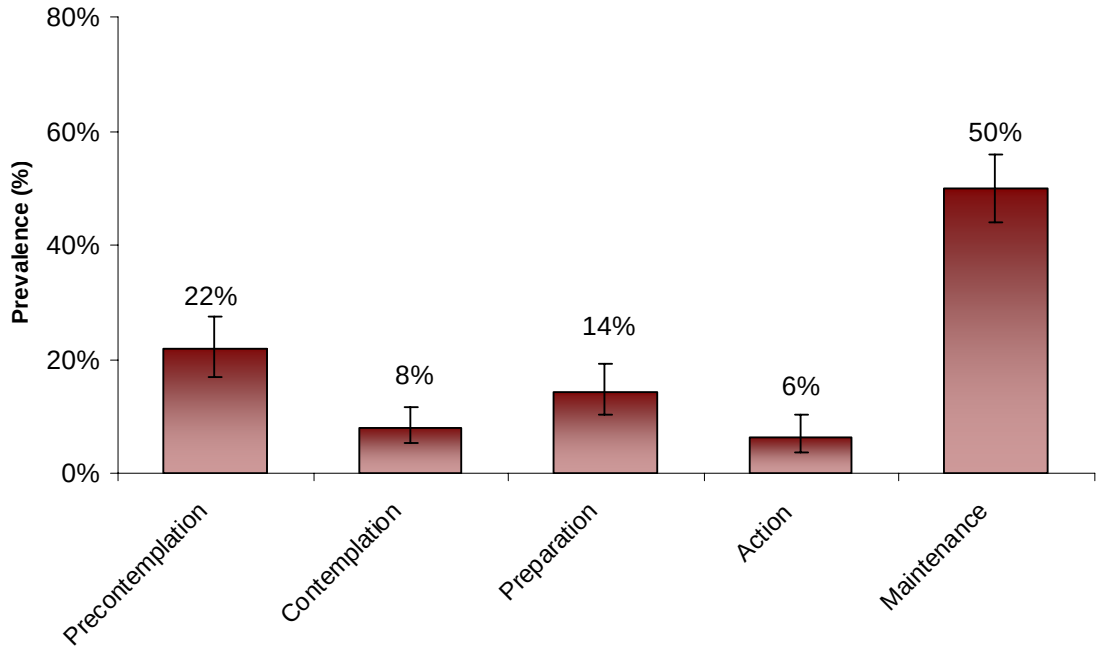

Figure 10.4: Profile of the Stages of Change of Among CF Personnel that have Ever Smoked Cigarettes, HLIS 2008/9

ALCOHOL USE

The use of alcohol has been associated with numerous negative health outcomes (Bondy et al, 1999). Alcohol should be used in moderation as there is strong evidence of increasing risk of adverse health and injury consequences with increasing amounts of alcohol consumption (Rehm et al, 1997). Alcohol consumption in the general Canadian population is common; data from the 2008 Canadian Community Health Survey indicated that 83.4% of Canadians aged 18-59 reported that they consumed alcohol in the past 12 months (CCHS 2008 dataset available from Statistics Canada).

Alcohol Use in the Canadian Forces

In the 12 months prior to completing the survey, 93.5% of CF personnel reported consuming alcohol. This was a statistically significant decrease from standardized 2004 estimates (95.4%). Even with the observed decrease in prevalence of alcohol consumption from 2004, alcohol use remained extremely common among CF personnel.

Among those that consumed alcohol in the previous 12 months, 23.0% drank less than once a month, 31.0% drank 2-4 times a month, 27.7% drank 2-3 times a week and 16.9% drank 4 or more times a week. Daily drinking was indicated by 7.9% of CF personnel in 2008/9. This represents a statistically significant increase from the 2.9% of CF personnel that reported daily drinking in 2004.

Low-Risk Drinking Guidelines

The Centre for Addictions and Mental Health, a Canadian organization, created the Low-Risk Drinking Guidelines (LRDG), which are intended to minimize the risk of alcohol consumption (Bondy et al., 1999) and are based on a comprehensive review of international research. These guidelines recommend a maximum of two standard drinks on any day, no more than nine drinks per week for women and no more than 14 drinks per week for men. A standard drink is defined as 13.6 grams of alcohol, which is the equivalent of one beer (12 oz/341 mL), one glass of wine (5 oz/142 mL) or one glass of spirits (1.5 oz/43 mL) (Bondy et al., 1999). Data from the Canadian Community Health Survey Nutrition supplement indicated that in 2004, 20% of males and 8% of females drank more than two alcoholic drinks on any day of the week.

When asked about their alcohol consumption for each day of the previous week, 47.8% of CF personnel reported that they drank more than the recommended daily maximum of two drinks. There was a statistically significant increase in the overall proportion of CF personnel exceeding daily recommendations in 2008/9 (47.8%) compared to 2004 (44.4%; $p = 0.027$).

A significantly higher proportion of males exceeded the two drink per day maximum (50.1%) compared to females (30.1%) (Figure 10.5).

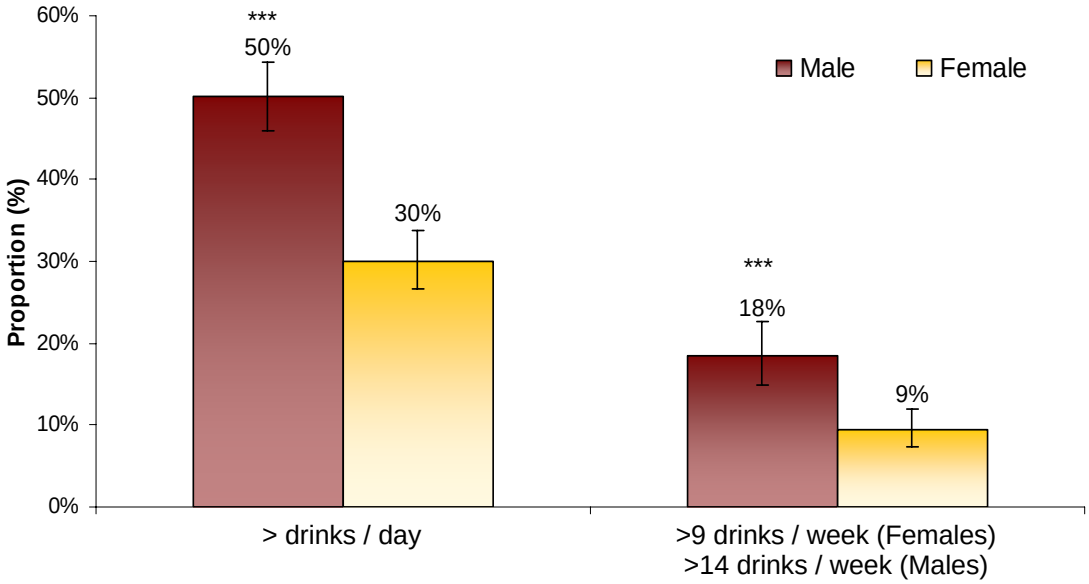

Figure 10.5: Proportion of CF Personnel Exceeding Low-Risk Drinking Guidelines Daily or Weekly Recommendations by Sex of Respondent, HLIS 2008/9
*** p ≤0.001 versus referent group

Exceeding the daily limits in the Low-Risk Drinking Guidelines was more common among younger CF personnel (Table 10.6). Single CF personnel and those with some/completed secondary education were also more likely to exceed the daily LRDGs. The proportion of persons exceeding the Low-Risk Drinking Guidelines daily maximum did not vary significantly by recent deployment, rank, CF Command or official language.

Table 10.6: Proportion of CF Personnel Exceeding Low-Risk Drinking Guidelines Daily Recommendations by Age Group, Marital Status, and Education, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Age Group	18-29	55.9% (46.5-64.8%)	Ref
	30-39	45.5% (38.5-52.6%)	ns
	40-49	43.1% (37.1-49.2%)	p=0.026
	50-60	45.5% (33.3-58.3%)	ns
	Widowed / Separated / Divorced	53.0% (40.2-65.3%)	ns
Education	Some / Completed Secondary Education	54.5% (47.0-61.8%)	Ref
	Completed College / Some University	42.4% (35.6-49.5%)	p=0.022
	Post-secondary Education	46.6% (40.8-52.5%)	ns
Age Group	18-29	55.9% (46.5-64.8%)	Ref
	30-39	45.5% (38.5-52.6%)	ns
	40-49	43.1% (37.1-49.2%)	p=0.026

As shown in Table 10.7 and Figure 10.5, twice as many males exceeded their weekly maximum of 14 drinks per week (18.4%), compared to females (exceeding 9 drinks per week) (9.4%), a statistically significant difference. In terms of the recommended weekly maximums, there was a statistically significant increase, once age and sex standardized, in the overall proportion of CF personnel exceeding weekly recommendations in 2008/9 (17.4%) compared to 2004 (11.8%).

Younger CF members, NCMs, and single personnel were most likely to exceed the weekly Low Risk Drinking Guidelines. Those with post-secondary education were less likely to exceed these guidelines. The proportion exceeding the LRDGs weekly maximum did not vary significantly by recent deployment, command, or official language.

Table 10.7**:** Proportion of CF Personnel Exceeding Low-Risk Drinking Guideline Weekly Recommendations of Alcohol Intake by Sex, Age Group, Rank, Marital Status, and Education, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	18.4% (14.9-22.6%)	$p \leq 0.001$
	Female	9.4% (7.3-11.9%)	
Age Group	18-29	24.5% (17.0-34.0%)	Ref
	30-39	16.5% (11.6-22.9%)	ns
	40-49	13.0% (9.4-17.8%)	$p = 0.010$
	50-60	11.7% (5.4-23.4%)†	ns
Rank	Officer	9.9% (7.4-13.1%)	$p \leq 0.001$
	NCM	19.5% (15.5-24.1%)	
Marital Status	Married or Common Law	13.4% (10.3-17.3%)	Ref
	Single	29.1% (20.3-39.9%)	$p = 0.001$
	Widowed / Separated / Divorced	19.6% (10.9-32.6%)	ns
Education	Some or Completed Secondary Education	23.9% (17.7-31.5%)	Ref
	Completed college or Some University	15.9% (11.3-21.9%)	ns
	Post-secondary Education	9.9% (7.4-13.1%)	$p \leq 0.001$

† Fewer than 20 observations, values may be unstable; interpret with caution

Individuals that exceeded either the daily and/or weekly recommendations were combined to create a general profile of individuals exceeding the Low-Risk Drinking Guideline recommendations. Overall, 47.8% of CF personnel exceeded *either* the daily and/or weekly LRDG recommendations.

Only 29.0% of CF personnel reported that they were aware of the Low-Risk Drinking Guidelines. The proportion that was aware of the guidelines was significantly higher among CF personnel with French as their official language (41.9%) compared to English (23.7%). There were no significant differences in awareness of the Low-Risk Drinking Guidelines by sex, age, rank, command, recent deployment, education or marital status. When CF personnel were asked what they thought was the maximum number of drinks a person should consume per day, 74.7% correctly selected two drinks or less, while 25.3% reported more than two drinks.

A significantly higher proportion of females correctly estimated the daily maximum (83.5%) compared to males (73.3%) (Table 10.8). CF personnel in the youngest age group (18-29) were least likely to correctly estimate the daily maximum compared to older age groups. The proportion correctly identifying the maximum number of drinks per day did not vary significantly by rank, recent deployment, command, education, marital status or official language.

Table 10.8: Proportion of CF Personnel to Correctly Estimate the Daily Maximum for Alcohol Beverages, by Age Group and Sex

Variable	Category	Proportion (95% CI)	p value
Sex	Male	73.3% (69.4-76.9%)	$p \leq 0.001$
	Female	83.5% (80.8-85.9%) †	
Age Group	18-29	66.0% (57.5-73.5%)	Ref
	30-39	77.4% (71.6-82.5%)	p = 0.018
	40-49	77.4% (72.4-81.7%)	p = 0.013
	50-60	84.4% (74.9-90.8%)	p = 0.004

† Fewer than 20 observations, values may be unstable; interpret with caution

Hazardous and Harmful Drinking

The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization to identify individuals with hazardous and harmful alcohol consumption patterns (Babor et al, 2001). An AUDIT score of 8 or more for men or 7 or more for women is an indicator of hazardous or harmful drinking practices. The difference in cut-off scores reflects the varying effects of alcohol by body weight and metabolism (Babor et al., 2001).

The overall percentage of CF personnel exceeding their gender specific AUDIT cut-off score was 19.8%. As shown in Figure 10.6, hazardous and harmful alcohol consumption in the CF significantly increased from 12.9% in 2004. Estimates are age and sex standardized to the 2008 CF population to allow direct comparison.

The age- and sex-standardized percentage of males with a score of 8 or more on the AUDIT was 20.9%, significantly higher than the percentage of females with a score of 7 or more at 12.3% (Figure 10.6). There were also statistically significant increases in the

age- and sex-standardized proportion of personnel who exceeded the AUDIT cut-off among males and females between 2004 and 2008/9 as seen in Figure 10.6.

