وزارة الدفاع
MINISTRY OF DEFENCE

CISM

UAE - 2025
CISM
ندوة السيزم الدولية
CISM INTERNATIONAL SYMPOSIUM

CISM INTERNATIONAL SYMPOSIUM 2025
ندوة السيزم الدولية

الجاهزية البدنية والمرونة في القوات المسلحة: **التحديات واستشراف المستقبل**

Physical Readiness and Resilience in the Armed Forces:
Challenges and Foreseeing the Future

ABU DHABI - UAE

19 - 24 أكتوبر October 2025

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Proceedings of the
CISM INTERNATIONAL SYMPOSIUM 2025

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Abu Dhabi

CISM President
Introductory Words

Colonel Nilton Gomes Rolim Filho
CISM President

Dear CISM Family,

It is an honor to address to you at this International Symposium Proceedings Book and welcome to read all contributions at the **CISM International Symposium 2025** (Abu Dhabi- UAE), under the theme **"Physical Readiness and Resilience in the Armed Forces: Challenges and Foreseeing the Future."**

We witnessed the seed sown by UAE founding fathers and their long-term vision that we celebrate with the feeling that nothing is impossible for the United Arab Emirates.

I manifest our sincere gratitude to the **UAE Delegation to CISM** and to your highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, the **Ministry of Defense, who also serves as the Crown Prince of Dubai and Deputy Prime Minister,** for their vision and direction that comes with outstanding support and hospitality in hosting this important CISM event.

This CISM International Symposium is a platform to achieve scientific exchange, share knowledge, implement innovation, and strength collaboration. It brings together military leaders, professionals' researchers, sports scientists, medical experts, and well know academic members from around the world.

CISM scientific family addressed critical topics such as:

• **The impact of climate change on athletic performance and human physiology** in extreme environments;

• **Advancements in sports medicine,** rehabilitation, and mental health for military athletes;

• **Combat fitness and training methodologies** tailored for operational readiness;

• And the **emerging role of technology,** including e-sports and virtual training, in shaping the future of military physical education.

These discussions were not only theoretical but were deeply applied science. We get information how we train, how we recover, how we lead, and how we innovate within our military institutions.

The CISM International Symposium reflects the evolving identity of CISM, sharing values as **knowledge, science, and resilience.** Our motto **Friendship through Sport** includes academic excellence and global cooperation.

This always will be the opportunity to learn from one another, to challenge assumptions, and to build bridges between disciplines, nations, and generations. The integration of technology, data analysis, and high-quality coaching provides a model that many CISM members nations can adapt to their own training systems.

The message from the **CISM International Symposium 2025** (Abu Dhabi- UAE) is one of solidarity, professionalism, excellence and peace. CISM reaffirms its commitment to develop military sports as force for cooperation and mutual respect.

As a CISM President of 142 member nations as address a final message of unity and resilience to all Armed Forces. We are the most powerful soft-power to strength military diplomacy among nations using **Friendship through Sport!**

CISM Secretary General
Introductory Words

Navy Captain Roberto Recchia
Secretary General

Dear Symposium Participants and CISM friends,

It is with great honor and deep satisfaction that I present this edition of the **Proceedings of the CISM International Symposium 2025,** held in Abu Dhabi, United Arab Emirates, under the theme **"Physical Readiness and Resilience in the Armed Forces: Challenges and Foreseeing the Future."**

This Symposium stands as a remarkable expression of the institutional strength and collaborative spirit that define CISM. From the initial concept to the successful conclusion of the event, every detail reflected the professionalism and commitment of all those involved. The UAE Ministry of Defense through the UAE delegation to CISM and the Local Organizing Committee delivered a level of excellence that truly represents the spirit and standards of CISM. Their organizational efficiency, warm hospitality, and flawless execution ensured that the Symposium ran seamlessly and created an environment conducive to both scientific exchange and international camaraderie.

At the heart of this achievement lies the synergy between CISM's international vision on academics and the organizational capabilities of our hosts. This harmony between planning and execution is what enables CISM to transform its mission — **Friendship through Sport** — into concrete action and lasting impact. Beyond the scientific presentations and discussions, the event fostered an atmosphere of unity and collaboration that reflects CISM's enduring values.

The outstanding organization of the event was the result of close and effective cooperation between the Local Organizing Committee, the CISM Sport Science Commission and the CISM Headquarters. Through their joint efforts and seamless collaboration, the Symposium achieved a high level of efficiency, quality, and consistency — allowing every participant to fully focus on the scientific discussions, exchange of knowledge, and cultural experiences that make CISM events so distinctive.

Once again, I wish to express my profound gratitude to the United Arab Emirates Ministry of Defense for their outstanding support, to the members of the UAE delegation CISM and the Local Organizing Committee for their tireless dedication and professionalism. Their combined efforts have produced not only a successful event but also a benchmark for the organization of future CISM academic activities.

To all participating delegations, speakers, and experts, I extend my sincere appreciation. Your engagement, insights, and professionalism gave life to the Symposium's discussions and ensured that this gathering will leave a lasting contribution to our collective understanding of readiness, resilience, and human performance in the armed forces.

The publication of these Proceedings not only preserves the scientific outcomes of the event but also stands as a legacy testament to CISM's institutional maturity and organizational excellence. It is my hope that this document will serve as a lasting reference for future initiatives, inspiring continued collaboration and reinforcing the role of CISM as a unifying platform for military sport science, and education.

With my highest esteem and gratitude,

CHIEF of the UAE Delegation
to CISM Introductory Words

Brigadier General Staff. Ayoob Buti Al Falasi
Chief of the UAE Delegation to CISM

Dear Chiefs of Delegation and CISM friends,

The United Arab Emirates hosted the International Symposium of the International Military Sports Council (CISM) 2025 under the theme **"Physical Readiness and Resilience in the Armed Forces: Challenges and Future Foresight."** This milestone event reflects the UAE's pioneering vision in advancing military sports and strengthening their role within the broader framework of preparing the modern soldier. Held in Abu Dhabi, the symposium served as a global platform that brought together military training experts and researchers in the fields of fitness and physiology. It addressed key topics such as the integration between physical training and military leadership, the use of artificial intelligence in designing and analyzing training programs, the application of physiological sciences and wearable technologies, and the development of safe and inclusive training environments that promote gender equality.

Global developments have shown that the concept of military fitness is no longer confined to muscular strength or physical endurance alone but rather has evolved into a comprehensive system that encompasses physiological, mental, and technological dimensions. Studies confirm that modernizing military training has become a national and global necessity driven by the nature of contemporary warfare, climate change, and the growing reliance on smart technologies on the battlefield.

The symposium presented a range of applied studies, including a notable one on functional training, which proved its effectiveness in developing applied strength and psychological endurance by simulating real battlefield conditions. The results demonstrated that such programs increase combat readiness by more than 25% compared to traditional training methods. Another study highlighted the importance of specific physical performance tests and intelligent evaluation in accurately measuring fitness readiness based on indicators such as strength, flexibility, and aerobic capacity, while digital analytics tools were shown to enhance the customization of training programs and improve collective performance efficiency.

A study on hydration and performance among women in the armed forces revealed that maintaining optimal hydration directly affects physical performance and mental alertness. It recommended implementing nutrition and hydration programs that consider gender-based physiological differences, particularly in hot and humid environments such as the Arabian Gulf. Another study on the therapeutic benefits of physical activity in military medicine demonstrated that regular exercise improves respiratory capacity and reduces stress and pain levels, reinforcing the concept of "therapeutic military fitness."

Further research shed light on physiological responses in mixed martial arts (MMA) and the role of wearable technologies in monitoring vital indicators, adjusting training loads, and preventing injuries. Another study examined the impact of climate and environmental factors on physical performance—findings that the UAE Armed Forces have integrated into specialized training programs tailored to the country's climatic conditions.

