National Defence Défense nationale

Canadian Forces College

Collège des Forces Canadiennes

# FIT SOLDIERS – AIMING ABOVE THE FORCE: PHYSICAL FITNESS EVALUATION IN THE CAF TODAY

LCol M.C.G. Lehoux

## JCSP 41

## Exercise *Solo Flight*

**Disclaimer**

Opinions expressed remain those of the author and do not represent Department of National Defence or Canadian Forces policy. This paper may not be used without written permission.



## PCEMI 41

## Exercice *Solo Flight*

**Avertissement**

Les opinons exprimées n'engagent que leurs auteurs et ne reflètent aucunement des politiques du Ministère de la Défense nationale ou des Forces canadiennes. Ce papier ne peut être reproduit sans autorisation écrite.



Canada

CANADIAN FORCES COLLEGE – COLLÈGE DES FORCES CANADIENNES
JCSP 41 – PCEMI 41
2014 – 2015

EXERCISE *SOLO FLIGHT* – EXERCICE *SOLO FLIGHT*

# FIT SOLDIERS – AIMING ABOVE THE FORCE: PHYSICAL FITNESS EVALUATION IN THE CAF TODAY

LCol M.C.G. Lehoux



Word Count: 5289

Compte de mots : 5289

## INTRODUCTION

> *By choosing the FORCE Evaluation, the CAF was now adopting a functional test and a unique physical employment standard more adequately designed to meet its Bona Fide Occupational Requirement needs.*[1]

The combat operations in Afghanistan reinforced the requirement for deployed soldiers to have a high level of physical fitness. The physical demands on soldiers currently deployed to Iraq and Kuwait are equally strenuous due to the terrain and extreme heat they operate in. The Chief of Defence Staff (CDS) emphasized the importance of fitness in his Guidance to the Canadian Armed Forces published in 2013: "our military personnel […] must be mentally and physically fit to meet the rigours of military service."[2] As the elite of the Canadian population, each man and woman in the military should strive to adopt lifelong standard of living with a commitment to good eating habits and regular physical fitness activities to ensure they remain fit and capable to deploy and be employed anywhere around the world.

The Fitness for Operational Requirements of CAF Employment evaluation, or FORCE evaluation, officially replaced the CF EXPRES evaluation program in April 2014, after one year of trial implementation.[3] The new FORCE evaluation relates to employment standards but arguably, does not entice CAF personnel to stay fit. The FORCE Program Operations Manual is very clear in its statement that the FORCE

---

[1] Department of National Defence, *FORCE Program Operations Manual* (Ottawa: DND Canada, 2015), 68.

[2] Department of National Defence, *Guidance to the Canadian Armed Forces* (Ottawa: DND Canada, 2013), 15.

[3] *FORCE Program Operations Manual*, 4.

evaluation is not a physical fitness evaluation, but rather "a reflection of the CAF minimal physical employment standard related to common defence and security duties known as the Universality of Service (U of S)."[4] In other words, the FORCE test serves as a measurement of a person's suitability for military duty and not as an assessment of the level of fitness of that individual.

All CAF personnel within the Regular or Primary Reserve Force are required to be ready at all times for any operational duty in the service to Canada. The failure to answer this call of duty lessens the capability and flexibility of the CAF to mount and sustain operations anywhere in the world. Therefore, its members' health and physical fitness are critical elements of the CAF operational readiness.[5] Although the institution has put significant emphasis on health and fitness in the last few years to improve its standards, it seems that the physical fitness levels of its members are declining. CF Health and Lifestyle Information Survey reported that the CAF population is more sedentary than it used to be and the number of obese military members is on the rise.[6] The CAF, as a professional institution, must continue to implement fitness programs to motivate its members to maintain or enhance their physical fitness level. This paper argues that the simple addition of a cardiorespiratory (aerobic) component into CAF annual fitness evaluation might be the solution to entice its personnel to be fit. Education

---

[4] *FORCE Program Operations Manual*, 5.

[5] Department of National Defence, *Canadian Forces Health and Fitness Strategy* (Ottawa: DND Canada, 2008), 17.

[6] Department of National Defence, *Health and Lifestyle Information Survey (HLIS) 2008/2009 – Regular Force Report* (Ottawa: DND Canada, 2008), 102 and 127.

and fitness programs alone are not enough to motivate its men and women as they do not enforce accountability of each individual to remain fit.

The purpose of this paper is to assess the validity of the newly implemented FORCE evaluation across the CAF and to propose some changes to increase the motivation of its members to be physically fit and healthy. The first section will review the importance of the physical fitness programs within the CAF and will discuss the current level of fitness of its members. The second section will describe the U of S principle within the existing legislative framework. The third section will discuss past and present physical fitness evaluations within the CAF. Finally, the last section will make reference to the benefits of an increased level of cardiorespiratory fitness can have on the institution and will give ideas on how to improve the level of fitness in the CAF. This paper focuses on the fitness level of Regular Force only and will not make mention of the Reserve Force.

