

Chapter 2 – IDENTIFICATION OF COMMON MILITARY TASKS

by

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2.1 BACKGROUND

In order to optimize the physical capacity of soldiers by setting appropriate criteria and evaluation methodologies, members of RTG-019 reviewed mission essential task lists (METL) and types of missions undertaken by NATO forces in the past and present. The physical demanding tasks of digging, marching and manual materials handling were identified by members as being the key common tasks performed in recent and current NATO missions (humanitarian, peace-keeping, conflict resolution, counter-terrorism, etc.). As well, the identification of these common tasks was derived from a review of other pertinent military documents as summarized below.

2.2 CANADIAN FORCES

The mission of the Department of National Defence and the Canadian Forces (CF) is to defend Canada, its interests and its values, while contributing to international peace and security. The CF has long recognized the importance of physical fitness in achieving its roles and objectives. In 1983, the Ergonomics Research Group (ERG) of Queen's University was contracted by the CF to develop minimum physical fitness standards (MPFS) for all military elements (Air, Sea, Land). In 1985, key stakeholders in the project to develop MPFS for CF personnel identified entrenchment digging, land evacuation, low/high crawl, sandbag carry, and sea evacuation as the common military tasks which all CF personnel might be required to perform in any emergency situation.

These five common military tasks (MPFS '88) were identified during the Cold War period hence their relevance and applicability to current military demands required confirmation. To this end, in 1996 the ERG of Queen's University was contracted to develop and validate the MPFS for CF personnel. The project commenced with a verification that the five common military tasks identified and utilized in MPFS '88 remain reflective of current military duties and operations in both times of peace and war. This was accomplished through the review of contemporary literature and media reports related to military exercises during peace-keeping and emergency duties. Table 2-1 depicts the common emergency tasks by operation (Deakin, Pelot, Smith and Weber, 2000). Results of this review confirmed that the original five common military tasks used in MPFS 1988 were in fact representative of the common military tasks performed during the period of the late 1990's and 2000. During this review process, evidence emerged that lifting is a major task in military work. As a result, a sixth common military task (Jerry Can Lift) was added to the list of common military tasks performed by CF soldiers.

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Table 2-1: Common CF Emergency Tasks by Operation

Operation	Sea Evacuation	Land Evacuation	Low/High Crawl	Entrenchment Dig	Sandbag Carry	Lifting
Manitoba Flood: Domestic Operation		X		X	X	X
Saguenay Flood: Domestic Operation		X			X	X
Eastern Ontario Ice-Storm: Domestic Operation		X			X	X
Peacekeeping: International Operations		X	X	X		X
Humanitarian Operations: International				X		X
Gulf War			X			X

Adapted from: Deakin, Pelot, Smith and Weber, (2000). *Development and Validation of Canadian Forces Minimum Physical Fitness Standard (MPFS 2000)*. Ergonomics Research Group, Queen's University, Kingston, Ontario, page 23.

While it is recognized that the CF MPFS represents the minimal level of physical fitness required by CF members to permit them to meet the physical demands of the common military tasks, it is also recognized that there may be other groups in the CF, such as the Army, that require a higher level of physical fitness. In a study to develop physical fitness standards for the Canadian Army, a series of representative common tasks were selected and ratified by a committee of Army experts as being representative of the physical requirements of the Canadian (Army) soldier. The representative tasks were identified as a casualty evacuation, ammunition box lift, maximal effort digging (trench), and a 13 km weight-loaded march (Singh, M., Lee, S.W., Wheeler, G.D., Chahal, P., Oseen, M. and Couture, R., 1991).

2.3 DUTCH ARMY

The modern Dutch military soldier must be physically fit in order to confront physically demanding situations, changing environments, and different information sources (Valk and Pasman, 2005). In 2004, a study to develop a list and descriptions of tasks performed by small units based on 6 missions conducted in the past (UNPROFOR, IFOR, SFOR, KFOR, ISAF and UK Gulf), was conducted by Smeenk, Barbier, Wilschut, Fiamingo, and Knijnenburg. Results of this study demonstrated that the tasks of "observation posts", "checkpoints" and "patrols" were the most frequently conducted tasks by small units. Of importance is that this study mainly dealt with peace support operations, and tasks performed in other military scenarios may be comprised of different physically demanding tasks.

In a study by Koerhuis, van Montfoort, Pronk and Delleman (2004), the most physically demanding tasks performed during different scenarios were described for five different types of combat soldiers of the Dutch Army (airmobile brigade, commandos, armoured infantry, marines and Object Ground Defence Soldiers (OGRV)). The results of this study showed that the offensive and defensive scenarios are the most physically demanding scenarios, and it was concluded that loaded walking is one of the most physical demanding tasks performed by combat soldiers during these scenarios. In addition, “fire and manoeuvre” activities, alternate kneeling and standing up, digging, lifting and carrying were identified as other physically demanding tasks performed by combat soldiers.

2.4 UNITED KINGDOM

In a study to research and develop task-related occupational tests and standards for Royal Naval (RN) personnel, traditional physical test criteria were reviewed and a number of task analyses of critical job components were conducted. The critical and generic components of the job were identified as shipboard fire-fighting, casualty carrying, and escaping through various hatches and safety doors on board a typical RN vessel (Bilzon, Scarpello, Bilzon, and Allsopp, 2002). Further, the tasks “Boundary Cooling”, “Drum Carry”, “Extinguisher Carry”, “Hose Run” and “Ladder Climb” were identified by subject matter experts, and endorsed by the Royal Navy as being representative of shipboard fire-fighting tasks performed by RN personnel.