The symposium concluded with significant outcomes, most notably the enhancement of international cooperation among armed forces and the emphasis on employing automation and artificial intelligence to modernize military training. These advancements mark a new beginning for redefining the concepts of readiness and resilience in the twenty-first century. The discussions reaffirmed that military sports are no longer a supplementary activity but a fundamental pillar in shaping the well-rounded soldier—physically, mentally, and spiritually. They also serve as a bridge of human connection among nations, echoing the UAE's message of peace, innovation, and excellence, and reflecting the enduring motto of the International Military Sports Council:

"Friendship Through Sport."

LOC President Introductory Words

Maj Gen Staff. Obaid Ali Obaid Al Mansouri
LOC President

Dear Chiefs of Delegation and esteemed CISM colleagues,

This symposium represents a significant global platform that brings together leading scientists and experts in the field of military sports from more than thirty-three countries, with the aim of exchanging experiences and knowledge.

Physical readiness and flexibility are not merely training requirements; they are the foundation of resilience and adaptability in the ever-changing and complex environments faced by the military. Today, we strive to anticipate the future and enhance our collective capabilities by leveraging the latest research and technologies to confront all challenges with confidence and competence.

The symposium's activities address vital topics, including the impact of climate change on military performance, sports medicine, and combat sports, in addition to showcasing the latest technologies that enhance the resilience and adaptability of armed forces personnel in diverse operational environments.

These topics represent a cornerstone for building the future of the armed forces and underscore the importance of exchanging experiences and innovations among participating nations to advance both military and athletic performance.

The UAE's hosting of this international event reflects the directives of our wise leadership to enhance the country's position as a leading destination for major and impactful global events. This reinforces the confidence the UAE enjoys on the international stage, thanks to its organizational capabilities, advanced infrastructure, and highly qualified national talent, which have made it a global model of excellence and leadership.

In conclusion, I am pleased to extend my sincere thanks to the International Military Sports Council (CISM) and the UAE Ministry of Defence for organizing and managing this symposium to address the most prominent issues affecting physical readiness and resilience in the armed forces.

Message From the President of the CISM Sport Science Commission

Lt Colonel Athinodoros I. MOSCHOPOULOS
CISM SSC President

Dear CISM friends,

Since the beginning of time, the first prehistoric human communities were facing not only dangers coming from wild animals, but also serious threats coming from their own species; nearby tribes were coveting the land and the supplies of other tribes resulting in violent conflicts. The stronger and more fearless members of the tribe were appointed to be its protectors. Thus, the need for security and safety led to the creation of the first armed groups, the predecessors of the modern Armed Forces.

The need to maintain a high level of combat capability of those armed troops led to the systematic use of physical exercise and sports as a method for promoting their readiness. But let us not forget the peaceful call of the heralds in Ancient Olympia, which was leading soldiers to meet on the common ground of the ancient stadion - not as enemies, but as athletes. The ancient soldier was scoping to be both a good athlete and a very brave warrior. Ancient warriors-athletes were engaged in sports not only during competitions, but also for recreation and social activities (festivities, funerals, celebrations, etc.).

So, the desire among the military to meet in sports arenas instead of battlegrounds was nothing new in 1948. The five founding nations –Belgium, Denmark, France, Luxembourg and the Netherlands- created CISM while meeting in Nice at a military fencing event on 18 February 1948. CISM has been promoting sport events among the military athletes for decades, spreading the message "Friendship through sports" and has been trying to embrace the members of all Armed Forces all around the world. With nearly 80 years of continues operation, our Organization created a common ground, like that of the Ancient Olympia, for soldiers to meet and compete, regardless alliances and politics.

Moreover, the founders of our Organization implemented the idea that sharing scientific knowledge is the noblest way of Solidarity among nations. CISM, in 1959, promoted an academic meeting in Toledo Spain, in which training methods and sports medicine issues were examined. The CISM Academy organized this meeting in a form of a scientific Symposium on the training grounds of the Infantry Academy of Spain.

All the participants were distinguished scholars in their respective fields of research, and they contributed to innovative scientific activities. Among the interesting results of this Symposium was the presentation of the "International Code of Water" by Col. Lartigue of France, who created a set of rules regarding the prevention of drowning, the rescuing and the reanimation of the victims which meant to prevent the deaths of hundreds of swimmers every year. At the end of the clinic, CISM published the book "Le Livre de Tolede", as a scientific proceedings book, in which all the conclusions of the researchers were presented to the international scientific society.

We know that we live in a world that is changing fast. Climate change is rapidly affecting our daily interaction and carries threats for the future of mankind. The need for resilience and perseverance is more than ever relevant and vitally important. All around the globe, the Armed forces have already acknowledged the fact that climate change significantly affects the operational environment. Moreover, countries stricken by natural disasters, earthquakes, floods and wild fires ask for the support of their respectful Armed Forces to face severe extremities. There are even cases of multinational task forces deployed to manage forest fires, floods and earthquakes. Terms as "military disaster response" and "multinational disaster relief task force" are no longer strange to us. The international scientific community has already made a call for action.

This CISM Symposium brought together highly acknowledged scholars along with new researchers in the hospitable ground of the United Arab Emirates, a country that combines prosperity with tolerance, history with technology, vision with practice.

The main theme of the Symposium "Physical Readiness and Resilience in the Armed Forces: Challenges and Foreseeing the Future" was covered systematically, highlighting several aspects of scientific research, sharing interesting scientific results and motivating the participants to make fruitful discussions.

I am seizing this opportunity to express my sincere gratitude to the CISM high authorities for the trust that bestowed to the CISM SSC to manage, lead, and develop the Symposium according to the CISM Statutes and Regulations. Moreover, I would like to extend my gratitude to the CISM General Secretariat for the aspiring guidance that provided the CISM SSC all the way – from the preparation period to the conduct of the Symposium. Last, but not least, there are not enough words to express the admiration of the CISM SSC for the UAE Delegation regarding the wholehearted hospitality and superior organizing skills that showcased.

To the members of the CISM SSC, I would like to highlight that this Symposium would not have been possible without their valuable assistance. Their hard, voluntarily,

selfless -yet "invisible"- contribution was remarkable. Teamwork makes our dreams work.

The CISM Symposium 2025 concluded succeeding to be an important milestone in CISM history.

It is an honor for all of us who have been involved in this effort, to present this publication which offers an insight of the excellent scientific and social interactions that took place in the exotic and hospitable ground of Abu Dhabi.

Ducit historia futurum!

Concept and Details of the **Symposium Logo Design**

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Element in the logo	Meaning and Symbolism
	Gold outer frame: Represents readiness, preparedness, and protection, reflecting the strength and discipline of the Armed Forces. The gold colour symbolizes prosperity, excellence, and distinction, embodying the UAE's prestige and leadership in hosting international events with professionalism and national pride.
	Colors (red, black, green, white): Represent the colors of the United Arab Emirates flag: red for strength and sacrifice, black for determination and resilience, green for growth and prosperity, and white for peace and purity - together symbolizing national identity, unity, and pride. President of CISM SSC.
	Interior drawing (curves and circle Head direction up): The curves represent the athletic body and are artistically inspired by the Arabic letters of the word (Al-Emarat), embodying national identity with a modern spirit. At the same time, they evoke the dynamic pathways of data systems and smart energy, symbolizing the integration between human and machine within an intelligent, advanced system that reflects flexibility, adaptability, and innovation. The green circle represents the human head and the thinking mind, guiding this system with awareness and vision toward the future-a symbolic expression of intelligence, vitality, and readiness to embrace technological challenges. The overall form conveys future vision, anticipation of challenges, and the pursuit of continuous development and excellence.