## IMPORTANCE OF PHYSICAL FITNESS FOR MILITARY PERSONNEL

It is recognized by most military personnel that a higher degree of health and fitness must be attained and maintained than the general Canadian population in order to operate in complex and demanding situations and environments. For military personnel physical strength and endurance could make the difference between mission success and failure.[7] Deteriorating trends in fitness levels of the Canadian society may have a great impact on the CAF, since new recruits are necessarily selected from the general

---

[7] *Canadian Forces Health and Fitness Strategy*, 2.

population. The Canadian population currently struggles with an increasing rate of obesity as a result of a more sedentary lifestyle and poor eating habits. Today, almost 60% of the Canadian population is considered overweight and, as reported by Statistics Canada, approximately 6.3 million Canadian adults were obese in 2011-2012, which corresponded to one in four Canadians. These statistics represent an increase of 17.5% since 2003.[8] Overweight and obesity are associated with a series of health issues including, heart diseases, strokes, type 2 diabetes, and certain types of cancer. As the CAF recruits come from the general population, the widespread epidemic of obesity in Canada must be taken seriously by CAF leadership. Measures of prevention and intervention are required to slow current deteriorating health trends within the CAF institution to ensure all soldiers can answer the call for duty anytime and anywhere in the world. CAF must maintain a pre-emptive approach in "shaping and re-shaping minds and bodies of its personnel and recruits" to offset the behavioral trends of poor health and physical fitness of the general population.[9]

Canada is not alone in researching ways to ensure a high level of physical fitness exists within its forces. In 2005, North Atlantic Treaty Organization (NATO) put together a Medicine Panel Task Group to study the medical fitness requirement for deployed operations. NATO Medical staff deployed to Afghanistan and observed numerous military members with chronic medical conditions or new chronic medical situations that may have been detected early if proper medical assessment and physical fitness testing

---

[8] Tanya Navaneelan and Teresa Janz, "Adjusting the scales: Obesity in the Canadian population after correcting for respondent bias" *Health at a Glance. Statistics Canada Catalogue* no. 82-624-X. (May 2014):1.

[9] *Canadian Forces Health and Fitness Strategy*, 14.

were performed before the deployment of the individual.[10] The goal of the Medicine Panel Task Group was to decrease the number of unfit individuals being deployed with pre-existing medical conditions. Pre-existing medical conditions can obviously be found through a rigorous medical exam but the inexistence of pre-existing medical conditions can be confirmed through a physical fitness evaluation. For example, physical fitness testing can validate if an individual is free from joint pain, back pain and asthma. By reducing the number of unfit deployed personnel the NATO Medicine Panel Task Group asserted that three operational and medical benefits would be achieved: "(1) a reduction of morbidity for the individual, (2) most efficient use of deployment resources (medical and nonmedical) and most importantly, (3) an increased likelihood of mission success and unit safety."[11] In sum, ensuring that the deployed force is physically fit contributes to the success of the mission while reducing the demand on personnel support and the medical system.

## CURRENT LEVEL OF PHYSICAL FITNESS IN THE CAF

CAF leadership and most of its personnel recognize that exercise and healthy diet are important elements for maintaining a fit body; yet physical fitness activity levels remain low for a group of workers who are supposed to be healthier than the general Canadian population.[12] The latest CF Health and Lifestyle Information Survey (HLIS) report published in 2008 indicates that the main reasons influencing the inability to

---

[10] Randy Russell, Alastair Reid, Guy Borgers, Henry Wassink, Andreas Grove, and David W. Niebuhr, "A NATO Guide for Assessing Deployability for Military Personnel with Chronic Medical Conditions: Medical Fitness for Expeditionary Missions, Task Group 174, Human Factors, and Medicine Panel." *Military Medicine* 179, no. 12 (Dec 2014): 1404.

[11] A NATO Guide for Assessing Deployability,1405.

[12] *Canadian Forces Health and Fitness Strategy,* 17.

deploy increased with age and were related to poor physical and mental health such as; injuries, depression and being physically unhealthy. These conditions accounted for 60.8% of the reasons why a CAF member could not deploy.[13,14]

The level of physical activities within the CAF has decreased in 2004 compared to 2000 and again in 2008. When surveyed, CAF personnel were grouped into three categories: inactive (less than 30 minutes of physical activity a day; equivalent to walking), moderately active (between 30 to 60 minutes a day) and active (more than 60 minutes a day). On a positive note, the number of fit CAF individuals remained similar between 2004 and 2008. Those who were physically fit valued the benefits of good health and continued to do physical activities for over 60 minutes a day. However, when comparing the data between 2004 and 2008, the proportion of CAF personnel who engaged in physical activities between 30 and 60 minutes a day decreased from 27% to 22% and the proportion of those who were considered inactive increased from 27% to 31%.[15] CAF personnel identified "not having enough time" as an important obstacle to lifestyle improvement. Physical activities become secondary to many CAF personnel due to family commitments, increased work demands and other activity interests such as watching TV, playing video games, surfing the internet and reading. The HLIS also highlighted that males spent more time doing sedentary activities than women, amounting

---

[13] *HLIS*, 182 and 184.
[14] Other non-medical reasons included family related issues and training requirements. *HLIS*, 184.
[15] *HLIS*, 11.

to 28.2 hours versus 23.9 hours per week.[16] The difference possibly comes from more time spent by men on the internet and video games than women.

