



THE NORWEGIAN DEFENCE UNIVERSITY COLLEGE

# 6th NMSLC symposium

Nordic Military Leaders Conference, Stockholm 12<sup>th</sup> October 2010



**Moving Soldiers** - Soldaten i bevegelse • 02/2010

Mikael Mineur (SWE), Knud Erik Andersen (DEN), Matti Santtila (FIN), Steinar Høgseth (NOR)



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The background of the page features several thin, light-colored lines that create a sense of movement and depth. These lines are mostly straight but include some curves, particularly towards the bottom right. They intersect and overlap, forming a complex, minimalist geometric pattern. The overall aesthetic is clean and modern.

6th NMSLC symposium  
Nordic Military Leaders Conference,  
Stockholm 12th October 2010

Mikael Mineur  
Knud Erik Andersen  
Matti Santtila  
Steinar Høgseth

The scope of **Moving Soldiers – Soldaten i bevegelse** is to provide an arena for interdisciplinary thinking and debate on issues related to the fields of interest for the Norwegian School of Sport Sciences, Defence Institute.

This edition of "Moving Soldiers" is dedicated to the work of the **Nordic Military Sport Cooperation**, which is a formalized network comprised of the governing body in the field of sports and physical education within the armed forces of Denmark, Finland, Norway and Sweden. The supreme authority of the Nordic cooperation is the annual Nordic Military Sport Leaders Conference (NMSLC). The following three pillars are at the core of NMSLC's work: a) military sport, b) physical training and education, and c) research and development.

When the Nordic Military Sport Cooperation was formalized in the early 1960s, its aim was to foster a friendly relationship among the four member nations through military sports activities. At the time, it meant organizing and participating in various sporting competitions. The first Nordic Military Championship (Military Pentathlon) was held in Oslo in 1962. Thus, **Military Sports** became the first pillar of the cooperation.

Since the official delegates and many of the athletes from the various nations were connected to physical training and educational departments in their respective armed forces, the subject of physical training and education was often debated in informal settings. Over the years, this has become such an important topic that one saw it as a natural step forward to make it a formal part of the program for the 1997 NMSLC in Bergen. From that year onward, **Physical Training and Education** (PT&E) became the second pillar of the NMSLC. Physical fitness testing, physical trainer courses, physical fitness and mental toughening were among the topics presented and debated during the first year.

With this extension, the seed for a more "scientific" approach to debating the various topics within the field of sports was born. Some participants even started to talk about conducting comparative studies on physical fitness across national borders. As a result, during the Copenhagen meeting in 2004, the four Chiefs of Delegation decided that it would include **Research and Development** (R&D) as the third pillar. The ambition was to create an arena for sharing knowledge and experience from different R&D projects within the sports and physical education field of the armed forces.

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Consequently, at the Oslo meeting in 2005, the NMSLC introduced a one day symposium with the dual aim of: a) reaching out to an audience outside of the field of sports and physical education within the armed forces, and b) to provide an arena on a Nordic level for presenting scientific- or experienced-based projects within the three focus areas. Since the beginning in 2005, the symposium has matured and has now become a central part of the Nordic Military Sport Cooperation.

This year's symposium (as with the two previous ones) is divided into an oral and a poster presentation part. The oral presentation has been given the title "*Preparing for extreme performance – within a military context*"; and as such is dedicated to a chosen topic in which the speakers are invited, while the poster presentation is open to anyone who wants to present research or other relevant issues of interest to the NMSLC.

Both of the presentation forms are in accordance with the three pillars of the NMSLC and therefore deal with or consist of: a) military sport, b) physical training and education, and c) research and development. As a result, the symposium should be seen as being both interdisciplinary and consisting of organizational information and descriptive data on the one hand and being scientific- and experience-based on the other.

The aim of this edition of *Moving Soldiers* is to communicate the content of the 6th NMSLC Symposium to be held in Stockholm, Sweden on the October 12th, 2010. Accordingly, the editorial staff of *Moving Soldiers – Soldaten i Bevegelse* wishes to express our gratitude to the organizing committee and to the four Chiefs of Delegation and their organizations for their cooperation with this edition of *Moving Soldiers*.

**Anders McD Sookermany**

## ■ NMSLC preface ■



Nordic cooperation has always been a highly prioritised issue between the Governments in the Nordic countries. The row of different areas where the cooperation has been successful and efficient is so far quite long.

The Nordic Military Sport Cooperation between the Armed Forces of Denmark, Finland, Norway and Sweden has a long and solid tradition. It has been developed from the idea to gather our Nordic soldiers and officers together, with military sport as a tool, to the broad contents of today's military cooperation.

Now, in 2010, we are able to look at our cooperation with a great amount of pride; our military national teams are supporting each other with combined training camps, synergic and cost effective sport development and use of other recourses. In addition our trainers and teachers, dealing with physical performance of soldiers, are collaborating and sharing ideas on a regular basis and our study- and research programs are supporting our different Armed Forces far over our national borders.

When it comes to tomorrow we have agreed upon a common devoted attitude to develop and improve our cooperation even more. As Nordic cooperation is a prioritised issue in all Nordic Governments and Defence Headquarters, one of our main goals for the future is to learn our superiors more about our cooperation in the field of military sport, soldier's physical performance and research matters supporting the development in our Armed Forces. We are also aiming towards recognition as an important part of our countries other areas of military cooperation.

2010-10-12

Nordic Chiefs of Delegation,

**Mikael Mineur** (SWE)  
**Matti Santtila** (FIN)

**Knud Erik Andersen** (DEN)  
**Steinar Høgseth** (NOR)

# Nordic military sports cooperation

## Chiefs of Delegates

Mikael Mineur (SWE), Knud Erik Andersen (DEN), Matti Santtila (FIN) & Steinar Høgseth (NOR)

### Aim

The aims of the Nordic military sports cooperation between the armed forces of Denmark, Finland, Norway and Sweden is to develop friendly relations through military sport activities, to promote physical education and to provide relevant research studies.

The Nordic military sports leaders (Chiefs of Delegates) are appointed by the various ministers of defence to represent their countries. The Nordic countries are also a strong part of CISM, which is an apolitical military organization that fosters "friendship through sport" between 132 member nations ([www.cism-milspport.org](http://www.cism-milspport.org)).



### (2) Physical training and education

The physical training and education (PTE) group is under the control of and reports to the NMSLC. The PTE group will create a network between the armed forces of the Nordic countries and will work on sharing information and coordinating education and physical training. When needed, the PTE group will develop and enforce projects within an activity area in order to directly promote the Nordic countries' military operative activities.

#### Possible tasks

- Develop and prioritize education projects
- Organize joint seminars, courses and conferences
- An exchange of students
- An exchange of sports and training officers
- Establish and develop contacts with relevant collaboration partners
- Conduct study visits
- Gather information about the latest international educational trends

### (3) Research and development

The research and development group (R&D group) is under the control of and reports to the Military Nordic Sports Leader Conference (MNLK).

The aim is to create a network between the armed forces of the Nordic countries within relevant areas such as behavioural, sociological and biological approaches of physical activities and sports in a military context. The R&D group will work on sharing information and coordinating research and development in this area.

When needed, the R&D group will develop and enforce projects within the activity area in order to directly promote the Nordic countries' military operative activities.

#### Possible tasks

- Develop and prioritize R&D projects
- Organize R&D symposiums
- Display R&D results to relevant receivers
- Establish and develop contacts with relevant collaboration partners
- Conduct study visits
- Produce and maintain an updated summary of R&D projects
- Create an Internet page
- Identify relevant, cooperating partners
- Compile a summary of external financial possibilities
- Gather information about the latest international research trends

### Authority

The supreme authority of the Nordic military cooperation is the Nordic Military Sports Leaders' Conference (NMSLC), which is held on an annual, rotating basis. In addition, the Nordic Chiefs of Delegates and delegates convene in conjunction with CISM's European meeting and the CISM general assembly.

The Nordic cooperation is conducted on three levels:

- (1) Military sport
- (2) Physical education
- (3) Research and development

### (1) Nordic Military Sports Championship

A general regulation signed by all the Chiefs of Delegates is the guideline for the Nordic Military Championships. These regulations provide the basis for the regulations that govern championship competitions in the various sports and for the organization of championship competitions, as well as defining the general guidelines for the meetings that direct the competitions.

Active duty military personnel belonging to the armed forces of Denmark, Finland, Norway and Sweden may participate.

The invitation of non-Nordic nations is decided upon at the Nordic Military Sports Leaders' Conference by the countries participating in the competition. Such an invitation requires a unanimous decision.

#### Military sports

The first Nordic Military Championships (Military Pentathlon) was organized in Oslo in 1962.

Today there are Nordic Military Championships in the following six sports:

- Biathlon
- Orienteering
- Aeronautical Pentathlon
- Naval Pentathlon
- Military Pentathlon
- Sailing
- Shooting



### References

- CISM Statutes, policy and procedures
- General regulations for Nordic Military Championships
  - Annex 1: Physical training and education
  - Annex :2 Research and development
- CISM: European strategic plan - 2011

### Acknowledgements

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NMSLC 2010





# 6th NMSLC symposium

## Nordic Military Leaders Conference

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## ■ Host nations` introduction ■

The Nordic Military Sport Cooperation between the Armed Forces of Denmark, Finland, Norway and Sweden was formalized by the Ministers of Defence in the early 1960s.

The cooperation has developed during the years and the aim today is to develop friendly relations through military sport activities, promote physical training/education and to provide relevant research studies.

The supreme authority of the Nordic Military Sport Cooperation is the Nordic Military Sport Leaders Conference, NMSLC, which is held annually on a rotational basis.

### **The Nordic cooperation is conducted on three pillars:**

- (1) Military sport exchange, including Nordic Military Championships, NMC
- (2) Physical training and education
- (3) Research and development

In my capacity as Chief of the Swedish delegation to CISM and head of the SAF Sports Centre, it is my pleasure and honour to wish you warmly welcome to the 6<sup>th</sup> annual symposium. It will this year be held in Stockholm, at the Military Academy of Karlberg.

The symposium is a vital product of the third pillar above and it has a big impact on the work inside the Nordic Military Sport Leaders Conference.

The Topic of the conference this year is "Preparing for extreme performance - within a military context". Each Nordic country has been invited to give speeches on their relevant research. We have also invited speakers from the Netherlands and Germany in purpose to broaden the perspectives even more. I really consider the program as very interesting for the audience and I hope that we will have a broad audience from different bodies of the defence community.

A poster session will be arranged during the lunch break, where all participating countries are invited to present their posters.

I hope you will find the symposium fruitful, interesting and enjoyable.

### **Warmly welcome!**

Mikael Mineur

*Head of the Swedish Armed Forces Sports Centre*

# ■ Symposium program ■

## Karlberg slott

Tuesday, 2010-10-12 kl. 0900-1500

Time	Country/Titel of lecture	Speaker
0900	Welcome speech Moderator – information, C FMIF	Bernt Grundevik Mikael Mineur
0915	<b>Denmark</b> <i>"Preparing for an extreme performance in a military context"</i>	Jacob Palmer Bjerborg
0945	<b>Sweden</b> <i>"Thermal load in Swedish combat soldiers"</i>	Roger Kölegård
1015	<b>Fruit and drinks</b>	
1035	<b>Finland</b> <i>"The changes in stress related salivary biomarkers, body composition and autonomic cardiac control during four months military service in hot environment"</i>	Harri Lindholm
1105	<b>Norway</b> <i>"Preparing for extreme performance – how to avoid extreme situations"</i>	Jørgen W. Eriksen
1135	<b>Lunch and Poster Session</b>	The Castle
1300	<b>Netherlands</b> <i>"Acclimatisation-protocol before going to Afghanistan in the summer-period"</i>	Jan van den Dool
1330	<b>Sweden</b> <i>"Extreme endurance, by foot from Italy to Norway"</i>	Andreas Falk
1400	<b>Fruit and drinks</b>	
1420	<b>Germany</b> <i>Military Fitness Instructor - Transforming sport knowledge in a military context</i>	Harald Dobmeier
1450	<b>Final Words</b>	Mats Danielsson





## ■ Oral presentations ■

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## ■ Invited speakers ■



■ | **Captain Jacob Palmer Bjerborg** is a teacher in Tactics at the Danish Army Academy. As an officer, his postings has mainly been with operational tactical units and he has been in Bosnia as a platoon leader and in southern Afghanistan as Squadron Commander for a Light Recce Squadron tasked with recce, offensive and ground holding operations in the Helmand Province.



■ | **Lieutenant Colonel Harald Dobmeier, MSc**, is a German Delegate to CISM and Assistant in the Department of Sport and Physical Fitness, German Armed Forces Office.



■ | **Lieutenant Colonel Jan van den Dool** (1963) started his military career in 1986 as an artillery-officer. In 1990 he started as a PT & Sport officer. After commanding several PT & Sport groups at army-barracks he became PT-officer of the 11th Airmobile Brigade in 1996. During this posting he graduated for Staff College in 2000 and in 2002 he became head of the PT & Sport section of the Royal Military Academy. In 2005 he got a posting as staff-officer and in 2007 he became commander of a PT & Sport region with PT & Sport groups at 15 army barracks. Since 2009 he is head of the department for Education, Training and Knowledge Production of the Army PT & Sport-organization. During his career LtCol van den Dool fulfilled several missions to Bosnia, the last in 2009.





■ | **Captain Jørgen Weidemann Eriksen** is a PhD candidate at the Norwegian Defense University College, Norwegian School of Sport Sciences Defense Institute and serves as a research officer. He has several peer reviewed articles and has also contributed to several books, both as an author and editor. His main interest lies in the realm of military skill acquisition, learning, and development of military performances.



■ | **First lieutenant Andreas Falk** is currently working at the Swedish armed forces headquarter, he is also one of six officers who is given the possibility to train and compete half their working time.



■ | **Roger Kölegård** is a scientist at the KTH, Technology and Health, Department of Environmental Physiology at Karolinska Institute. He has 15 peer review publications and 24 internal reports, Swedish Defence Research Agency (FOI/FOA). His research interests are environmental Physiology: Cardiovascular-, work- and temperature regulation in extreme environments.



■ | **Harri Lindholm** is Head of the Laboratory of Human Functional Reserves. He has over 40 peer-reviewed articles in the area of cardiorespiratory health, fitness and physiological evaluation of stress, author in several textbooks, guides. Other research interests are environmental stress, recovery, metabolism, cardiovascular regulation, work fitness

## Preparing for an extreme performance in a military context

*Jacob Palmer Bjerborg*

Tactical Teacher at the Army Officers School, Denmark In August 2009, 2 Light Recce Squadron of the Recce Bn/1 Bde (DnK) was deployed to Helmand in Afghanistan for their second tour in the troubled Province. During the next 6 months the soldiers of the squadron conducted more and longer foot patrols than any other Danish unit had done so far in the history of the ISAF mission.

Even though, the soldiers experienced fewer injuries than other units had done.

How is that possible? How did they prepare for the mission and what did they do during the mission in order to achieve this remarkable result?

The briefing will tell a story of a unit that realized the need to assimilate the thinking of an elite sports coach in the preparations for a military mission. Once realized, the unit facilitated a change in the approach to physical training in spirit, quantity and quality.

In close cooperation with the Institute for Military Physical Training in Denmark, the training was planned and coordinated with physical tests in order to measure the progress of the preparations. More tests were conducted during and after the mission and the result is that every soldier has a clear understanding of the effect of the training and the mission itself on his or her body.