Concept and Details of the **Symposium Logo Design**

Element in the logo	Meaning and Symbolism
	Symbolizes the solid foundation of readiness, stability, and the strength of the Armed Forces.
	7 Stars: Represent the seven emirates of the UAE - with Abu Dhabi at the center, Dubai, Sharjah, and Ajman on the right, and Umm Al Quwain, Ras Al Khaimah, and Fujairah on the left. They also symbolize military ranks, discipline, and excellence.
UAE - 2025 CISM	Refers to the International Military Sports Council (CISM) and marks the year of the symposium's convening in the United Arab Emirates. The inclusion of the year and the digital identity within the design evokes the era of technological transformation and smart military sports, reflecting the UAE Armed Forces' advancement in integrating modern technologies and artificial intelligence within the fields of readiness, performance, and military sports excellence.

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The logo design idea was created by
Brigadier General Staff. Ayoob Buti Al Falasi
Chief of the UAE Delegation to CISM

General Program of the Symposium

CISM INTERNATIONAL SYMPOSIUM 2025				
DATE	**TIME**	**ACTIVITY**	**PLACE**	**DRESS**
Sunday 19.10.2025	All day	Arrival of Symposium participants	Zayed/Dubai International Airports	Casual
Monday 20.10.2025	0800 – 0900	Symposium Registration	Onyx Room	Class A
	0900 – 1045	Symposium Opening Ceremony		
		Official Picture		
	1045 – 1115	Coffee Break		
	1115 – 1235	1st session		
	1235 – 1250	Coffee Break		
	1250 – 1335	2nd session		
	13:35 – 13:45	Coffee Break		
	1345 – 1430	3rd session		
	14:30 – 16:30	Lunch Break	Urban Kitchen	Casual
	1730 – 2000	Sports Activities (Darts)	Multi-Function Area	Casual
Tuesday 21.10.2025	0900 – 1030	1st session	Onyx Room	Class B1 Service Dress Class A Chairpersons & Speakers
	1030 – 1045	Coffee Break		
	1045 – 1215	2nd session		
	1215 – 1230	Coffee Break		
	1230 – 1400	3rd session		
	1400 – 1600	Lunch Break	Urban Kitchen	Casual
	1700 – 1900	Sports Activities (Darts)	Multi-Function Area	
	1930 – 2130	Gala dinner		Class A

CISM INTERNATIONAL SYMPOSIUM 2025				
DATE	**TIME**	**ACTIVITY**	**PLACE**	**DRESS**
Wednesday 22.10.2025	0800 – 0930	1st session	Onyx Room	Class B1 Service Dress Class A Chairpersons & Speakers
	0930 – 0945	Coffee Break		
	0945 – 1115	2nd session		
	1115 – 1130	Coffee Break		
	1130 – 1300	3rd session		
	1330 – 1400	Closing Ceremony		Class A
	1400 – 1600	Lunch Break	Urban Kitchen	Casual
	1730 – 2000	Sports Activities (Darts)	Multi-Function Area	
Thursday 23.10.2025	0900 – 2000	Cultural Day	Abu Dhabi	Casual
Friday 24.10.2025	All day	Departure of all participants	Zayed/Dubai International Airports	Casual

Scientific Program of the CISM International Symposium 2025

CISM INTERNATIONAL SYMPOSIUM 2025				
TIME	**TITLE**	**SPEAKER**	**CHAIRMAN**	**DRESS**
1ST DAY - MONDAY - 20.10.2025				
0800-0900	**Symposium Registration**		Local Organizing Committee	**Class A**
0900-1045	**Symposium Opening Ceremony & Official Picture**			
1045-1115	**COFFEE BREAK**			
1115-1150	International Sport Governing Bodies Soft Diplomacy – CISM, a key player in a turbulent context?	Prof. Thierry Zintz **Keynote Speaker**	Lt Col. Athinodoros MOSCHOPOULOS Prof. Lt Col. Annette SCHMIDT	**Class A**
1150-1225	CISM WMGs- 30 Years Building the Resilience of CISM	General Gianni Gola **Keynote Speaker**		
1225-1235	**DISCUSSION**			
1235-1250	**COFFEE BREAK**			
1250-1335	**Patrick Mullie, Kevin Van Hoovels, Florent Van Maele, Lander Volckaert, Jan Boone**		Lt Col. Athinodoros MOSCHOPOULOS Col Dr. Hashel AL TUNAIJI	**Class A**
	Assessment of Energy Expenditure in Load Carriage: A Comparative Analysis of Three Methods			
	Ayesha Al Dhaheri			
	Exploring Sustainable Alternative Protein Sources for Military Forces			
	Guillermo Portugal, Valéria Faria, Leonardo Leal, Priscila Bunn, Bruno Viana, Elirez Silva			
	Energy Expenditure of Women in the Marine Corps Basic Training Course: Adequacy to the Physical Demands of the Brazilian Navy			
	Q&A SESSION			
1335-1345	**COFFEE BREAK**			
1345 -1430	**Patrick Mullie**		Brig General. Lotfi BOUGUERRA Lt Col. Athinodoros MOSCHOPOULOS	**Class A**
	Change in Body Fat Mass as a Predictor of Successful Completion of Special Operations Forces Basic Training			
	Martin Bugala			
	Tactical Readiness Enhancement Through Human Performance Optimization: Implementation in Special Forces CQB Training			
	Wolfgang Rausch, Hannes Fichtenthal			
	Development and Validation of a Military Occupational Specialty Assessment for Light Infantry: Comparing Military Specific Tests and Critical Task Performance.			
	Abdelrahman Ahmed Abdulrahman Mohamed			
	The Impact of Training Cessation on Physical Readiness in Military Personnel			
	Q&A SESSION			

CISM INTERNATIONAL SYMPOSIUM 2025				
TIME	**TITLE**	**SPEAKER**	**CHAIRMAN**	**DRESS**
1430-1630	**LUNCH BREAK**			
	2ND DAY - TUESDAY - 21.10.2025			
0900-0945	Heat, Altitude, and Hostility: Preparing the Future Soldier for Extreme Environments	Prof Yannis Pitsiladis **Keynote Speaker**	Prof. Lt Col. Annette SCHMIDT Lt Cdr. Florentia SFAKIANOU	**Class B1** Service Dress **Class A** Chairpersons & Speakers
0945-1030	**Tom Brandt, Annette Schmidt**			
	Physical Fitness Requirements for the 21st-Century Soldier: Functional Fitness Training as a Comprehensive Strategy to Increase Combat Readiness			
	Jomar Matos Souza Júnior, Rodrigo Felipe Monteiro, Marcelo Baldanza Ribeiro, André Brand Bezerra Coutinho, Allan da Silva Costa, Alexandre Vieira Gurgel, Leandra Souza de Mello, Eduardo Ceşar Rodrigues Pereira			
	Implementation of Specific Physical Performance Testing for Brazilian Air Force Cadetswear			
	Danielli Braga de Mello and Gelson Luiz Pierre Junior			
	Infrared Thermography for Monitoring Recovery in Marathon Runner: Effects of HIIT			
	Q&A SESSION			
1030-1045	**COFFEE BREAK**			
1045 -1215	**Viktor Yu. Egorov**		Brig General. Lotfi BOUGUERRA Col. Andrei POLITOV	**Class B1** Service Dress **Class A** Chairpersons & Speakers
	Army Rugby – Basic Military Applied Sports Game			
	Olga A. Muzhchil			
	Problematic Aspects of Training Military Personnel from Foreign Armed Forces in Specialized Military Disciplines at Military Physical Educational Institution of the Russian Federation			
	Negovan Ivankovic, Dragan Todorov			
	Modern Innovations in Physical Education and Sports Training in Military Backgrounds			
	Femedein Timipre Okou			
	Optimizing Physical Training Protocols in the Military: Balancing Readiness with Injury Prevention			
	Dmitriy A. Chuchvaga			
	Results of an Assessment of the Level of Endurance Development in Military Personnel in Different Climatic Zones.			
	Hashel al Tunaiji, Jimmy Wright			
	The Role of Wearable Technology in Monitoring Stress and Training Load among Military Cadets			
	Andrei Politov			
	Optimization of Military Personnel›s Physical Training for Operations in Hot Climate Conditions: Physiological Aspects and Methodological Approaches			
	Q&A SESSION			