The HLIS report also highlighted that CAF members realize that a change in lifestyle with better eating habits, increased exercise regimen and weight loss would enhance their own health and ensure their availability for deployment.[17] Plenty of research reported in the media has made the link between physical inactivity and the increased risk of health problems and obesity. The more sedentary a military member is, the more chance he or she has to develop a health issue which could prevent his or her capability to deploy. Most men and women in the service understand they should enhance their health and fitness to be ready to answer the call for duty, however lack of time and lack of motivation persist and the decreasing level of physical fitness within CAF follows the Canadian population trend. The numbers representing a low level of physical activities confirm the requirement that the CAF must implement a rigorous physical fitness strategy with a proper fitness evaluation system and provide time during the workday for fitness activities. This would increase the general physical fitness of its members and augment their motivation and incentive to stay fit.

This section drew attention to the fact that CAF members are becoming more sedentary, it also highlighted the importance of a high level of fitness for CAF members to ensure they are able to carry out a wide range of military tasks in a timely manner

---

[16] *HLIS*, 107.
[17] *HLIS*, 10.

anywhere around the world. The next section will explain the legal authority given to CAF as an employer to impose a minimum physical fitness standard on its members.

## LEGISLATIVE FRAMEWORK - UNIVERSALITY OF SERVICE

The Canadian Human Rights Act instituted in 1985 ensures that all individuals have an equal opportunity for employment and shall be given all necessary accommodations to perform their job without discrimination. The Canadian Human Rights Act prohibits discrimination on the basis of gender, colour, religion, ethnic and national origin, age, or disability within any federal institution and all federally regulated industries.[18] Persons with disabilities are defined by the Employment Equity (EE) Act as "persons who have a long-term or recurring physical, mental, sensory, psychiatric or learning impairment."[19] The CAF can slightly deviate from some legislated requirements, such as the EE Act, as they are not mandated to recruit Canadians with disabilities. However, when implementing a physical fitness standard, the CAF must still conform to the Canadian Human Rights Act (CHRA) and meet bona fide occupational requirements (BFOR) as prescribed under CHRA section 15(2). BFOR is defined by the Government of Canada as "a condition of employment that is imposed in the belief that it is necessary for the safe, efficient, and reliable performance of the job and which is objectively, reasonably necessary for such performance."[20] The establishment BFOR is described under the section 15(9) of the CHRA with the heading "Universality of Service for

---

[18] David Johnson, "Human Resource Management." in *Thinking Government: Public Administration and Politics in Canada*. (Toronto: University of Toronto Press, 2011), 360.

[19] Canadian Human Rights Act, R.S.C., c. H-6, s.15 (1985).

[20] CFMWS Website, "Bona Fide Occupational Requirement," Internet accessed 3 May 15. https://www.cfmws.com/en/AboutUs/PSP/DFIT/Fitness/Pages/Bona-Fide-Occupational-Requirement.aspx

Canadian Forces". The policy states "members of the Canadian Forces must at all times and under any circumstances perform any function that they may be required to perform."[21] The principle of U of S is enforced by section 33(1) of the National Defence Act (NDA). This law mandates that all Regular Force members are "at all times liable to perform any lawful duty."[22] Essentially the legislation entails that a member who cannot "at all times perform any lawful duty", cannot serve within the CAF as a Regular Force member, except during periods of recovery and transition. Put simply, men and women of the Regular Force must be healthy and physically fit to remain employable and deployable for general operational duties at all times. In practice, U of S demands that CAF members be capable of performing general military duties and common defence and security duties, not just the functions of their military occupations.

Physical fitness is an obligation for all CAF members, and all personnel are required to perform fitness testing on an annual basis to ensure compliance with the U of S. As outlined in Defence Administrative Orders and Directives (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."[23] These standards have been scientifically validated, including the evaluations within the CF EXPRES and FORCE program.

---

[21] Canadian Human Rights Act, R.S.C., c. H-6, s.15 (1985).
[22] National Defence Act, R.S.C., c . N-5, s.33 (1985).
[23] Department of National Defence, DAOD 5023-2 Physical Fitness Program (Ottawa: DND Canada, 2013), 1.

Some have argued that it might be time to review the CAF U of S with the aim of accommodating person with disabilities; this would translate into retaining those who suffered injuries while in service beyond the current three years transition period and recruiting men and women with visible or non-visible disabilities.[24] This accommodation would involve the creation of a two-tier system consisting of a non-deployable and a deployable force. Accepting persons with disabilities would assuredly help with recruitment and retention. As the Canadian population ages, the CAF will compete within the labour market to attract and retain talented and dedicated individuals. A solution to reach CAF preferred manning levels for each trade could be to recruit persons with disabilities. However, this would mean that a potentially large group of service members could not deploy due to physical fitness limitations. This author does not believe that a two-tier system should exist in the CAF. The adoption of this system would increase the pressure on an already stretched population of personnel available for deployment and would impede on mission effectiveness. The U of S should thus remain in effect and all military members must maintain a minimum medical and physical fitness standard so as to be able to deploy at all times.

This section has described the legal authority given to CAF as an employer to impose a minimum physical fitness standard on its men and women. It could be perceived that the minimum physical fitness standard imposed on military members is discriminatory as it prevents persons with disabilities to join the Forces. However, as long as the minimum standard is related to the actual work to perform, is made in good

---

[24] Department of National Defence, *Foresight Study Synopsis: Persons with Disabilities in Defence Deep Dive to 2023* (Ottawa: DND Canada, 2013), 20.

faith, is reasonably essential, and proof exits that reducing the standard would cause undue hardship to the institution, the CAF has all legal rights to enforce a minimum physical fitness standard. The next section will give a brief overview of past and current physical fitness standards with their advantages and disadvantages.