The conclusion is clear. Thinking as an elite coach will drastically improve the fitness and stamina and therefore minimize the amount of injuries.

### **Key Words:**

Mentality shaping, Core training, Cross Training, Quantity vs Quality, - Physiological vs psychological effect

## Thermal load in Swedish combat soldiers

*Eiken O<sup>1</sup>, M. Grönkvist<sup>1</sup>, R. Kölegård<sup>1</sup>, U. Danielsson<sup>1</sup>, D. Zavec<sup>2</sup>, S. Kounalakis<sup>2</sup> and I. Mekjavic<sup>2</sup>; <sup>1</sup>Department of Environmental Physiology, School of Technology and Health, Royal Institute of Technology (KTH), Sweden. <sup>2</sup>Department of Automation Biocybernetics and Robotics, Jozef Stefan Institute, Slovenia*

A consequence of the increasing engagement of the Swedish Armed Forces in international missions is that its personnel is more frequently exposed to extreme environments. A current problem concerns heat balance in combat soldiers. In Afghanistan, soldiers are required to conduct military maneuvers at ambient temperatures exceeding 45°C, which, together with the demands for ballistic protective garments and additional carried load, increases the risk of heat illness.

Anecdotal evidence support the notion that exercise-induced heat exhaustion limits combat-soldier actions in Afghanistan.

The aim was to investigate the risk of heat exhaustion in Swedish combat soldiers under two conditions, (i) whilst patrolling in a desert climate wearing reduced combat gear, and (ii) whilst marching in temperate climate wearing full combat gear.

Methods: Ten healthy, physically fit men with average (range) age, height and weight of 23 (20-28) yrs, 1.75 (1.70-1.82) m and 69 (60-78) kg, were investigated in four different conditions (C1-C4). In all conditions they wore combat uniform FU90 including rucksack and a mock-up rifle; they walked on a treadmill for 2 x 35 min interspersed by a 10 min rest periods during which they drank 0.5 l of water. The experiments were performed in a climatic chamber at simulated wind-still conditions (frontal laminar air flow corresponding to the walking speed). In C1-C3 the subject carried 25.5 kg equipment (reduced load), the environmental temperature was 45°C and relative humidity (RH) was 20%, walking speed was 3.3 km/hr.

- In C1 the subject wore the protective vest including ceramic plates and groin protection.
- In C2 the subject wore the vest, but the ceramic plates and groin protection was carried in the rucksack.
- In C3 the vest including ceramic plates and groin protection was carried in the rucksack.
- In C4 the subject carried 37.5 kg equipment (full combat gear, including protective vest), walking speed was 4.7 km/hr, environmental temperature was 25°C and RH was 50%.

During the experiments heart rate, rectal (Tre) and skin temperature, and heat flux at 12 sites were measured continuously, whereas measurements of oxygen uptake, body mass and ratings of temperature comfort and perceived exertion were obtained intermittently.

**Results:** In C1 and C2 only three of the ten subjects managed to complete the exercise bouts and in C3 six subjects completed the bouts. Exercise was discontinued prematurely, because of either symptoms/signs of heat exhaustion or because of excess elevation of Tre. Signs/symptoms of imminent heat exhaustion were evident also in the subject who completed the two bouts.

In C4 9 subjects completed the bouts; the premature termination was due to orthostatic symptoms during the pause.

In all conditions the subjects lost about 1 kg in body mass.

**Conclusion:** Swedish combat soldiers who need to perform physical tasks – even low-intensity exercise - in a hot climate will be at considerable risk of experiencing heat exhaustion. This may not only constitute an imminent medical problem, but also markedly limit the operational capacity of the soldiers.

## The changes in stress related salivary biomarkers, body composition and autonomic cardiac control during four months military service in hot environment

*Harri Lindholm<sup>1</sup>, Henna Hämäläinen<sup>1</sup>, Matti Santtila<sup>2</sup>, Heikki Kyröläinen<sup>3</sup>, Matti Mäntysaari<sup>2</sup>, Hannu Rintamäki<sup>1</sup>. <sup>1</sup> Finnish Institute of Occupational Health, <sup>2</sup> Finnish Defence Forces, <sup>3</sup> University of Jyväskylä*

### Introduction

Nordic countries are participating in multi-national peacekeeping operations and crisis management also in extremely demanding environmental conditions. The transition from the Nordic climate to hot desert conditions imposes high demands on the physiological and behavioural adaptation. During the service it is important to maintain physical fitness, but also to be prepared for sudden physically demanding military tasks. The heat stress might be heavy and the time and possibilities to recover limited. The purpose of the present study was to investigate autonomic cardiovascular control, metabolic and hormonal stress and body composition of Finnish soldiers during the 4 months' deployment in hot environment.

### Methods

The study group consisted of 20 healthy peacekeepers. Period of the deployment in the hot environment occurred from November 2009 to March 2010. Prior to the service period the basic tests of aerobic and muscular fitness were performed. In addition, blood and saliva samples were collected. A great number of biochemical markers of stress and metabolism were analysed, including salivary cortisol, testosterone and  $\alpha$ -amylase levels. Body composition was measured by whole body impedance plethysmography (In Body, South Korea). Body fat and muscle volume was analysed. The muscle structure of m. quadriceps fem. was assessed in more detail with magnetic resonance imaging (MRI). The maximal strength of leg extensor muscles was measured. Autonomic nervous system (ANS) function was studied at rest and during orthostatic test. Heart rate variability (HRV) was calculated from ECG signal (WinAcq, Finland) and blood pressure variability (BPV) was calculated from continuous finger blood pressure (Portapress, the Netherlands). Baroreflex sensitivity (BRS) was analysed from BPV and HRV signals (WinCPRS, Finland). The same measurements were repeated after the service period. In addition, during the deployment in Chad (after two months adaptation) a set of field measurements were performed. They included ANS measurements, 24 hour recordings of R-R intervals (MegaElectro, Finland), blood and salivary samples and recordings of thermal balance with skin sensors and gastrointestinal telemetric thermal sensor. During the study also information regarding health status, the burden of heat adaption and physical strain was collected by questionnaires. The reports of heat related illnesses of the whole deployment group were analysed. Thermal conditions were also monitored with a great number of continuously registering meters (iButton).

### Results

Body weight decreased during the period of deployment by 3% ( $\pm$ 4). The whole

body muscle mass also reduced by 2,5%. The sympathetic tonus of the autonomic nervous system activity in hot conditions, sympathetic tonus was slightly enhanced. Thermal equilibrium was compensated during the days of test. The most critical period in the risk of heat illnesses are the first two weeks after arrival in the hot environment. The cortisol awakening response was significantly higher in the deployment area than before or after the deployment ( $p=0,011$ ).

### **Discussion**

During the deployment in the hot environment there was a tendency for the reduction in muscle mass. The maintaining of physical fitness is important during the time in the camp conditions. The training, however, should not reduce the resources to perform sudden, heavy service tasks with limited possibility to recover. In addition, fitness training should consist of muscular strength exercises. For example, demanding tasks during patrol the portable equipment increases the weight of 80 kg soldier to 125 kg. The augmented salivary cortisol awakening response (CAR) has been correlated to increased stress level in hypothalamus-pituitary-adrenal axis (HPA). The activation of HPA- axis may predispose to negative balance in anabolic/catabolic metabolism. The appropriate training and nutrition together may prevent the poor outcomes of catabolic metabolism.

### **Key words:**

Soldier, heat stress, biomarkers

## **Preparing for extreme performance: to avoid extreme situations**

*Jørgen W. Eriksen*

Through this presentation I want to discuss the concept of extreme performance attributable to military operations. It is a common comprehension that to show some kind of extreme performance is a desirable capability among soldiers. In some situations it is undoubtedly a requirement for solving particular conditions or challenges. But, at the same time, situations where extreme performances are required are not necessarily a desirable and wanted military setting. It will be argued, based on historical, theoretical and philosophical foundations, that extreme performance may be characterized by a kind of brave successful coping in situations that the soldier has insufficient experience to handle. History has shown that the outcome of extreme performances, particularly in relation to military operations, may not even be considered successful. This claim will be made explicit by elaborating on the characteristics of situations in which such behaviour is required; situations often known for being ambiguous, unpredictable and highly complex. To meet this challenge, it will be argued that the military employs different strategies to avoid these situations.

### **Key Words:**

Extreme performance, Military, Expertise

## Acclimatisation-protocol before going to Afghanistan in the summer-period

*Jan van den Dool, PT&Sport-organisation RNLA, Dr Gerard Rietjens, Trainingmedicine & -fysiologie RNLA*

The Dutch armed forces were stationed in Afghanistan from beginning 2006 until the end of 2010 (planned). The very hot and dry climate in Afghanistan during summertime requires good preparation. For the units that worked in Afghanistan during the summer-period, part of the preparation was an acclimatisation-protocol that was executed in Al Minhad, Dubai.

In this lecture we will take a closer look at the acclimatisation-protocol. What was the inducement to introduce the acclimatisation-protocol and how is it embedded in the preparation. What are the dangers of working in extreme heat and what is the influence of physical factors like age, physical fitness, etc on the resistance of the soldiers against extreme heat? We'll have a look at the goals that, based on studies from the past, are set for the programme.

What is the content of the programme and how is it organised and executed so that it fits smoothly in the overall preparation? It is possible to assist the soldier to adapt physically to extreme heat or is it better to learn drills in order to reduce the influence of the heat?

Finally we will look back at the experiences of four years of executing the acclimatisation-programme. Can we see results of the programme and what is the impression of the soldiers that took part in the programme?

### **Keywords:**

Military preparation, Afghanistan, acclimatisation

## Extreme endurance, by foot from Italy to Norway

*Andreas Falk*

First lieutenant Andreas Falk and Captain Mattias Bramstång entered and finished the world's longest footrace.

Trans Europe Footrace 2009 started the 19th of June in Bari of southern Italy and finished at North Cape in the northern tip of Europe 64 days later. The two officers covered more than 70 km each day with no rest days. The presentation will present how the two officers prepared for over three years and of course how they managed to cover almost 4500 km in 64 days.

The focus of the presentation will lay on preparation for the race and "success factors" during the race.

*Harald Dobmeier, Heiko Wömpener, Sport School German Armed Forces*

### **Situation**

In the past the focus of general physical training in the German Armed Forces was oriented on a sport pedagogy way. It means, the content and sports of general physical training selected are geared to the interests and inclinations of the respective training group. Accordingly, also basic and further education of the part-time Bundeswehr sports instructors is, on the one hand, characterized by communicating basic interdisciplinary knowledge about the theory of training and movement and in the field of methodology and didactics with the attention to the general sport.

### **Problem**

In view of the increased employment of German military personnel in crisis and conflict regions all over the world, the issue of “military fitness” increasingly gained in importance in the context of predeployment training. This clearly showed the need for a so-called “soldier’s or military fitness” beyond the level of basic fitness to manage the physical and psychological capabilities and skills required for operations in an “optimal” way or without notable performance losses. Although the Bundeswehr sports instructors are mainly employed as military leaders and instructors, but they aren’t capable of integrating the sport knowledge imparted into military skill training in a structured, functional and profitable way. Therefore we need a new approach: transformation of the basic sport knowledge imparted during sports instructor training to branch-specific routine combat and operational training in order to improve basic military capabilities for operations and the ability to take mental stress.

### **Realization**

In cooperation with the Sports Center of the Austrian Army, we developed the specialization training course “Military Fitness Instructor”; this training course was aimed at enabling the military instructor to identify demanding movements and actions of general and military basic skills – especially those of his branch – with regard to different forms of load and stress and to implement these skills on the basis of sport science-oriented principles of training to optimize the soldiers’ performance.

### **Among other things, this includes communicating**

- pedagogic and psychological forms of intervention as part of achievement motivation, group processes, stress management strategies and leadership behavior;
- interdisciplinary and specific forms of training integrated into already known sports such as biathlon, orienteering, climbing, swimming/lifesaving, etc.;
- knowledge about preparing requirements profiles with regard to the military forms of load and stress in terms of biomechanics and physiological performance.

### **Keywords:**

Military Fitness, Sport instructor education, Physical deployment training

# Change in physical fitness in male military cadets during first year attendance at the Royal Norwegian Air Force Academy

A. Aandstad<sup>1</sup>, R. Hageberg<sup>1</sup>, R. Nilssen<sup>1</sup>, Ø. Sæther<sup>1</sup>, R. Selvaen<sup>2</sup>

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## Introduction

Good physical fitness is considered to be one of the basic elements of military preparedness and an essential high physical occupational competence. Compared to 20-30 years ago physical fitness is required to carry Norwegian military and military-related tasks. Studies are thus of great importance to assess how good physical fitness training levels before attendance to military academies, physical fitness standards of the academy, and to what extent.

## Aim

The aim of this study was to describe initial physical fitness of Norwegian cadets, and examine if any change in fitness occurs during the first year at the Air Force Academy.



## Methods

### Subjects

All first-year cadets recruited at the Royal Norwegian Air Force Academy in August 2007 were invited to participate in the study. Only one cadet could not be contacted, and therefore excluded from the analysis. Altogether, 202 were included from 20 units located from 02.3 to 4.9 yrs of education, ranging from cadets to the youngest level of the academy.

### Measurements

All fitness tests were conducted within two weeks after entrance (August 2007), and at the end of the first year (July 2008).

Maximum oxygen uptake ( $\dot{V}O_{2max}$ ) and maximal heart rate ( $HR_{max}$ ) were measured using a portable metabolic system (Cosmed K4b2) during a maximal incremental physical test. The test was self-paced, starting at 100 W and increasing by 100 W every minute until the subject reached volitional exhaustion. The test was performed on a 30 m track. The test was performed on a 30 m track. The test was performed on a 30 m track.

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## Results

Maximum oxygen uptake ( $\dot{V}O_{2max}$ ) and maximal heart rate ( $HR_{max}$ ) were measured at the end of the first year ( $n = 202$ ). Descriptive statistics were also determined during the first year ( $n = 202$ ). There was no significant difference between initial and change in maximum  $\dot{V}O_{2max}$  ( $p = 0.05$ ). Mean heart rate and HR<sub>max</sub> in the first year were 140 and 180, respectively, while HR<sub>max</sub> was 181. Lower in the second year, the comparison was not made (Table 1).

Weight and body composition at baseline, were determined and categorized. High increase in weight of the first year ( $n = 202$ ) between previous level was determined by 0.27 during the first year (Table 2).

Table 1. Descriptive statistics of the physical fitness of the cadets at the end of the first year at the Royal Norwegian Air Force Academy. Data are presented as mean (SD).

	$\dot{V}O_{2max}$ (L/min)	HR <sub>max</sub> (b/min)	HR (b/min)	HR <sub>max</sub> (b/min)	HR (b/min)
Age (years)	19.1 (0.5)	180 (10)	140 (10)	181 (10)	140 (10)
Height (cm)	178 (6)	178 (6)	178 (6)	178 (6)	178 (6)
Weight (kg)	75 (10)	75 (10)	75 (10)	75 (10)	75 (10)
Body fat (%)	12 (2)	12 (2)	12 (2)	12 (2)	12 (2)

Table 2. Descriptive statistics of the weight and body composition of the cadets at the end of the first year at the Royal Norwegian Air Force Academy. Data are presented as mean (SD).