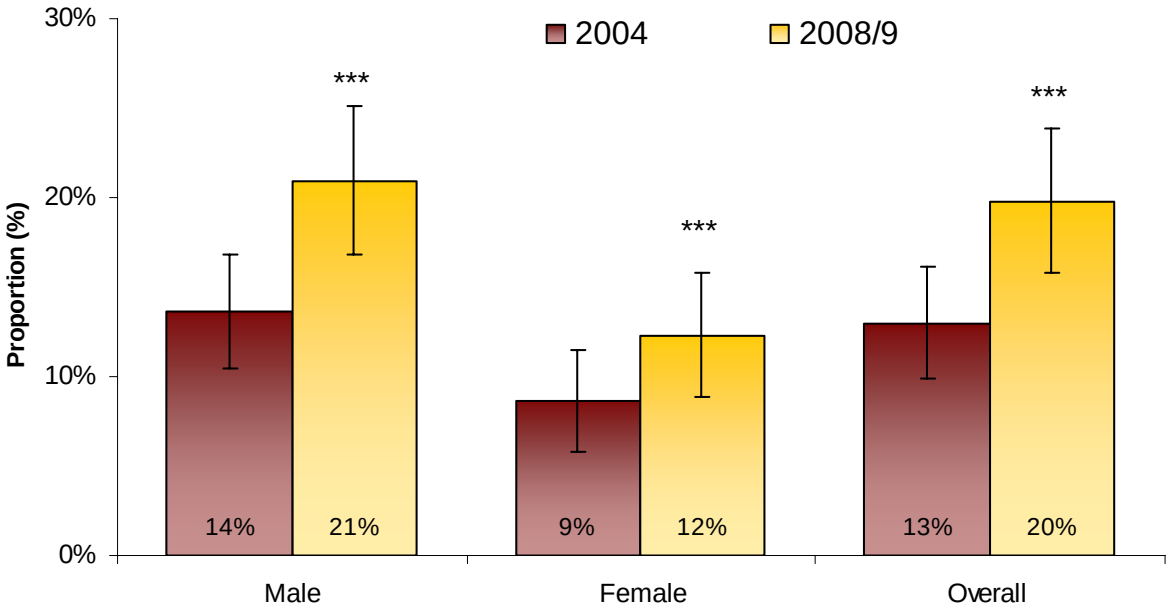

Figure 10.6: Proportion of CF Personnel who Exceeded the Alcohol Use Disorders Identification Test (AUDIT) High Risk Score by Sex, HLIS 2004 and 2008/9 [θ]

θ Age and sex standardized to the 2008 CF population

*** p ≤0.001 versus referent group

The proportion of CF personnel with scores indicating hazardous and harmful drinking tended to decrease with increasing age. Among CF personnel aged 18-29 years, 28.2% exceeded the AUDIT cut off and exhibited hazardous or harmful drinking behaviour. Although the proportion scoring above the AUDIT cut off was lower for those aged 30-39 years (20.8%) it was not a statistically significant difference. Only 13.4% of CF personnel aged 40-49 years and 11.4% of those aged 50-60 years exceeded the AUDIT cut off, a significantly lower proportion compared to those 18-29 years.

The proportion of persons exceeding the AUDIT score sex-specific cut-off did not vary significantly by education, official language, recent deployment, command or rank.

Binge Drinking in the Canadian Forces

One of the individual questions from the AUDIT specifically asked about binge drinking behaviour. For the AUDIT, binge drinking is defined as consuming six or more drinks on one occasion. When asked how often they have six or more drinks on one occasion, 27.9% of CF personnel reported that they never did, while 47.5% did so less than once a month, and 24.6% did so monthly or more often. Binge drinking more than once a month was significantly more common among CF personnel who were male, aged 18-29 years old or were NCMs (Table 10.9). There were no significant differences in binge drinking behaviour by command or recent deployment.

Table 10.9: Prevalence of Monthly Binge Drinking (6 or More Drinks on One Occasion), by Sex, Age Group and Rank, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	26.9% (23.2-31.0%)	p ≤ 0.001
	Female	9.3% (7.3-11.9%)	
Age Group	18-29	39.4% (31.2-48.3%)	Ref
	30-39	24.5% (19.1-30.9%)	p = 0.005
	40-49	16.2% (12.4-20.9%)	p ≤ 0.001
	50-60	10.1% (4.6-20.8%) †	p ≤ 0.001
Rank	Officer	18.3% (14.6-22.7%)	p = 0.007
	NCM	26.5% (22.5-31.0%)	

† Fewer than 20 observations, values may be unstable; interpret with caution

When asked if their drinking practices had changed since joining the Forces, 27.0% said that they drank more, 30.0% said they drank less, and 36.1% said they drank about the same amount. The remaining 6.9% of respondents reported that they did not consume alcohol. Those that reported drinking more alcohol after joining the CF did not differ from those that drank the same amount or less in terms of sex, rank, deployment, command. There was a pattern in drinking practices by age group; as age increased there was a significant decrease in the proportions of individuals who reported drinking more alcohol since joining the Forces (Table 10.10).

Table 10.10: Prevalence of CF Personnel who Reported that they Consume More Alcohol Since Joining the CF, by Age Group

Age Group	Proportion (%) (95% CI)	p value
18-29	42.5% (34.2-51.1%)	Ref
30-39	24.2% (19.2-30.0%)	p ≤ 0.001
40-49	23.4% (19.0-28.4%)	p ≤ 0.001
50-60	25.6% (16.4-37.8%) †	p ≤ 0.025

† Fewer than 20 observations, values may be unstable; interpret with caution

Drinking behaviour while on Home Leave Travel Allowance (HLTA) was assessed by querying the frequency of drinking five or more drinks on one occasion. Consuming five or more drinks on one occasion was used to indicate heavy drinking, matching the heavy drinking definition used by the CCHS. Among those that went on HLTA in the past 3 years, 8.7% reported that they drank five or more drinks at one occasion on a daily basis, while 5.4% reported doing so every other day, 24.4% about 3-4 times during HLTA, 24.4% about 1-2 times during HLTA and 25.5% reported never having drank five or more drinks at one occasion. (Figure 10.7).

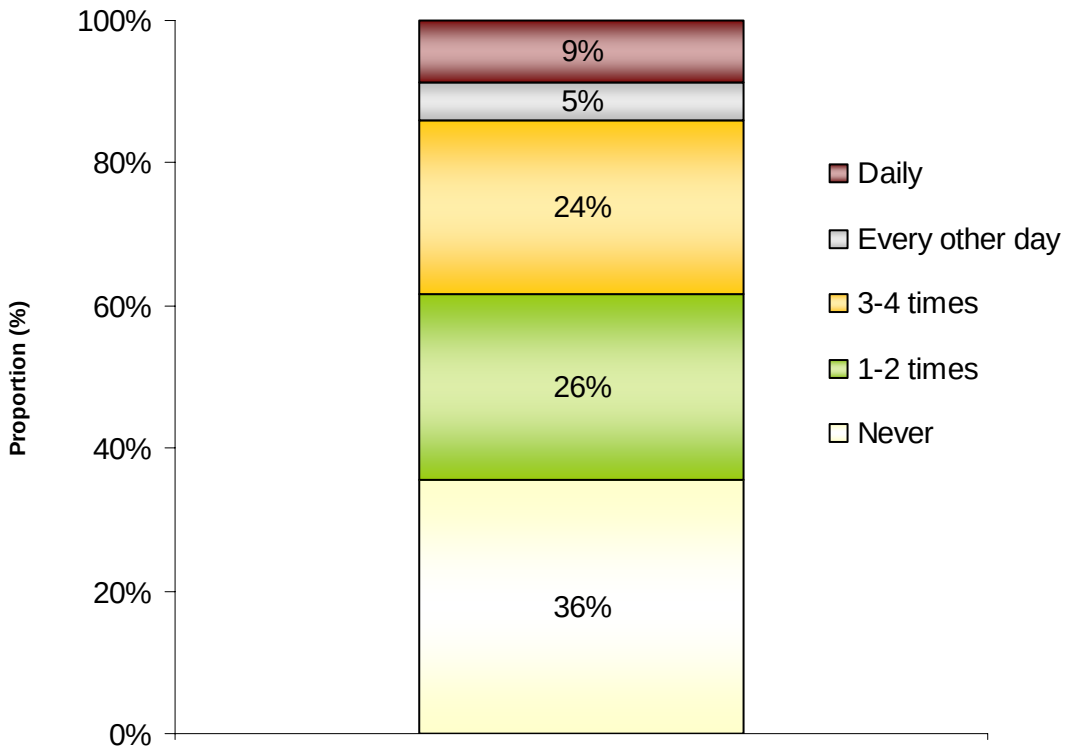

Figure 10.7: Frequency of drinking five or more drinks on one occasion while on Home Leave Travel Allowance (HLTA), HLIS 2008/9

When asked if their drinking behaviour on HLTA remained typical of their drinking behaviour before they had been deployed, 50.2% said it was very similar, 33.2% said that it was somewhat similar, and the remaining 16.6% said that it was very different.

Among those CF personnel reporting very different drinking behaviour while on HLTA there was a pattern of lower proportions with increasing age, among the Air Force and among Officers (Table 10.11).

Table 10.11: Prevalence of CF Personnel Reporting Very Different Drinking Behaviour while on Home Leave Travel Allowance (HLTA) Compared to Before Deployment, by Age Group, Rank and CF Command, HLIS 2008/9

Variable	Category	Proportion (%) (95% CI)	p value
Age Group	18-29	26.9% (15.8-42.0%)	Ref
	30-39	14.8% (10.2-21.0%)	ns
	40-49	12.1% (7.3-19.5%)	p = 0.025
	50-60	9.8% (3.3-25.6%) †	ns
Rank	Officer	9.5% (7.2-12.4%)	p = 0.002
	NCM	18.3% (13.3-24.7%)	
Command	Army	22.1% (15.9-29.8%)	Ref
	Navy	10.5% (2.8-32.1%) †	ns
	Air Force	6.8% (3.2-13.9%) †	p = 0.001
	Other	11.2% (5.3-22.1%)	ns

† Fewer than 20 observations, values may be unstable; interpret with caution

Alcohol-Associated Risk Taking Behaviours

Alcohol use is associated with an increase in risk taking behaviours (Cherpital, 1999). When asked about alcohol-related behaviours in the 12 months prior to the survey, 5.5% of CF personnel reported driving a vehicle when they had had too much to drink. This proportion is low compared to the general Canadian population, where data from the 2003 Canadian Addiction Survey (CAS) indicated that 11.6% of Canadians that drank in the past year and had a valid driver's license drove within one hour of consuming two or more alcoholic drinks.

It appears as though CF personnel are less likely to drive after drinking alcohol than members of the non-military population. There are several alternate explanations for this finding. First, the difference may be due to the differences in the way the question was asked, since the CAS included both a specific time period (within one hour) and an amount of alcohol (two or more drinks); for the HLIS 2008/9, respondents were asked to make a subjective decision about what constituted "too much to drink". Alternatively, the lower prevalence of drinking and driving in the CF could represent a reluctance to report an illegal activity, due to fear of repercussions in spite of the anonymity of the survey. Finally, it may represent a change in societal acceptability of the behaviour over time, as the CAS was conducted in 2003 and the HLIS in 2008/9.

In the 12 previous months, 6.1% of respondents had been in a vehicle driven by someone who had had too much to drink. Only 2.8% had driven or been a passenger in a water vehicle when the operator had had too much to drink, and less than 2% had operated power tools while intoxicated. Males were consistently and significantly more likely to engage in alcohol associated risk taking behaviours than females (Figure 10.8).

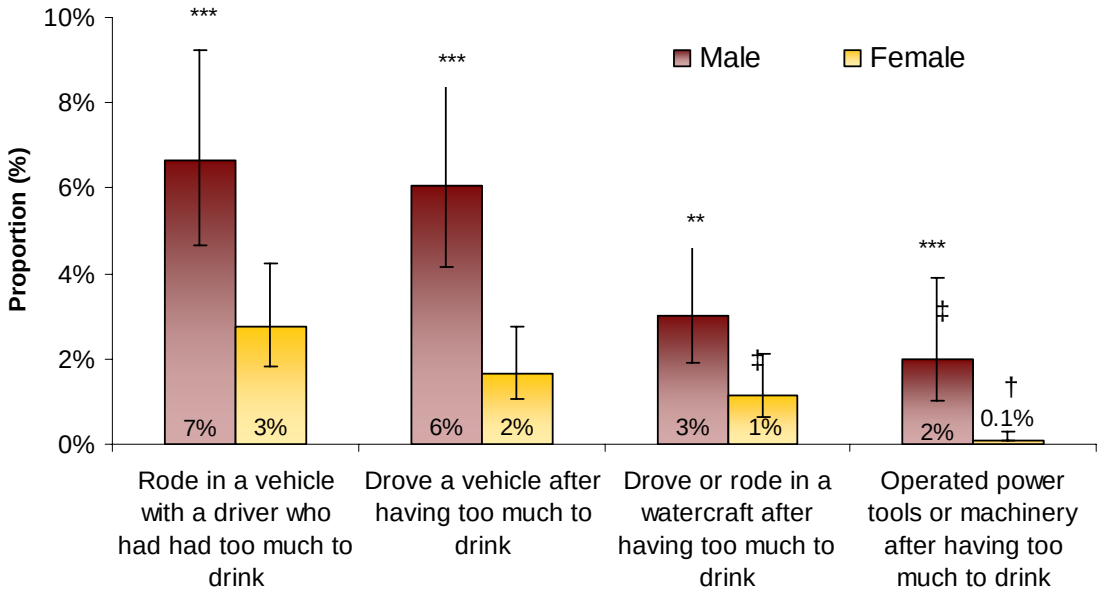

Figure 10.8: Prevalence of Alcohol-Associated Risk Taking Behaviours by Sex, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

** p ≤0.01 versus referent group, *** p ≤0.001 versus referent group

There were no differences observed between driving a vehicle, driving or riding in a water craft, or operating power tools or machinery after having had too much to drink in terms of age, rank, deployment or CF Command. The prevalence of riding with a driver that had consumed too much alcohol did decrease with advancing age (Table 10.12).