## PHYSICAL FITNESS EVALUATIONS

> *Soldiers need a high level of fitness. This includes a high aerobic capacity, muscular strength, endurance and power, flexibility, and a healthy body weight. Achieving these goals brings many benefits.*[25]

Over the last 30 years, when implementing its fitness standards, the CAF always remained aware that its standards could result in legal action if they were deemed discriminatory and therefore, ensured its standards met the BFOR criteria. In the recent past, CAF physical fitness standard evaluations differed among the Army and the Air Force and the Navy. The Canadian Army used a task related physical fitness evaluation, called the Land Force Command Physical Fitness Standard (LFCPFS) and the remainder of the Forces used the CF EXPRES Test. Results from new studies and research on physical fitness evaluation in the CAF, have recently prompted the implementation of the Fitness for Operational Requirements of CAF Employment (FORCE) program in 2013. This FORCE test was approved by the Armed Forces Council (AFC) in December 2012 and officially replaced the CF EXPRES test and the LFCPFS. This section will evaluate the CF EXPRESS test, the LFCPFS and the FORCE test.

---

[25] Department of National Defence, B-GL-382-003/PT-001, *Army Fitness Manual* (Ottawa: DND Canada, 2005), 1.

**CF EXPRES Test**

The CF EXPRES program was used for almost twenty years (from February 1983 until December 2012). The EXPRES term is derived from the words "exercise" and "prescription".[26] The physical fitness evaluation included in the CF EXPRESS program was conducted to measure CAF personnel in comparison to the CAF Minimum Physical Fitness Standard (MPFS) and consisted of four components: sit-ups, push-ups, handgrip dynamometer and the 20-Metre Shuttle Run (MSR) or modified Canadian Aerobic Fitness Test (mCAFT). These four components predicted abdominal muscular endurance, upper body muscular endurance, overall muscular strength and aerobic fitness measured with the maximum oxygen uptake (VO2 max) respectively. The MPFS within the CF EXPRES test was derived from five common military tasks: sea evacuation, land stretcher evacuation, low-high crawl, entrenchment dig and sandbag carry. These tasks were selected as they were considered tasks that could be performed by any CAF member in a time of emergency.[27] This test was administered to all CAF personnel except to those within the Canadian Army or those subject to task-specific unit evaluations (e.g. Joint Task Force 2, Canadian Special Operations Regiment, officer cadets at the Royal Military College of Canada, military firefighters, search and rescue personnel and military divers).[28] Since the level of physical abilities varies between gender and age the fitness standards in the MPFS also varied based on age and gender.

---

[26] Department of National Defence, *CF EXPRES Operations Manual* (Ottawa: DND Canada, 2005), 5.

[27] DAOD 5032-2.

[28] *CF Express Manual,* 15.

Of those who failed the CF EXPRES test, male candidates were more likely to fail the aerobic component (20 MSR), while female candidate were more likely to fail the push-ups.[29] The 20 MSR became the only aerobic testing protocol in 2007. Before then, the testing protocol consisted of a timed mile and a half run (2.4 km). The advantages of the 20 MSR over the mile and a half run were that it was a progressive evaluation in which the individual couldn't manipulate his/her pace to compensate for a poor cardiorespiratory fitness level. It gave an accurate reading of aerobic fitness if the individual pushed themselves to their limit. The 20 MSR also permitted for many individuals to be tested at the same time within a controlled environment and with minimal equipment requirement and set-up.[30]

The main issue CAF members had with the CF EXPRES test was the fact that the test looked nothing like their job and a few believed that the separate standards based on age and gender were unfair by giving an advantage to older personnel and to women. Although sit-ups, push-ups and handgrip dynamometer testing were proven scientifically to predict abdominal muscular endurance, upper body muscular endurance and overall muscular strength required to perform the five common military tasks, it did not prove that a person could dig a trench or carry a sand bag in case of an emergency. Even if the CF EXPRES testing was considered to give an acceptable measure of general physical fitness, the gap between the components of the test and the criteria for BFOR was too

---

[29] *Canadian Forces Health and Fitness Strategy*, 24.
[30] *CF Express Manual*, 22.

large to be fully accepted and was deemed discriminatory and non-defendable in the Court of Law. [31]

**Army Fitness Standard**

The Army, consistent with its more physically demanding operating environment, went further than the minimum fitness standard prescribed by the CF EXPRES program and developed their own Army Fitness Standard. A study completed in 1990 revealed a series of common tasks representative of the physical requirements of the Canadian Army soldier.[32] The common tasks were: 1) execute survival duties of digging shellscrapes and trenches, 2) march, 3) casualty evacuation and 4) handle material manually. The evaluation of Army Fitness Standard also known as LFCPFS consisted of three activities: a Weight Load March of 13 kilometers in two hours, 26 minutes and 20 seconds, a Casualty Evacuation Task which entailed the requirement to drag a fellow soldier of similar weight and no less than seventy kilograms over a distance of twenty-five meters and a trench dig which involved the shoveling of 0.486 cubic meters of pea gravel in less than six minutes.[33] The main difference between the Army Fitness Standard and the CF EXPRES test was that the standard to be achieved on the LFCPFS was the same for each individual regardless of age and gender. All army soldiers had to develop their endurance, strength, power, and flexibility to meet the minimum Army Fitness Standard

---

[31] G.M. Andrew, J.T. Bryant, S.W. Lee, J.M. Stevenson, R.D. Swan, and J.M. Thomson, "Development of Minimum Physical Fitness Standards for the Canadian Armed Forces: Phase III." (Kingston, ON: School of Physical and Health Education, Department of Mechanical Engineering, Queen's University, 1986), 18.