	Weight (kg)	HR <sub>max</sub> (b/min)	HR (b/min)	HR <sub>max</sub> (b/min)	HR (b/min)
Age (years)	19.1 (0.5)	180 (10)	140 (10)	181 (10)	140 (10)
Height (cm)	178 (6)	178 (6)	178 (6)	178 (6)	178 (6)
Weight (kg)	75 (10)	75 (10)	75 (10)	75 (10)	75 (10)
Body fat (%)	12 (2)	12 (2)	12 (2)	12 (2)	12 (2)

## Discussion and conclusion

Maximum oxygen uptake, HR<sub>max</sub> and heart rate were measured at the end of the first year at the Royal Norwegian Air Force Academy. Descriptive statistics were also determined during the first year at the Royal Norwegian Air Force Academy. There was no significant difference between initial and change in maximum  $\dot{V}O_{2max}$  ( $p = 0.05$ ).

Weight and body composition at baseline, were determined and categorized. High increase in weight of the first year ( $n = 202$ ) between previous level was determined by 0.27 during the first year (Table 2).

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## Acknowledgments

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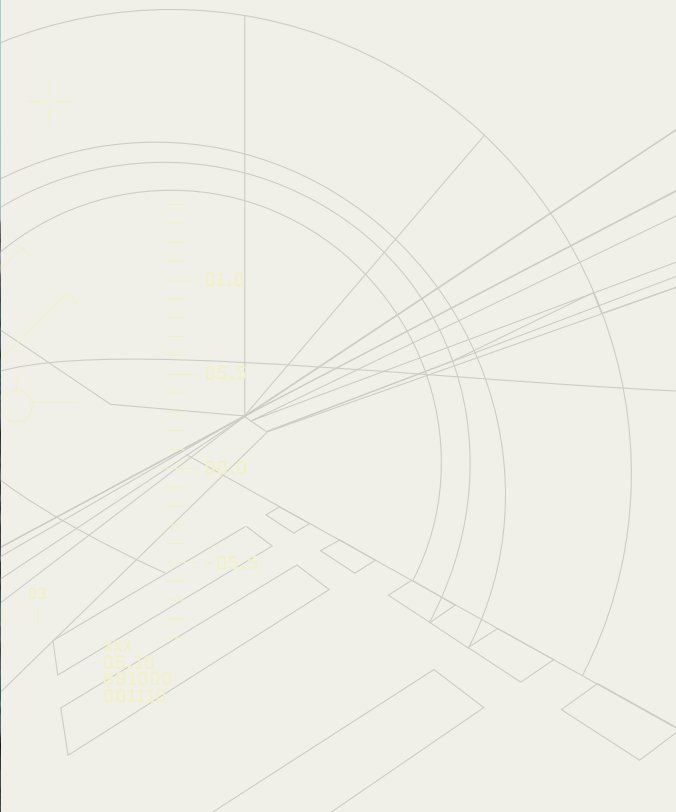
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## ■ Poster presentations ■

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# ■ Military sport and organization ■



Military sport and organization



## Sports in the Swedish Armed Forces

### Introduction/Aims

All sport activities in the SAF are aiming to support the readiness units with well prepared soldiers and officers in a physical aspect. Away to reach the goal is to have an organisation who is prepared, healthy and fully able to realize the main goals. This means that all personal plays a important role.

The SAF Sport Centre is setting up on yearly basis, sport activities who encourage all categories of employees.

The activities shall serve as stimulating effect on personal training goals. Depending on witch category the employees belongs to - the training goals will be different. Therefore has SAF set up activities in following four categories:



### Int. representation



### High level sports Championship



### Physical performance



### Sports for all





# Sport organization within the Finnish Defence Forces

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## INTRODUCTION

Every Finnish male citizen is liable for military service at 18 years of age. This means 30,000 male conscripts a year. Most young male athletes complete their military service. The Defence Forces support Finnish coaching and competitive sports by organizing national and international championships. Sport maintains high standards in coaching, it ensures the regular organisation of competitions and the teaching of individual sports. At the same time, the production of capable troops is supported by military sport.

## DESCRIPTION

National and international military sports, including development, championships, training, rules and resources, are led by the Defence Command, in close co-operation with the Finnish Olympic Committee and the National Sport Federations.

The Finnish Military Championships are the highest national competition level in the Defence Forces (Table 1). Approximately 1,400 conscripts, salaried personnel and frontier guard personnel participate in the Championships annually.

The Defence Forces are represented on an international level by the shooting (rifle, pistol), biathlon, cross country skiing, combat sports (wrestling, judo), orienteering, sailing, and military, aeronautical and naval pentathlons teams. Athletes, coaches and leaders are active duty soldiers. They are readily given the opportunity to spend service time coaching, practising and competing. Basically athletes are divided into the Top-, A- and B-teams (total of 80-100 athletes), and they are given 50 to 100 days of service time a year for sports. The best athletes also belong to the national team.

The Sport School of the Finnish Defence Forces (FDF) enables the best young athletes (annually 150) to perform their compulsory military service. Most of the athletes are assigned to the 12-month military leadership programme. The optional 6-months rank-and-file soldiers' programme is developed for the top athletes with a professional status, for e.g. tennis player Jarkko Nieminen and football player Mikael Forssell (Figure 1). Approximately 40-60 athletes are admitted yearly to the 6-month programme. The Sports School plays a big part in training and coaching in Finland. This of course is also positive publicity for the national defence.



**Figure 1.** Above, Finnish national team football player Mikael Forssell (Hannover 96, Germany) after shooting a goal in an international game.

Below: Tennis player Jarkko Nieminen (ATP rank 25th, Feb. 2008) received the Best Conscript Athlete title for 2008.

Competitions in units and garrisons are the main way for maintaining and developing sport and coaching in the Defence Forces. It is a challenge for units to ensure that financial and activities planning takes into account the amount of personnel and resources needed for sports activities. Army, Navy and Air Forces headquarters are in charge of inspecting and monitoring competitions and coaching within their own brigade-level units.

**Table 1.** Finnish Military Championships

- **SKIING**
  - Cross-country, biathlon, patrol race
  - Service weapon biathlon
  - Conscript relay (3 x 5 km) cross-country
- **ORIENTEERING**
  - Middle distance
  - Patrol race
- **SHOOTING**
  - Rifle 50 m, 300 m, pistol 50 m, 25 m
  - Service weapon 150 m
- **FOOTBALL**
  - Max. 16 teams
- **MILITARY PENTATHLON**
- **FIELD SHOOTING**
  - Service weapon, rifle, pistol
- **CROSS-COUNTRY RUNNING AND BIATHLON ORIENTEERING**

In addition there is certain Championships in Service branches (navy, air) and Championships of Finnish Military Sport Federation, which is independent organization taking care of salaried personnel's and conscripts' voluntary free time sport activities.

## RESULTS

The FDF have been a member of the International Military Sports Council (CISM) since 1964. Finland is well-known as an active, reliable and successful member nation. Military teams have consisted of several European, World and Olympic medalists over the years. The last Finnish military sport hero is First Lieutenant Henri Häkkinen (Figure 2), who achieved a bronze medal in air rifle shooting at the Beijing Olympic Games 2008. Currently, the most successful Finnish military teams are the pentathlons and shooting teams (Figure 3). The amount of CISM medals achieved by the FDF varies between 5 to 12 medals on a yearly basis (Table 2).

**Table 2.** FDF statistics on the World Military Championship between 1964-2008

Participated	Organized	Medals			Total
		Gold	Silver	Bronze	
333	23	167	183	177	527

Sports participated in: shooting (rifle, pistol), skiing (cross-country skiing, biathlon, patrol race), aeronautical pentathlon, judo, parachuting, cross-country running, naval pentathlon, sailing, fencing, modern pentathlon, boxing, military pentathlon, orienteering, triathlon, swimming, track and field.



**Figure 2.** Olympic bronze medalist, 1stLt Henri Häkkinen, Beijing 2008

## DISCUSSION

The Defence Forces' participation, organizing of championships and sporting goals in the CISM will remain the same in the near future. This means a maximum of 50-80 athletes and 10-15 voluntary or full-time coaches. The annual aim is as previously to participate in 6-10 Military World Championships, 5-7 Regional Military Championships and about 10 other international military competitions or training camps. The FDF also participate in the Military World Games every fourth year. In addition, the Defence Forces aim to organise a Military World Championship every second year. The annual performance target is 6-10 world championship medals. Moreover, the aim is to have 2-4 military athletes competing in the Olympic Games.

In future, more and more top athletes will be eligible for a non-commissioned officer's post at the Sports School and in the other garrisons. The best of these athletes (5-6 persons) are selected in collaboration with the Olympic Committee.



**Figure 3.** The Finnish women's military pentathlon team after the cross-country running event at the Military World Games, Hyderabad, India 2007. In the middle bronze medalist Capt Ann-Sofie Kunelius (Forssten)

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Finnish Defence Forces

# Military Sport within the Norwegian Armed Forces

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The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

## Introduction

The Norwegian Defence Forces attach great importance in promoting an active lifestyle among all of its military personnel. Participation in military sports gives the personnel an increased physical standard, while at the same time supporting the production of capable troops. Therefore, different championships and competitions are being arranged locally, nationally and internationally.

## Authority

National and international military sport, including the development of championships, training, policy, rules and regulations are led by the Defence Institute at the Norwegian School of Sport Sciences in close cooperation with the Olympic training centre and several national sports federations. The institute reports on its military duties/activities to the chief of the Norwegian Defence University College.

## Military sports at the national level

The Norwegian Military Championship is the highest national competition level within the defence forces.

Approximately 1,600 conscripts and officers annually participate in:

- Infantry Race
- Chief of Defence Forces winter competition (skiing)
- Naval, aeronautical and military pentathlons
- Shooting, rifle and pistol competitions
- Orienteering
- Football and indoor floorball tournaments



## Friendship through sport

Since 1953, The Norwegian Defence Forces has been a member of Conseil International du Sport Militaire (CISM), the world's largest military sports organization. The motto of CISM is "Friendship through Sport", and their aim is to promote peace and understanding among nations by bringing soldiers from all countries worldwide together in a friendly competition.

In 2008, the Norwegian Defence Minister and the Defence Forces started a sports project in which Afghan boys aged 10-14 were invited to play football at the Norway Cup. It turned out to be a huge success. In 2009 and 2010, a football team from the Faryab Province, Faryab United, got their chance to attend the cup, which was an exciting experience for both Afghan and Norwegian players. In terms of communication, sport can be used as an efficient delivery mechanism for an education about peace and friendship through sport. The aim of this project is to create a mutual understanding and respect between the two nations through sports. As a result, the Norwegian forces in Meymaneh brought together different individuals and the community to increase knowledge about the development of sports in the northern part of Afghanistan. Several local actions have been carried out both before and after participation in the Norway Cup.



## International military sport competitions

Approximately 20 military world championships and 120 continental, regional and local competitions are arranged by CISM each year.

Norway only participates in the military sports (shooting plus military, naval and aeronautical pentathlons, orienteering, skiing and sailing). Military sports have become very big within CISM, with its participants on a high level and Norway making itself noticed in the prestigious competition. In particular, our shooters and pentathlon participants have shown outstanding results.

The Chief of Mission of each sport has 3 to 5 officers under his/her command. They support (administratively) and coach the athletes in their performance. Both the sport leaders and athletes are very good ambassadors for the Norwegian Defence Forces. In addition, they contribute in the training and education of regular troopers (because of their excellent skills). For instance, our shooters test weapons and ammunition for the special forces, and our skiers train and coach NATO soldiers in the mountains of Norway.



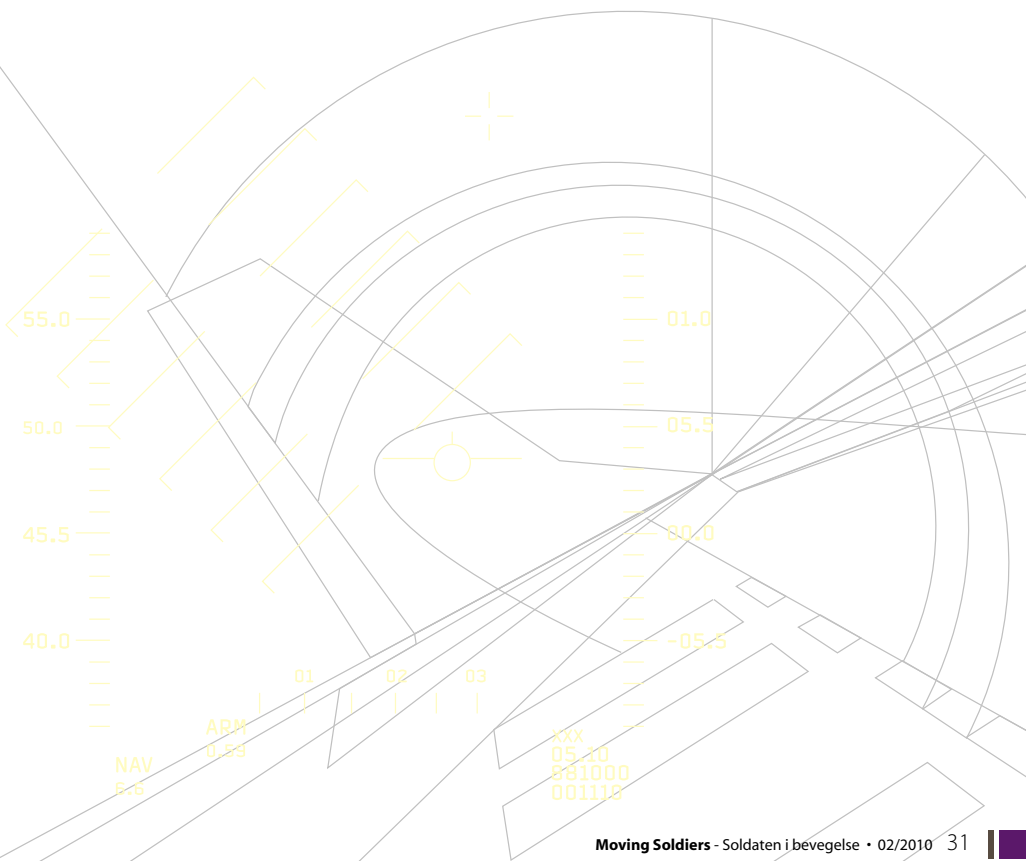
The Norwegian Minister of Defence, Grete Faremo, visiting Faryab United at the Norway Cup 2010.