Table 10.12: Prevalence of CF Personnel who Rode with a Driver that had Consumed Too Much Alcohol in the Past Year, by Age Group

Age Group	Prevalence (%) (95% CI)	p value
18-29	8.6% (4.8-14.9%)	Ref
30-39	9.0% (5.6-14.3%)	ns
40-49	3.0% (1.5-5.8%) †	p = 0.019
50-60	0.8% (0.2-4.3%) †	p = 0.008

† Fewer than 20 observations, values may be unstable; interpret with caution

Illicit Drug Use

Use of illicit drugs is known to have negative consequences on health and social wellness. Data from the 2008 CCHS found that 18.1% of Canadians aged 18-59 had used some sort of illicit drugs in the previous 12 months. Illicit drugs included cannabis, cocaine or crack, speed or amphetamines, ecstasy (MDMA), hallucinogens, glue, gas or

solvents, heroin or steroids. Cannabis use in the previous 12 months (excluding one time use) was reported by 16.8% of Canadians aged 18-59. Additional data from 2002 shows that 1.3% had used cocaine or crack, and less than 1% had used hallucinogens, stimulants or heroin within the previous 12 months.

Drug Use in the Canadian Forces

Illicit drug use was not commonly reported among CF personnel. Overall, 87.4% of CF personnel did not report any non-medicinal drug use in the 12 months prior to the survey. However, 10.1% reported using one type of non-medicinal drug in the previous 12 months and 2.5% reported using two or more. There were no significant differences by sex, age, command, or official language between persons who reported having used any drugs in the previous 12 months and those who did not.

There were no significant differences in illicit drug use by recent deployment. This result mirrors the findings by the US Department of Defense that rates of illicit drug use (including prescription drug misuse) did not differ significantly by deployment status (HRB Survey, 2009).

Amongst those CF personnel that did use illicit drugs in the previous 12 months there were some significant differences by demographic variables (Table 10.13). A significantly higher proportion of CF personnel that were separated, divorced or widowed or single used illicit drugs in the past year compared to those married or common law. Overall, there was an inverse relationship observed between the prevalence of illicit drug use and educational attainment. The proportion of persons who reported using any illegal drugs was significantly lower among CF personnel that had completed post secondary education compared to those who had completed some or all of their secondary education. The decrease in illicit drug use with increasing levels of education parallels the finding that there was significantly less drug use reported by Officers compared to NCMs.

Table 10.13: Prevalence of Illicit Drug Use in the CF, by Rank, Marital Status and Education, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Rank	Officer	7.9% (5.8%-10.6%)	p = 0.003
	NCM	14.0% (11.0-17.6%)	
Marital Status	Married / Common Law	9.7% (7.4-12.5%)	Ref
	Single	17.3% (10.8-26.4%)	p = 0.034
	Widowed / Separated / Divorced	26.1% (16.6-38.4%)	p ≤ 0.001
Education	Some/completed secondary education	16.9% (12.3-22.8%)	Ref
	Completed college/ some university	12.0% (8.5-16.7%)	ns
	Post-secondary education	6.3% (4.6-8.5%)	p ≤ 0.001

Use of marijuana or hashish in the previous 12 months was reported by 3.3% of personnel (Table 10.14). This is low compared to the general Canadian population, where 16.8% of Canadian aged 18-56 reported using cannabis in the previous 12 months. The lower prevalence of cannabis use in the CF may be due to a reluctance to accurately report use due to fear of repercussions in spite of the anonymity of the survey. Alternatively it may simply reflect good adherence to the policy which prohibits the use of illicit substances in the CF.

Overall, 7.3% of personnel reported using analgesics, narcotics or tranquilizers in the 12 months prior to the survey. The narcotics example provided of "prescription pain relievers" may have confused respondents as this question was concerning non-medicinal uses of these drugs only. The validity of the category "analgesics, narcotics or tranquilizers" is therefore questionable, given that cannabis is the most common illicit substance used by the general Canadian population.

The other most common illicit drugs used in the previous 12 months were sexual enhancers, used by 2.9% of personnel, and barbiturates or other sedatives, used by 2.1% of respondents. The reported use of hallucinogens, cocaine, amphetamines, methamphetamines or other stimulants and inhalants was very uncommon in the 12 months prior to the survey.

Table 10.14: Self-Reported Use of Drugs for Nonmedical Purposes in Previous 12 Months, HLIS 2008/9

Name of Drug Used for Nonmedical Purpose	12 Month Prevalence (%)
Marijuana or hashish (e.g. weed, pot)	3.3%
Hallucinogens (e.g. LSD, PCP, ecstasy)	0.5%†
Cocaine (e.g. powder, crack)	0.2%†
Amphetamines, Methamphetamines, or other stimulants	0.1%†
Barbiturates or other sedatives/hypnotics (e.g. 'downers', Quaaludes, GHB, prescription sleeping pills)	2.1%
Analgesics, narcotics, or tranquilizers (e.g. prescription pain relievers, morphine, opium, oxycodone, OxyContin, Vicodin, Fentanyl, Percocet, Xanax, Valium, 'rufies')	7.3%
Inhalants (e.g. amyl nitrate, nitrous oxide)	0.2%†
Sexual enhancers (e.g. Viagra, Cialis)	2.9%
Anabolic steroids (e.g. testosterone)	1.0%†

† Fewer than 20 observations, values may be unstable; interpret with caution

Paradoxically, 16.9% of respondents stated that they have worked with CF personnel known to be taking non-medicinal drugs in garrison or on exercise in the 12 months prior to the survey. As shown in Table 10.15, male and younger CF personnel, NCMs, and Army personnel compared to Air Force were more likely to have worked with CF personnel known to be taking non-medicinal drugs. However, working with someone known to be using illicit drugs did not vary significantly by recent deployment.

Table 10.15: Proportion of CF Personnel Reported to have Worked with Someone Known to be Taking Illicit Drugs, by Sex, Age Group, Rank, and CF Command

Variable	Category	Proportion (%) (95% CI)	p value
Sex	Male	17.5% (14.5-21.0%)	p = 0.031
	Female	13.1% (10.8-15.7%)	
Age Group	18-29	32.1% (24.7-40.4%)	Ref
	30-39	14.7% (10.8-19.8%)	p ≤ 0.001
	40-49	9.1% (6.4-12.8%)	p ≤ 0.001
	50-60	4.4% (1.4-13.1%) †	p ≤ 0.001
Rank	Officer	9.3% (6.8-12.7%)	p ≤ 0.001
	NCM	19.1% (15.8-22.9%)	
CF Command	Army	24.3% (19.6-29.8%)	Ref
	Navy	15.9% (9.6-25.1%)	ns
	Air Force	12.9% (7.8-20.5%)	p = 0.016
	Other	7.9% (4.5-13.6%)	p ≤ 0.001

† Fewer than 20 observations, values may be unstable; interpret with caution

When asked about their colleagues' drug use while on deployment, 4.2% of those who had been deployed said that they felt unsafe on deployment because someone they were working with was taking drugs. Feeling unsafe due to a colleague's drug use on deployment did not differ significantly by age, sex, rank or command.

When asked about how their drug use habits have changed since joining the Forces, 79.5% said that they have never used illegal drugs, 18.1% reported using less since joining the Forces, 2.1% reported using about the same amount and less than 1% reported using more. The proportion who reported using more drugs since joining the Forces represent less than 20 observations, thus the estimate may not be reliable. Among CF personnel that have used illegal drugs while in the CF, less than 1% report being under the influence of drugs at work in the past two years.

Among those CF personnel who have used illicit drugs while in the Forces, 90.3% reported that no one has ever expressed concern about their use of illicit drugs, while 7.4% said that friends or relatives had expressed concern at some time. The final 2.4% of CF personnel that had used illicit drugs while in the CF did not know if friends or relatives had ever expressed concern. Reporting that friends or family had expressed concern was rarely reported, and thus contrasts within demographic variables were not possible. When asked about their attempts to control, cut down or stop using illegal drugs, 26.8% said they had made such attempts, while the remainder (73.2%) had not. Among CF personnel that used illegal drugs, less than 1% reported being unable to fulfill what was normally expected of them in their daily life due to drug use. Among CF personnel that have used illicit drugs while in the CF, attempts to control, reduce or stop taking drugs did not vary by age group, sex, rank, deployment or CF Command.

GAMBLING

Legalized gambling opportunities have been rapidly increasing in Canada since the early 1990s (Cox et al, 2005). Gambling has become common among Canadians aged 18-59; 75% participated in some form of gambling in the past 12 months (Statistics Canada, 2008). As of 2005, gambling in Canada was a 13 billion dollar industry (Azmier, 2005). Gambling addictions are known to have health, social and economic impacts on individuals as well as their families and communities (Korn, 2000).

Gambling in the Canadian Forces

Gambling is common among CF personnel. Overall 82.7% participated in some type of gambling in the previous 12 months. The frequency of gambling varied greatly depending on the type of gambling. The frequency of each type of gambling activity was summarized as more than monthly, less than monthly or never and is presented in Table 10.16.

Table 10.16**:** Frequency of Gambling Among CF Personnel, by Type of Gambling

	Prevalence (%) (95% CI)		
Type of Gambling	**More than monthly**	**Less than monthly**	**Never**
Lottery tickets	41.4% (38.1-44.7%)	30.5% (27.4-33.8%)	28.1% (25.1-31.3%)
Instant win/ scratch tickets	18.7% (16.0-21.7%)	26.0% (22.9-29.3%)	55.3% (51.7-58.9%)
Cards or board games	12.6% (10.4-15.2%)	23.0% (20.1-26.2%)	64.4% (60.9-67.8%)
Games of skill	6.9% (5.2-9.0%)	13.0% (10.9-15.5%)	80.1% (77.1-82.7%)
Speculative investments	3.1% (2.0-4.7%)	6.1% (4.7-7.9%)	90.8% (88.6-92.6%)
Sports	2.9% (1.8-4.6%)	3.6% (2.5-5.2%)	93.5% (91.4-95.2%)
VLT outside of casinos	1.9% (1.0-3.6%)	5.8% (4.4-7.7%)	92.3% (90.0-94.0%)
Internet gambling	1.5% (0.8-2.9%)	2.9% (1.8-4.5%)	95.6% (93.7-96.9%)
Casino games (other than coin or VLT)	1.3% (0.7-2.5%)	12.8% (10.5-15.5%)	85.9% (83.1-88.4%)
Arcade gambling	1.0% (0.4-2.5%) †	2.3% (1.4-3.6%)	96.7% (95.0-97.8%)
Coin slots or VLT inside of casinos	0.9% (0.4-1.9%) †	15.1% (12.7-17.8%)	84.0% (81.2-86.4%)
Liar's dice	0.8% (0.3-2.1%) †	1.7% (1.0-2.9%)	97.5% (96.1-98.5%)
Bingo	0.6% (0.3-1.1%)	5.0% (3.9-6.4%)	94.4% (93.0-95.6%)
Other	0.1% (0.0-0.5%) †	3.6% (2.4-5.4%)	96.3% (94.5-97.5%)
Live horse racing	0.0 (0.0-0.2%) †	1.7% (1.1-2.9%)	98.2% (97.1-98.9%)

† Fewer than 20 observations, values may be unstable; interpret with caution

Gambling Addiction

The Canadian Problem Gambling Index (CPGI) is an instrument developed by the Canadian Centre on Substance Abuse to assess gambling involvement, problem gambling and associated risk factors. Part of the CPGI is the Problem Gambling Severity Index (PGSI), used to identify the prevalence of problem gambling (Marshall et al, 2003). The PGSI is a nine item scale, based on a series of questions that assess the health, social and financial consequences of gambling over a 12 month period. The responses to these nine questions in the HLIS 2008/9 are shown in Table 10.17.

