

Chapter 1 – INTRODUCTION

by

Suzanne Jaenen

Personnel Support Programs Manager
Dwyer Hill Training Centre
National Defence Headquarters
MGen George R. Pearkes Building
101 Colonel By Drive
Ottawa, Ontario K1A 0K2
CANADA

OTGPSP01@forces.gc.ca

ABSTRACT

With the conclusion of the RSGs 4, 8, and 17, as well as the Workshop on Optimizing the Performance of Women in the Armed Forces of NATO, there remained open questions concerning mission-related testing and training. The Research and Technical Organization (RTO) recognizes the need to address these issues in light of the wide range of missions (coordinating humanitarian relief, coordinating emergency and relief operations in the event of a disaster, both nature and man-made, civil emergency measures, addressing instability caused by regional and ethnic conflicts, defence against terrorism and countering other threats to modern society) and increased deployment of NATO personnel on operations since 1997 (NATO in the 21st Century @ <http://www.nato.int/docu/21-cent/html>). The revised spectrum of NATO missions requires a new approach to operational physical fitness. Specifically, a new necessity to define, assess, evaluate and optimize physical capability by setting appropriate criteria and methodology was identified by an exploratory team that met in Spain in 2002. As a result of the exploratory meeting, Task Group 019 on Optimizing Operational Physical Fitness was established to determine the requirement for physical fitness for military personnel in order to prepare military personnel for physical task requirements, to prevent physical overburdening, and to reduce injuries. The efforts of RTG-019 Optimizing Operational Physical Fitness will represent the international agreement for evidence-based findings which may provide the basis for policy decision.

1.1 BACKGROUND

The Defence Research Group (DRG) of the North Atlantic Treaty Organisation (NATO) is a body that stimulates and coordinates research, and consists of a number of Panels, each covering separate areas of research. In 1969, the Anglo-Netherlands-Norwegian Cooperation Program (ANNCP) set up a Project on Physical Fitness. There was a 1970 meeting in the United Kingdom (UK) and a 1973 Symposium in Oslo, Norway. In 1974, ANNCP closed and Panel 8, which coordinates Human and Biomedical Research in NATO was persuaded to establish a Research Study Group (RSG) on Physical Fitness. Since the disbandment of the ANNCP, three Research Study Groups (RSGs) (RSG 4, 8, and 17) and one workshop pertaining to physical fitness have been sponsored and completed under Panel 8.

1.2 RSG 4

RSG 4 on Physical Fitness with Special reference to Military Forces was established in 1975, and focused on identifying the military requirement for physical fitness, the measurement and training of peak anaerobic (alactic) power/strength, anaerobic and aerobic power, the importance of physical fitness as it

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pertains to sustain military operations (sleep deprivation, time zone change, environmental influences, ergogenic aids, and sustained cognitive performance), medical aspects of physical training (age, gender, overuse and traumatic injuries, coronary heart disease, risk factors and screening, heat and cold injuries, fitness and G tolerance, exercise and health), and test of physical fitness and body composition. The final report summarizing the work of RSG 4 was published in August of 1986 (AC/243 (Panel VIII) D/125).

1.3 RSG 8

RSG 8 on Nutritional Aspects of Military Feeding (Military Nutrition) was established and focused on nutrition and optimum physical performance (muscle glycogen, glycogen strategies, micronutrients and performance, caloric restriction, environmental factors), nutrition and coronary heart disease (CHD) risk factors in the military population (lipid metabolism, and CHD, influences of diet), body composition and its relation to health and physical performance of military personnel, rations of selection NATO countries (composition of survival, emergency, and combat rations and their influence on performance), nutrition education and weight control programmes, and nutritional strategies to enhance military performance. The final report summarizing the work of RSG 8 was published in December of 1989 (AC/243 (Panel 8/RSG 8) D/9).

1.4 RSG 17

RSG 17 was formed to study critical biomedical issues relevant to physical fitness training in NATO military forces. RSG on the Biomedical Aspects of Military Training elaborated on the training issues left over from the RSG 4 work. Specifically, RSG 17 focused on the physiology of physical training (responses to training, description of training programs for aerobic fitness, muscular strength, muscular endurance, and other fitness related factors like flexibility and body composition), principles of physical training (overload, specificity and reversibility principles, training variables of intensity, frequency and duration, training guidelines and training evaluation), trainability of military populations (adaptations to training, influencing factors, military application, training effects, and response of women), practical guidelines for development military physical training programs, injuries related to physical training (incident rates, risk factors, costs of injuries, prevention strategies, policy and management considerations), and models of physical training responses. The groups report (AC/243 (Panel 8)TR/16, 0875-94) summarized the knowledge that had been consolidated through the NATO membership and which concerned physical fitness for the military role.