## References

- Tff gr 43 and
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## Acknowledgements

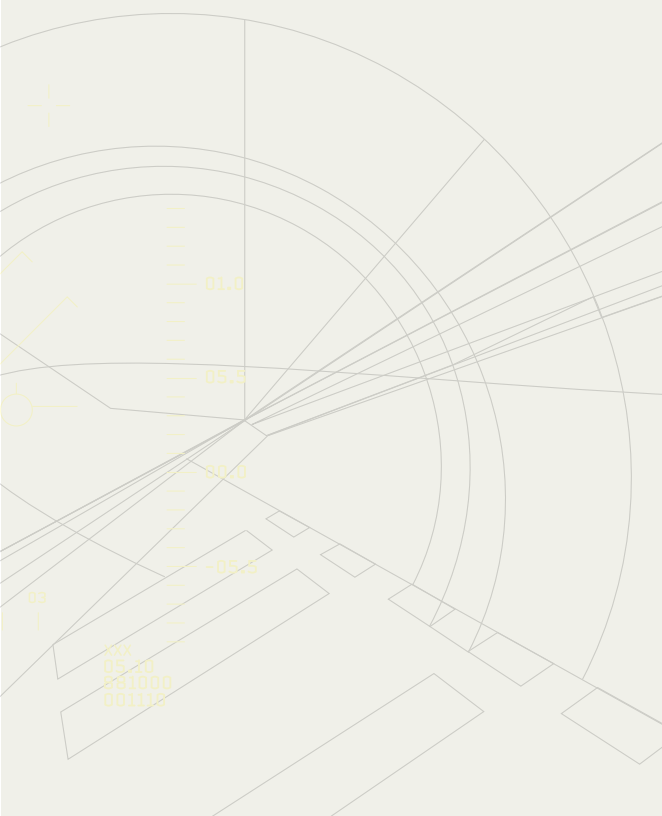
Photos: CISM, The Norwegian Defense Media Centre







# ■ Physical training and education ■



Physical training and education



# Physical tests in the Danish Army



## THE ARMED FORCES PHYSICAL TEST

ARMY

GRADE	CIRCUIT TEST				TEST OF STRENGTH					FUNCTIONAL TEST
	Test A		Test B		Test C					Test D
	<b>AEROB DISTANCE</b> The bodies ability to absorb, transport and consume oxygen		<b>AEROB &amp; ANAEROB INTERMITTENT WORK</b> The bodies ability to tolerate fatigue substances and repeatedly perform a task with high intensity		<b>MAXIMUM STRENGTH</b> The bodies ability to develop a large amount of strength repeatedly in a short period of time					<b>ENDURANCE &amp; COORDINATION</b> The bodies ability to work with balance, coordination etc at a high intensity and fatigue
	<b>12 min</b>	<b>Yo-Yo UH 1</b>	<b>Yo-Yo IR 1</b>	<b>Danish Military Speed Test</b>	<b>1. Lunges</b> Max. 2 min	<b>2. Dips</b> Max. 1 min	<b>3. Pull-Up</b> Max. 1 min	<b>4. Deadlift</b> Max. 1 min	<b>5. The Plank</b>	2 km march - Military Obstacle Course - 2 km march. Dress code: Battle Dress with boots and PLCRE (Personal Load Carrying Equipment). Total weight of PLCRE must be 25 kg.
<b>5</b>	3000 m	14,6	19,4	66 rounds	40 reps 50 kg	8 reps 10 kg	8 reps 10 kg	8 reps 100 kg	120 sec 20 kg	45 min
<b>4</b>	2850 m	13,2	18,3	63 rounds	40 reps 40 kg	8 reps 0 kg	8 reps 0 kg	8 reps 80 kg	120 sec 15 kg	50 min
<b>3</b>	2750 m	12,8	17,5	60 rounds	30 reps 40 kg	6 reps 0 kg	6 reps 0 kg	6 reps 80 kg	120 sec 10 kg	55 min
<b>2</b>	2550 m	11,2	15,6	58 rounds	30 reps 30 kg	4 reps 0 kg	4 reps 0 kg	6 reps 60 kg	120 sec 0 kg	60 min
<b>1</b>	2400 m	9,11	14,6	54 rounds	30 reps 10 kg	2 reps 0 kg	2 reps 0 kg	6 reps 50 kg	90 sec 0 kg	65 min
<b>0</b>	2150 m	8,8	11,2	49 rounds	20 reps 10 kg	1 reps 0 kg	1 reps 0 kg	6 reps 40 kg	60 sec 0 kg	70 min



\* Following obstacles are not to be passed: Nr. 1 (Prestige), 8 (Kjævelæg), 10 (The Search), 12 (Firebomb), 13 (Sikkerheds døl eg 15 (Buldervej), Forhindring 2 (Obstacles) without touching the ground, 17 (Creeper) must be done only

\*\* PLCRE that can be used: Battlebelt with full magazines, bombproof full carrying (if needed), helmet, gloves, etc (checked on site)

By: Center for Uddannelses og Forsvarsuddannelsen, Nr. 20151823

## THE ARMED FORCES PHYSICAL TEST/CORETEST

NIVEAU	1. BACK	2. 90° STATIC SIT-UP	3. SIDEBRIDGE LEFT	4. SIDEBRIDGE RIGHT	5. BACKBRIDGE LEFT	6. BACKBRIDGE RIGHT	7. LUNGES 20 KG
<b>5</b>	165 sec.	135 sec.	120 sec.	120 sec.	90 sec.	90 sec.	60 reps.
<b>4</b>	150 sec.	120 sec.	105 sec.	105 sec.	75 sec.	75 sec.	50 reps.
<b>3</b>	135 sec.	105 sec.	90 sec.	90 sec.	60 sec.	60 sec.	40 reps.
<b>2</b>	120 sec.	90 sec.	75 sec.	75 sec.	45 sec.	45 sec.	40 reps.
<b>1</b>	105 sec.	75 sec.	60 sec.	60 sec.	30 sec.	30 sec.	20 reps.



By: Center for Uddannelses og Forsvarsuddannelsen, Nr. 20151823



# Physical tests in the Danish Army



## THE ARMED FORCES PHYSICAL TEST/CORETEST



### BACK

Håndbæret fremføres placeres to fingertbrodder ud over hænderne af grunden, mens hånderne holdes på brystet.  
Tæststilling indtages ved at gå op i vandret eller lodret.



### 90° STATIC SIT-UP

Tæststillingen indtages med 90 grader i knæ og hofte, mens hånderne holdes på hovedet.  
Ryggen holdes opret, og brystet skydes frem under hele testen.



### SIDEBRIDGE RIGHT/LEFT

Albue og underarm placeres på gulvet, når man skal placere sig under armbøjen eller end mod kroppen.  
Fødderne placeres oven på hinanden, herefter indtages tæststilling.



### BACKBRIDGE RIGHT/LEFT

En fod placeres med fuld kontakt i gulvet og hånderne holdes på brystet.  
Tæststillingen indtages ved at skyde hofte op mod loftet, mens det ene ben strækkes, så begge knæ har samme højde.



### LUNGES

Luffers som udført til forreste bens hæl er min. 10 cm frem i luftebens bens knæ.  
Der kræves ned til luftebens bens knæ har en maks. afstand på 10 cm til gulvet.  
Ryg og knæ skal være stabile under hele testen, som udføres kontinuerligt uden pause.



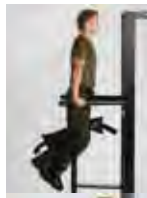
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## THE ARMED FORCES TEST OF STRENGTH



### LUNGES

Luffers som udført til forreste bens hæl er min. 10 cm frem i luftebens bens knæ.  
Der kræves ned til luftebens bens knæ har en maks. afstand på 10 cm til gulvet.  
Ryg og knæ skal være stabile under hele testen som udføres kontinuerligt uden pause.



### DIPS

Luffers ved, at hånderne placeres i en vinkel position, benene placeres ligeledes i en vinkel position og kroppen og disse må ikke ændres under testen.  
Overkroppen sænkes til der opnås 90 grader, efter hvilket i skulderledet, herefter der returneres til udgangsposition.



### PULL-UP

Luffers ved, at hånderne placeres i overhåndstiltning, benene placeres i vinkel position og kroppen og disse må ikke ændres under testen.  
Der luffers et træk til hagen er over stangen, herefter der returneres til udgangsposition.



### DEADLIFT

Luffers ved, at hænder og fødder placeres i en vinkel position, ting ikke ændre holdning end 10 cm over skulderbrodder.  
Herefter rettes kroppen i et bøjnings til en ret position er opret, og brystet er skulder bredt, herefter er der returneres til udgangsposition.  
Vægten skal røre gulvet mellem hænder udføres, men må ikke "træde".



### THE PLANK

Luffers ved, at albuerne placeres i skulderbrodder, hånderne holdes og håndene placeres med let spænding og knæ over skulderbrodder.  
Vægten placeres over lænden, herefter en ret position indtages, så kun tæer og underarme rører jorden.  
Det er ikke tilladt at vugges eller ændre på positionen under testen, og luffers holdes i retning, fortsættelse af kroppen.



By Center for Helse/Forebyggelse & Arbejdshygiejne, Tlf. 30253823



# Fitness testing in the Finnish Defence Forces



Pihlainen K. and Santtila M.

Personnel Division of Defence Command, Finnish Defence Forces

## INTRODUCTION

The Finnish Defence Forces' (FDF) physical education activities, including fitness testing, aim to ensure the FDF has physically fit, active and motivated personnel that exercise regularly, and are thus prepared for war, crisis and peace time activities. Furthermore, physical education in the FDF is about positively influencing the personnel's physical activity, health behaviour and about improving their attitudes towards physical exercise.

Physical exercise encourages conscripts and reservists as well as FDF personnel to have a physically active lifestyle, it promotes and maintains physical fitness abilities and it either seeks to inspire or strengthen people's willingness to be physically active throughout their lives.

Physical activity and fitness both have a great influence on an individual's health status and working ability. Thus, adequate levels of endurance and muscle fitness are essential, especially, in physically demanding field duties like marching, carrying heavy loads and materials. Physical fitness can be measured with different methods, commonly with fitness tests.

## PURPOSE

The 2008 Act on the Finnish Defence Forces requires that professional soldiers must foster the professional skills and fitness level needed in their duties. Therefore participation in the annual fitness tests is compulsory for professional soldiers and obligatory for civilian personnel. Fitness testing is also a part of a follow-up and promotion system that aims to improve the physical fitness of individuals and to promote public health.

The salaried personnel who have done the fitness tests are encouraged to use two hours a week for exercise. Other forms of physical activity promotion are:

- Physical activity and recreation days (two days per year)
- Exercise by commuting to work
- Pause exercises and gymnastics
- Supporting free time activities, like participation in national sports events and entrance fee support to different kind of sports facilities.

## METHODS

The personnel's fitness for duty and physical working capacity are monitored using a system that is made up of fitness tests, measuring equipment, testing methods, personnel resources and data base programme called MiFit. Physical working capacity is determined by aerobic capacity and muscle fitness tests. Body composition is measured by body height, weight and waist circumference measurements. In addition, professional soldiers have to pass the field duty fitness tests which include shooting, marching and orienteering tests (Figure 1). Physical fitness tests and body composition measurements of the conscripts and reservists are nearly the same as previously described.

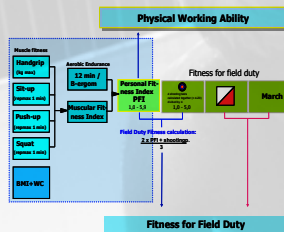


Figure 1. Fitness tests consist of endurance capacity test (12 min running or bicycle-ergometer test) and muscle fitness tests (push-ups, sit-ups, isometric grip strength, and repeated squats). Before the muscle fitness tests body height and weight (BMI) and waist circumference are measured.

## RESULTS

The annual participation rate in the follow-up system among professional soldiers during the 21<sup>st</sup> century has been considerably high, approximately 97-98%. The physical fitness index of the professional soldiers has remained approximately at the same level during the last few years. Despite that, the VQ<sub>max</sub> has decreased and the BMI has increased (Figure 2). There seems to be a negative relationship between BMI, sick leave days and physical fitness level. In addition, aerobic fitness of the conscripts (Figure 3) and reservists has significantly decreased during the last decades. At the same time, body weight has increased. However, positive improvements have been recorded with increased aerobic capacity and muscle strength during military service. Furthermore, military service markedly reduces fat tissue and increases the lean body mass of the conscripts.

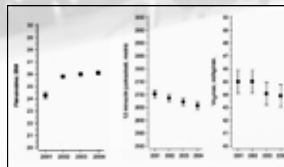


Figure 2. Changes in the mean values of the endurance capacity tests and body mass index among male professional soldiers during the years 2001-2004. Left: Body mass index, kg/m<sup>2</sup> (n = 7617). Middle: 12 minutes running test, meters (n = 5754). Right: Maximal bicycle ergometer test, ml·kg<sup>-1</sup>·min<sup>-1</sup> (n = 1991). Results include 95 % confidential level.

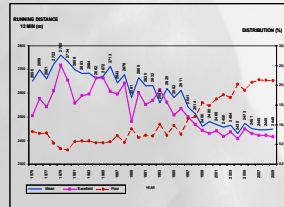


Figure 3. Mean results of the 12 minutes running tests of young men entering military service during the years 1975-2009 (modified from original article by Santtila et al, MSSE 2006).

## DISCUSSION

Physical activity promotion, especially at vigorous intensity, seems to be an effective way to improve physical fitness, maintaining working ability and work productivity. Systematic fitness testing may also reveal persons with lowered health status and elevated risk of losing their working ability and premature disability pensions. Workers at a higher health risk due to obesity and poor fitness level should be advised to improve their lifestyle by adding physical activity and focusing on a healthier diet. Investing on conscripts' physical fitness and occupational health promotion activities may also have positive effects on public health and the national economy. The health benefits are higher especially among the individuals with lower physical activity and who are overweight.

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Finnish Defence Forces

# Basic physical tests in the Norwegian Armed Forces

Jon Kirknes

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

## Introduction

Good physical fitness is considered to be one of the basic features of military personnel due to possible high physical occupational demands. The Norwegian Armed Forces have a basic physical test for:

- (1) National servicemen
- (2) Annual test for officers and NCOs

The tests are individual and must be taken by all applicants for and students undergoing basic officer and NCO training, all national servicemen doing their initial military service and all officers, NCOs and enlisted servicemen in active service. Personnel over the age of 50 shall take the tests on an equal footing with other personnel, but the time requirements for the exercises will not apply.

The Chief of Defence Norway has laid down the minimum requirements for all personnel in the Norwegian Armed Forces. When necessary, the Chiefs of Staff can define more stringent minimum requirements for particular categories of personnel.

## Purpose

Physical fitness tests shall give personnel concrete, attainable goals for physical training and give the unit commander an opportunity to assess the status of his/her personnel.

The physical demands of a job may vary considerably from duty assignment to duty assignment, but everyone must have a satisfactory aerobic capacity. We have therefore chosen endurance as a fundamental element in the testing scheme. Aerobic endurance gives a good indication of the ability of the cardiovascular system to deliver oxygen to the working muscles. The capacity of these organs is of great importance for the ability of the organism to handle stress - be it physical or mental.

The Chiefs of Staff have been given the responsibility of setting special requirements, as necessary, for individual functions above and beyond those laid down here to make sure that it is monitored as to whether the requirements have been met.

Functional job requirements and tests of this nature are not encompassed in the basic tests, but shall be described in the individual job description.



## (1) National servicemen

The physical fitness tests shall:

- inform the individual about his/her own training condition and any improvements from completed training
- give superior officers a basis for assessing the servicemen's physical development and the need for local revisions in programmes and supporting measures
- inform key bodies about the servicemen's physical development during their initial military service

The tests consist of the following exercises:

- 3,000 m run on a track, road or developed trail.
- Strength exercises: chin-ups, sit-ups and push-ups

## (2) Officers and NCOs

A yearly test shall assess officers' and NCOs' physical condition out of consideration for:

- emergency preparedness
- personal health
- an example for subordinate personnel

All regularly serving officers and NCOs are obligated to report for testing. An exemption from the test can only be given on medical grounds. Age is determined on January 1. Enlisted personnel and conscripted doctors, priests, veterinarians and dentists are tested just as officers and NCOs.