Table 10.17: Problem Gambling Severity Index (PGSI) Items, HLIS 2008/9

PGSI Items	Proportion (%) (95% CI)	
	Never	Yes§
Bet more than you could really afford to lose	97.3% (95.6-98.3%)	2.7% (1.7-4.4%)
Needed to gamble with larger amounts of money to get the same feeling of excitement	97.2% (95.5-98.3%)	2.8% (1.7-4.5%)
Went back another day to try and win back the money previously lost	97.1% (95.5-98.1%)	2.9% (1.9-4.5%)
Borrowed money or sold something to get money to gamble	98.8% (97.4-99.5%)	1.2% (0.5-2.6%) †
Felt that you might have a problem with gambling	97.4% (95.7-98.4%)	2.6% (1.6-4.3%)
Gambling caused health problems, including stress or anxiety	98.5% (97.1-99.2%)	1.5% (0.8-2.9%)
People criticized your betting or told you had a problem	98.6% (97.2-99.3%)	1.4% (0.7-2.8%)
Gambling caused any financial problems	99.0% (97.8-99.6%)	1.0% (0.4-2.2%) †
Felt guilty about the way you gamble or what happens when you gamble	97.2% (95.6-98.2%)	2.8% (1.8-4.4%)

† Fewer than 20 observations, values may be unstable; interpret with caution
§ Yes includes Sometimes, Most of the time, and Almost Always responses

The PGSI combines the responses to these questions to create a summary score that divides gambling behaviour into the following categories of risk: non-gamblers/non-problem gambling, low risk gambling, moderate risk gambling and problem gambling. Moderate risk gambling may be associated with heavy gambling, however, moderate risk gamblers may or may not have experienced adverse consequences of gambling. Problem gambling refers to individuals that have experienced both heavy gambling *and* suffered adverse consequences of gambling (Cox et al, 2005).

Based on the PGSI scores, the vast majority of CF personnel were non-gamblers or non-problem gamblers. Table 10.18 shows the distribution of gambling behaviour among CF personnel and across the four categories of the PGSI.

Table 10.18: Categories of Risky Gambling Behaviour Based on the Problem Gambling Severity Index, HLIS 2008/9

Frequency of Problem Gambling in the previous 12 months (based on PGSI)	**Prevalence (95% CI)**
None or non-problem gambling	93.9% (91.6-95.6%)
Low risk gambling	3.8% (2.5-5.7%)
Moderate risk gambling	1.7% (0.9-3.3%)
Problem gambling	0.6% (0.2-1.5%) †

† Fewer than 20 observations, values may be unstable; interpret with caution

The 2002 Canadian Community Health Survey (CCHS) used the CPGI to assess the propensity for problem gambling in the non-military population. The 12-month national prevalence of moderate risk gambling was 1.5%, and problem gambling was 0.5% (Marshall et al, 2003). There was variation in problem gambling across the 10 provinces, with provinces with permanent casinos and a greater number of VLTs per 1000 population having significantly higher moderate and problem gambling rates (Cox, et al., 2005). The 2008 CCHS also used the CPGI, however it was included as an optional module for this survey, and health regions in only three provinces and in Nunavut participated (CCHS, User Guide, 2008). In 2008, the overall 12 month rate of moderate risk gambling was 0.9% and problem gambling was 0.3% in this select, non-military population (CCHS 2008 dataset available from Statistics Canada). The demographics of Canadian gamblers most likely to be at highest risk of problem gambling were males and individuals with lower education (Marshall et al, 2003).

Given the small proportion of individuals in low risk, moderate risk and problem gambling groups, these three risk categories were combined to create one group comprised of CF personnel at risk of problem gambling. These at-risk individuals were compared to those in the non-gambling/non problem gambling group across demographic variables. There were no significant differences between at risk gamblers compared to non gamblers/non problem gamblers in terms of rank, command, deployment, education. There were some notable differences by age, sex and marital status as shown in Table 10.19.

Table 10.19: Prevalence of At-Risk Gambling Compared to Non-gambling or No Risk Gamblers, HLIS 2008/9

Variable	Category	Prevalence (95% CI)	p values
Sex	Male	6.5% (4.5-9.1%)	p = 0.019
	Female	3.5% (2.4-5.1%)	
Age	18-29	9.4% (5.2-16.3%)	Ref
	30-39	7.6% (4.5-12.5%)	ns
	40-49	3.2% (1.9-5.4%)	p = 0.007
	50-60	1.8% (0.6-5.1%) †	p = 0.007
Marital Status	Married / Common Law	4.3% (2.8-6.4%)	Ref
	Single	12.4% (6.9-21.2%)	p =0.004
	Widowed / Separated / Divorced	6.8% (2.4-17.8%) †	ns

† Fewer than 20 observations, values may be unstable; interpret with caution

CF personnel identified as being at some level of risk for problem gambling were also compared to those not at risk in terms of their self-rated health. There is supporting evidence to suggest that problem gamblers are twice as likely to report poor or fair health compared to non-problem gamblers (Marshall et al, 2003). In the HLIS 2008/9, no significant difference in the reporting of fair or poor self rated health was observed between at risk gamblers and to non-gamblers/non-problem gamblers. This lack of evidence may be attributable to the sparse number of persons in the CF who are at-risk gamblers, resulting in insufficient power to detect meaningful differences in this group.

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CHAPTER 11 ~ DEPLOYMENT HEALTH

Deployments expose CF personnel to combat, foreign environments and extended separations from family. Bartone (1998) demonstrated that deployment-related stressors affect the psychological and physical health of military personnel both during deployment and after their return home. Specifically, exposure to combat is associated with increased risks of physical injuries, post traumatic stress disorder (PTSD), major depression, substance abuse, functional impairments in social and employment settings, and increased use of health services (Hoge, 2006). However, there are measurable benefits associated with deployment including increased job satisfaction, and improved retention and reenlistment. Furthermore, some service members prefer the challenges of deployment to non-deployed tasks (Hosek, 2006).

To be considered for deployment, CF personnel must be physically and mentally fit, free of serious chronic disease, and must successfully complete deployment-specific screening. The CF deployment screening process consists of two tiers (VCDS, 2005). Tier I includes a CF Personnel Readiness Verification (PRV), which is a check list that all CF personnel must update annually. The PRV include basic qualifications and administrative requirements, and health and demographic factors (CEFCOM, 2009). Tier II is mission-specific screening which is verified only once a member has been called up for deployment. In the pre-deployment screening is a Departure Assistance Group (DAG) process in which an additional list of items will be rated as granted (dag green), denied (dag red), or initiated (dag yellow). The DAG process includes medical, dental, training, administrative, supply, spiritual, and family related items. Personnel usually must dag green on all items to deploy; however, exemptions can be granted where the operational requirements outweigh the potential risk associated with an incomplete DAG process.

Overseas Deployments

Of the CF personnel surveyed, 24.1% had deployed overseas in the past two years. As shown in Table 11.1, males deployed significantly more than females, NCMs deployed significantly more than Officers and CF personnel in the 30-39 age bracket deployed more than those in the youngest age bracket. CF personnel in the Army have deployed overseas significantly more than personnel from all other commands. Army bases reported the highest proportion of personnel that have deployed, which was expected considering the nature of combat operations in Afghanistan in recent years. Nearly half of all respondents from Valcartier reported having deployed overseas in the previous two years.

Table 11.1: Proportion of CF Personnel that Have Deployed Overseas in the Previous Two Years by Select Characteristics, HLIS 2008/9

Variable	Category	Deployed (%)	p value
Sex	Males	25.6 (24.9 – 26.4%)	p ≤ 0.001
	Females	14.3 % (14.2 – 14.6%)	
Rank	NCM	25.9 (25.1 – 26.7%)	p ≤ 0.001
	Officer	18.1 (17.3 – 18.8%)	
Age Group	18-29	21.5% (16.8 – 26.3%)	Ref
	30-39	29.6% (25.6 – 33.4%)	p = 0.025
	40-49	23.0% (20.3 – 25.7%)	ns
	50-64	17.9% (11.6 – 24.3%)	ns
Command	Army	32.2% (29.0-35.3%)	Ref
	Air	17.9% (14.2-22.2%)	p ≤ 0.001
	Navy	22.5% (17.0-28.4%)	p = 0.02
	Other	16.8% (13.7-20.1%)	p ≤ 0.001
Base	Ottawa	23.7% (18.6-29.6%)	Ref
	Gagetown	15.4% (9.6%-23.9%)	ns
	Esquimalt	15.4% (8.9-25.3%)	ns
	Trenton	24.3% (16.2-34.9%)	ns
	Halifax	26.8% (9.8-35.3%)	ns
	Edmonton	29.0% (19.6-40.6%)	ns
	Petawawa	29.3% (19.2- 42.0%)	ns
	Valcartier	50.4% (40.0-60.8%)	p ≤ 0.001

A total of 65.1% of CF personnel have ever deployed and of those, 24.2% have deployed in the last 2 years. As shown in Table 11.2, 15.0% deployed within the last year, 9.2% deployed between one to two years, 40.9% deployed more than two years ago and 34.9% never deployed.

As shown in Table 11.3, of those who deployed in the last two years, 76.1% reported that they deployed to Afghanistan, 18.2% to the Middle East and 20.4% to other locations[1]. Personnel in the Army were the most likely to have deployed to Afghanistan, while Navy personnel were the most likely to have reported a deployment to the Middle East and other locations.

The HLIS 2008/9 collected data on the time between deployments and frequency of deployments in the last 2 years. The tendency to report fewer than 12 months between deployments decreased with age; there was a significant difference in fewer than 12 months between deployments between the oldest (3.3%) when compared to the youngest age group (18.9%). There was no significant difference in reporting fewer than 12 months between deployments across sex, or rank, or CF Command (Table 11.4).

[1] Note that the responses do not equal 100% because respondents were asked to select all that apply.

Table 11.2: Time in Months Since Last Deployment by CF Command

	CF Command % (95% CI)				Overall %
	Air Force	Army	Navy	Other	(95% CI)
Less than 12 months	10.7% (7.9-14.3%)	20.7% (17.9-23.8%)	12.8% (9.2-17.5%)	9.9% (7.8-12.7%)	15.0% (13.9-16.2%)
12 to 24 months	7.2% (5.1-10.1%)	11.3% (9.2-17.5%)	9.7% (6.5-14.1%)	6.8% (5.1-9.1%)	9.2% (8.1-10.4%)
More than 24 months	39.0% (31.4-47.2%)	37.6% (32.4-43.0%)	36.4% (27.8-45.9%)	50.1% (43.6-56.6%)	40.9% (38.0-43.8%)
Never deployed	43.1% (35.3-51.2%)	30.4% (25.4-35.8%)	41.2% (32.2-50.8%)	33.1% (26.9-40.0%)	34.9% (32.1-37.9%)

Table 11.3: Location of Deployment in the Previous Two Years by CF Command

	CF Command % (95% CI)				Overall %
	Air Force	Army	Navy	Other	(95% CI)
Afghanistan	77.3% (68.9-85.6%)	94.1 (91.2-97.1%)	17.6 (8.2-27.1%)	67.8 (58.7-76.8%)	76.1% (72.3-79.9%)
Middle East	42.8% (31.8-53.9%)	5.2 (2.3-8.1%)	46.0 (33.8-58.2%)	12.9 (6.6-19.2%)	18.2% (14.9-21.5%)
Other Locations	17.5% (8.5-26.4%)	5.2 (2.3-8.1%)	51.0 (38.6-63.4%)	12.9 (6.6-19.2%)	20.4% (16.7-24.1%)

Note: Participants were asked to select all responses that apply; proportions may sum to greater than 100%

Table 11.4: Number of Deployments in the Previous 2 Years by CF Command

	CF Command % (95% CI)				Overall %
	Air Force	Army	Navy	Other	(95% CI)
Deployed once	63.2% (51.4-73.7)	83.3% (77.3-87.9)	64.4% (51.9-75.2)	80.5% (70.7-87.6)	76.8% (72.4-80.7)
Deployed twice	18.5% (11.0-29.5)	11.7% (7.7-17.2)	24.3% (15.1-36.8)	11.3% (6.3-19.6)	14.6% (11.4-18.5)
Deployed 3 or more times	18.3% (10.6-29.7)	5.1% (2.9-8.7)	11.3% (5.8-20.9)	8.2% (3.7-17.0)	8.6% (6.3-11.6)
Less than 12 months between deployments	24.3% (14.2-34.4)	11.2% (6.4-16.0)	17.4% (8.4-26.4)	10.9% (4.5-17.4)	14.2% (10.7-17.7)

The few number of Army personnel with multiple deployments in the previous two years may be attributed to Army deployments being 6 months in length, while deployments for the other commands are typically of shorter duration.

Limitations to Deployment

As shown in Table 11.5, 22.1% of personnel reported that they were not able to deploy at some point during the past 2 years. Of those who were not able to deploy, the average time of not being able to deploy was 11.4 months. There were no statistically significant differences in the proportion or number of months unable to deploy across CF Command.

Table 11.5: Proportion of CF Personnel Unable to Deploy in the Previous Two Years and the Mean Number of Months Unable to Deploy by CF Command, HLIS 2008/9

	CF Command % (95% CI)				Overall
	Air Force	Army	Navy	Other	
Proportion unable to deploy (95% CI)	22.5% (15.9-29.1%)	21.3% (16.6-25.9%)	27.7% (18.9-36.4%)	19.5% (14.6-24.4%)	22.1% (19.1-25.0%)
Mean number of months unable to deploy (95%CI)	9.1 (7.2-11.1)	12.5 (10.1-14.8)	10.3 (6.7-13.8)	12.8 (10.3-15-2)	11.4 (10.0-12.7)

As shown in Table 11.6, females reported that they were unable to deploy significantly more than males and reported higher average time not able to deploy. The inability to deploy increased with age, as did the average number months not able to deploy. There were no statistically significant differences in ability to deploy across rank or base.

Personnel Readiness Verification (PRV)

Participants in the survey reported that 61.4% of their units conducted PRVs annually, 10.1% of their units did not conduct PRVs annually, and 28.5% did not know. Over half of the participants in the survey reported that their PRV was currently updated (57.5%), 23.0% were not up-to-date, and 19.6% reported that they did not know.