1.5 WORKSHOP ON OPTIMIZING THE PERFORMANCE OF WOMEN IN THE ARMED FORCES OF NATO

During the period of 13-16 October 1995, a NATO DRG Panel 8 Workshop on Optimizing the Performance of Women in the Armed Forces of NATO was held in London, U.K. The pre-stated aim of the meeting was to establish contacts between military policy planners and the scientific programmes of different nations, which would promote collaboration and avoid duplication in research work. Topics covered in the Workshop included many of the issues relating to the integration and performance of women in Sea, Land and Air Forces, with emphasis being placed on practical experiences (attitudes towards integration, plans for future integration), anthropometry and physical fitness (differences between genders and some of the effects that these difference have on clothing, personal military equipment and workstation design), gender and physical selection standards (Nations progress reports pertaining to the introduction of fair, scientifically based and legally defensible job-related standards), gender differences in the heat and cold, cognitive differences, women in teams (mixed gender teams or all female teams in comparison to the traditional all male teams), and policy and social issues (health care, pregnancy, sexual harassment). One of the major outcomes of this Workshop was the production of draft position statements and recommendations for future research (AC/243 (Panel 8) TP/13).

“The agreed draft position statements were the following:

- a) Gender differences in physical performance do not preclude any roles in the Armed Forces of NATO from being satisfactorily performed by some women.
- b) A complex of strategies should be pursued in order to overcome any limitations in the operational performance of females that are due to their lower physical strength compared to males. These strategies should include:
 - i) The study of physically demanding roles with a view to ergonomic redesign of tasks and equipment in order to decrease the physical demands wherever it is possible without detriment to operational effectiveness;
 - ii) The optimization of physical training to maximize women’s strength potential; and
 - iii) The implementation of true role-related physical selection tests with flexibility regarding team size and composition in order to increase the number of roles that are not limited by excessive physical demands.
- c) Quantification of team performance is required to determine how mixed teams can be fully effective in military roles including combat.” (AC/243 (Panel 8) TR/13).

1.6 OBJECTIVES AND SCOPE OF RTG-019: OPTIMIZING OPERATIONAL PHYSICAL FITNESS

With the conclusion of RSGs 4, 8, and 17, as well as the Workshop on Optimizing the Performance of Women in the Armed Forces of NATO, there remained open questions concerning mission-related testing and training. The revised spectrum of NATO missions requires a new approach to operational physical fitness. Specifically, a new necessity to define, assess, evaluate and optimize physical capability by setting appropriate criteria and methodologies was identified by an exploratory team that met in Spain in 2002. As a result of the exploratory meeting, HFM-080/Research Task Group 019 on Optimizing Operational Physical Fitness was established “to determine the requirement for physical fitness for military personnel in order to prepare military personnel for physical task requirements, to prevent physical overburdening, and to reduce injuries.” (Annex VIII AC/323 (HFM)A/9). The stated specific goal of this RTG is “to improve the readiness of military personnel to carry out their primary mission by the establishment of mission/job-related physical fitness standards (Annex VIII AC/323(HFM)A/9).

The Terms of Reference (TOR) for RTG-019 was based on operational fitness vice general fitness issues. Specifically, RTG-019 was established to focus on the following topics:

- a) Physical fitness elements and assessment;
- b) Mission/job oriented physical requirements;
- c) Determination of physical fitness standards for military tasks;
- d) Mission oriented physical fitness training programs;
- e) Gender considerations for standards and training; and
- f) Pregnancy and military performance.

(Annex VIII AC/323(HFM)A/9).

The first meeting of RTG-019 was held in Warendorf, Germany during the period of 23-25 June 2003. At this meeting the TOR established during the exploratory meeting held in Spain were reviewed and

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ratified. Specifically, it was the consensus of the participating members of RTG-019 that the topic of “physical fitness elements and assessment” was adequately covered during RSGs 4 and 17, and would therefore be excluded from the work of this group.

The group members also decided to exclude “gender considerations for standards and training” as a specific objective. This decision was based primarily on two key points. First, this topic was covered during the Workshop on Optimizing the Performance of Women in the Armed Forces of NATO. Second, one of the recommendations resulting from that workshop was for the establishment of a new RTG on the topic due to the number of unanswered questions remaining at the end of the workshop. For these reasons, it was felt that this topic could not be adequately addressed within this RSG as a separate objective, but could best be addressed as it pertains to the performance of common military tasks.