[32] S.W. Lee, P. Chahal, G. Wheeler, and M. Singh, "Task Related Physical Fitness and Performance Standards: A Canadian Forces Approach" (NATO DRG Panel 8, Optimizing the Performance of Women in the Armed Forces of NATO, London, England, Sep 1995), 12.

[33] *Army Fitness Manual*, 3.

to prove they were fit to fight.[34] The main advantages of this test were that it was entirely related to possible tasks any army soldiers could be called to perform and therefore made it very defendable in the Court of Law. It also gave a good appreciation of the level of physical fitness of each individual. The main disadvantage was that it was time consuming as the entire test could not be performed in less than three hours.

**FORCE Test**

"FORCE" is an acronym that stands for "Fitness for Operational Requirements of CAF employment".[35] The FORCE Evaluation marked a fundamental turn in how the CAF tackles fitness testing by focusing on operational and functional tasks and making it one common performance standard regardless of age, gender, rank or occupation. The mandate of the research team creating the FORCE test was to bridge the gap between complex task simulation such as sandbag fortification and the use of a very simple fitness test, like push-ups. Their solution was to stop using individual body weight as the resistance and replace it with an external generic load such as sandbags. The CF EXPRES test predicted the ability to perform five common military tasks whereas the FORCE test predicts six. These common military tasks form the new minimum physical fitness standard for U of S. These six common military tasks are: 1) escape to cover, 2) sandbag fortification, 3) pickets and wire carry, 4) picking and digging, 5) vehicle extrication and 6) stretcher carry.[36] Common Military Task Fitness Evaluation (CMTFE) referred to as the FORCE test currently represents the new minimum physical fitness

---

[34] *Army Fitness Manual*, 5.
[35] *FORCE Program Operations Manual*, 5.
[36] *FORCE Program Operations Manual*, 67.

standards for attaining the U of S standards and includes four test components: sandbag lift, intermittent loaded shuttles, sandbag drag and 20 metre rushes.

It is clear when reading the FORCE Program Operations Manual that the FORCE test is not an evaluation of physical fitness but rather a reflection of the CAF minimal physical employment standard related to the U of S defining the common defence and security duties.[37] It describes that a physical fitness test may or may not be related to the job, whereas a physical employment standard is a measure of job performance, scientifically based on job requirements. In other words, the FORCE test does not give a measurement of fitness, but rather an assessment of a soldier's physical ability to do a job; that they are not unfit for employment.

The FORCE test is defendable in the Court of Law as it is a realistic reflection of physical employment any man and woman in the CAF may be called to perform. The test gives a good indication of muscular strength; however, it does not give a good assessment of the aerobic level of fitness as it lacks a cardiorespiratory or endurance component such as a 13 km march, a mile and a half run or the 20 MSR. The FORCE test does not motivate CAF personnel to remain fit as it requires a very low level of physical fitness to meet the minimum standard of each of the four components.

The FORCE evaluation became the physical fitness standard to achieve for all of the CAF including the Canadian Army (CA); however, realizing that this evaluation is

---

[37] *FORCE Program Operations Manual*, 5.

not enough to evaluate the level of fitness before deployment, the CA decided to keep the load bearing march as an annual fitness evaluation. General Haines, Commander of the Army, released a Canadian Army General (CANARMYGEN) message in December 2013 stressing the importance of load-bearing marching for army soldiers as a key activity "to promote teamwork, unit cohesion, demonstrate leadership and increase the physical and mental resilience."[38] He directed that the load bearing march of 13 km would now be conducted annually and become an Individual Battle Tasks Standard (IBTS).

## BENEFITS OF INCREASED LEVEL OF AEROBIC FITNESS

CAF personnel are required to serve in a multitude of geographic and climatic locations in both peacetime and wartime. For instance, in Afghanistan, military soldiers were working in extreme environmental conditions for long periods of time and were required to rely on their physical fitness to cope with these physical and mental stresses. The physical demands in peacetime might not be as high as in wartime but men and women in the military must be able to cope with the pressures of modern society which often results in a sedentary and stressful lifestyle. As referenced below, many studies exist and highlight the fact that having a higher cardiorespiratory (aerobic) fitness level leads to greater abilities to deal with stressful situations and enhance planning and problem solving skills. The Army Fitness Manual summarized very well the benefits of aerobic fitness:

---

[38] Department of National Defence, *CANARMYGEN Annual Load Bearing March* (CANARMYGEN 021/13, Ottawa: DND Canada, Dec 2013), 2.

Aerobic fitness will help you:
• work for extended periods without undue fatigue
• make sound decisions even after periods of demanding work
• recover quickly from hard work
• handle heat stress and altitude more effectively
• adjust more easily to travel and jet lag
• resist minor infections and colds
• recover more quickly from any injuries you might have.[39]

In 2011, a group of researchers examined the effects of moderate to vigorous intensity of aerobic exercises on the executive functions of planning and problem solving. Their study demonstrated that the aerobic exercises had a positive benefit on job performance, mainly related to efficiency and accuracy.[40] Another study in 2014 revealed that maintaining fitness at a moderate level is associated with better executive functions.[41] Other research demonstrated that obese male workers with a low-level of cardiorespiratory fitness showed considerably lower productivity than lean or overweight workers.[42] Low aerobic fitness levels are linked with increased musculoskeletal injury risk.[43] Maintaining fitness by following a regular physical activity program has been proven to reduce stress and reduce depression. Dr Kenneth Fox of the Department of Exercise and Health Sciences at University of Bristol realized that a significant amount of research has been conducted to study the benefits of physical activity on coronary heart

---

[39] *Army Fitness Manual*, 2.