As shown in Table 11.7, the reporting of annual unit reviews and currently updated PRVs significantly increased with age. Compared to CF personnel in the Army, those in the Air Force were less likely to report that their unit performed annual PRV verifications.

Personnel serving in Gagetown and Trenton reported that their unit performed annual PRV verifications significantly more often than Ottawa, while Valcartier personnel reported that their unit performed annual PRV verifications significantly less often than Ottawa. Valcartier, Halifax and Trenton were the only bases where PRVs were reported as up-to-date significantly more often than Ottawa. There were no differences in the proportion of units annually reviewing PRVs or having an up-to date PRV by sex or rank of the respondent.

Table 11.6: Proportion of CF Personnel Unable to Deploy in the Previous Two Years and the Mean Number of Months Unable to Deploy by Select Characteristics, HLIS 2008/9

Variable	Category	Proportion Unable to Deploy (%)	p value	Mean Number of Months Unable to Deploy	p value
Sex	Males	19.7% (16.6-23.2%)	$p \leq 0.001$	10.8 (9.1-12.6)	p = 0.02
	Females	37.2% (33.8-40.7%)		13.3 (12.3-14.3)	
Age Group	18-29	15.2% (10.3-21.9%)	Ref	14.18 (10.3-18.1)	Ref
	30-39	19.5% (15.2-24.8%)	ns	9.5 (7.5-11.4)	p = 0.03
	40-49	28.7% (24.0-34.0%)	p = 0.02	10.6 (8.7-12.5)	ns
	50-64	23.2% (15.6-33.1%)	ns	17.1 (13.9-20.3)	ns
Marital Status	Married	21.7% (18.5-25.4%)	Ref	10.2 (8.7-11.8)	Ref
	S/W/D	35.6% (25.5-47.3%)	$p \leq 0.001$	14.8 (11.4-18.2)	p = 0.015
	Single	17.0% (11.7-24.0%)	ns	14.1 (10.8-17.4)	p = 0.04
Base	Ottawa	23.3% (16.7-31.4%)	Ref	14.0 (10.7-17.4)	Ref
	Valcartier	13.7% (7.6-23.3%)	ns	10.3 (4.5-16.1)	ns
	Gagetown	14.4% (7.0-27.2%)	ns	14.1 (9.1-19.0)	ns
	Edmonton	21.1% (11.3-36.0%)	ns	11.6 (4.9-18.3)	ns
	Trenton	23.8% (13.4-38.7%)	ns	8.2 (5.5-10.9)	p = 0.008
	Halifax	27.1% (17.7-39.1%)	ns	12.6 (8.4-16.7)	ns
	Esquimalt	29.3% (16.5-46.5%)	ns	6.5 (3.3-9.8)	p = 0.002
	Petawawa	30.1% (17.6-46.5%)	ns	16.2 (11.5-21.0)	ns

S/W/D: Separated, Widowed or Divorced

Table 11.7: Proportion of CF Personnel Reporting Annual Personnel Readiness Verifications (PRVs) at Unit and Currently Updated PRVs, HLIS 2008/9

Variable	Category	PRVs Annually at Unit (%)	p value	Updated PRV (%)	p value
Age Group	18-29	47.5% (39.3-55.7%)	Ref	47.7% (39.5-56.0%)	Ref
	30-39	59.8% (53.8-65.6%)	p = 0.02	61.1% (54.7-67.1%)	p = 0.01
	40-49	72.1% (67.3-76.5%)	$p \leq 0.001$	62.2% (57.0-67.2%)	p = 0.004
	50-64	66.7% (55.3-76.5%)	p = 0.008	55.6% (44.3-66.4%)	ns
Command	Army	74.5% (66.7%81.0%)	Ref	63.7% (55.3-71.3%)	Ref
	Air	57.1% (51.4%62.6%)	$p \leq 0.001$	56.2% (50.3-61.8%)	ns
	Navy	60.1% (50.5%68.9%)	ns	62.8% (53.3-71.4%)	ns
	Other	58.9% (52.0%65.4%)	ns	51.1% (44.4-57.8%)	ns
Base	Ottawa	57.2% (48.6-65.4%)	Ref	44.7% (36.3-53.3%)	Ref
	Valcartier	35.2% (26.1-45.6%)	p = 0.001	65.7% (54.1-75.7%)	ns
	Petawawa	56.6% (40.8-71.1%)	ns	56.2% (40.4-70.9%)	ns
	Esquimalt	58.4% (41.7-73.3%)	ns	48.8% (33.2-64.7%)	ns
	Edmonton	61.8% (46.5-75.0%)	ns	54.8% (40.0-68.9%)	ns
	Halifax	62.9% (51.2-73.2%)	$p \leq 0.001$	71.1% (60.0-80.1%)	p = 0.01
	Gagetown	71.2% (56.6-82.5%)	ns	43.9% (30.2-58.6%)	ns
	Trenton	84.7% (73.0-91.9%)	p = 0.005	69.5% (54.6-81.1%)	ns

Pre-Deployment Screening (DAG)

In the HLIS 2008/9 35.2% of personnel were called up for pre-deployment screening at some point during the past two years, and of those, 13.7% reported that they dagged red. It should be noted that members with health limitations or other serious concerns may be less likely to be called up for pre-deployment screening, a bias that is likely to underestimate non-deployability.

As shown in Table 11.8, males were significantly more likely than females, and NCMs were significantly more likely than Officers to be called up for pre-deployment screening. The likelihood of being called for pre-deployment screening also decreased with advancing age. When compared to personnel serving in the Army command, respondents in the Air Force and Other commands were significantly less likely to be called up for pre-deployment screening. Participants from Edmonton, Petawawa and Valcartier were significantly more likely to be called up for pre-deployment screening than those from Ottawa.

As shown in Table 11.8, females reported that they dagged red significantly more than males, NCMs more often that Officers, and persons 40-49 years old more often than CF personnel in the youngest age group. When compared to personnel serving in the Army command, personnel within the Other Command were significantly more likely to dag red. The tendency to dag red did not differ significantly across base of employment.

Reasons Unable to Deploy

Reasons reported for not being able to deploy included musculoskeletal injury (31.9%), family situation (17.4%), illness (17.4%), training (12.1%), mental health (11.5%), pregnancy (8.7%), leave (3.9%), and dental issues (1.0%); other reasons account for an additional 6%.

Of the participants who were called up for pre-deployment screening, musculoskeletal injury (33.1%) and family situation (18.6%) were the two most frequent reasons reported for having dagged red. Personnel attributed ‘other reasons’ as the third most common explanation for dagging red (13%), which included reasons such as their medical information or security clearance was not up-to-date. Additional reasons given for dagging red in pre-deployment screening were mental health (12.5%), illness (9.5%), pregnancy (4.5%), dental issues (3.4%); training (3.2%), and leave (1.3%). In summary, the reasons reported by CF personnel for not being able to deploy were very similar to the reasons given by persons who dagged red in pre-deployment screening. For situations such as pregnancy or training in which it would be clear that a deployment would not be possible, the differences seen would probably be due to these personnel not even being referred to the DAG process.

Table 11.8: Proportion of CF Personnel Called for Pre-Deployment Screening and the Result of their Pre-Deployment Screening, HLIS 2008/9

Variable	Category	Pre-Deployment Screening (%)	p value	Percent of Screened that DAG Red (%)	p value
Sex	Males	36.1% (32.6-39.7%)	p = 0.007	12.2% (8.3-17.6%)	p = 0.001
	Females	29.7% (26.7-32.8%)		25.7% (20.2-32.2%)	
Rank	NCM	37.3% (33.5-41.3%)	p = 0.001	15.5% (11.1-21.1%)	p = 0.001
	Officers	28.1% (24.6-31.8%)		5.7% (3.3-9.7%)	
Age Group	18-29	38.4% (31.2-46.3%)	Ref	6.5% (2.6-15.4%)	Ref
	30-39	39.1% (33.7-44.8%)	ns	8.6% (4.5-15.9%)	ns
	40-49	32.1% (27.8-36.6%)	ns	24.3% (16.7-33.9%)	p = 0.005
	50-64	22.0% (15.5-30.3%)	p = 0.004	21.4% (7.8-46.8%)	ns
Command	Army	49.9% (44.4-55.4%)	Ref	11.6% (7.0-18.6%)	Ref
	Air	19.1% (14.9-24.1%)	p = 0.03	13.3% (6.5-25.3%)	ns
	Navy	14.9% (11.2-19.7%)	ns	8.1% (2.9%-20.6%)	ns
	Other	16.1% (12.9-19.9%)	p ≤ 0.001	26.3% (15.7-40.6%)	p = 0.02
Base	Ottawa	27.4% (21.1-34.7%)	Ref	20.5% (9.2-39.7%)	Ref
	Esquimalt	25.8% (15.4-39.8%)	p = 0.01	--	--
	Gagetown	27.8% (17.0-42.0%)	ns	--	--
	Halifax	39.2% (28.4-51.1%)	ns	9.6% (3.0-26.6%)	ns
	Trenton	41.6% (27.2- 56.1%)	ns	9.4% (3.4-23.5%)	ns
	Edmonton	43.8% (30.1-58.6%)	p = 0.04	19.6% (7.7-41.8%)	ns
	Petawawa	49.4% (33.9-65.0%)	p = 0.01	20.8% (7.8%-44.7%)	ns
	Valcartier	63.8% (52.1-74.1%)	p ≤ 0.001	--	--

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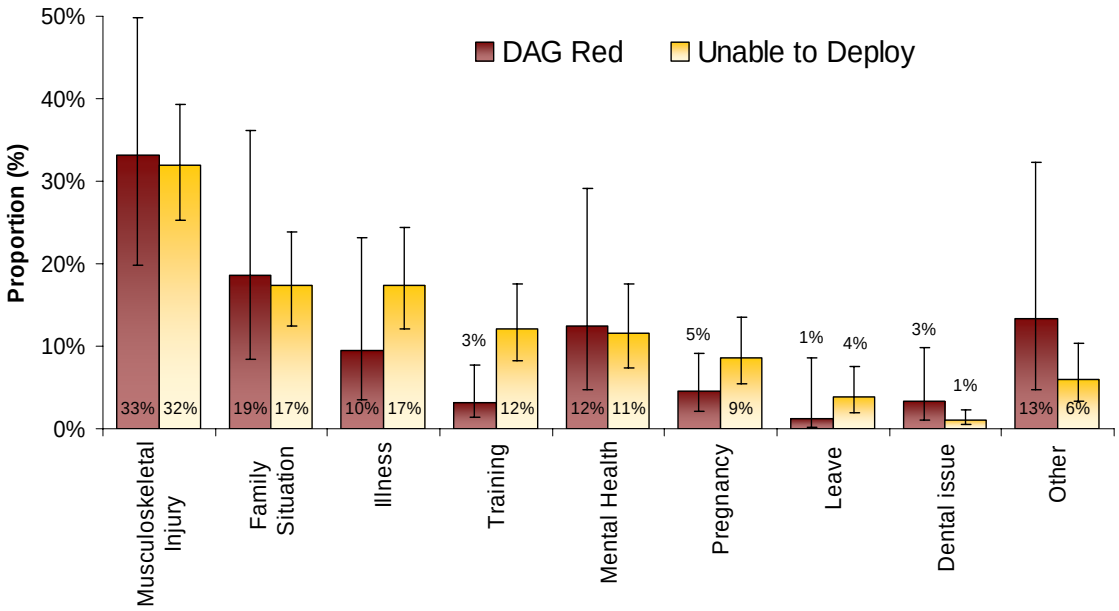

Figure 11.1: Reasons for not Being Able to Deploy and Reasons for Dagging Red in Pre-Deployment Screening, HLIS 2008/9

Adjustment to Family Life Following Deployment

For the 24.1% of CF personnel that deployed overseas in the previous 2 years, 48.8% reported that their adjustment to family life in the three months following their deployments was easy (Figure 11.2). An additional 26.9% reported their adjustment was neutral and 24.3% reported their adjustment to be difficult. Married (28.1%) and Divorced/Separated/Widowed (35.3%) respondents were more likely to report some difficulty in adjusting to family life than single respondents (12.7%). There were no statistically significant differences in the adjustment to family life across categories of sex, age group, rank, CF Command or base of service.

Adjustment to Work Life Following Deployment

Participants were also asked to describe their adjustment to work life following their overseas deployment. 48.7% reported that their adjustment to work life in the three months following their deployments was easy, 20.2% were neutral and 31.1% indicated that adjustment to work life was difficult (Figure 11.2).

Females (42.4%) were more likely to report some difficulty adjusting to work life than males (29.3%). Respondents in the Navy (11.2%) were the least likely of the CF Commands to report any difficulty adjusting to work life following a deployment. As for the base of service, respondents in Edmonton and Halifax reported less difficulty in adjusting to work life than persons in Ottawa.

There was no significant difference identified in the difficulty of adjusting to work life following an overseas deployment by age group, marital status, or rank.