CISM INTERNATIONAL SYMPOSIUM 2025				
TIME	**TITLE**	**SPEAKER**	**CHAIRMAN**	**DRESS**
1215-1230	**COFFEE BREAK**			
1230-1315	**Heat Warriors: Military Performance in Extreme Temperatures**	Ass. Prof. Jason Lee **Keynote Speaker**	Dr. Gareth PICKNELL Lt Col. Christian LÜTZKENDORF	**Class B1** Service Dress **Class A** Chairpersons & Speakers
1315-1400	**Guillermo Portugal, Marcus Cattem, Valéria Faria, Leonardo Leal, Priscila Bunn, Bruno Viana, Josely Koury, Elirez Silva**			
	Hydration Analysis of Women During the Brazilian Marine Corps Basic Military Training Course			
	Francisco Hidalgo, Victor Antolín. Ana Oreja &.Sergio Pérez.			
	Analysis of the Benefits of Physical Exercise in Lung Cancer Patients Within the Spanish Ministry of Defense			
	Eduardo Figueira Rodrigues, Fabrício Boscolo, José Vilaça-Alves, João Ferreira Lima Neto, Ágata Aranha			
	Physiological and Physical Performance Responses in a Specific MMA Test among Advanced and Novice Athletes			
	Q&A SESSION			
1400-1600	**LUNCH BREAK**			
	3RD DAY - WEDNESDAY - 22.10.2025			
0800-0815	Presidential Presentation	Col. Nilton Gomes		
0815-0845	Sports Specific Injuries and Rehabilitation Procedures	General (MD). E.V. Kryukov **Keynote Speaker**	Col. Andrei POLITOV Lt Col. Timipre OKOU	**Class B1** Service Dress **Class A** Chairpersons & Speakers
0845-0945	**Oleg S. Botsman**			
	Current Issues of the Development and Assessment of Flexibility of Senior Military Personnel			
	Oleg S. Botsman, Tatyana A. Selitrenikova			
	Methods of Adaptive Physical Education of Military Personnel with disabilities			
	Sergey P. Gribchenko presented by Dmitrii Kadiashkin			
	Studying the Interrelationships of Indicators of the Functional State of the Body, Physical Performance and Adaptive Capabilities of the Body of Military Personnel during Exercises in the Cold Climatic Conditions of the Arctic			
	Farah Saeed Mohammad Al-Zaabi			
	Preventing Chronic Pain: A Multidisciplinary Approach for Military Readiness and Resilience			
	Q&A SESSION			

CISM INTERNATIONAL SYMPOSIUM 2025				
TIME	**TITLE**	**SPEAKER**	**CHAIRMAN**	**DRESS**
0945-1000	**COFFEE BREAK**			
1000 -1130	**Thuraya Balhaj** The Power of Psychological Readiness in Enhancing Physical Performance **Gareth Picknell, Brendan Cropley, Stephen Mellalieu, Sheldon Hanton, Mouza Al Shehhi** Optimizing Physical Readiness Through Mindfulness and Reflective Practice: Facilitating Healthy Lifestyle Behavior Change in Military Recruits **Arto Gråstén, Gehan Handouk, Balazs Gabor, Jamal Alnuaimi** Fostering Exercise Motivation in Youth Preparing for Military Service: Self-Determination Theory Approach **Dragan Todorov, Negovan Ivankovic** Sport as a Holistic Strategy for Military Interoperability: A Metaphysical–Biohacking Approach **Sabrina Celestino, Rodrigo Bandeira Silva** Human Dimension, Social Resilience and Neuroscience Applied to the Military Context: Literature and Doctrine Review **Q&A SESSION**		Col Dr. Hashel AL TUNAIJI Lt Col . Timipre OKOU	**Class B1** Service Dress **Class A** Chairpersons & Speakers
1130-1145	**COFFEE BREAK**			
1145-1230	Biosensors and AI in Military Readiness: The Future of Human Performance Monitoring	Prof Runner Marson **Keynote Speaker**	Prof. Lt Col. Annette SCHMIDT Lt Col. Christian LÜTZKENDORF	**Class B1** Service Dress **Class A** Chairpersons & Speakers
1230-1300	**Hesham Aref Alsayed** High-Intensity Tactical Readiness Indicators and Elite units' Combat Resilience in Extreme Environments: A Systematic Review **Danielli Braga de Mello** Wearable Technologies for Hydration and Thermoregulatory Responses in an Olympic Military Athlete during Heatwave Training: a Case Study **Jefferson Martinez Monjardim Couto, Danielli Braga de Mello** Functional Conditioning and Physical Performance: A Six-Month Intervention in Military Personnel **Q&A SESSION**			
1330-1400	**CLOSING CEREMONY**			**CLASS A**


Dusit Thani

Invited
SPEAKERS

Invited Speaker

Prof. Thierry Zintz

TOPIC
International Sport Governing Bodies Soft Diplomacy – CISM,
a key player in a turbulent context?

BIO.
Thierry Zintz is an emeritus professor of Sports Organisations Management at the Faculty of Sports Sciences of the Université catholique de Louvain, Belgium. He was the Dean of the Faculty between 2010 and 2016. He was in charge of the Olympic Chair Henri de Baillet Latour – Jacques Rogge in Management of Sport Organisations at the same university (2008-2020). He works closely with the Louvain Research Institute in Management (LouRIM) as a senior researcher and member of the Center for Research in Entrepreneurial Change and Innovation Strategies (CRECIS). He was also Vice-President of the Belgian Olympic and Interfederal Committee from 2001 until 2017 and is Past-President of the European Observatory of Sport and Employment (EOSE). From May 2010 until September 2021, he was the director of MEMOS, an Executive Master in Management of Sport organisations, organised by the International Olympic Committee. He chaired the Haute Ecole Léonard de Vinci (Higher Education Institution) (2022-2024). He is a member of the Olympic Education Commission of the International Olympic Committee (since 2015) and of the Standing Committee for Education of the World Antidoping Agency (since 2018). He is the Chair of the Appeal Commission of the International Military Sports Council (CISM).

Invited Speaker

Lieutenant General (ret.) Dr. Gianni Gola

TOPIC
CISM WMGs- 30 years building the resilience of CISM

BIO.
Lieutenant General (ret.) Dr. Gianni Gola is the former Commanding Officer of the Guardia di Finanza Sport Centres "Fiamme Gialle" (1972–2010) and currently serves as Life Honorary President of the International Military Sports Council (CISM).

He graduated summa cum laude in Political Sciences from Rome "La Sapienza" University and later completed studies in Economic and Financial Safety at Rome "Tor Vergata" University. From 2000 to 2018, he served as Professor of Sport Management at the University of Rome "Foro Italico." Throughout his distinguished career, Dr. Gianni Gola held senior leadership positions in both sport and the military. He presided over CISM from 1998 to 2010 and promoted the 1st and 3rd Military World Games (Rome 1995, Catania 2003) as well as the inaugural Military World Winter Games (Aosta Valley 2010). He also served on the IOC Olympic Truce Foundation (2000–2010) and the IOC Sports for All Commission (2003–2010).

In Italy, he was President of the Italian Athletics Federation (FIDAL) from 1989 to 2004 (now Life Honorary President), a member of the CONI Council and Executive Board (1989–1999), and a Council Member of the European Athletics Association (1999–2003) and the IAAF (2001–2003). He also served as President of the National Association of Golden Stars of Merit (2017–2021), now Life Honorary President. For his outstanding contributions to sport, military cooperation, and international peace initiatives, Dr. Gianni Gola has received numerous distinctions, including the Grand Cordon of the CISM Order of Merit, Commander of the Italian Republic Order of Merit, the Italian Olympic Committee's Gold Star, and the title of "Peace and Sport Ambassador," conferred by H.S.H. Prince Albert of Monaco.