[40] Yu-Kai Chang, Chia-Liang Tsai, Tsung-Min Hung, Edmund Cheung So, Feng-Tzu Chen and Jennifer L. Etnier, "Effects of Acute Exercise on Executive Function: A Study with a Tower of London Task." *Journal of Sport & Exercise Psychology* 33, (2011): 862.

[41] Yu-Kai Chang, C.-C. Wang, C.-H. Chu, L. Chi, J.L. Etnier and C. Zhou, "Effect of Acute Aerobic Exercise on Cognitive Performance: Role of Cardiovascular Fitness." *Psychology of Sport and Exercise* 15, no. 5 (2014): 464.

[42] C.M. Bernaards, K.I. Proper and V.H. Hildebrandt, "Physical Activity, Cardiorespiratory Fitness, and Body Mass Index in Relationship to Work Productivity and Sickness Absence in Computer Workers with Preexisting Neck and Upper Limb Symptoms." *Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine* 49, no. 6 (2007): 633.

[43] Joseph M. Molloy, David N. Feltwell, Shawn J. Scott and David W. Niebuhr. "Physical Training Injuries and Interventions for Military Recruits." *Military Medicine* 177, no. 5 (May 2012): 553.

disease, obesity and diabetes, but few studied its benefit on mental health. He therefore conducted a research in 1999 on the impact of physical activity on mental health. His research showed evidence suggesting that physical activity may contribute to improve mood and increased self-esteem, self-confidence and sense of control.[44] He also came to the conclusion that exercise could be useful in treating and preventing depressive illnesses such as Operational Stress Injuries (OSI).[45]

## HOW COULD THE LEVEL OF FITNESS IN THE CAF BE INCREASED

> *Fitness in the CAF is both an individual and leadership responsibility which should include encouraging personnel to achieve maximal results on their FORCE Evaluation. Only then does the FORCE Evaluation provide a true indication of fitness that can guide future fitness programming at the individual, unit, group or command level.*[46]

Knowing all the benefits of aerobic fitness and knowing that the level of sedentary activities is on the rise amongst CAF personnel as described in section two, it is disconcerting to know that there is no longer a minimum standard of cardiorespiratory endurance within the CAF physical fitness evaluation. The CAF has recognized the value of health and physical fitness by re-energizing health promotion programs such as; healthy eating habits, weight control and cessation of smoking, however; there is still much work to be done. While physical fitness testing, such as the FORCE test, is essential for minimum fitness validation, far more is needed to encourage CAF personnel to achieve excellence in maintaining a proper level of physical fitness. The current

---

[44] K.R. Fox, "The Influence of Physical Activity on Mental Well-being." *Public Health Nutrition* 2, no. 3A (1999): 411.

[45] K.R. Fox, "The Influence of Physical Activity on Mental Well-being." *Public Health Nutrition* 2, no. 3A (1999): 414.

[46] *FORCE Program Operations Manual*, 4.

FORCE test, although scientifically proven, still remains a test without an aerobic component which does not entice people to keep a high level of cardiovascular fitness. It is mentioned in the FORCE Program Operations Manual that: "fitness in the CAF is both an individual and leadership responsibility which should include encouraging personnel to achieve maximal results on their FORCE Evaluation."[47] However, the current test standard is easily achievable by personnel who are considered unfit and overweight.

The CF EXPRES test had the 20 MSR which was a maximal aerobic test which required a certain level of training and a minimum cardiovascular fitness level to meet the standard. According to physical fitness experts, the VO2max is the best method to assess cardiorespiratory fitness level.[48] Currently there exists no incentive for a military member to get a high score on the FORCE evaluation and the minimum standard can easily be achieved with minimum training. This author believes that a cardiorespiratory testing component would motivate CAF personnel to maintain a higher fitness level commensurate of any service member representing his or her country.

Understanding that a mile and a half run or the 20-MSR evaluation might be difficult to be considered a BFOR in the Court of Law (as it could not be proven to be a realistic reflection of physical employment), the evaluation of aerobic fitness could be conducted in conjunction with the FORCE evaluation components. The aerobic fitness evaluation would not constitute a requirement to meet U of S; however, it could be set up

---

[47] *FORCE Program Operations Manual*, 4.

[48] Anu Raisanen, Jyrki Eklund, Jean-Henri Calvet, and Jaakko Tuomilehto. "Sudomotor Function as a Tool for Cardiorespiratory Fitness Level Evaluation: Comparison with Maximal Exercise Capacity." *International Journal of Environmental Research and Public Health* 11, no. 6 (Jun 2014): 5839.

in a way that higher scores would provide incentives to the member. Obtaining a high score on the FORCE evaluation and aerobic fitness component could result in any number of incentives including; recognition (prize, time off, uniform badge), or additional points at career promotion boards.