With respect to developing physical fitness standards representative of the physical demands of performing generic RAF Combined Incident Team tasks, initial work conducted by Nevola, Puxley, Messer, Roberts, and Collins (2003) identified 14 Core Operational Tasks (COTs). Three of the 14 COTs that were defined as a Bona Fide Occupational Requirement (BFOR) for RAF combined incident teams involved digging or shovelling. Other COTs included, but was not limited to lifting, and lifting and carrying tasks (Nevola, Coyles, Puxley, and Collins, 2003). To ensure that all Royal Air Force (RAF) personnel have a minimal level of fitness commensurate with performing some of the Core Operation Tasks required when on operations, a project was conducted to develop an operational fitness assessment (Rayson, Wilkinson, Carter, Richmond and Blacker, 2005). Four Representative Service Tasks (RSTs) (single lift of a weighted ammunition box, a sandbag carry, a Fire and Manoeuvre sequence, and a trench dig) were designed to represent the physical demands of performing the 14 Core Operational tasks.

A detailed job analysis of all entry level Army occupations resulted in the identification of four Representative Military Tasks (RMTs) that were common to most military occupations and critical to soldier performance. These four RMTs were defined as a single lift of an ammunition box, a continuous carry of 2 – 20 kg water jugs (jerry cans), a repetitive lift and 10 metre carry of an ammunition box, and a road march of 12.8 km (Rayson, 1988).

2.5 UNITED STATES

During a study to develop criterion performance tasks for the purpose of establishing “physical abilities” standards for entry to the United States (US) Army, Myers, Gebhardt, Crump and Fleishman (1984) analyzed 1,999 critical tasks across all job categories. Table 2-2 depicts the reported rank order of the most frequent physical tasks in the U.S. Army as reported by Myers et al., 1984.

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Table 2-2: Rank Order of the Most Frequent Physical Tasks in the U.S. Army

Physical Tasks	Total	Very Heavy MOS	Heavy MOS	Moderately Heavy MOS
Lift/lower	41%	40%	40%	43%
Carry/load bear	30%	31%	30%	28%
Pull/torque	6%	8%	6%	7%
Push	5%	5%	5%	7%
Climb/descend	4%	4%	5%	3%
Reach	2%	2%	2%	1%
Stoop	2%	2%	2%	2%
Dig	1%	1%	1%	2%
Crawl	1%	1%	1%	<1%
Kneel	1%	1%	1%	1%
Crouch	1%	1%	1%	1%
Hammer/pound	1%	1%	1%	1%
Stand	<1%	0%	0%	<1%
Recline	<1%	<1%	<1%	<1%
Handle/finger	<1%	<1%	1%	<1%
Throw	<1%	<1%	0%	0%
Walk/March	<1%	0%	<1%	<1%
Rush/run	<1%	<1%	0%	0%
Swim/dive	<1%	<1%	0%	<1%
Sit	0%	0%	0%	0%

As part of a Training and Doctrine Command (TRADOC) directed initiative to develop physical performance standards for all U.S. Army Military Occupational Specialties (MOSs), the physical task requirements for all of the Army MOSs were identified (Sharp, Patton and Vogel, 1998). The identified physical task demands were based on a description of the physical requirements for all MOSs as contained in Army Regulation 611-201 (Headquarters, Department of the Army, 1995). A series of databases of the physically demanding tasks performed by U.S. Army soldiers was developed, and of interest is that the six task categories developed in the databases were:

- i) Lifting and carrying;
- ii) Lifting and lowering;
- iii) Climbing;
- iv) Digging;
- v) Walking, marching, and running; and
- (vi) Pushing and pulling.

Lifting and carrying was identified as the most common physically demanding task, representing 232 tasks performed by 172 different MOSs. The next most physically demanding task identified was lifting and lowering, representing 92 tasks performed by 75 different MOSs. Digging represented 18 tasks performed by 18 different MOSs, whereas walking, marching and running represented 22 tasks performed by 18 different MOSs. It was noted that although there were few entries in the walking, marching, running

database, long distance road marching with a loaded backpack was considered an important physical task, specifically for infantry soldiers (Sharp et al., 1998).

2.6 SUMMARY OF THE IDENTIFICATION OF COMMON MILITARY TASKS

Table 2-3 below summarizes the common military tasks by Nation, as derived from the review of relevant documents pertaining to the research and development of physical fitness standards and/or training regimes.

Table 2-3: Summary of Common Military Tasks by Nation

Nation	Common Military Tasks			Authors
	Manual Materials Handling	Marching	Digging	
Canada – Army	Ammunition box lift, jerry can lift and carry	Weight loaded march	Entrenchment dig	Singh et al., 1991
Canada – Air Force/Navy	Sandbag Carry, Jerry Can lift and carry		Entrenchment Dig	Deakin et al., 2000
Netherlands	Lifting and carrying	Loaded walking		Koerhuis et al., 2004
United Kingdom – Navy	Casualty carrying, drum carry, and extinguisher carry			Bilzon et al., 2002
United Kingdom – Royal Air Force	Ammunition box lift, and sandbag carry			Rayson et al., 2005
United Kingdom – Army	Ammunition box lift (single repetition), jerry can carry, and ammunition box lift (repetitive) and carry	Road march	Trench Dig	Rayson, 1988
United States	Lifting and carrying, lifting and lowering, and pushing and pulling	Walking, marching, and running	Digging	Sharp et al., 1998

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