Invited Speaker

Yannis P. Pitsiladis, MMEDSci., PhD, FACSM

TOPIC
Heat, Altitude, and Hostility: Preparing the Future Soldier for Extreme Environments.

BIO.
Professor Yannis Pitsiladis has an extensive research background in the role of lifestyle and genetics in human health and performance. His current work focuses on human enhancement technologies in health and disease, emphasizing responsible paradigms. His latest research, funded by the World Anti-Doping Agency (WADA) and the International Olympic Committee (IOC), applies "omics" (genomics, transcriptomics, metabolomics, and proteomics) and artificial intelligence to detecting doping in sport, particularly blood doping and testosterone use.

Professor Pitsiladis is a member of the IOC Medical and Scientific Commission, the Executive Committee and Chair of the Scientific Commission of the International Federation of Sports Medicine (FIMS), and the Scientific and Education Commission of the European Federation of Sports Medicine Associations (EFSMA). He also serves on WADA's Health Medical Research Committee (HMRC) and is a Fellow of the American College of Sports Medicine (ACSM).

With over 250 scientific publications and multiple-authored and edited books, his research has influenced both scientific and popular discourse. His work has been featured in documentaries such as Kipchoge: The Last Milestone (2021, directed by Jake Scott, executive produced by Ridley Scott) and Enhanced (2018, directed by Alex Gibney), as well as in bestselling books like The Sports Gene and Bounce: The Myth of Talent and the Power of Practice.

Invited Speaker

Ass. Prof. Jason Lee

TOPIC
Heat Warriors: Military Performance in Extreme Temperatures

BIO.
Jason Lee is an Associate Professor at the Yong Loo Lin School of Medicine, National University of Singapore. He directs the Heat Resilience and Performance Centre and is a Fellow of the American College of Sports Medicine since 2012. Tapping on his experience as a Commando Officer in the Singapore Armed Forces and domain knowledge, he serves in various national and international panels related to human performance and safety. Jason's main research interests are in fluid balance, thermoregulation and mitigation strategies for improving human performance. He studies the physiological demands associated with passive and exertional heat stress and how humans adapt to ensure optimum performance and survival. A key outcome of his research is the formulation of a holistic heat management system. This is achieved through profiling the associated heat strain in humans under various settings, designing and evaluating heat mitigation strategies (physical conditioning regimes, heat acclimatisation, pre-activity cooling, work-rest cycles and hydration) and finally translating them into policies such as training directives, training safety regulations and lesson plans. Knowledge gained from his research has also benefitted several other governmental agencies. Jason co-chairs the Heat Injury Clinical Practice Guidelines at the Ministry of Health, Singapore and was the past chair for the Scientific Committee on Thermal Factors at the International Commission on Occupational Health (2018 to 2024). He is on the management committee at the WHO-WMO Global Heat Health Information Network (GHHIN) and leads the GHHIN Southeast Asia Hub to scale up efforts in managing the complex health risks posed by rising ambient temperatures. Jason is a member of the Expert Advisory Group at the Rockefeller Foundation.

Invited Speaker

General (MD). Evgeny Vladimirovich KRYUKOV

TOPIC
Sports Specific Injuries and Rehabilitation Procedures

BIO.
Head of the S.M. Kirov Military Medical Academy of the Ministry of Defence of the Russian Federation (St. Petersburg), Academician of the Russian Academy of Sciences, Doctor of Medical Sciences, Professor, Honoured Doctor of the Russian Federation (2008), Lieutenant General of Medical Service.

E.V. Kryukov is a well-known specialist in the field of military medicine in our country. His scientific interests include various topical issues of therapy. Among them, especially in recent years, the problems of military field therapy occupy an increasing specific weight in terms of the scale of solved problems and obtained scientific and practical results: fundamental studies of new factors of military labour of servicemen in peacetime and wartime, pathogenesis and clinical picture of modern combat therapeutic trauma, development, approbation and introduction of the latest technologies of diagnostics, treatment and rehabilitation into the practice of medical care of the injured, scientific substantiation and development of organisational basis for the development of therapeutic treatment and rehabilitation of the wounded. Academician E.V. Kryukov organised the development of modern rehabilitation technologies, which are currently focused on studying the effectiveness of interactive virtual reality technologies, the formation and integration of medical decision support systems using artificial intelligence technologies, and the use of robotic mechanokineso therapy in patients with diseases and consequences of injuries of the musculoskeletal system, central and peripheral nervous systems. Fundamental studies of the mechanisms of adaptation of the human organism to extreme loads are being carried out. On this basis, safety criteria and training regimes for military specialists of particularly dangerous professions have been developed. E.V. Kryukov published 413 scientific papers, Hirsch index – 29. E.V. Kryukov – Chief Editor of Bulletin of the Russian Military Medical Academy and Izvestia of the Russian Military Medical Academy. Member of several editorial boards, Chairman of the Scientific Council of the Kirov Military Medical Academy, and member of key scientific councils of the Ministry of Defence of the Russian Federation.

Invited Speaker

Prof. Runner A. Marson

TOPIC
Biosensors and AI in Military Readiness: The Future of Human Performance Monitoring

BIO.
Runer A. Marson, Ph.D., is an Associate Research Professor of the Brazilian Army Command, serving at the Preparatory School for Army Cadets as a Scientific Advisor of the Research & Extension Center. I hold a B.Sc. in Physical Education (2000), an M.Sc. in Sciences of Human Motricity - Biodynamics (2003), and a Ph.D. in Biological Science (2008).

In addition, I hold a Post-Doctoral in Biomedical Engineering (2017), Health Science (2018), and Physical Education (2019), as well as a Visiting Professorship-Sabbatical (2022) in Neuromuscular Research Laboratory/Warrior Human Performance Research Center at the University of Pittsburgh, PA, USA. I was a Professor & Researcher at the Brazilian Army Physical Training Center. I worked at the Brazilian Army Research Institute of Physical Fitness as a Scientific Advisor for Operational Physical Performance (2012-2024).

My overall research goal is to maximize physical performance and comprehend the adaptations of the neuromechanical (Kinetic, kinematic, and electromyography) system associated with physical tasks/demands using biosensors and digital signal processing in qualitative and quantitative data.

CISM SSC Members

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Lt Col. Athinodoros MOSCHOPOULOS

Dr. Karl Friedl
SSC Member

Brig Gen. Lotfi Bouguerra
SSC Member

Col. Andrey Politov
SSC Member

Lt Col. Christian Lützkendorf
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Lt Col. Ghulam Shabbir Anjum
SSC Member

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SSC Member

Lt Commander Florentia Sfakianou
SSC Secretary – CISM HQ Academic Director

LOC Scientific Committee Members

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الجاهزية البدنية والمرونة في القوات المسلحة: التحديات واستشراف المستقبل
Physical Readiness and Resilience in the Armed Forces:
Challenges and Foreseeing the Future
22 - أكتوبر October 20
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Opening Ceremony Photo Gallery


His Excellency K
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Day 1: **Speakers Photo Gallery**


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TOKEN OF APPRECIATION


CISM
Article
Energy intake (
Fairbrother et al. 3,803
Fairbrother et al. 3,033
Jacobs et al. 2,578
Jacobs et al. 3,172
Margolis et al. 3,286
Moore et al. 2,773
Shippee et al. 3,220
Welsch et al. 1,540


Prof. Lt Col.
Annette SCHMIDT


Overview of the Concept of Training Cessation


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The Female Soldier


Background & Context
• High-stakes environments require peak physical & cognitive readiness.
• Special Forces face CQB/FIBUA challenges: confined spaces, rapid transitions, stress.
• Need for integrated Human Performance (HP) approach to sustain operational effectiveness.