While it is understood that CAF personnel should compel to higher levels of physical fitness than the general Canadian population, it must be noted that the level of injuries in the CAF is much higher than that of the Canadian population. In fact, rate of injuries of CAF personnel is twice as large as the general Canadian population.[49] As injuries prevent CAF personnel to deploy on operations and, as the bulk of injuries are incurred during sports and physical activity, judicious consideration on the methods, the environment and the location must be taken before implementing physical fitness training programs. When choosing the right cardiorespiratory component testing, considerations on logistical imperatives such as time to administer, resource and personnel requirements must be taken. 20 MSR has been proven in the past to be very effective at giving an accurate fitness profile and it could easily be re-instated into the CAF annual fitness testing. Adding an aerobic component to the current FORCE evaluation would likely double the time required to conduct the test, but it is deem necessary to test CAF members on aerobic fitness to entice them to stay fit.

---

[49] *Canadian Forces Health and Fitness Strategy*, 19.

## CONCLUSION

The paper provided a review of the importance to be physically fit for CAF members and highlighted the fact that the CAF follow the Canadian population trend in becoming more sedentary. Maintaining a fit, combat capable military force is vital in ensuring Canada retain a legitimate voice on the international scene. CAF has the legal authority to impose a minimum physical fitness standard on its members and created the FORCE program in 2013.

The CAF leadership and most of its personnel recognize the importance of physical fitness. In recent years, a lot of effort has been put on health promotion and on the importance of being fit. While the CAF must continue to have reliable, measurable and scientifically validated fitness standards suitable for operational requirements, the main effort should be on strengthening a culture of good physical fitness and health.[50] It is the responsibility of the CAF senior ranks to lead by example and create a culture of health and physical fitness through consistent programs and inspire all personnel to make the right health and physical fitness choices.

However, leadership and education alone is not enough. Not all military men and women value physical fitness the same way. It is time the CAF put emphasis on putting the onus on the individual to improve their health. Adding a cardiovascular component to the annual fitness testing, such as the 20 MSR, would motivate CAF personnel to stay fit and its inclusion has minimum logistical impacts. In closing, military personnel differ

---

[50] *Canadian Forces Health and Fitness Strategy*, 23.

from the general Canadian population as they are required to be healthier and physically fitter, to be employable and deployable 24/7. The Government of Canada will always have a requirement for a physically fit military force that can deploy anywhere at any time and under any condition; therefore, CAF leadership must continue to enforce lifelong healthy standards of living for its members.

## BIBLIOGRAPHY

Anderson, Gregory S., Darryl Plecas, and Tim Segger. "Police Officer Physical Ability Testing: Re-Validating a Selection Criterion." *Policing* 24, no. 1 (2001): 8-31.

Baleshta, John D. "Fire Fighters' Fitness Training Evaluation." M.Sc., University of Alberta (Canada), 1982.

Bernaards CM, KI Proper, and VH Hildebrandt. "Physical Activity, Cardiorespiratory Fitness, and Body Mass Index in Relationship to Work Productivity and Sickness Absence in Computer Workers with Preexisting Neck and Upper Limb Symptoms." *Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine* 49, no. 6 (2007): 633-40.

Bibb, Sandra, C. Garmon, N. Farzana, M.P.H. Mollah, and Brenda J. Morgan. "Evaluation of the Behavioral Risk Factor Surveillance System as a Potential Index Model for Total Force Fitness." *Military Medicine* 179, no. 5 (May 2014): 529-39.

Canada. Department of National Defence. *FORCE Program Operations Manual*. Ottawa: DND Canada, 2015.

Canada. Department of National Defence. *Guidance to the Canadian Armed Forces*. Ottawa: DND Canada, 2013.

Canada. Department of National Defence. *Canadian Forces Health and Fitness Strategy*. Ottawa: DND Canada, 2008.

Canada. Department of National Defence. *Health and Lifestyle Information Survey (HLIS) 2008/2009 – Regular Force Report*. Ottawa: DND Canada, 2010.

Canada. Department of National Defence. *Foresight Study Synopsis: Persons with Disabilities in Defence Deep Dive to 2023*. Ottawa: Foresight Study of Person with Disabilities in the Service Community, 2013.

Canada. Department of National Defence. B-GL-382-003/PT-001, *Army Fitness Manual*. Ottawa: DND Canada, 2005.

CFMWS Website, “Bona Fide Occupational Requirement,” Internet accessed 3 May 15. https://www.cfmws.com/en/AboutUs/PSP/DFIT/Fitness/Pages/Bona-Fide-Occupational-Requirement.aspx

Chang Y.-K., C.-C. Wang, C.-H.Chu, L. Chi, J.L. Etnier, and C. Zhou. "Effect of Acute Aerobic Exercise on Cognitive Performance: Role of Cardiovascular Fitness." *Psychology of Sport and Exercise* 15, no. 5 (2014): 464-470.

Chang, Yu-Kai, Chia-Liang Tsai, Tsung-Min Hung, Edmund Cheung So, Feng-Tzu Chen and Jennifer L. Etnier. "Effects of Acute Exercise on Executive Function: A Study with a Tower of London Task." *Journal of Sport & Exercise Psychology* 33, (2011): 847-865.

Colling, Aaron C. "Cumulative PFT/CFT." Marine Corps Gazette 98, no. 6 (Jun 2014): 48-49.