**Test group A** consists of individual exercises with scoring scales of 0 - 6 in order to give an indirect measurement of the officer's and/or NCO's aerobic capacity.

- 3,000 m run
- 500 m swimming, freestyle
- 500 m swimming, breaststroke
- 10 km cross-country skiing, classic style
- 20 km cycling

**Test group B** is a sample of physically demanding proficiency badges, in which a passed proficiency test gives a score of 4. Meeting the requirements for two or more badges gives a score of 6.

- The military pentathlon badge
- The military skiing badge
- The military marching badge
- The infantry badge
- The field sport badge
- The biathlon badge
- The Nijmegen medal

**Test group C** is a sample of proficiency badges and a walking test, which when the minimum requirements have been met, give a score of 2. This means that the minimum requirements for physical fitness have been met.

- The sports badge
- "Store havhesten" (a swimming proficiency badge)
- 15 km walk

Kategori	Nær 3000 m				
	M 11	M 12	M 13	M 14	M 15
3	11:30	11:50	12:00	12:05	14:00
4	12:30	12:50	13:00	13:05	15:00
5	13:30	13:50	14:00	14:05	16:00
6	14:30	14:50	15:00	15:05	17:00
7	15:30	15:50	16:00	16:05	18:00
8	16:30	16:50	17:00	17:05	19:00
9	17:30	17:50	18:00	18:05	20:00

Kategori	Nær 3000 m				
	M 11	M 12	M 13	M 14	M 15
0	17:30	17:50	18:00	18:05	20:00
1	18:30	18:50	19:00	19:05	21:00
2	19:30	19:50	20:00	20:05	22:00
3	20:30	20:50	21:00	21:05	23:00
4	21:30	21:50	22:00	22:05	24:00
5	22:30	22:50	23:00	23:05	25:00
6	23:30	23:50	24:00	24:05	26:00

## References

- Tff gr 43 Regulation for physical training and education

All test shall be evaluated in 2010; new tests will be implemented on January 1 2011.

## Acknowledgements

Photos: The Norwegian Defense Media Centre.



# Physical demands in Swedish Armed Forces

Johan Salén

Swedish Armed Forces Sports Centre

## Introduction

Good physical fitness is considered to be one of the basic features of military personnel. To take actions in field-equipment, to dig, lift, carry and climb are basic skills for a soldier and creates demands on specific physical performances.

## Aim

The aim of this presentation is to introduce the physical demands for Swedish ground combat personnel in the operations organization. The test must be carried out before the readiness stage starts and thereafter at least once per year.

### Division of ground combat personell/units:

Group	Personnel/Units
A	Staff positions for directing ground operations
B	Ground combat units with other than front-line main roles
C	Ground combat units with front-line main roles
D	Ranger roles (corresp.)

## Oxygen uptake

### Field test 2000m

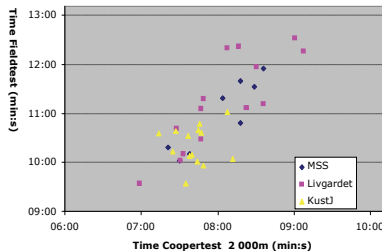
Fighting equipment, 20-22 kg



### Requirement table

Group	Officer	Soldier	Average time/unit
A	13 min 30 sec	13 min 30 sec	-
B	12 min 30 sec	13 min 30 sec	12 min 30 sec
C	11 min 30 sec	12 min 30 sek	11 min 30 sec
D	10 min 15 sec	11 min 30 sec	10 min 15 sec

### Coopertest compared with Field test



## Strength

Multi-test 5 moment = 1 test

- 1) Push-ups (Arms/shoulders)
- 2) Sit-ups (Stomach)
- 3) Vertical jump (Legs)
- 4) Back suspension
- 5) Arm suspension (Arm/shoulders)



Exercise	Unit	Min	Max	Points= over min. level
Push-ups	Numb.	8	28	5 points/repetition
Sit-ups	Numb.	10	60	2 points/repetition
Vertical jump	cm	30	50	5 points/cm
Back suspension	sec	60	160	1 points/sec
Arm suspension	sec	15	65	2 points/sec

### Requirement table

Group	Officer	Soldier
A	125 points	125 points
B	175 points	175 points
C	175 points	175 points
D	300 points	300 points

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# Military Fitness Instructor

-Transforming sport knowledge in military context -

LtCol Harald Dobmeier & LtCol Heiko Wömpener



Transformation of the basic sport knowledge to branch-specific routine combat and operational training in order to improve basic military capabilities for operations and the ability to take mental stress.

Therefore the Bundeswehr established the specialization training course "Military Fitness Instructor"; this training course was aimed at enabling the military instructor to identify demanding movements and actions of general and military basic skills – especially those of his branch – with regard to different forms of load and stress and to implement these skills on the basis of sport science-oriented principles of training to optimize the soldiers' performance.

Among other things, this includes communicating

- pedagogic and psychological forms of intervention as part of achievement motivation, group processes, stress management strategies and leadership behavior;
- interdisciplinary / specific forms of training (e.g. special training to lift/carry/throw loads and objects, overcoming obstacles, exercises to change positions, etc.) integrated into sports such as biathlon, orienteering, climbing, swimming and lifesaving, etc.;
- knowledge about preparing requirements profiles with regard to the military forms of load and stress in terms of biomechanics and physiological performance.

**Sport Competition  
Special Sport Groups  
Interest**

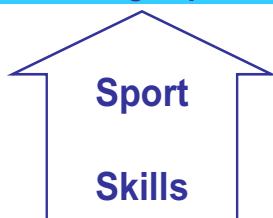
...

**Special Training Supervisors**

**Military Operations  
Physical & Psychological Capacity  
Command & Group Process**

...

**Military Fitness Instructor**





**PHYSICAL TRAINING AND EDUCATION**  
Danish Defence

**1) General regulations for physical activity in the Danish Defence.**

**Purpose**

- All personnel develop and sustain a physical training level which create healthy and operational competent employees.

**Aim**

- "Fit for fight" (physical/psychological/health).
- Support the operational quality & security including the individual own safety, health and well-being.
- Contribute holding on to qualified personnel by appearing as a attractive, modern & challenging firm.
- Motivate to engage in physical activity in leisure time.
- Participate in promoting public health issues.

**Definition**

- Military Physical Training:**
  - Service related physical training which include planned & structured physical education & which primarily purpose is to support the operational structure of the organisation.
- Competitive Sports:**
  - A benefit for all employees to participate in sports related competitions on all levels – on national as well as international ground.



**1a) Military Physical training 2010**

Establishment of Military Physical Training Team (MPTT) with the aim to identify the combat soldiers physical performance specifications in Afghanistan and hereby develop future recommendations and physical tests for military physical training in general.

The result of this process contributed to 3 overall concepts integrated in the physical training and education in Denmark:

- Concept 1:** "Become your own physical trainer" which aim is to educate and train each individual soldier to understand the body needs and the signalling effect in relation to:
  - Overload.
  - Nutrition and physical training.
  - Recovery.
  - Focus on the individual soldiers weak & strong points.
  - Intensity & volume in physical training:
    - Resistance training inclusive a significant focus on core stability training.
    - Endurance training in general.
- Concept 2:** Revision of existing education plan in physical training for enlisted and short term contracted soldier. Focus:
  - An elitist attitude in the individual soldier.
  - Resistance training before endurance training.
  - Core-/stability training.
  - Nutrition in general.
  - Micro training sessions (15 min.) anytime – anywhere.
  - Hand-to-hand fighting techniques.
- Concept 3:** The Danish Defence Physical Test.

**2) The Danish Defence Physical Tests**

The combat experiences from Afghanistan, the extreme climatic and ground conditions, the threat level, the physical workload, the individual soldiers pattern of movement and, last but not least, the extent of injuries where parameters which collectively contributed to development of the Danish Defence Physical Tests (see specific poster).

The main purpose for the tests is to serve as a guideline by determine ones physical level and hereby in the physical training to keep focus and improve ones weak points.

**Anaerobic, Aerobic & functional tests.**

- The ability to provide oxygen for the working muscles during long tactical patrols.
- The ability to tolerate blood lactate and repeatedly move from A to B with high intensity e.g. during a fire fight.

Aim of the test is to estimate anaerobic capacity and to determine maximal aerobic power with and without equipments.

**Strength assessment**

- Requirements for the soldiers pattern of movement with major work load in the form of equipment which reflect:
  - Kneeling down on left/right knee to assume a position.
  - Push or pull one self to a bench, a vehicle, a hole, a wall, a window etc.
  - Lift a large and heavy object from the ground e.g. a wounded comrade.

**Core/- stability test**

- By improving mobility, strength in core and hereby general stability, the soldier will obtain secure and stronger lift, longer endurance in given and certain positions and movements thus less risk of injuries.



**2a) Basic Physical Tests**

- Basic physical conditions are tested once a year. Aerobic conditions are tested by running, walking or bicycling a given distance in accordance to ones age. The employee strength assessments are furthermore tested by completing a basic physical strength test by doing a number of push-ups, sit-ups and back-extensions.
- The employee has to honour the criteria stated in these test and the result is an evidence of the employees basic aerobic and strength conditions.
- The employee must pass the basic physical tests in order to qualify for international operations.



## Part-time “Basic course for military trainers”

- An educational programme in the field of sport and training

**Magnhild Skare**

The Norwegian School of Sport Sciences, Defence Institute

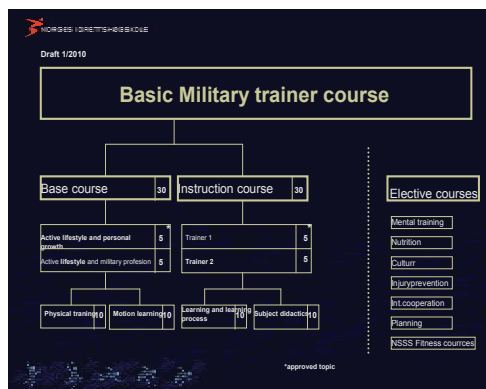
### Background

The Norwegian School of Sport Sciences, Defence Institute is in the process of establishing a part-time “Basic course for military trainers.” The first part of this is planned to be offered in autumn 2011. This study should be relevant for military assignments while at the same time meeting the need for qualified trainers to the compulsory physical education programme: Body, movement and energy (BME) in the Norwegian Armed Forces. The goal must be seen together with the goals for the broader field of “sport and training” that BME is a part of. The focus here is on human movement across a broad field of expertise and processes tied to physical activity and exercise that in the end should generate sturdy soldiers who live an active life. The education program is at the college level and can be used as a part of a bachelor’s degree.



### The main subjects

The programme will be an interdisciplinary scientific study. The plan is to include a study of exercise physiology, - biomechanics, - psychology, roles in coaching, methods and principles of training. These subjects will be divided into two separate parts with a joint subject as an introduction. Every subject will give from five to 10 credits. A total of 60 credits will be offered in addition to some five-credit electives.



### Aim

The main objective of this study is to increase knowledge and skills for the trainer in a military unit with the responsibility of a theoretical and practical education in physical education.

The emphasis in the study is to educate the trainer in subjects related to exercise and movement activities that expand the soldier’s ability to solve their assignments in the field while simultaneously taking care of their health, welfare and well-being.



### Administrative

Admission requirements are the same as the minimum requirements for Higher Education Entrance Qualification in Norway. The study will be held in Oslo as weekend sessions with highly qualified instructors.

The academic year is divided into semesters:

Autumn: August-December  
Spring: January-June

Each subject will lead to an exam.

### Acknowledgements

Photo: The Norwegian Defence Media Centre

# Body, Movement and Energy; The compulsory physical education program in the Norwegian Armed Forces

Magnhild Skare & May Lena Berg Nymoen  
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## Introduction

Body, Movement and Energy (KBE) replaced "Physical fostering" as a subject from 01.01.08. This new subject is the educational part in the field "Sport and Exercise" in the Military, and is meant to be a mandatory part of all military education.

The changes that have been made in the subject and the field reflect the transitional period from a traditional static invasion defense force, with foundation in a dualistic human perspective, to a flexible expeditionary defense based force, grounded on a more integrated holistic human perspective. The changes are implemented in acknowledgment that the body of a soldier is more than *it*, the body is also something we *are* and *do*. Due to this fact the subject KBE is now to a greater extent than before based on a multidisciplinary scientific concept of knowledge, where the central approach is the military context. This means that the subject KBE moves away from a strong physical focus to a broader perspective that focuses on active lifestyle as an important part of the formation of the military profession. The education in KBE is on a far with college level. The Norwegian School of Sport Sciences Defence Institute (NIH/F) as a part of The Norwegian Defence University College (NDUC) is the competent authority with the subject responsibility for KBE.

## Goals for KBE

The goal for KBE must be seen together with the goals for the field "Sport and Exercise". This field and its arena focuses on human movement and deals with a broad field of expertise and processes tied to physical activity and exercise that at the end should contribute to operational soldiers. The main goal for KBE is therefore to generate sturdy soldiers that exercise regularly and have an overall active lifestyle.

Priority is given to exercise- and movement activities that expand the soldier's ability to operate in a military operational theatre or an area of military/civilian conflict whilst at the same time focusing on health, welfare and the well being of the soldiers.



## Basic soldier training (GSU)

The Norwegian Defence University College offers today together with the branches of the military services a total of 15 credits distributed across three subjects that each gives 5 credits; KBE, Law- and armed force (JUMA) and Ethics- and armed force (EMA).

The subject KBE related to the basic soldier training (module: "Active lifestyle and personal development") is intended to start a personal growth and learning process that will lead to good exercise habits and a lifelong commitment to an active lifestyle in addition to sturdy soldiers.

The level of education is a basic understanding of the concept around body, movement and energy, and to understand the connection among these three. The every day life in the military is expected to be an integrated part of the subject KBE in the future. Meaning that military practice training, pack marches and life in the barracks all should be a foundation for reflection and consciousness development.

## Future work

The subject KBE was first introduced as part of the basic soldier training in 2008. The plan is to start the subject at basic officer candidate school (GBU) during 2009. The curriculum will then be adjusted to fit the goals for this education. The subject has been introduced to all three of the War academies (GOU). As part of this process the subject "Sport and exercise" in GOU has been given 12-15 credits over a period of 3 years, while the curriculum is under reconsideration. Today it looks like it will be established as in-depth studies for the expert officer education program (VOU) with links to the topic.



## Basic officer candidate school (GBU)

The subject KBE related to active lifestyle is the same as for GSU (module: "Active lifestyle and personal development"). In addition to this the officer cadets offered another module in didactic exercise- and movement knowledge (module: "Exercise and movement didactic"). In this module the officer cadets are will be educated so they can make plans for, and lead the exercise- and movement activities for, different groups where the goal could be performance-, health-, or recreation related. To optimize the return on activity at this level the officer cadets should be able to see the overall picture in the activity context among the physiological, mental and social aspects of the target group.

## War academy (GOU) and staff college (VOU)

The subject KBE has not yet been formally introduced to the two aspects of higher education (GOU and VOU). Curricula are under development and the work is in progress between NDUC, NIH/F and the three academies.

KBE related to GOU is supposed to be an integrated part of the development of the officer and give the officer opportunities for a multidisciplinary scientific understanding. The officer should through the education acquire the ability to understand the subject's place and relevance in his/her military branch. Circumstances that restrain and promote the soldiers sturdiness to put up with the operational challenges in military operations should be a central topic. The subject goals at this level are also to give space for the officer to continue to pursue personal growth, stick to regular physical activity and keep up a healthy lifestyle.