The data suggest that adjustment to work life presents more difficulty than adjustment to family life. Similar findings were reported in a 2003 report by the Director General Health Services, wherein the negative aspects of post-deployment reintegration were often related to occupational issues. A proposed explanation for this observation is that soldiers who have returned from a high-intensity deployment find less of a challenge in their post-deployment work, which translates into a decline in occupational meaningfulness and satisfaction (Blais et al., 2003).

Adjustment to work and family life following an overseas deployment presented a varied range of difficulties for CF personnel, which may reflect both the heterogeneity of the deployment experience as well as family, social and behavioural differences between CF personnel. Multivariate methods of investigation would be useful to identify the optimal combinations of social, demographic, and geographic factors that contribute to a successful post-deployment transition.

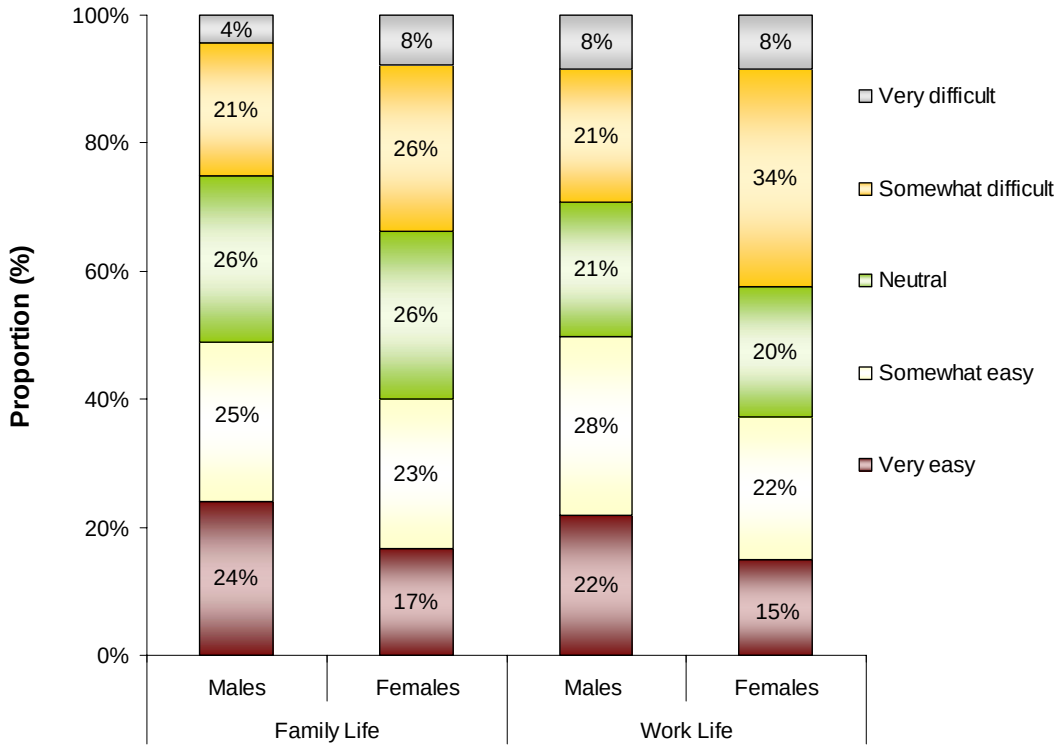

Figure 11.2: Adjustment to Family and Work Life Following Deployment by Sex of Respondent, HLIS 2008/9

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CHAPTER 12 ~ INJURIES

REPETITIVE STRAIN INJURIES

Repetitive strain injury (RSI) results from repetitive or forceful motions affecting muscles, tendons and nerves over an extended period of time, rather than from a single injury event (Yassi, 1997). This type of injury is associated with inflammation, numbness, dysfunction and loss in productivity. Examples of RSIs are tendonitis, carpal tunnel syndrome and tennis elbow (O'Neil, Forsythe, & Stanish, 2001). Data from the Canadian Community Health Survey indicate that the overall prevalence of RSI among Canadians aged 18-59 is 14% (CCHS 2008 dataset available from Statistics Canada). In the non-military Canadian population, the prevalence of RSIs increases with increasing age. Among Canadians aged 18-29 years of age, 12% reported an RSI in the past 12 months, while the prevalence was 13% among those aged 30-39 years. There is a higher prevalence of RSIs among Canadians aged 40-49 (17%), and 50-59 (15%) (CCHS 2008 dataset available from Statistics Canada).

Repetitive Strain Injuries in the Canadian Forces

During the 12 months prior to the 2008/9 survey, 22.7% of CF personnel reported a RSI serious enough to limit their normal activities. This represents a statistically significant decrease from RSIs reported in 2004 (26.7%). Estimates were age and sex standardized to the 2008 CF population to facilitate statistical comparisons. This significant decrease in RSIs over time may correspond to the statistically significant decrease in the rate of physical activity levels observed between 2004 and 2008/9 (further details reported in Chapter 7).

The proportion of CF personnel with a RSI did not vary significantly by sex, rank, recent deployment or command. However, a consistently and significantly larger proportion of CF personnel in the older age groups had experienced a RSI in the previous 12 months compared to those aged 18-29 years (Table 12.1).

Table 12.1: Prevalence of Repetitive Strain Injuries (RSIs), by Age Group, HLIS 2008/9

Age Group	Prevalence (%) (95% CI)	p value
18-29	14.4% (9.5-21.3%)	Ref
30-39	24.9% (19.8-30.8%)	p = 0.02
40-49	27.3% (22.8-32.5%)	p = 0.003
50-60	25.3% (17.2-35.4%)	p = 0.04

Activity During Repetitive Strain Injury

CF personnel with a RSI were asked about the activities they were engaged in when they acquired their RSI. The most common activities reported by CF personnel as being related to their RSI were sports/PT/adventure training (53.1%), military training activities (44.1%), other paid military duties (24.9%) and battle related activities (8.2%) (Figure 12.1). Estimates were age and sex standardized to 2008 CF population to permit direct comparison; consequently, estimates reported here may vary from previously published HLIS 2004 results. It was possible for respondents to select as many activities as were applicable, thus the total percentage of RSI related activities reported may sum to more than 100%.

There was a significant increase in RSIs associated with military training from 2004 (29.7%) to 2008/9 (44.1%). There was also a significant decrease in RSIs associated with other paid military duties from 2004 (31.6%) to 2008/9 (24.9%) (Figure 12.1).

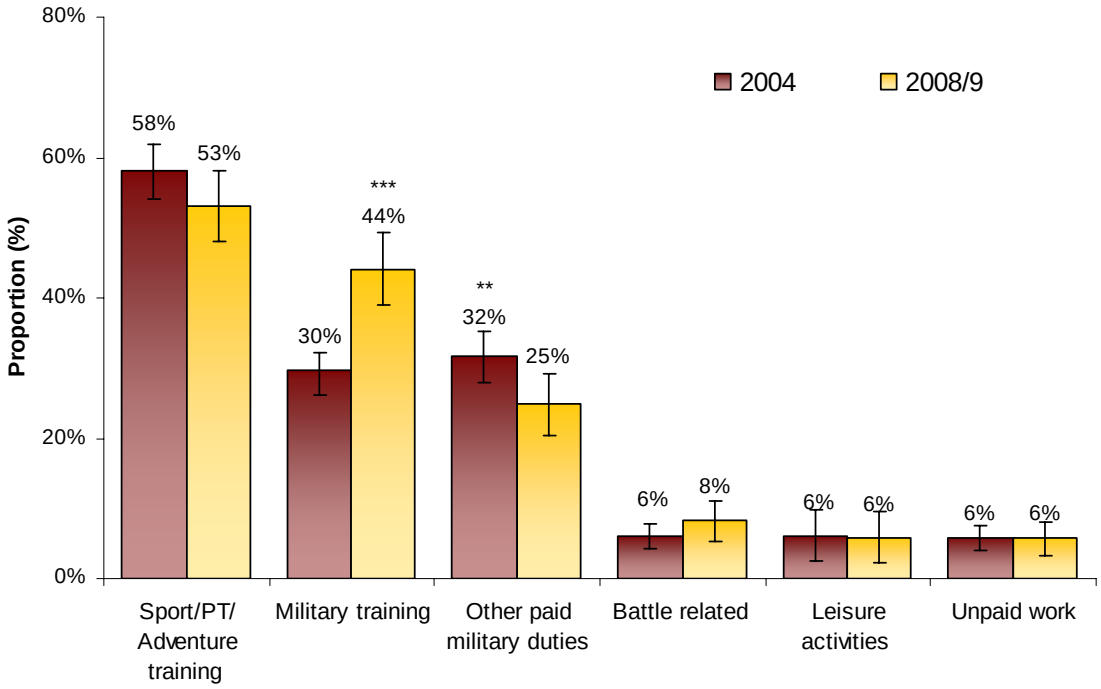

Figure 12.1: Most Common Activities Associated with Repetitive Strain Injury (RSI) in the Previous 12 Months, HLIS 2004 and 2008/9 θ

θ Age and sex standardized to the 2008 CF population

** p ≤0.01 versus referent group, *** p ≤0.001 versus referent group

Note: Estimates total more than 100% because the question asked respondents to select all that apply

Note: Activities with frequencies less than 3% were not shown but include: travelling, paid civilian work and other activities.

In the non-military Canadian population aged 18-59, the most common activity associated with RSIs was work (48%), followed by sports/physical activity (26%), unpaid chores (11%) and leisure (9%) (CCHS 2008 dataset available from Statistics Canada).

The CCHS survey question asked respondents to identify only *one* activity related to their RSI. However, in the HLIS, CF personnel were asked to select *all* activities that applied to the RSI. In spite of the differences inherent to these questions, there were some identifiable contrasts between the Canadian and CF results. Three of the most common activities reported as being associated with RSI in the CF (military training, other paid military duties, and battle related activities) are directly related to CF work. Also, the prevalence of RSIs related to sport/PT/adventure training is higher in the CF, compared to the Canadian population. This increase in the prevalence of sport-related attributions for RSI was possibly due to the specific nature of the CF work environment, which includes mandatory PT and a general encouragement to participate in sports and physical activity.

The six most common activities associated with RSIs were examined for differences based on sex, age, rank, recent deployment, and CF Command.

In regard to RSIs attributed to sports/PT/adventure training, the prevalence increased significantly with increasing age (Table 12.2). Compared to CF personnel aged 18-29, those in all other age groups were significantly more likely to have had a RSI in the previous 12 months. RSIs from sports/PT/adventure training were significantly more common among Officers compared to NCMs. There were no significant differences in RSIs related to sports/PT/adventure training by sex, deployment or command.

Table 12.2: Repetitive Strain Injuries (RSIs) Attributed to Sports, PT, or Adventure Training, by Age Group and Rank, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Age Group	18-29	29.2% (14.7-49.8%)	Ref
	30-39	60.9% (48.2-72.2%)	p = 0.01
	40-49	60.7% (50.1-70.4%)	p = 0.01
	50-60	72.2% (50.8-86.7%)	p = 0.01
Rank	Officer	67.5% (56.7-76.8%)	p = 0.04
	NCM	52.8% (43.9-61.5%)	

Showing an opposite trend, RSIs from military training were significantly less common among Officers compared to NCMs (Table 12.3). Military training-related RSIs decreased with advancing age. There were no significant differences in RSIs related to military training by sex, deployment or between Air, Navy and Army Commands.

Table 12.3: Repetitive Strain Injuries (RSIs) Attributed to Military Training, by Age Group and Rank, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Age Group	18-29	57.5% (37.3-75.5%)	Ref
	30-39	48.7% (36.2-61.4%)	ns
	40-49	30.9% (21.9-41.7%)	p = 0.01
	50-60	28.3% (13.4-50.1%)†	p = 0.04
Rank	Officer	23.1% (16.0-32.2%)	p ≤ 0.001
	NCM	45.8% (37.1-54.8%)	

† Fewer than 20 observations, values may be unstable; interpret with caution

Overall, RSIs from battle-related activities were significantly more common among males, NCMs, and those in the Army. There were no significant differences in RSIs attributed to battle-related activities by the age of the respondent.

Table 12.4: Repetitive Strain Injuries (RSIs) Attributed to Battle-Related Activities, by Age Group, Rank and CF Command, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Sex	Male	8.7% (5.3-14.0%)	p = 0.01
	Female	3.2% (1.7-5.9%)†	
Rank	Officer	2.2% (1.3-3.6%)†	p ≤ 0.001
	NCM	9.5% (5.7-15.2%)	
CF Command	Army	15.3% (8.8-25.3%)	Ref
	Navy	4.9% (1.4-15.6%)†	ns
	Air Force	1.9% (0.5-7.7%)†	p = 0.01
	Other	2.4 (0.8-7.1%)†	p = 0.003

† Fewer than 20 observations, values may be unstable; interpret with caution

Based on descriptive analyses, RSIs sustained during other paid military duties, leisure activities or unpaid work did not vary by sex, age, rank, recent deployment or CF Command.

Body Part Affected by Repetitive Strain Injury

CF personnel with a RSI were asked to identify which body part was affected by the condition. This survey question was not asked in the HLIS 2004, thus comparison over time is not possible. The most common body parts affected by RSIs were lower back (36.2%), thigh and knee (31.7%), shoulder and upper back (25.8%), lower leg and ankle (22.4%), and foot (18.4%) (Figure 12.2). Therefore lower extremity RSIs appear to be the predominant problem among CF personnel, followed by RSIs to the lower back.