Fox KR. "The Influence of Physical Activity on Mental Well-being." Public Health Nutrition 2, no. 3A (1999): 411-8.

Goulet, Lindsay L. "Development and Validation of a Physical Fitness Test and Maintenance Standards for Canadian Forces Diving Personnel." Ph.D., University of Victoria (Canada), 2007.

Gram, Bibi, Holtermann, Andreas, Bültmann, Ute, Sjøgaard, Gisela,Søgaard, Karen,. "Does an Exercise Intervention Improving Aerobic Capacity among Construction Workers also Improve Musculoskeletal Pain, Work Ability, Productivity, Perceived Physical Exertion, and Sick Leave? A Randomized Controlled Trial." *Journal of Occupational and Environmental Medicine Journal of Occupational and Environmental Medicine* (2012): 1.

Jamnik, Veronica. "Establishing a Physical Fitness Screening Protocol for Correctional Officer Applicants in Accord with the Supreme Court of Canada's Meiorin Decision on Bona Fide Occupational Requirements." Ph.D., University of Toronto (Canada), 2008.

Johnson, David. "Human Resource Management." In *Thinking Government: Public Administration and Politics in Canada*. Toronto: University of Toronto Press, 2011.

Knapik, Joseph J., Salima Darakjy, Keith G. Hauret, Sara Canada, and et al. "Increasing the Physical Fitness of Low-Fit Recruits before Basic Combat Training: An Evaluation of Fitness, Injuries, and Training Outcomes." *Military Medicine* 171, no. 1 (Jan 2006): 45-54.

Knapik, Joseph J. and Whitfield B. East. "History of United States Army Physical Fitness and Physical Readiness Testing." *U.S.Army Medical Department Journal* (Apr, 2014): 5-19.

Lee, S.W., Chahal, P., Wheeler, G., Singh, M. Task Related Physical Fitness and Performance Standards: A Canadian Forces Approach. NATO DRG Panel 8, Optimizing the Performance of Women in the Armed Forces of NATO. (Sep 1995) London, England.

McKenzie, Thomas L. and Hans van der Mars. "Top 10 Research Questions Related to Assessing Physical Activity and its Contexts using Systematic Observation." Research Quarterly for Exercise and Sport 86, no. 1 (2015): 13-29.

Molloy, Joseph M.,SP USA, David N. Feltwell SP USA, Shawn J. Scott SP USA, and David W. Niebuhr MC USA. "Physical Training Injuries and Interventions for Military Recruits." Military Medicine 177, no. 5 (May 2012): 553-558.

Navaneelan, Tanya, and Teresa Janz. "Adjusting the scales: Obesity in the Canadian population after correcting for respondent bias" *Health at a Glance. Statistics Canada* Catalogue no. 82-624-X. (May 2014).

Niebuhr, David W., Christine T. Scott, Yuanzhang Li, Sheryl A. Bedno, Weiwei Han, and Timothy E. Powers. "Preaccession Fitness and Body Composition as Predictors of Attrition in U.S. Army Recruits." Military Medicine 174, no. 7 (07, 2009): 695-701.

Ortiz, Gerardo. "Enablers and Barriers Perceived by Professional Firefighters in the Implementation of a Mandatory Physical Fitness Program." Dr.P.H., The University of Texas School of Public Health, 2014.

Pawlyk, Oriana. "PT Test Checkup." Air Force Times (Jun 2, 2014): 14.

Pedersen MT, Blangsted AK, Andersen LL, Jørgensen MB, Hansen EA,Sjøgaard G,. "The Effect of Worksite Physical Activity Intervention on Physical Capacity, Health, and Productivity: A 1-Year Randomized Controlled Trial." Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine 51, no. 7 (2009): 759-70.

Raisanen, Anu, Jyrki Eklund, Jean-Henri Calvet, and Jaakko Tuomilehto. "Sudomotor Function as a Tool for Cardiorespiratory Fitness Level Evaluation: Comparison with Maximal Exercise Capacity." International Journal of Environmental Research and Public Health 11, no. 6 (Jun 2014): 5839-48.

Russell, Randy, Alastair Reid, Guy Borgers, Henry Wassink, Andreas Grove, and David W. Niebuhr. "A NATO Guide for Assessing Deployability for Military Personnel with Chronic Medical Conditions: Medical Fitness for Expeditionary Missions, Task Group 174, Human Factors, and Medicine Panel." Military Medicine 179, no. 12 (Dec 2014): 1404-11.

Stevenson, Joan M., Andrew, George M., Bryant, J. T.,QUEEN'S UNIV KINGSTON (Ont.) ERGONOMICS RESEARCH LAB.,. Development of Minimum Physical Fitness Standards for the Canadian Armed Forces. Ft. Belvoir: Defense Technical Information Center, 1985.

Tice, Jim. "'Too Many Overweight Soldiers'." Army Times (Aug 25, 2014): 18.

Van Patten, Elizabeth. "Fit to Fight." Citizen Airman: The Official Magazine of the Air National Guard & Air Force Reserve 66, no. 2 (Apr 2014): 24-25.

Vanderburgh, Paul M. "Correction Factors for Body Mass Bias in Military Physical Fitness Tests." Military Medicine 172, no. 7 (Jul 2007): 738-42.

Wilson, Tona De Aune. "Relationships between Specific Health-Related Fitness Components and Standardized Academic Achievement Tests." Ph.D., Walden University, 2015.