The intention with KBE related to VOU is to make top level leaders aware of the organisation for body, movement and energy related topics to the development of a military achievement culture. The subject at this level focuses on the active lifestyle perspective as an integrated part of the military professional identity.

## Acknowledgments

Former subject co-ordinator Anders McD Sookermary, Norwegian School of Sport Sciences Defence Institute

Photo: The Norwegian Defence Media Centre.

## Sports shooting management

Nina Rones & Hanne Güssow Thoresen

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

### Introduction

This study was introduced in the autumn of 2004, and is carried out through a part-time study. The study shall contribute in strengthening the sport of shooting by increasing the skills of those engaged. It is adapted for students with shooting experience such as officers from the armed forces, police personnel, in addition to leaders and administrators in unions and clubs, shooting instructors and trainers.



### Objectives

The main objective for the study is to increase the knowledge and skills of students interested in sports shooting, with an emphasis on the Olympic programmes for rifles, pistols and shotguns. The main subjects are sports shooting from an historic perspective, range officer skills, teaching psychology and roles for the shooting coach. The study also covers international military shooting within the "Conseil International du Sport Militaire" and the Norwegian national rifle programmes. The total study gives 60 ECTS credits within a time frame of two years.



### Main subjects

#### Part 1

ISD 110 - Norwegian sport shooting from an historic perspective, as well as its importance and international relations.

ISD 120 - Instruction and training of shooters, methods and military shooting competitions.

ISD 130 - Training programmes for shooters, educational psychology and range officer skills.

#### Part 2

ISD 140 - The training and development of international match shooters.

ISD 150 - Technical, environmental and safety requirements in shooting sports.

ISD 160 - The writing and presenting of a thesis and the arranging of a shooting competition.

### Main activities

The students need to attend a total of 18 long weekends filled with leadership tasks and shooting activity in which certain training objectives have to be met.

1. Safety codes, regulations, weapons, testing of ammunition, environmental and lead pollution; shooting with a miniature rifle and a small calibre pistol.
2. Leadership training, evaluation methodology and weapons training for full calibre rifles and pistols.
3. International civilian cooperation within shooting sports and its social importance; safety regulations and shotgun shooting.
4. Military weapons and safety regulations; national and international military shooting competition.
5. Computer target systems for championship management; arrangement technique and leadership tasks; Olympic shooting programmes.
6. Anti-doping work; formulation of training objectives in shooting and construction of training programmes; shooting sports for the disabled.
7. Shooting under cold weather conditions and participation in a winter field shooting competition.
8. Mental training; pedagogics and didactics; demands and principles for shooting leadership.
9. Match shooting with full calibre rifle; planning, preparation and accomplishment of field shooting with pistol; evaluation and closure.
10. Official opening; techniques and didactics for practical pistol shooting.
11. Leadership tasks, field shooting with pistol and international military match shooting with a full calibre rifle.
12. Leadership and principles of instruction for the shooting coach; leadership tasks in full calibre rifle shooting; biathlon shooting.
13. Technical, environmental and security requirements for outdoor shooting ranges; Olympic rifle shooting.
14. Arrangement techniques; Olympic silhouette shooting; organization of electronic targeting; use of simulators in the training of shooters.
15. The Norwegian Benchrest Shooting Union and Air Field Target; mental techniques and match shooting; international pistol programmes.
16. Shooting education at The Norwegian College of Elite Sport; pedagogics and didactics.
17. Planning and preparation of shooting events; management of first-year student's shooting exam with evaluation.
18. Presentation of study; evaluation and closure.



### Exams

Each of the subjects are rounded off with a four hour written exam. The last subject is finished with a written individual paper and an oral presentation. The students have to pass leadership tasks and proficiency tests in shooting.

### Acknowledgements

Photos: Fotograf Birdy/www.heneide.no

# Advice and consulting within the field of training and exercise - Squadron 4 - Armoured Battalion

Hilde Orderud

The Norwegian Defence University College/Norwegian School of Sport Sciences, Defence Institute

## Introduction

The Squadron Commander of Squadron 4 (Esk 4) of the Armoured Battalion (PBN) requested a need for advice and consulting within the field of training and exercise during the spring of 2010 to Defence Institute at the Norwegian School of Sport Sciences (NSS/DI). The armoured battalion has a tradition for being the "fist" of the army in the northern part of Norway. The battalion's armour protection, great firepower and good mobility skills makes it exceptional for offensive warfare in which the tempo is critical for success. Squadron 4 is one of two mechanized infantry squadrons in the armoured battalion. It is from tough terrain and urban areas that the squadron gets its strength in combination with infantry soldiers and armoured vehicles operating together. Each platoon consists of four squads equipped with the armoured personnel carrier CV9030N. Except for the CV90's 30mm stabilized automatic cannon, the squad is equipped with machine guns and antitank capacity. According to the rotation plan, Squadron 4 is planned to deploy to Afghanistan in November 2011.



## Need

The Commander of Squadron 4 requested help to "train the trainer" in order to increase the skills of the officers in the squadron in relation to training and exercise. He also hopes that this will contribute to a change in the culture and understanding as far as the importance of the safeguarding of one's own health among the officers of the squadron. He also needed a recommendation for which physical tests to perform, in addition to the standardized one. The reason was that he had a desire to find a better way to select the personnel for his unit. After he got the results of the physical tests, he needed feedback on how to differentiate the soldiers into training groups, especially in terms of aerobic exercise. There was also a need for some advice on how to properly register injuries and carry out some injury prevention work. The main reason for the request to NSS/DI was to give some quality assurance for the training and exercise done in Squadron 4.



## Deliveries to Squadron 4 from NSS/DI

NSS/DI has contributed to the recommendation of which physical tests to perform. The imposed standardized tests: a 3,000 metre run, push-ups, sit-ups and pull-ups. The following tests were also recommended: chest press, long jump without running, throwing the medicine ball and a "beep-test." We also recommended a run with a backpack after the initial period. After receiving the results of the 3,000 metre run, we separated the soldiers into different training groups as follows: > 14 min, 12-14 min, < 12 min. A training program of 14 weeks was produced for each of the groups. The squadron has also received programs for the ankles, Achilles tendon, knees, back and shoulder. In addition, they have also received a booklet with "combat conditioning." There has also some time given to consulting and advice by phone because of overuse injuries early in the initial training period.

Test	Equipment	Test procedure	Equipment	Test procedure
3000m løp				
Push-ups				
Sit-ups				
Pull-ups				



## Further follow-up

A further follow-up will be to create an injury registration regime in the unit, and based on these results, to develop an injury prevention concept. We also have the intention of bringing qualified personnel to the unit to educate the officers in the unit, e.g. within the fields of strength and aerobic training. In combination with this, it would be desirable to conduct a session to motivate the officers for further activities and training. The follow-up is continuing and done relative to requests from the Commander of Squadron 4.

## Acknowledgements

The Norwegian Defence Media Centre  
Exercise Organizer

# “Aktivitetskampen” An activity campaign among military units

Jon Kirknes

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

## Introduction

The Norwegian Defence Forces attach great importance to promoting an active lifestyle among all military personnel. Participation in military training and physical activity in general gives the personnel increased physical standards, while at the same time supporting the production of capable troops.

## Authority

National and international military sports, including the development of championships, training, policy, rules and regulation, are led by the Defence Institute at the Norwegian School of Sport Sciences (NSSS/DI) in close cooperation with the Olympic training centre and several national sports federations. The institute reports its military duties to the chief of the Norwegian Defence University College.

## Rules of the activity battle

The overall goal is to inspire and motivate every military and civilian employee to become more active and to increase knowledge about the importance of physical fitness in regard to professional demands and their health situation.

- It was possible to register all types of physical activity over 30 min. (counting both activities done at work and during spare time).
- If you accomplish over three (3) 30 min. activities per week, then you count for your unit.

The head of the Norwegian Defence Forces sets up different awards for the most active:

- “big units” of over 100 people
- “small units” of less than 100 people

NSSS/DI developed its own website for the registration

## Results

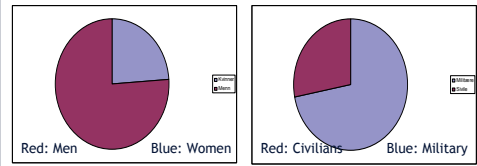
4,271 employees participated from 122 units. Together, they registered 126,473 activity units (30 minutes or more).

On an individual basis, NSSS/DI draws 10 persons every week who have been active more than three (3) times a week.

Total amount of registered activities



Who Participated?



The most active unit:  
“big units”

Top 10 Aktivitetsenheter – Større enheter



“small units”

Top 10 Aktivitetsenheter – Små enheter



## Period

The activity battle is a competition among the units in the Norwegian Defence Forces. Which unit wants to create the most active personnel from Feb. 1 to May 1, 2010?

## References

Project leader, Major Jon Kirknes, NSSS/DI

## Project: "Jenter i form" Preparing females for the military selection process

Jon Kirknes

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

### Introduction

The physical demands that the military makes of its personnel have a background in the "test sample - 1979" and "test sample - 1994." The requirements have repeatedly been adjusted to be in line with social development, and has used "war claims" as a reference.

The first women who entered the armed forces had to meet the same physical requirements as the men. This has been changed, and the requirement for women and men to have a basic officer school education is currently 15 and 14 minutes, respectively, in a 3,000 metre race.

Figures from the public record selection for 2007 showed that 50% of girls failed to pass the physical entrance examination, while only 13% of boys failed to pass. This reinforces previous experiences which demonstrate that there are more women than men who fail the physical tests, with a 50% failure rate among the women definitely something to worry about. As a result, the Norwegian School of Sport Sciences, Defence Institute was ordered to create the project "Girls in shape."



### Measurements and results

Lessons learned from sports shows that contemporary knowledge and personal attention have a significant effect when it comes to the influence of a motivation about exercise. All information about training and testing requirements were therefore updated on [www.mil.no](http://www.mil.no).

Separate training sites were created especially for girls, and information about requirements and training tips were sent to over 7,000 girls born in 1989. After that, they printed out journals that were sent to over 10,000 girls from the Defence Media Centre's database. Girl journals were also the advertising inserts in the youth magazines "Mag" and "Topp," and there was also a series of education fairs and school visits.

NSSS/DI established a map of Norway on the Internet, which gave all the sports contact and professional training personnel within the armed forces. This information provided personal support for the current group of candidates, and a training camp was held for girls at the NIH and for female applicants at the GBU. Here, the girls' were given information and lectures on endurance and strength training that were practical such as how to train to perform at admission, advice on the intensity of management, running technique, concrete dietary advice, a review of tactical and mental preparation, etc. There were also training sessions led by prominent sportsmen and sportswomen from the armed forces, and the applicants were also given military trainers.

The measures were carried out from January to July of 2008. The result of FOS 2008 shows that **only 12% of the girls failed**. The Norwegian School of Sport Sciences, DI has not analysed whether the measures have been significant or whether it was the social changes or the introduction of general ability level 5 which accounted for the good results.

### Project goal

The objective was to secure a significantly lower failure rate without sacrificing the motivation for physical fitness in general.

The Norwegian School of Sport Sciences, DI had to:

- Consider what measures might be appropriate to improve the girls' endurance and their ability to meet the requirements for the 3,000 metre race.
- Consider the measures in the context of a strategic plan for sports and exercise from 2006-2010, together with its goal of influencing an active lifestyle and good physical shape for the military in general.
- Consider what measures can help to generate publicity and marketing for the project "Girls in shape."
- Evaluate the agencies and actors that can externally contribute to an increased flow of information about the measures.



### Work group

The Norwegian School of Sport Sciences, DI established a working group consisting of representatives from The Norwegian School of Sport Sciences, Defence Institute, the Conscription Administration, the Norwegian Defence Media Centre, the War Academies and FOS. The working group had to develop practical measures that would contribute to improving girls' physical conditioning in general and better endurance for girls who are running for admission (GBU, 2008) in particular.

There were three formal meetings and the participants had regular communication via e-mail.

The head of the working group also briefed the steering group, the Defence Minister and the Chief of Defence about the progress.



### Acknowledgements

Photos: CISM, The Norwegian Defence Media Centre

## Institute series: "Moving soldiers - Soldaten i bevegelse"

Anders McDonald Sookermy & Lene Røe

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

### Introduction

Moving Soldiers - Soldaten i bevegelse is a new institute series that aims to provide an arena for interdisciplinary thinking and debate within the various fields of interest of the Norwegian School of Sport Sciences, Defence Institute.

### Content

The content of the series will be based on the core performance areas of the Institute which are: research, education and the communication of knowledge about human bodily training and performance within a military context. As such, "Moving Soldiers" is the military equivalent of the Norwegian School of Sport Sciences' journal, "Moving Bodies," which is dedicated to the communication of knowledge about sport and the bodily movement of humans.

### Aim

The series is meant to be a forum which reflects some of the activity taking place at, and in connection with, the Defence Institute. Thus, over time, "Moving Soldiers" will present a variety of ongoing research and development projects, conference and symposium presentations, seminar and workshop reports and invited contributions from scholars and military personnel who have a connection to the Institute's field of interest in different ways. As a result, "Moving Soldiers" will have both thematic issues and editions that are somewhat more diverse in their content.

The research and development program at the Defence Institute covers the natural and social sciences as well as the humanities. Consequently, "Moving Soldiers" will truly be an interdisciplinary series. Being situated within a university society, the Institute conducts its professional activities in accordance with recognized scientific, pedagogical and ethical principles. In compliance, "Moving Soldiers" will seek to maintain a qualitative standard that can be valued accordingly.

### Editor and publisher

#### Editor

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Lene Røe - lene.roe@nih.no

#### Publisher

The Norwegian Defence University College and the Norwegian School of Sport Sciences

First edition MS 01/10

### *Gender and military issues- A categorized bibliography*

This bibliography gives an extensive interdisciplinary overview of studies on gender issues in a military context. It covers more than 2,500 references of internationally reviewed articles, reports, books, and theses from both military and non-military institutions. The references have been categorized into themes such as "Masculinities", "Gender, Sexual Harassment and Abuse in a Military Context", "Gender, Physical and Psychological Ability" and "Recruitment of Women". Hence, this represents an essential tool for military leaders and scholars interested in gender issues in a military context.

The bibliography has been funded by The Norwegian Defence University College (FHS) - The Gender Project and the Norwegian Defence Research Establishment (FFI).



To place an order: fi-publikasjoner@nih.no

# Training shoes for military personnel

**Rune Hageberg &  
Anders McD Sookermary**  
Norwegian School of Sport Sciences, Defence institute

## Introduction

The Norwegian Armed Forces have focus on physical training and fitness. To motivate soldiers to carry out physical activity, it is important that they are equipped with good quality training shoes. Therefore, the Norwegian Armed Forces support them all with both outdoor and indoor training shoes. The outdoor shoe is supposed to be used primarily for running on both tarmac and cross-country, with the indoor shoe mainly for different types of ball games. To prevent injuries, especially to the knees, soldiers can choose an outdoor shoe that has either normal- or overpronation.

To make sure that the training shoes are of good quality, the Norwegian Armed Forces Logistics Organization and the Norwegian School of Sport Sciences Defence institute carried out a test of shoes from three different brands that were accepted to participate in the tender procedure.