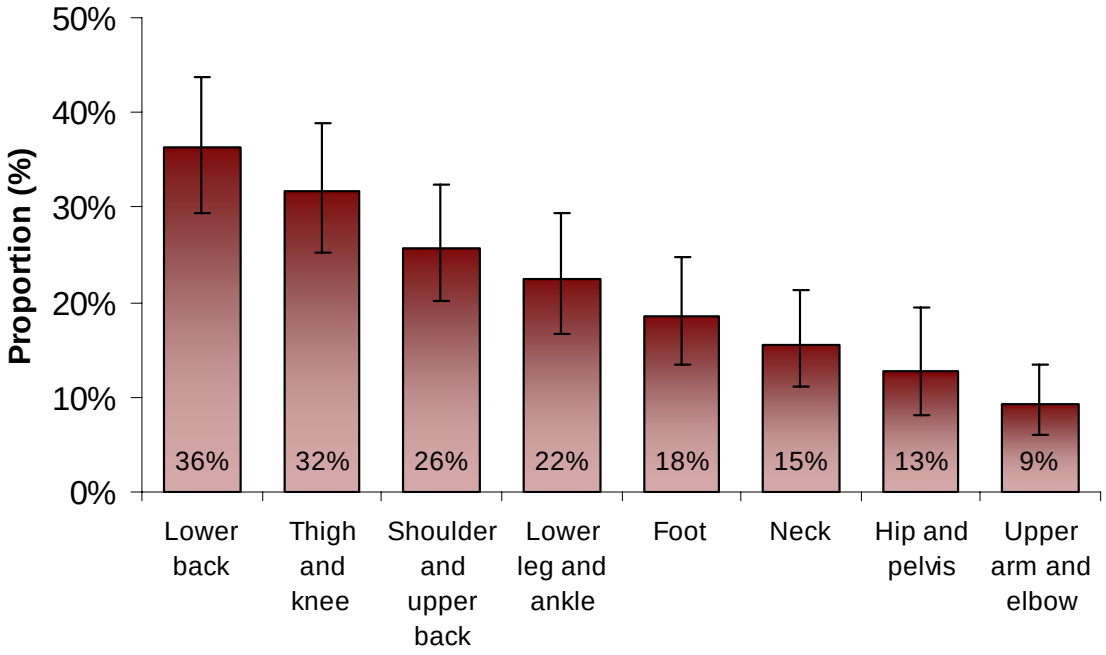

Figure 12.2: Most Common Body Part Affected by RSI in the Previous 12 Months, HLIS 2008/9

NOTE: Body parts with frequencies less than 7% were not shown and include hand, chest and abdomen, and other.

Body parts affected by a RSI were examined by demographic variables. CF personnel who had been deployed in the previous two years were significantly more likely to report a shoulder and upper back RSI in the previous 12 months (35.4%) compared to those who did not deploy (23.0%). Males were significantly more likely to report a RSI of the lower leg and ankle (24.3%) compared to females (14.0%). The prevalence of RSI of the lower back was significantly higher among NCMs (39.9%) compared to Officers (23.0%).

Acute Injuries

Acute injuries are defined by the World Health Organization as the physical damage that results from a sudden transfer of energy in an amount or rate that exceeds the threshold of human tolerance, or from the absence of vital elements (e.g. oxygen, heat) (Holder, et al., 2001). Among Canadians aged 18-59, 14% experienced an acute injury serious enough to limit normal activities in a 12 month period. The burden of activity limiting acute injury was higher among males (15%) compared to females (12%). The prevalence of activity-limiting acute injury decreased with increasing age. For the general Canadian population, an acute injury in the past 12 months was reported by 18% of 18-29 year olds, 13% of both 30-39 and 40-49 year olds, and 11% of 50-59 year olds (CCHS 2008 dataset available from Statistics Canada).

Acute Injuries in the Canadian Forces

Based on the 12 months prior to the 2008/9 survey, 20.7% of CF personnel reported having an acute injury that was serious enough to limit their normal activities. This estimate is a statistically significant decrease from acute injuries reported in 2004 (26.4%). This significant decrease in acute injuries over time may correspond to the statistically significant decrease in the rate of physical activity levels observed between 2004 and 2008/9 (further details reported in Chapter 7). The prevalence of acute injuries did not vary significantly by age, sex, rank, recent deployment, or command.

Of those who reported an acute injury in the preceding 12 months, 60.5% had one injury, 26.3% had two injuries and 13.2% had three or more serious acute injuries. In contrast, 80% of the general Canadian population aged 18-59 reported having only one activity limiting acute injury in the previous 12 months, while only 12% had two acute injuries and 8% had three or more (CCHS 2008 dataset available from Statistics Canada). CF personnel with only one acute injury in the previous 12 months did not differ significantly from those with more than one injury by age, sex, rank, deployment or command.

Body Part Affected by Acute Injury

The most common acute injuries are displayed in Figure 12.3. Respondents were asked to indicate each of the activity-limiting acute injuries they had experienced in the previous 12 months; thus the total may sum to more than 100%. Recognizing that many people sustain more than one activity-limiting acute injury in a 12 month time period, CF personnel were asked to specify which injury was their single most serious acute injury. The distribution of types of the most serious acute injury reported is also displayed in Figure 12.3.

The two most common types of acute injuries were sprain or strain in the hip, knee, ankle or foot, and injury to the back. These two types of injury were also the two most common serious acute injuries (Figure 12.3). In contrast, scrapes, bruises and blisters were a common acute injury, but rarely represented the most serious acute injury encountered in a 12 month period.

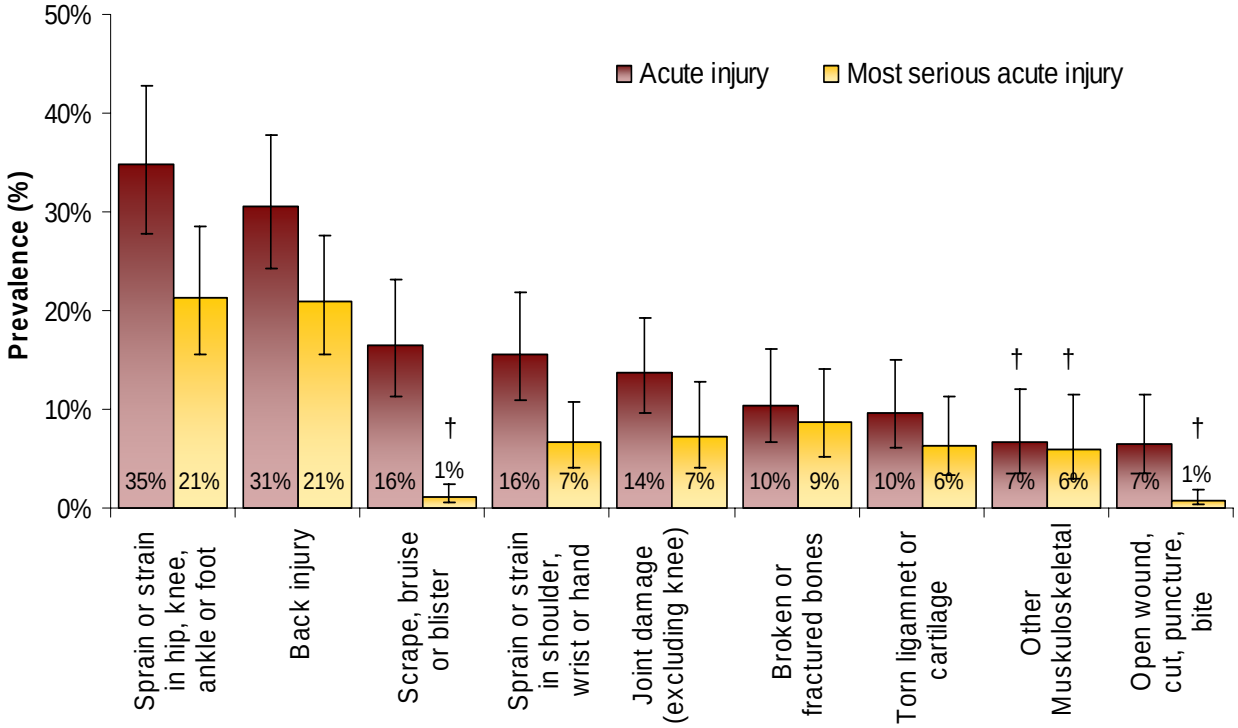

Figure 12.3: Types of Acute Injuries and Most Serious Acute Injury in the Previous 12 Months, HLIS 2008/9

† Fewer than 20 observations, values may be unstable; interpret with caution

NOTE: Types of most serious injuries with frequencies less than 5% were not shown and include multiple injuries, concussion or other brain injury, burn, scald or chemical burn, eye injury/sudden loss of vision, nerve cut/damage, shoulder dislocation, other joint dislocation, and other acute injuries.

Activity During Acute Injury

CF personnel were asked to indicate what activity they were doing when they sustained their most serious acute injury. The most common activities are shown in Figure 12.4. Estimates are age and sex standardized to the CF population to facilitate comparison between 2004 and 2008/9, as a result reported estimates may vary from earlier publications.

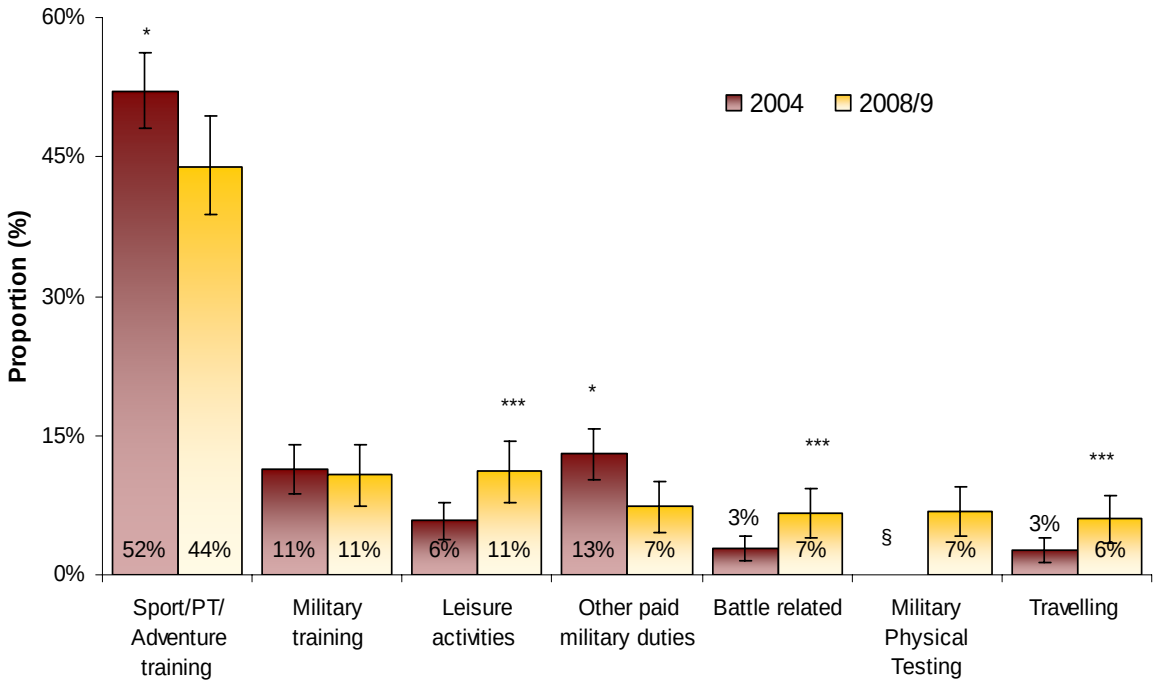

Figure 12.4: Activities Associated with Most Serious Acute Injuries in the Previous 12 Months, HLIS 2004 and 2008/9 θ

θ Age and sex standardized to the 2008 CF population

§ This response option was not included in the HLIS 2004 survey

* p ≤0.05 versus referent group, ** p ≤0.01 versus referent group, *** p ≤0.001 versus referent group

Note: Activities with frequencies less than 6% were not shown and include unpaid work, office work, paid civilian work, daily activities and other activities.

In 2004, over 50% of serious acute injuries occurred during participation in sports/PT/ adventure training (52.1%). Although from 2004 to 2008/9 there was a significant decrease in the prevalence of serious acute injuries that occurred during sports/PT/ adventure training (44.0%), these activities remained the most likely to be reported by CF personnel to have been associated with their acute injury.

There was a significant decrease in serious acute injuries due to other paid military duties from 2004 (13.0%) to 2008/9 (7.3%). Conversely, serious acute injuries that occurred during leisure activities increased significantly from 5.8% in 2004 to 11.1% in 2008/9. There was also a significant increase in the prevalence of battle-related serious acute injuries; in 2004 the prevalence was 2.9%, while in 2008/9 the prevalence was 6.7%.

The activities associated with most serious acute injury were examined for significant differences based on sex, age, rank, recent deployment, and command. As shown in Table 12.5, acute injuries from sports/PT/adventure training were significantly more common among Officers and among CF personnel that were not deployed in the previous two years. There were no significant differences in acute injuries related to sports/PT/ adventure training by age, sex or CF Command.