SPEAKERS ABSTRACTS

TITLE
Assessment of Energy Expenditure in Load Carriage: A Comparative Analysis of Three Methods

AUTHORS
Patrick Mullie, Kevin Van Hoovels, Florent Van Maele, Lander Volckaert, Jan Boone.

INTRODUCTION
Quantifying energy expenditure (EE) during physical activity is essential for the development of performance-enhancing nutritional strategies in military contexts. Wearable technologies offer a practical alternative to laboratory-based measurements. The objective of the present study was to evaluate and compare the accuracy of three methods for estimating EE.

METHODS
Ten participants (age: 22 years; body fat: 18%) completed treadmill walking trials across different conditions. These conditions were defined by combinations of three load levels (0, 10, and 20 kg), two walking speeds (4 and 6 $km \cdot h^{-1}$), and two incline angles (0.0° and 4.5°). EE was simultaneously assessed using a Garmin smartwatch (GAR) and an ActiGraph accelerometer (ACT), with CPET-derived oxygen consumption serving as the reference standard.

RESULTS
Across all conditions, the GAR underestimated EE compared to CPET by a mean of –1.5 $kcal \cdot min^{-1}$, while the ACT overestimated EE by a mean of 1.2 $kcal \cdot min^{-1}$. Under level treadmill conditions (0.0° incline), the ACT consistently overestimated EE, whereas the GAR underestimated it. At 4.5° incline, both devices underestimated EE relative to CPET. When the mean of GAR and ACT estimates was calculated, the resulting EE value showed the smallest overall bias compared to CPET, with a mean error of –0.8 $kcal \cdot min^{-1}$ across all conditions. This error was further reduced to –0.1 $kcal \cdot min^{-1}$ under level treadmill conditions, outperforming the individual accuracy of either device (GAR: –1.2 $kcal \cdot min^{-1}$; ACT: 1.8 $kcal \cdot min^{-1}$).

DISCUSSION AND CONCLUSION
The findings indicate that when the outputs from GAR and ACT were averaged and in absence of a slope, the resulting EE estimate closely approximated the reference standard, suggesting a potential combined-use strategy for EE estimation.

PRACTICAL IMPLICATION FOR CISM
Accurate assessment of energy expenditure during physical activity remains a methodological challenge. The mean of two different methods seems to give the best estimation in absence of a slope.

Patrick MULLIE

Patrick Mullie studied Veterinary Medicine (Ghent University) for three years, obtained a Bachelor's in Nutrition and Dietetics (Regaschool Leuven), a Master in Epidemiology and Biostatistics (Maastricht University), and two certificates of Epidemiology and Biostatistics (Université Libre de Bruxelles).

In 2010 he obtained his Ph.D. in Biomedical Sciences (KU Leuven) and in 2013 he obtained a Post-Ph.D. from the International Prevention Research Institute in Lyon, France.

He teaches Systematic Literature Analysis at the Vrije Universiteit Brussel and is Research Director at the Division of Epidemiology and Biostatistics (DG H&WB – BELGIAN DEFENSE).

In this last position he is responsible for the nutrition, hydration and energy availability of elite units such as Special Operation Forces, F16 pilots, Para-Commandos and Chasseurs Ardennais.

He is Research Director at the renowned International Prevention Research Institute in Lyon, France. Finally, he is a Researcher at the Center for Evidence Based Medicine (Leuven) - Cochrane Belgium. He is also an expert attached to the Superior Health Council of Belgium.

Ayesha Al DHAHERI

Prof. Ayesha earned her Ph.D. in Clinical Nutrition (2007) from Oxford Brookes University, her M.Sc. in Environmental Sciences (Nutrition, 2002) from United Arab Emirates University (UAEU), and her B.Sc. in Food Science and Nutrition (1998) from UAEU's Faculty of Agriculture and Food Science.

She has participated in over 200 scientific conferences, including the Scientific Conference on Physical Readiness in the Land Forces (GCC Military Sports Organizing Committee, 2025, Abu Dhabi) and Prevention of Childhood Overweight and Obesity Using a Food Systems Approach in the Gulf Region (UN House, Riyadh, 2025).

Professor Al Dhaheri has published more than 130 scientific papers and received multiple awards, including the Associate Provost of Research Award for publications in the top 5% of journals (2017–2022, UAEU) and the Rashid Award for Scientific Distinction (2003, 2008, Dubai, UAE).

TITLE
Exploring Sustainable Alternative Protein Sources for Military Forces

AUTHOR
Ayesha Al Dhaheri

INTRODUCTION
Sustainable nutrition is a growing priority for military forces operating in extreme environments. Traditional animal-based protein sources used to support physical readiness generate significant environmental costs. With increased protein needs among military personnel, this study explores the viability of sustainable, high-quality alternative proteins to optimize physical performance while reducing environmental impact.

METHODS
A narrative review was conducted to evaluate emerging alternatives such as mycoproteins, plant-based proteins, and insect proteins in terms of nutritional adequacy and ecological impact. PubMed, Scopus, and Web of Science were searched for randomized controlled trials and reviews assessing postprandial amino acid profiles, muscle protein synthesis (MPS), and sustainability metrics.

RESULTS
Findings indicate that these protein sources can reduce environmental burdens by up to 70% while offering essential amino acids crucial for muscle protein synthesis. Mycoproteins demonstrated superior postprandial anabolic responses compared to milk-based proteins, while insect protein isolates elicited similar essential amino acid levels as soy. Pea protein, despite its low methionine content, has also been shown to effectively support post-exercise MPS, comparable to mycoprotein or a blended formulation. Additionally, spirulina and chlorella were found to stimulate MPS in both resting and exercised states to a similar extent as mycoprotein, supporting their functional role in recovery.

DISCUSSION AND CONCLUSION
Alternative proteins offer significant potential to enhance physical readiness and promote environmental sustainability. They provide adequate nutritional support while reducing ecological impact, aligning with the operational needs of armed forces. However, challenges such as production scalability, regulatory barriers, and limited acceptance among military personnel persist. Evidence specific to military populations is also limited, indicating a need for further research.

PRACTICAL IMPLICATIONS FOR CISM
Sustainable protein sources support the dual mission of enhancing soldier performance and environmental stewardship. This is especially relevant in the UAE, where such an approach aligns closely with the nation's sustainability agenda and climate resilience priorities.

TITLE
Energy Expenditure of Women in the Marine Corps Basic Training Course: Adequacy to the Physical Demands of the Brazilian Navy.

AUTHORS
Guillermo Portugal, Valeria Faria, Leonardo Leal, Priscila Bunn, Bruno Viana, Elirez Silva

INTRODUCTION
Operational training of female military personnel is increasingly relevant to the readiness and effectiveness of the Armed Forces. Initial training courses are key milestones in a service member's career. In the Brazilian Navy, the Basic Training Course for Marine Corps Soldiers (C-FSD-FN) fulfills this role, imposing significant physical and psychological demands. Energy expenditure (EE) is crucial to military activity, directly influencing health and performance. This study aimed to verify whether the EE of women during the C-FSD-FN aligns with reference values in the literature.

METHODS
Fourteen women (19.10 ± 1.30 years; 62.40 ± 10.60 kg; 1.62 ± 0.06 m) participated. They wore Polar Vantage V2 smartwatches, configured with individual physical data and updated throughout the course. The devices continuously monitored EE during classroom and field activities. A one-sample t-test compared observed values with those from the meta-analysis "Energy Expenditure of Women During Basic Military Training." Data normality was tested with Shapiro-Wilk. Significance level: 5%, analyses in R (v. 4.3.2).

RESULTS
Mean EE from the meta-analysis was 3,427.36 kcal/day, with $t(13) = 0.022$, $p = 0.98$, 95%CI [3,185.68; 3,674.10], showing no difference from the observed value. Classroom (3,242.66 kcal/day; $t(13) = 1.66$, $p = 0.12$, 95%CI [3,185.68; 3,674.10]) and field (3,741.84 kcal/day; $t(11) = 0.44$, $p = 0.67$, 95%CI [3,405.51; 4,244.24]) activities also showed no statistical difference.