## Factors that were evaluated

The test persons were asked to evaluate the following factors on a scale from 1 to 6, in which 6 was best:

- Does the shoe fit your foot (toe, heel, in general)?
- Running feeling (weight, ventilation, etc)?
- Shock absorption?
- Attachment between shoe and basement?
- Stability?
- Wear resistance?
- Overall feeling?

At the end of the test period, the test persons gave the shoes an overall mark from 1 to 6, and they were also asked to rank the shoes from 1 to 3, in which 1 was the shoe that they preferred. They also had the opportunity to hand in a written explanation of their final marks.

## Methods and results in quality testing

Training shoes from three brands were tested (see pictures). Every test person tested all three brands.

Nineteen men and 15 women, running three times or more per week, tested the outdoor training shoes, while 17 male and 13 female students at the Norwegian School of Sport Sciences tested indoor training shoes.

Every test person tested every shoe at least eight times. After each test, the test persons handed in a form with their personal evaluation of the shoes. Approximately 10 factors were evaluated on a scale from 1 to 6 (see list).

The outdoor shoes were tested during running and fast walking on various surfaces/conditions such as tarmac, treadmill, cross-country and snow. The indoor shoes were tested during different ball games such as football, handball, basketball and indoor hockey.

The tests and analysis were conducted during the winter of 2009. Based on the results from this test, and the price, training shoes from Asics were selected (see picture). For more information about methods and results, send an email to [rune.hageberg@nih.no](mailto:rune.hageberg@nih.no).

### Outdoor shoe

### Indoor shoe



Adidas Respons 17



Adidas adiCORE



New Balance Stability

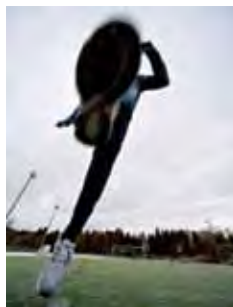


New Balance 778

## Testing in action

More information about the project (in Norwegian) can be found in an article on the following web page:

[http://www.fofo.no/Skor+seg+for+deg\\_b7C\\_w7fU4u.ips?template=master](http://www.fofo.no/Skor+seg+for+deg_b7C_w7fU4u.ips?template=master)



## Acknowledgements

The study was financed by The Norwegian Defence University College and The Norwegian Armed Forces Logistics Organization.

Photo of runner: Arne Flaaten from "Forsvarets Forum", the magazine of the Norwegian Armed Forces.  
Photo of shoes: Rune Hageberg



Asics Gel-Trabuco



Asics Gel-Power Play



## Training clothes for military personnel

Rune Hageberg &  
Anders McD Sookermany  
Norwegian School of Sport Sciences, Defence institute

### Introduction

The Norwegian Armed Forces have focus on physical activity and fitness. To motivate soldiers to carry out physical activity, it is important that they are equipped with good quality training clothes. Therefore, the Norwegian Armed Forces support them all with training clothes for both outdoor, indoor and swimming activities.

Outdoor training clothes are supposed to be used for activities under different types of weather and climate, while indoor training clothes are used for both different types of ball games and strength training.

To make sure that the training clothes are of good quality, the Norwegian Armed Forces Logistics Organization and the Norwegian School of Sport Sciences Defence institute will carry out a test of the training clothes that will be accepted to participate in the tender procedure. Based on both the results from this test, and the price, training clothes for the Norwegian Armed Forces will be selected. The invitation for tenders is estimated to be sent out in November 2010. The tests and analyses of the training clothes are estimated to be performed in January and February of 2011.



### Methods in quality testing

Training clothes will be separated into two levels (see list). Level 1 clothes will be handed out to all soldiers, whereas Level 2 clothes will be given to soldiers at the officers' training school, war college and different special forces.

About 10 men and women will test the Level 1 clothes, and every test person will test clothes from all the brands that will be accepted to take part in the tender procedure. A small group of test persons will test Level 2 clothes as well.

Test persons will be men and women with a lot of long experience in using training clothes for endurance activities, ball games and swimming, and who exercise at least five times per week.

All 15 test persons will test all Level 1 clothes at least eight times. After each test, the test persons will hand in a form with their personal evaluation of the clothes. Factors will be evaluated on a scale from 1 to 10 (see list). Outdoor clothes will be tested during running, biking and cross-country skiing, indoor clothes during ball games and strength training.

### List of clothes

#### Level 1 training clothes

- Technical jacket
- Technical trousers
- Shorts
- Technical hat
- Gloves for cross-country skiing
- Socks for running
- Swimming clothes

#### Level 2 training clothes

- Technical t-shirt
- Tights with long legs
- Technical vest
- Technical trousers for biking
- Technical clothes for cross-country skiing
- Buff
- Socks for cross-country skiing

### Factors that will be evaluated

The test persons will be asked to evaluate various factors for different clothes (list under construction). The evaluation will be on a scale from 1 to 10, in which 10 is best:

- General quality
- Ergonomic shape
- Light and soft materials
- Windproof and breathable materials
- Quick drying materials
- Reflective prints
- Pockets and practical details
- Quality under different conditions (weather and climate)
- Quality under different activities

At the end of the test period, the test persons will give the clothes an overall mark from 1 to 10. They will also be asked to rank the clothes, and they will have an opportunity to hand in a written explanation of their final marks.



### Acknowledgements

The study will be financed by The Norwegian Armed Forces Logistics Organization  
Photos: Norwegian Armed Forces media archives



## ■ Research and development ■

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Research and development



## Military identities, body and gender: A sociological analysis of cultures within the Norwegian Armed Forces

Nina Rones and Kari Fasting

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

### Introduction

It has been debated whether one or more warrior cultures is developing in the Norwegian Armed Forces. If so, what is a warrior culture? Why does such a development occur? Is this something to worry about? The Norwegian Defence University College has published a book on this debate entitled "Warrior Culture in a Peace Nation" (Edström, Lunde & Haaland Matlary, 2009) In this book, several of the authors focus on the fact that there is a lack of empirical knowledge about Norwegian military cultures and identities. This project intends to partially fill this void.



### Research Questions

- 1) What characterizes a selection of Norwegian military cultures?
- 2) How are identity, body and gender constructed in selected military cultures/professions?



### Theory

Theoretically, this study will be based on Connell's (1993) theory of a hierarchical system of masculinities and femininities. What is important in this theory is that masculinity and femininity are social constructions and that hegemonic masculinity is always constructed in relation to various subordinate masculinities, as well as in relation to various femininities. War and the military plays an important role in this construction.

*The transformation of a body into a "soldier's body" has an unmistakable gendered meaning. Through the soldiering "body project" (Connell 1995, 50), men's bodies become visibly different from those of women. In this sense, the soldier's embodiment plays a central role in the social construction of polarized gender identities and hierarchal gender regimes (Connell, 1987) (Sasson-Levy, 2008 p. 305).*

If this is true, it could be assumed that the transformation to a partially professionalized intervention defence in which participation can be considered a "free" choice for those who meet the selection criteria, enabling masculine self actualization, construction of identity and ratings of men in a different way than the old invasion defence, which was based on a shorter mass training of all men (and some women). This has to have consequences for the (re)construction of military cultures.



### Methods

To answer the questions of research, a multi-method design will be used consisting of field studies/(participatory) observation, qualitative interviews and document analysis.

The field studies/(participatory) observation will focus on the socialization into: 1) common and 2) profession-specific culture. The selected professions are planned to be marksmen and medics.

A total of 25-30 qualitative interviews will be sought with both newly qualified and experienced marksmen and medics.

The document analysis seeks insights into organizational processes and more or less conscious aspects of military cultures, including the prevailing perspectives and intentions that define and shape them. This will consist of white papers, doctrines, regulations, directives, curricula, educational plans, reports, recruitment materials and websites.



### Aim

The aims of this research are to study which identities selected military cultures create, and how the cultures are (re)constructed to create opportunities for wanted identities to be created, e.g. by introducing restrictions and barriers for some women and men.

### Acknowledgements & Literature

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Sasson-Levy, O. (2008). Individual Bodies, Collective State Interests: The Case of Israeli Combat Soldiers. *Men and Masculinities*. Volume 10. No. 3, pp. 296-321.

Photos: The Norwegian Defence Media Centre

## The officer candidate school study - joint admission and selection (FOS) 2010

Stornæs, Annett V., Ronnes, Nina & Sookermany, Anders McD.

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

### Introduction

In the "White Paper", St. meld. 36 (2006-2007) "Increased recruitment of women into the armed forces", it is pointed out that the government wants "a modern and flexible defence that can handle a wide range of tasks. Greater diversity in the organization, including a better gender balance, will even more increase the ability of the armed forces to meet security challenges, both nationally and internationally" (St. meld 36 (2006-2007), p. 5). This "White Paper" proposes to implement research on cohorts in the Norwegian Armed Forces as one initiative to meet these challenges. Due to this "White Paper", St. meld. 36 (2006-2007), the Norwegian Defence Research Establishment (FFI) is now researching cohorts in the armed forces.

The Norwegian School of Sport Sciences, Defence institute, has been assigned to the cohort project to contribute with knowledge from their field of science on this interdisciplinary project.

### Purpose

In order to increase diversity within the Norwegian Armed Forces, it seems necessary to find out more about the men and women who choose to serve in the armed forces and what attracts and motivates them. The aim of this project is to find out more about the men and women who have applied for the officer candidate schools and the military academies of Norway. We seek to find out what characterizes these men and women and why they have applied to these schools. Furthermore, what make some of them leave and some of them remain in the Norwegian Armed Forces for the long term? The purpose is to further examine factors that may inhibit/exclude and promote/include admission to the officer candidate schools. We will look further into the characteristics (demographic variables, leisure interests, issues related to motivation for the officer candidate school) of the men and women who were admitted and did not choose to start the education and those who were not admitted to the schools in July/August 2010.



### References

St. meld. nr 36 (2006-2007). Økt rekruttering av kvinner til Forsvaret. Oslo: Det Kongelige Forsvarsdepartement.

### Methods

#### Subjects:

All candidates who were at the "joint admission and selection" (FOS) in June/July 2010 were invited to participate in the first part of this study (survey). In the second part of the study (the field study), all candidates and officers from one "platoon" (approx. 48 candidates and 8 officers) from the Army Officers Candidate School were invited to participate.

#### Measurements:

1) Electronic questionnaire. The survey was conducted during the first three days of the selection period (Monday to Wednesday, June 28-30, 2010). It took approximately 30-40 minutes to answer the questionnaire.

2) Field study - observation. The observation part of the study was conducted during the second part of the selection period (July 1-7, 2010).

### Results/Analysis

The preliminary results shows that 1,073 candidates answered the survey (87.8% men and 12.2% women).

The survey and the field study will be analysed during the autumn of 2010, and the results will be published in 2011.

### Future/Additional research

We aim to follow this cohort over a longer period of time to see if we can find some characteristics of the men and women who choose to leave the military and those who choose to remain in the Norwegian Armed Forces.



### Acknowledgements

This study has been funded by The Norwegian Defence Research Establishment (FFI).

Photos: The Norwegian Defence Media Centre. (The photos were taken during the joint admission and selection period (FOS) 2010).

## What do we mean by “functional training?”

Magnhild Skare & Marius Morstad

The Norwegian Defence University College, Norwegian School of Sport Sciences, Defence Institute

### Background

In just a couple of years, *functional training* has become the new “buzzword” in the Armed Forces (Marine Corps Gazette, 2008; Human Performance Program, 2010; The Norwegian Army, 2009; Opedal, 2009) as well as in the physical exercise industry (American College of Sports Medicine, 2010). But what exactly does it mean? This project will seek to find out more about this by exploring the various interpretations and definitions of the term and concepts.



### Different meanings

- The more general use of the term is often related to daily functions.
- In medicine, it is often used together with rehabilitation (The Great Norwegian Encyclopedia, 2010). One definition is that “functional training is training that aims specifically at training a special function and used for muscle disorders.” (Mæhlum, 2010)
- In physical exercise literature, it is often used as a synonym for sport-specific training (Blindheim, 2007.)
- In the armed forces, the term is often used in the context of combat-oriented fitness that is relevant for what the soldiers are experiencing on the battlefield (Shusko, J., 2010; HPP, 2010; The Norwegian Military Academy, 2010).



### Aim

The purpose of this project is to achieve a better grip of how we understand and debate the different terms/concepts of functional training. The first face of the project will be to work out a literature review which will include: a) a description of the historical background for the concept(s) of functional exercise, b) a description of the etymological origin of the terms in use, c) a discussion of the different meanings derived from a and b, and d) explore the possibilities for a new definition.



### Future work

Do our training and exercise programmes meet the demands of our organization? As we see it, the various definitions and diversity of terminology for functional exercise need to be explored more in-depth. Increased knowledge on this subject will not only clarify the understanding of the term, but it is suggested that the training and exercise programmes will be more specific and therefore more relevant in the planning of combat training for our troops.



### References

- 1) Marine Corps Gazette, “*Functional Fitness*”, March, 2008.
- 2) Human Performance Program (HPP), “*Trainer course*”, Navy Seal US, 2010.
- 3) The Norwegian Army, “*Oral statements*”, 2009.
- 4) Opedal, P. S., Inspector General of the Norwegian Army, “*Oral presentation at NSSS, 200.9*”
- 5) American College of Sports Medicine, “*ACSM fitness trend survey*”, 2010
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### Acknowledgements

Photo: The Norwegian Defence Media Centre

# The Cadet Development Study - A longitudinal interdisciplinary study on Norwegian cadets

Anders Aandstad<sup>1</sup>, Anders McD. Sookermany<sup>1</sup> & Reidar Säfvenbom<sup>1,2</sup>

<sup>1</sup> The Norwegian Defence University College/Norwegian School of Sport Sciences, Defence Institute

<sup>2</sup> Norwegian School of Sport Sciences, Department of Physical Education

## Introduction

Approximately 150 cadets graduate every year from the Norwegian Officer Academies, and receive a bachelor's degree in military subjects after three years of studies. The Cadets receive theoretical lessons and practical sessions in physical education (PE) for all three years. However, the effect of the PE subject (and Officer Academy attendance in general) has been evaluated to a lesser degree.

Hence, the aim of this study is to evaluate the effect of the PE subject, and Academy attendance in general, from an interdisciplinary approach. During the three years of studies, physical fitness tests and self-reported questionnaires will be carried out to evaluate potential changes in physical fitness, motivation for being physically active, officer skills and several other aspects that are believed to be important factors in developing competent officers.

The Cadet Development Study is a cooperation between the Norwegian School of Sport Sciences, Defence Institute and the three Officer Academies in Norway: the Air Force Academy, the War Academy and the Naval Academy. The data gathering started in 2007, and will end in 2011.



## Methods continue

**Muscular strength** is measured from the performance of sit-ups, push-ups, pull-ups, vertical jump and the 6 kg medicine ball throw.

**Height and weight** are measured to the nearest 0.5 cm and 0.1 kg.

**Physical activity** is measured objectively by activity monitors (Sensewear Armband Pro<sup>®</sup>, Bodymedia). Each cadet must wear the monitor for seven consecutive days for a randomly chosen week during each year of studies.

**The risk of cardiovascular disease** is measured once, and blood samples are analysed for cholesterol (LDL and HDL), triglycerides, glucose, apolipoproteins and CRP. In addition, blood pressure will also be measured.