Table 12.5: Acute Injuries Related to Sports/PT/Adventure Training by Rank and Deployment Status, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Rank	Officer	57.7% (47.5-67.3%)	p = 0.01
	NCM	38.9% (30.0-48.5%)	
Overseas Deployment in Past 2 Years	No	49.4% (39.4-59.3%)	p = 0.001
	Yes	27.3% (18.8-35.7%)	

Military training-related acute injuries were significantly more common among females (18.2%) compared to males (9.9%). There were no significant differences in acute injuries related to military training by age, deployment or command. Acute injuries related to other paid military duties were more common among NCMs (10.3%) compared to Officers (2.8%). However, these estimates were based on less than 20 observations for Officers, which may result in unstable estimates.

A significantly higher prevalence of acute injury associated with battle-related activities was reported among males, NCMs, and those in the Army (Table 12.6). There were no significant differences in battle-related acute injuries according to the age group of the respondent.

Acute injuries sustained during leisure activities, military physical testing and travelling did not vary significantly by sex, age, rank, recent deployment, or command.

Table 12.6: Acute Injuries Attributed to Battle-Related Activities, by Sex, Rank, and CF Command, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Sex	Male	7.3% (4.7-11.3%)	p = 0.04
	Female	2.7% (1.1-6.7%)†	
Rank	Officer	2.8% (1.2-6.5%)†	p ≤ 0.03
	NCM	7.9% (5.0-12.5%)	
CF Command	Army	14.4% (9.0-22.2%)	Ref
	Navy	0.3% (0.0-1.9%)†	p ≤ 0.001
	Air Force	2.4% (0.6-9.2%)†	p = 0.015
	Other	0.5% (0.2-1.5%)†	p ≤.001

† Fewer than 20 observations, values may be unstable; interpret with caution

Place of Acute Injury

CF personnel were asked about the location where their most serious acute injury occurred. The most common locations are summarized in Figure 12.5 and were age and sex standardized to the 2008 CF population to allow direct comparisons between 2004 and 2008/9. As a result of the standardization procedure, 2004 estimates may vary from earlier publications. Two response categories in the HLIS 2008/9 (military working area, military office) were combined for this analysis to form a new category (area of military work), in order to compare to the HLIS 2004 category (military office, accommodations, service, and work areas).

In 2008/9, there was a significant increase in the prevalence of acute injuries that occurred in an area used for military training or PT (25.0%) compared to 2004 (15.3%). There was a statistically significant decrease in the prevalence of acute injuries that occurred in a sports and athletic area from 36.1% in 2004 to 24.5% in 2008/9. Note that this decrease in reported injuries at sports and athletic areas between 2004 and 2008/9 coincides with a decline in the reported energy expenditure during moderate physical activity, and an increase in physical inactivity over the same time period (Chapter 7). There was also a significant increase in the prevalence of acute injuries that occurred on the street, highway or sidewalk in 2008/9 (12.2%) compared to 2004 (5.1%).

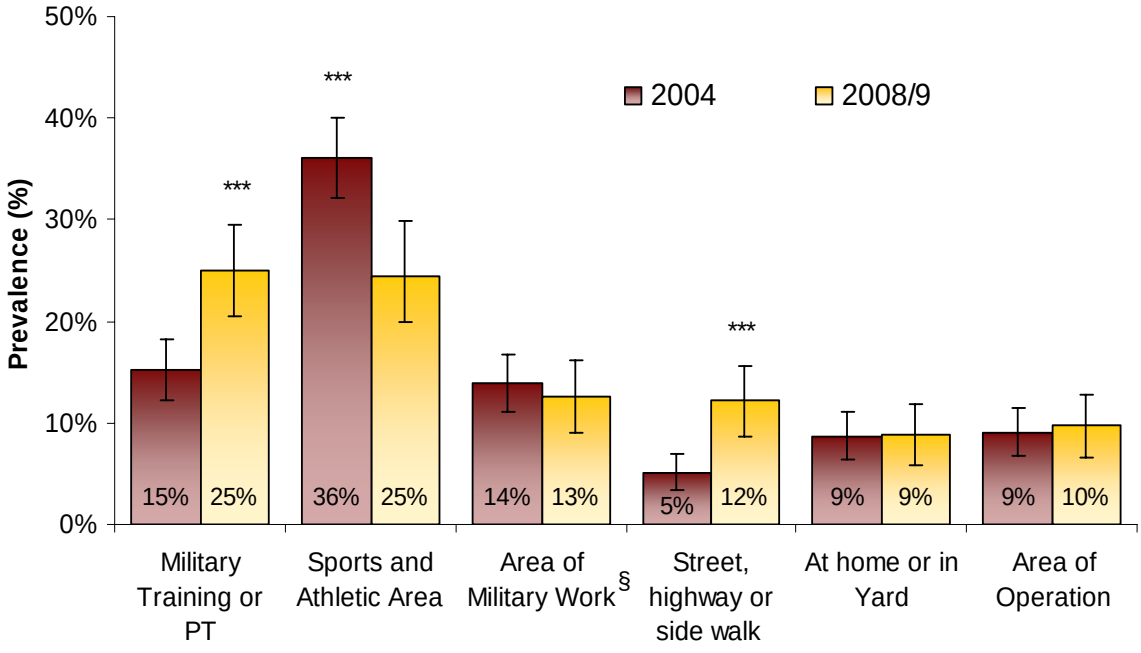

Figure 12.5: Most Common Places Associated with Most Serious Acute Injury in the Previous 12 Months, HLIS 2004 and 2008/9 θ

θ Age and sex standardized to the 2008 CF population

Note: Places related to acute injury with frequencies less than 5% were not reported and include farm or farmland, countryside, civilian area and other.

§ The response categories in HLIS 2008/9 '*military working area*' and '*military office*' were combined in order to facilitate comparisons with HLIS 2004

*** p ≤0.001 versus referent group

The three most common locations where CF personnel sustained their most serious acute injury were areas used for military training or PT, sports and athletic areas and areas of military work. It is important for injury prevention programs to realize that each of these areas involve locations over which the CF exerts some level of control.

The places where the most serious acute injuries occurred were examined for any differences based on sex, age, rank, recent deployment, or command to better understand who is at increased risk of getting injured at each location. As shown in Table 12.7, there was a significantly lower prevalence of acute injuries that occurred in an area used in military training/PT among CF personnel aged 30-39 compared to those aged 18-29. CF personnel who had not been deployed in the past two years reported significantly higher prevalence of acute injuries in an area used in military training/PT compared to those that had been deployed. The most serious acute injuries in an area used in military training/PT were less common among CF personnel in the Navy compared to persons in the Army. There were no significant differences in acute injuries that occurred in an area used in military training/PT by sex or rank.

Table 12.7: Acute Injuries Attributed to Areas Used in Military Training or PT by Age Group, Deployment Status and CF Command, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Age Group	18-29	38.5% (22.2-57.9%)	Ref
	30-39	14.8% (9.7-22.0%)	p = 0.01
	40-49	25.5% (16.1-37.8%)	ns
	50-60	20.0% (9.3-37.9%)	ns
Overseas Deployment in Past 2 Years	No	28.5% (20.5-38.2%)	p = 0.02
	Yes	15.5% (9.7-23.8%)	
CF Command	Army	34.6% (24.0-47.0%)	Ref
	Navy	7.7% (3.0-18.2%) †	p = 0.001
	Air Force	27.1% (14.5-44.9%)	ns
	Other	14.3% (6.9-27.0%)	p = 0.02

† Fewer than 20 observations, values may be unstable; interpret with caution

In terms of acute injuries that occurred in sports and athletic areas, the prevalence was significantly higher for males and lower among CF personnel that deployed in the previous two years. There were no significant differences in acute injuries related to sports and athletic areas by age, rank or CF Command.

Table 12.8: Acute Injuries Attributed to Sports and Athletic Areas, by Sex and Deployment Status, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Sex	Male	23.9% (17.2-32.3%)	p = 0.04
	Female	14.5% (10.1%-20.5%)	
Overseas Deployment in Past 2 Years	No	25.6% (18.0-35.1%)	p = 0.04
	Yes	14.3% (8.8-22.4%)	

As shown in Table 12.9, acute injuries that occurred in an area of military work were more common among females, NCMs, and among older CF personnel. There were no significant differences in acute injuries that occurred in an area of military work by deployment or command.

Table 12.9: Acute Injuries Attributed to an Area of Military Work, by Sex, Age Group, and Rank, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Sex	Male	12.2% (7.5-19.3%)	p = 0.02
	Female	23.1% (16.9-30.7%)	
Age Group	18-29	4.9% (2.5-9.6%) †	Ref
	30-39	16.8% (9.0-29.4%)	p = 0.004
	40-49	18.4% (10.7-29.9%)	p = 0.001
	50-60	1.6% (0.6%-4.6%) †	ns
Rank	Officer	5.2% (2.9-9.3%)	p = 0.001
	NCM	16.4% (10.8-24.2%)	

† Fewer than 20 observations, values may be unstable; interpret with caution

Significantly fewer females and Officers sustained their most serious acute injury in an area of operation (Table 12.10). There were no significant differences in acute injuries related to an area of operation by age or between Army, Navy or Air Force.

Table 12.10: Acute Injuries Attributed to an Area of Operation, by Sex and Rank, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Sex	Male	10.7% (7.6-15.0%)	$p \leq 0.001$
	Female	2.3% (1.3-4.1%) †	
Rank	Officer	5.1% (2.7%-9.7%)	$p = 0.04$
	NCM	11.0% (7.6-15.7%)	

† Fewer than 20 observations, values may be unstable; interpret with caution

Acute injuries that occurred at home or in the yard were more likely to occur among CF personnel aged 40-49 compared to those 18-29 (Table 12.11). There were no significant differences in acute injuries that occurred in the home or in the yard by sex, rank, deployment or CF Command.

Table 12.11: Acute Injuries Attributed to Home or in the Yard by Age Group, HLIS 2008/9

Age Group	Prevalence (%) (95% CI)	p value
18-29	2.8% (0.6-12.8%) †	Ref
30-39	8.7% (4.7-15.6%) †	ns
40-49	15.6% (8.3-27.4%)	$p = 0.04$
50-60	1.0% (0.3-3.7%) †	ns

† Fewer than 20 observations, values may be unstable; interpret with caution

Based on this descriptive analysis, acute injuries sustained on a street, highway or sidewalk did not vary significantly by sex, age group, rank, deployment history or CF Command.

Injury Prevention

CF personnel that reported having sustained an activity-limiting acute injury in the previous 12 months were asked what could have prevented their most serious injury. The survey question allowed respondents to select all responses that applied to their situation, thus the total may sum to more than 100%. This question was not asked in the HLIS 2004, consequently a comparison is not possible.

The most common response reported by CF personnel was that they felt their most serious injury was not preventable (61.2%). Other common responses were that the injury could have been prevented if there had been less pressure to perform (11.8%); if they had been less tired (5.7%); if they had not exceeded personal physical limitations (5.0%; n.b. less than 20 observations, therefore estimate may be unstable); or if they had proper protective equipment (4.5%; n.b. less than 20 observations, therefore estimate may be unstable). Conversely, less than 4% of persons thought the injury could have been

prevented by any of the following: having assistance with the task associated with their injury; through changes to policies; being sober; improved personal attentiveness; wearing a seatbelt or improved maintenance. These are interesting and illuminating answers from CF personnel, since it has been shown that injuries are generally considered to be preventable (Francescutti, 2005; Tator 2008). A trial is currently underway to prospectively evaluate the prevention of injuries among Canadian Forces personnel.

When asked about helmet use when riding a bicycle, 54.0% of CF personnel that ride a bike reported that they always wear a helmet, while 16.9% wear a helmet most of the time, 11.4% rarely wear a helmet, and 17.7% never wear a helmet.

The prevalence of always wearing a helmet when bicycling was significantly higher among females, Officers, those not deployed in the past two years, Navy personnel, and older CF personnel. It is foreseeable that the observed differences by command in the tendency to wear a bicycle helmet may reflect differences in the gender distribution between commands, or provincial differences in bicycle helmet laws.

Table 12.12: Profile of CF Personnel that Always Wear a Helmet When Riding a Bicycle by Sex, Age Group, Rank, Deployment Status, and CF Command, HLIS 2008/9

Variable	Category	Prevalence (%) (95% CI)	p value
Sex	Male	52.6% (48.1-57.0%)	$p \leq 0.001$
	Female	63.6% (59.7-67.2%)	
Age Group	18-29	42.0% (33.3-51.2%)	Ref
	30-39	50.3% (43.6-57.0%)	ns
	40-49	63.7% (58.0-69.0%)	$p \leq 0.001$
	50-60	62.5% (49.2-74.2%)	$p = 0.01$
Rank	Officer	62.3% (57.4-66.9%)	$p = 0.002$
	NCM	51.4% (46.5-56.2%)	
Overseas Deployment in Past 2 Years	No	55.8% (50.9-60.6%)	$p = 0.04$
	Yes	48.4% (43.4-53.5%)	
CF Command	Army	46.7% (40.4-53.0%)	Ref
	Navy	76.6% (66.6-84.4%)	$p \leq 0.001$
	Air Force	42.7% (40.2-57.6%)	ns
	Other	56.8% (49.5-63.9%)	$p = 0.04$

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