DISCUSSION AND CONCLUSION
EE values were consistent with other military data, indicating energetic adequacy. The course's physical demands appear appropriate for supporting female military readiness.

PRACTICAL IMPLICATIONS FOR CISM
The findings confirm the energetic adequacy of Brazilian female Marines during basic training. This supports performance-based meal planning and physical training for women in military settings and may inform the development of fair, gender-responsive fitness assessments and operational programs.

Guillermo PORTUGAL

Lieutenant (Marine Corps) Portugal is a Ph.D. student in the Graduate Program in Exercise and Sport Sciences at Rio de Janeiro State University.

He holds a Master's degree in Operational Human Performance from the Air Force University (UNIFA) and a Bachelor's degree in Nutrition from Estácio de Sá University, along with a Graduate Specialization in Combatant Physical Performance from CEFAN/UNIFA.

He also earned a Bachelor's degree in Naval Sciences from the Brazilian Naval Academy and completed the Staff Course for Intermediate Officers at the Naval War College.

Lieutenant Portugal is a member of the International Society for the Advancement of Kinanthropometry (ISAK) and has completed advanced military training, including the Marine Corps Officer Improvement Course and the Special Amphibious Warfare Internship at CIASC.

He currently serves as a researcher at the Laboratory of Exercise and Performance Science (LABOCE) and as Head of the Technological Innovation Cell at the Admiral Adalberto Nunes Physical Education Center (CEFAN).

Patrick MULLIE

Patrick Mullie studied Veterinary Medicine (Ghent University) for three years, obtained a Bachelor's in Nutrition and Dietetics (Regaschool Leuven), a Master in Epidemiology and Biostatistics (Maastricht University), and two certificates of Epidemiology and Biostatistics (Université Libre de Bruxelles).

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In this last position he is responsible for the nutrition, hydration and energy availability of elite units such as Special Operation Forces, F16 pilots, Para-Commandos and Chasseurs Ardennais.

He is Research Director at the renowned International Prevention Research Institute in Lyon, France. Finally, he is a Researcher at the Center for Evidence Based Medicine (Leuven) - Cochrane Belgium. He is also an expert attached to the Superior Health Council of Belgium.

TITLE
Change in Body Fat Mass as a Predictor of Successful Completion of Special Operations Forces Basic Training.

AUTHOR
Patrick Mullie

INTRODUCTION
Following the Military Initiation Phase, candidates of the Belgian Special Operations Regiment undertake an eight-week Special Operations Forces Basic Course (SOF). The objective of the present study was to identify potential predictors of successful course completion.

METHODS
Body composition was assessed at baseline and after two weeks using a multi-frequency bioelectrical impedance analyzer. Participants who completed the full eight-week SOF were classified as completers, while those who discontinued the training after week two were categorized as non-completers.

RESULTS
Of the 124 participants, 88 successfully completed the SOF Basic Course. At baseline, no significant differences in body composition were observed between completers and non-completers; mean (SD) body fat mass was 11.1 ± 3.4 kg and 12.1 ± 3.6 kg, respectively. After two weeks of training, a greater reduction in total body fat mass was observed in the non-completer group compared to the completers. Specifically, the rate of fat mass loss ($kg \cdot d^{-1}$) was 0.200 ± 0.125 in non-completers versus 0.129 ± 0.125 in completers ($p < 0.01$). Logistic regression analysis revealed that, unlike baseline fat mass, the change in body fat mass over the first two weeks significantly predicted course completion, with a classification accuracy of 75% ($p = 0.005$).

DISCUSSION AND CONCLUSION
This study enabled the assessment of training-induced changes after two weeks of the SOF Basic Course. Baseline fat mass did not predict course completion, suggesting that low initial fat mass does not pose a limitation, provided the tactical athlete maintains adequate energy intake during training. These findings indicate that evaluating body composition both at baseline and after two weeks may offer valuable insights into the physiological impact of military training and assist in identifying early predictors of success.

PRACTICAL IMPLICATION FOR CISM
Early identification of individuals at risk of attrition may be critical for ensuring success during military training exercises and operational deployments.

TITLE
Tactical Readiness Enhancement through Human Performance Optimization: Implementation in Special Forces CQB Training.

AUTHOR
Martin Bugala

INTRODUCTION
Maintaining high levels of physical and cognitive performance in high-stakes environments is critical for Special Forces operators. The Czech Armed Forces have developed and certified a comprehensive methodology for Human Performance optimization (KOSP), which has been directly applied to combat-specific training tasks such as Close Quarter Battle (CQB) and urban operations (FIBUA).

METHODS
Between 2022 and 2024, over 120 operators from the 601st Special Forces Group were enrolled in a multi-domain optimization program. The intervention included five pillars in each of three domains: physical conditioning, nutritional strategy, and psychological support. Real-time diagnostics (Garmin, HRV, sleep tracking), structured movement evaluations, and applied cognitive drills were used to individualize training protocols. CQB implementation emphasized coordinated movement, rapid transition handling, situational awareness, and cognitive stress resilience.

RESULTS
The KOSP-based approach improved tactical execution metrics in CQB environments, including faster response times (–22%), improved neuromechanical fluidity, and enhanced decision-making under pressure. HRV and sleep quality improved significantly (+12% and +17%, respectively), and injury incidence declined by 28%. Cognitive training embedded in movement and shooting tasks led to better accuracy and memory retention under operational load.

DISCUSSION AND CONCLUSION
This applied model demonstrates that domain-specific implementation of Human Performance programs significantly enhances combat fitness and operational sustainability. While resource-intensive, the model presents a scalable concept for elite units across NATO-aligned militaries.

PRACTICAL IMPLICATIONS FOR CISM
KOSP provides a blueprint for integrating Human Performance strategies into operational training cycles, supporting readiness, resilience, and long-term force sustainability.

Martin BUGALA

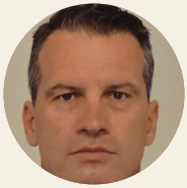
Assoc. Prof. Martin Bugala is a specialist in human performance optimization for security and armed forces personnel, with a strong academic and applied background in kinanthropology and tactical performance training. He earned his habilitation (Assoc. Prof.) in Kinanthropology (2025), Ph.D. in Kinanthropology (2017), and earlier academic degrees in Applied Sport Education of Security Forces from Masaryk University, Faculty of Sports Studies, where he also serves as Assistant Professor.

Since 2019, Dr. Bugala has worked as Human Performance Coordinator for the 601st Special Forces Group (Czech Republic), where he developed and implemented the KOSP methodology to enhance physical, cognitive, and psychological readiness of SOF operators.

He coordinates multidisciplinary teams of physiotherapists, nutritionists, and psychologists, and collaborates internationally with US Special Forces (10th & 3rd SFG) and the Finnish Police Rapid Response Unit.

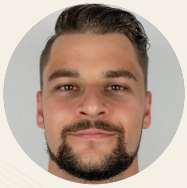
His research interests include load carriage physiology, tactical mobility, cognitive performance under stress, and periodization for tactical populations, with a focus on integrating evidence-based performance models into SOF and police practice.

He has presented at numerous international conferences, including IMACSSS (Spain 2025, Malaysia 2024, Poland 2023), and the International Conference on Kinanthropology (2015, 2020).



Wolfgang RAUSCH

Dr. Wolfgang Rausch holds an M.Sc. and Ph.D. (2004) from the University of Graz, Department of Sport Science.
He specializes in physical preparation of soldiers, evaluation of physical training, and performance enhancement of elite athletes.
He has presented at international conferences, including the CISM Congress 2023 in Tunis, with research on the effects of a six-month guided training intervention during an officer cadet course in the Austrian Armed Forces.