### SELF-REPORTING QUESTIONNAIRE

The questionnaire was completed in plenary two weeks after entrance, as well as at the end of the first, second and third (the final) years. The questionnaire consists of approximately 400 single items or questions, representing topics such as :

- Military ability
- Hardiness
- Goal orientation
- Motivational climate
- Self-determination
- Self-efficacy
- Reasons for exercise
- Personality
- Psychological health
- Perception of competence
- Quality of life
- Prosperity at school
- Self-evaluation
- Sensation seeking
- Perfectionism

In addition, the study will collect information on the cadets' grades and service statements, which will be used as dependent variables and act as markers of the officers' capability.

## Methods

### SUBJECTS AND ETHICS

All first-year cadets enrolled in 2007 and 2008 at the Norwegian Air Force Academy, the War Academy and the Naval Academy have been invited to participate in the study (n = 300). The subjects gave their informed written consent prior to participation, and the study has been approved by the Regional Ethical Committee and the Norwegian Social Science Data Services.

### PHYSICAL TESTS

All physical fitness tests were carried out within two weeks after entrance and at the end of the first, second and third (the final) years.

Direct **maximal oxygen uptake**, ( $VO_{2max}$ ) is measured on a treadmill, using a stepwise incremental protocol with a constant incline at 5.2%. The initial speed is set individually according to each cadet's performance in a preliminary 3,000 metre test. The speed is increased by one  $km \cdot h^{-1}$  every minute until volitional exhaustion. Exercise tolerance time, maximal heart rate, respiratory exchange ratio, blood lactate concentration three minutes post exercise and  $VO_{2max}$  (Oxycon Pro, Erich Jaeger GmbH, Germany) are all measured from the treadmill test.

The percentage of **body fat** is estimated from bioimpedance measurements (Quantum II, RJL Systems, USA), using the Weight Manager equation.



## Time frames and outcomes

The final data gathering will end in spring 2011.

Our goal is to publish several internationally peer-reviewed papers from the project, both interdisciplinary and sub-disciplinary. Results from the project will also be presented in several master's theses.

## Acknowledgements

The study has been funded by the Norwegian School of Sport Science, Defence Institute, The Norwegian Air Force Academy, The Norwegian Naval Academy and the Norwegian War Academy.

Photos: The Norwegian Defence Media Centre

# Health promotion in Swedish Armed Forces

## - a salutogenic strategy for good health and high performance

Jennie Andr en, Swedish Armed Forces Sports Centre

### Introduction

Health promotion (WHO definition): *“The process of enabling people to increase control over, and to improve, their health and thereby enabling people lead an active productive life towards wellbeing and quality of life”*

Swedish Armed Forces (SAF) are skilled and well organized for handling risks of illness and injuries related to work. However, it is unclear what health promotion contents, responsibility and skills needed. In particular there is a confusion of different concepts and ideas in the governing documents of the organization.

The project presented below proposes a strategy and implementation plan for developing the process of health promotion within the organization. The final purpose is to support the SAF to fulfil strategic goals.

### Purpose

The purpose of this project was to develop a plan for health promotion in SAF that contributes to the fulfilment of documented strategic goals.



### Methods

The work was organized as a project ordered by the Commander of the Training and Procurement Directorate. The project members were to represent different perspectives of health: Health Care, Human Resource, Sports and Fitness, Leadership and Military commanders, led by a project manager. Supervising the project manager was a steering group consisting of commanders from units involved in the project. Also, a network for references was set up, including unit commanders from the three different branches of the SAF, the manager of the Human Resources Centre, the Chief of staff of the Nordic Battle Group, the Head of the Department of Work Environment and union representatives.

The project utilized a learning process facilitated by the project manager. A literary review was undertaken to elucidate research done in the field, which contributed to the knowledge and experiences discussed by the project. The heterogenic approach was used in order to achieve a holistic and creative health promotion program adapted to the specific organization and culture of SAF.

The process was structured by working through the following objectives:

- Analyse the strategic documents to identify activities and processes for health promotion
- Find joint definitions for the SAF within the health field
- Identify health promotion actors within the organization
- Describe benefits from health promotion for the Training and Procurement Directorate and the Operations Directorate
- Suggest and identify methods for evaluation of impact and outcome of the suggested program
- Describe and identify structure and guidelines
- Suggest a training program to assure required competence

### Results



The model above is illustrating results achieved according to the objectives presented. The white areas are work still needed to reach the goal of an implemented SAF health promotion program.

In summary, the following fundamental factors are needed to continue working towards a fully implemented health promotion program:

#### Platform (Predisposition)

- The spoken will of the strategic management of the Armed Forces
- Support in the governing strategic documents

#### Competence

- Health specialist in a strategic position
- Skilled commanders and managers throughout every level
- Health promotion specialists in cooperation

#### Goal-orientation

- Fulfillment of the operation tasks
- Strategy- resources - program components

#### Human development process - the key factors

Participation, enabling, process, shared responsibility

Goal-oriented activities with impact on key operations

#### • Goal fulfillment

– Unit commander owns the task



• Strategy – resources / competence – program components

– Health coordinator responsible for guiding the group of specialists

### Conclusions

The key factors of the results are:

- The process of health promotion is to be owned by the SAF commanders and managers. Increased awareness of the impact of health promotion to achieve set goals is necessary. They also need increased competence of methods to manage these human processes.
- The process needs structure, goal-orientation and evaluation methods for following process as well as results.
- The health promotion program - with a clear salutogenic approach - is to be included in the SAF governing documents and guidelines.

When implemented, the proposed strategy and program, is to be a support for commanders and managers to promote good health as well as high performance.

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# How can we understand the concept of (military) skill?

Anders McD Sookermary

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## Introduction

An essential objective of the ongoing military transformation is to make the armed forces more capable of conducting military operations in a post-Cold War context. There is a widespread understanding within the armed forces community that a *Military Transformation* represents a *paradigmatic* shift when it comes to the use and training of military forces. A slightly different way of looking at this is by viewing the transformation more as a parallel to the "evolutionary" changes we have seen in Western society over the past couple of decades, namely as a change from *modernity*, with its emphasis on universalism, structure and objectivity towards *postmodernity* and its responsiveness towards constructivism, complexity and contextuality. The evidence of these transformational changes are perhaps best seen by witnessing how transnational and national policy documents and military doctrines have adopted this postmodern way of meaning as a basis for military organization as well [1- 8].

Consequently, the military transformation raises a clear dilemma when it comes to the understanding of what constitutes a skillful soldier, and moreover, how we develop such a soldier.

This raises at least three important questions:

- How can we understand the concept of skill in modern versus postmodern military organizations?
- Assuming the soldiers' skills are different in these two forms of organization, what does it mean to say that soldiers are skilled or skillful in these two forms of organization?
- How are these different skills acquired?

## Aim & Method

By discussing these three simple but important questions in alignment with the ongoing military transformation, it is the aim of this paper to outline a typological framework that can work as an epistemological foundation for different skill perspectives. The typology framework is used as a developmental construct that presents theoretical and ideal-type kinds of solutions to the problem addressed. The aim is to present ideal-typical alternatives of how we understand and deal with skill acquisition.

The study has been methodically conducted in a philosophical tradition, using a hermeneutical-phenomenological approach in describing and discussing the consequences of the ongoing military transformation.

The sources are primarily comprised of strategic political and military planning documents and my own experiences from the field of research [6]. Some oral sources such as observations and discussions with various actors in the field also occur, though more as examples for the argumentation than for the purpose of empirical validation.



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## Universalism vs. contextualism?

This presentation starts with sketching the military transformation from a modern towards a postmodern armed forces. The article then uses the Norwegian context to argue for universalism as a modern paradigm versus contextualism being a postmodern one. Against the backdrop of these two paradigms, the article discusses: a) how we can understand [military] skill, b) what it is to be [militarily] skilled, and c) how we acquire [military] skill? In doing so, it will be argued that universalism is strongly connected with the military paradigm of the invasion defence and that contextualism is a much better framework for understanding flexible expeditionary forces. In presenting this viewpoint, the transformative changes seen in the developed Western countries in general and Norway in particular over the past couple of decades or so will be used as an example to frame the hyphenated typologies.

## Findings

**Table 1 - An overview of the typological sketch of the epistemological foundation for how we can understand and debate military skill acquisition.**

	Universalistic epistemology (Invasion defence-based concept)	Contextualistic epistemology (Expeditionary force-based defence concept)
	Modernity (universalism, structure and objectivity)	Postmodernity (constructivism, complexity and contextuality)
Military paradigm	Volume concerning mobilization of forces	Ability-motivated professional military communities of practice
View on the soldiering ethos	Individual submission to authority	Ability to take and display initiative, flexibility and independence
View on human behaviour	A following of rules and maxims	A response to context
View on knowledge as a basis for skill execution	Verbalized knowledge (theory-based)	Habitual knowledge (intuitive and experience-based)
View on the human nature and body	Dualistic (mind and/over body)	Holistic/integrated (living bodies in the world)
View on skill execution	Analytic information processing (based on cognitive and deliberate practice)	Ongoing habitual activity (based on intuitive and experience-based practice)
View on skill performance	Lower levels (rough, general and/or unsuitable)	Higher levels (nuanced, explicit and situated)
View on pedagogical approach for skill acquisition	Scholastic learning (rational/analytical deliberation)	Non-scholastic learning (perceptual and emotional involvement)
View on learning context	Disconnected from real-life practice (i.e. in school and out of theatre training, drills and manoeuvres)	Active practice participation in real-life situations (i.e. in theatre operations)
View on learning	Behavioural change of permanent character	Behavioural change of continual and adaptive character

## Conclusions

It seems plausible to make the argument that the concept of the large and static invasion defence force, which focuses on the mass learning of basic military skills for the male population, was primarily based on a universalistic epistemology. Likewise, the concept of the smaller and flexible expeditionary defence forces, which emphasizes applicable skills for smaller and selected groups, is largely rooted in a contextualistic epistemology.

## Acknowledgements

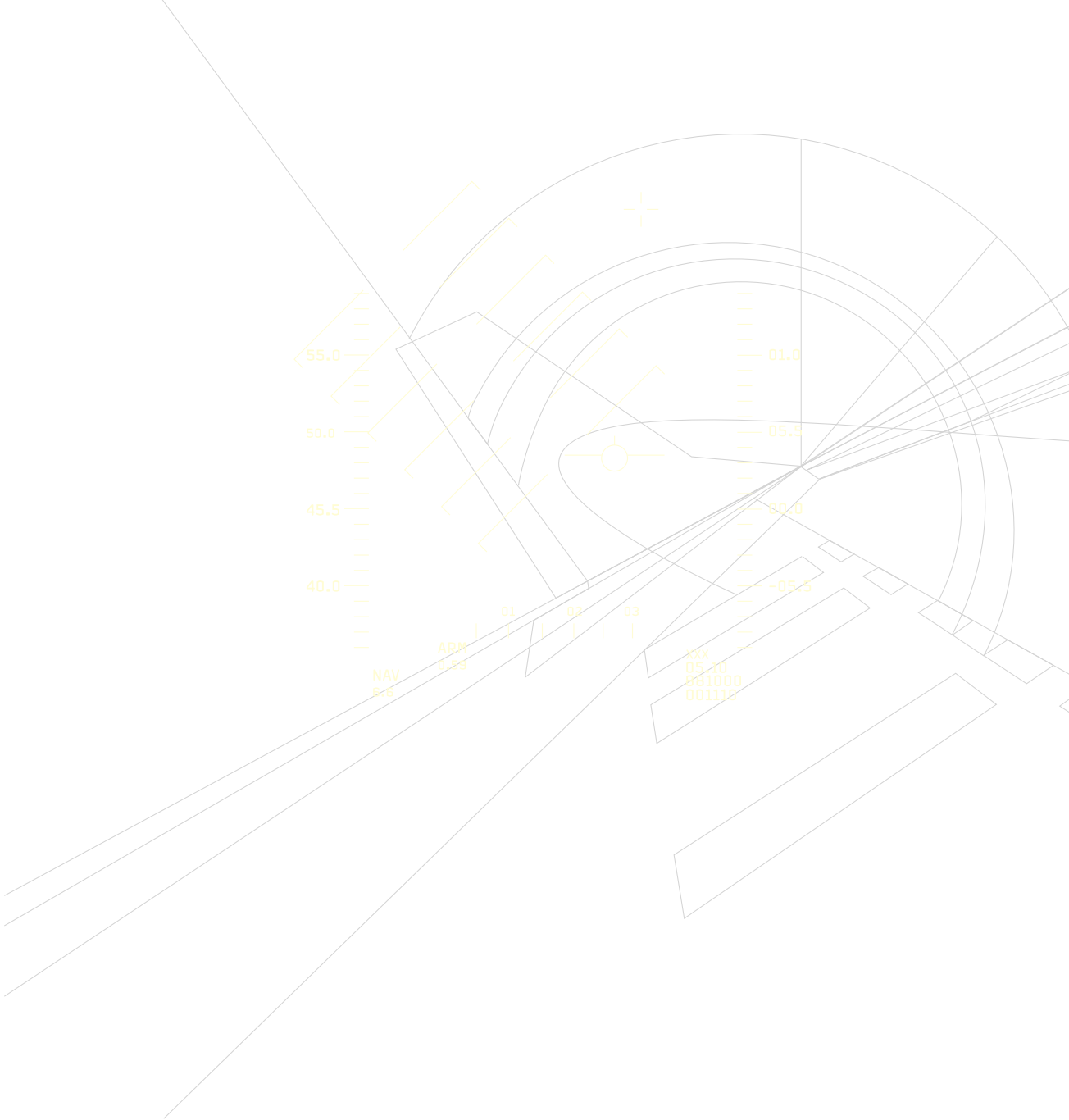
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Photo: Torgeir Haugaard, The Norwegian Defence Media Centre.

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## ■ The Norwegian School of Sport Sciences/ Defence Institute (NSSS/DI) ■

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*Director: Lieutenant Colonel Steinar Høgseth*

**Moving Soldiers – Soldaten i bevegelse** is an institute series that aims to provide an arena for interdisciplinary thinking and debate within the fields of interest of the Norwegian School of Sport Sciences Defence Institute. As such, target groups of the series are primarily military leaders and civilian scholars interested in the development of military capability and the performance of soldiers and their units in an ever changing world. Moving Soldiers will be published three to six times a year. The series is primarily based on Norwegian contributions, but will be published in English whenever the topic being addressed is of interest to a more international audience. The series is also open to contributions from authors other than those affiliated with the Defence Institute. All views expressed in Moving Soldiers are those of the authors, thus the content may not necessarily coincide with the views of the Norwegian School of Sport Sciences Defence Institute.

*Editor: Major Anders McD Sookermany*

Moving Soldiers is an institute series that aims to provide an arena for interdisciplinary thinking and debate on relevant issues related to the development of soldiers and their military units. The series is published by the Norwegian School of Sport Sciences Defence Institute.

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This edition of "Moving Soldiers" is dedicated to the work of the Nordic Military Sport Cooperation, which is a formalized network comprised of the governing body on the field of Sports and Physical Education within the armed forces of Denmark, Finland, Norway and Sweden. The supreme authority of the Nordic cooperation is the annual Nordic Military Sport Leaders Conference (NMSLC), which also host the one day NMSLC Symposium.

The aim of this edition is to correspond the content of the 6th NMSLC Symposium held in Stockholm, Sweden on the 12th of October 2010.