The major outcome of the 1st meeting held in Warendorf, Germany was the identification of common physically demanding tasks (marching, digging, materials handling (manual), assault, military operations in urban terrain, climbing and close quarter battle) representative of recent and current NATO missions (humanitarian, peace-keeping, conflict resolution, and counter-terrorism).

The 2nd meeting of RTG-019 was held in Vienna, Austria during the period of 20-23 June 2004. At this meeting there was a slight realignment of chapters. Specifically, it was the consensus of the group that the topic of “pregnancy and military performance” be excluded from the work of RTG-019 due to a myriad of difficulties in conducting research with pregnant subjects, and due to the limited data available in this area. Difficulties in studying pregnant women include the potential for complications (to mother and baby) and research design limitations. As well, pregnant soldiers are quite often excluded from physically demanding tasks for the duration of their pregnancy, and are non-deployable in theatres of operation. Therefore, it was felt that the topic of “pregnancy and military performance” did not fit within the context of Optimizing Operational Physical Fitness. It was also the consensus of the group to exclude the common military task of Assault due to the wide range of Assaults (Sea, Land and Air) and difficulties in defining the task.

It was also discussed that current NATO missions are becoming increasingly complex in nature requiring soldiers to perform many military activities. While military tasks such as MOUT and FIBUA are of relevance to current NATO operations, it was decided to exclude this proposed chapter due to the lack of both published information and research being conducted in this area. However, it was agreed upon that NATO Special Operation Forces (SOF) are being used in many specialized missions (which include tasks such as MOUT, FIBUA, Close Quarter Battle, etc.) and that these complex mission demands cannot be described exclusively by a single common military task (i.e. marching, digging, lifting and carrying). Based upon the fact that the Austrian Federal Army was conducting research to establish a model of optimal weighted sports motor components as a basis for the development of task specific individual and group training recommendations for Special Forces soldiers, and the relevance and applicability of this research to current NATO missions, it was agreed to dedicate a chapter of the final report to the summary of this research.

The third meeting of RTG-019 was held in Lahti, Finland, 23-25 May 2005, whereas, the fourth and final meetings were held in Vienna, Austria (26-28 June 2006 and 18-20 December 2006 respectively).

1.7 STRUCTURE OF THE TECHNICAL REPORT

RTG-019 members agreed that the common physically demanding military tasks of marching, digging, and manual materials handling would each be described in individual chapters and in terms of:

- a) Intensity and duration;
- b) The physiological requirements;

- c) Testing to predict performance; and
- d) Training to improve performance.

It was agreed upon that a chapter of the final report would be dedicated to summarizing the research being conducted on an evidence-based job analysis and methodology to determine the physical requirements of special military occupations (Special Operation Forces – Austrian Army).

In addition, RTG-019 members agreed that the following factors influencing performance would be briefly summarized (factor description and effects on performance) and contained in one chapter:

- a) Sustained operations;
- b) Temperature (cold);
- c) Temperature (heat);
- d) Nutrition;
- e) Altitude;
- f) Clothing;
- g) Age;
- h) Gender;
- i) Hydration;
- j) Genetics; and
- k) Anthropometry.

It was also agreed upon that an Annex on pre-employment screening tests and active duty testing of Common Military Task (CMT) performance used by various NATO countries would be compiled and included in this Technical Report, which will provide information for Staff Officers and references.

1.8 INTENDED CUSTOMER

The efforts of RTG-019 Optimizing Operational Physical Fitness will represent the international agreement for evidence-based findings which may provide the basis for policy decisions. To this end, the intended customers of this Technical Report are NATO Panel 8, National representatives, and exercise scientists.

1.9 REFERENCES

- [1] NATO in the 21st Century @ <http://www.nato.int/docu/21-cent/html>.
- [2] Optimizing the Performance of Women in the Armed Forces of NATO. AC/243 (Panel 8) TP/13.
- [3] RSG 4 on Physical Fitness with Special Reference to Military Forces. AC/243 (Panel CIII) D/125).
- [4] RSG 8 on Nutritional Aspects of Military Feeding (Military Nutrition). AC/243 (Panel 8 RSG8) D/9).
- [5] RSG 17 on Biomedical Aspects of Military Training. AC/243 (Panel 8/TR16) 0875-94).