Hannes Fichtenthal

Hannes Fichtenthal is an Austrian sport scientist specializing in sport and human movement science. He is currently pursuing his academic training at the University of Vienna.
Hannes combines his academic background with professional experience in structured and high-performance environments.
In recognition of his outstanding performance, he received a Letter of Appreciation for exceptional service with the 1st RECCE Company.

TITLE

Development and Validation of a Military Occupational Specialty Assessment for Light Infantry: Comparing Military Specific Tests and Critical Task Performance.

AUTHORS

Wolfgang Rausch, Hannes Fichtenthal

INTRODUCTION

This study developed and evaluated a Military Occupational Specialty (MOS) for the light infantry of the 7th Jäger Brigade using standardized test procedures, of comparing the Military Specific Test (MST) and five Critical Tasks (CTs): 8-km march (43 kg load), obstacle crossing (2 m wall), fire & movement, simulated casualty transport (123 kg), and lifting & carrying (20 kg).

METHODS

The tests were conducted in 2023 and 2024 using automated timing (Sportident) and biometric recordings (QUS-Smart-T-Shirt), supplemented by anthropometric measurements (e.g., BMI, body fat percentage). Data analyses were performed using SPSS and Excel.

RESULTS

Approximately 83% of the soldiers attained the highest MST performance classifications, namely Profile A and Profile B. The average total CT duration was 96 minutes (SD ± 18.20), with the 8-km march accounting for 82% (SD ± 7.32) of the time and fire & movement being the most intense task (relative heart rate: M = 87.83%, SD ± 5.62). Relative loads reached up to 54% (SD ± 6.43) of body weight. Pearson's correlation analyses revealed a moderate positive correlation ($R = 0.48$, $p = 0.001$) between the 8-km march (CT) and the 3.2-km forced march (MST). CT2 (obstacle crossing) and CT5 (lifting & carrying) showed moderate correlations ($R \geq 0.3$, $p < 0.05$) with MST components such as terrain movement and load carrying, while CT3 and CT4 exhibited weaker correlations ($R \leq 0.3$, $p < 0.05$). Soldiers with MST profile A achieved significantly better CT times (e.g., 74 min for 8-km march) than those with profile C (88 min).

CONCLUSION

The CTs are a valid tool for assessing infantry-specific performance; optimizations such as intensified march training and load optimization are recommended.

PRACTICAL IMPLICATIONS FOR CISM

The abstract's findings apply to CISM by standardizing fitness tests, enhancing training, benchmarking performance, integrating tactical skills, and adopting data-driven optimization for infantry readiness.

TITLE
The Impact of Training Cessation on Physical Readiness in Military Personnel.

AUTHORS
Abdelrahman Ahmed Abdulrahman Mohamed.

INTRODUCTION
Training cessation is defined as the interruption of regular training, resulting in a decline in physiological and physical adaptations and, consequently, reduced physical performance. Military readiness heavily relies on the consistency of physical training throughout the year.

METHODS
This review-based study investigates the physiological, anatomical, psychological, and performance-related effects of short- and long-term training interruption among military personnel. Data were compiled from recent and classical resources, in addition to military training protocols and guidelines worldwide.

RESULTS
Training cessation—whether voluntary (e.g., rest periods) or involuntary (e.g., injury, illness) leads to measurable declines in aerobic capacity, muscular strength, cardiovascular and pulmonary efficiency, and neuromuscular coordination. Studies report up to 25% reduction in VO max within 2–3 weeks and 40–50% loss in muscle fitness over 8–12 weeks. Deconditioning is accompanied by hormonal imbalances, reduced mitochondrial activity, and an increase in visceral fat and injury risk.

DISCUSSION AND CONCLUSION
The findings align with previous studies emphasizing the importance of continuous training in military populations. Periods of inactivity significantly impair combat readiness and physical performance. Recovery of lost adaptations requires cautious progression and structured rehabilitation programs, leveraging smart monitoring systems and tailored loading strategies.

PRACTICAL IMPLICATIONS FOR CISM
Findings recommend designing individual-specific retraining protocols for service members returning from training gaps, implementation of digital tracking systems, and enforcing attendance policies for physical education programs. Emphasis on continuous education for leadership and structured recovery periods may prevent performance losses.

Abdelrahman AHMED

Dr. Abdelrahman Ahmed is a distinguished lecturer and recognized expert in the field of physical fitness and military sports. With decades of experience,

he has been actively engaged in conferences, symposia, and training programs across the Arab world and the Gulf region, making significant contributions to the advancement of physical readiness within the armed forces.

His previous engagements include serving as a speaker at the Arab Symposium on Physical Fitness (Abu Dhabi, 2021) and at the Physical Fitness Seminar "Sports Through Brotherhood" (Abu Dhabi, 2015).

Earlier in his career, he participated in the Third Arab Symposium on Physical Fitness in the Armed Forces (UAE, 2008) and the Conference on the Reality and Future Aspirations of Physical Education, organized by the Faculty of Education, Department of Physical Education (Al Ain, 1999).

In addition to his active role in conferences, Dr. Ahmed has been a lecturer in PT training courses since 2005, continuously shaping and mentoring future leaders in military sports and fitness.

Day 2: **Speakers Photo Gallery**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CISM INTERNATIONAL SYMPOSIUM


Conducting experiments to monitor the physical performance of military personnel in various climatic zones and a comparative analysis of the data obtained.


CISM
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Prepare for the conditions

TITLE
Physical Fitness Requirements for the 21st-Century Soldier: Functional Fitness Training as a Comprehensive Strategy to Increase Combat Readiness.

AUTHORS
Tom Brandt, Annette Schmidt.

INTRODUCTION
The 21st century battlefield demands soldiers to perform high-intensity physical efforts while carrying heavy external loads. Traditional military training concepts focusing primarily on aerobic fitness and muscular endurance are not sufficient to prepare soldiers for such "anaerobic battlefields". As functional fitness training (FFT), in contrast, appears particularly effective in developing key operational fitness attributes such as strength and power, we investigated the effectiveness of FFT in German soldiers.

METHODS
We conducted a series of controlled intervention studies to compare FFT with conventional military training in active-duty personnel, focusing on general physical preparedness, military task-specific performance, adherence, and feasibility. Participants represented diverse branches and ranks, with varying fitness levels and military experience. Training protocols were based on established FFT concepts (e.g., CrossFit©, HYROX®), incorporating exercises from multiple disciplines (e.g., gymnastics, weightlifting, kettlebell training, and endurance modalities) performed at varying intensities. Outcome measures included standardized field-based fitness assessments, physiological laboratory diagnostics, and data derived from wearables and questionnaires.

RESULTS
FFT led to improvements in strength, power, mobility, endurance, and body composition. Participants also demonstrated increased performance in military-specific fitness tests (e.g., casualty evacuation, movement in terrain, lifting, carrying, and dragging of loads). The versatile training was feasible for heterogeneous groups, focused on safety as well as injury prevention, and contributed to high adherence and motivation.

DISCUSSION AND CONCLUSION
FFT represents an efficient, adaptable training approach that prepares soldiers for complex physical tasks and varying mission scenarios. Integrating FFT into military conditioning programs may enhance combat readiness while reducing injury risk.

PRACTICAL IMPLICATIONS FOR CISM
Establishing FFT as an official CISM sport represents a necessary and promising step toward raising awareness of the advantages of this training methodology. Promoting its integration into military physical education programs offers the potential to systematically improve operational fitness across CISM member nations.

Tom BRANDT

Captain Tom Brandt is a postdoctoral researcher in sports biology and an Explosive Ordnance Disposal (EOD) Officer in the German Armed Forces. He serves at the University of the Bundeswehr Munich (UniBw M), where his academic and professional work bridges military performance optimization and applied exercise physiology.

Captain Brandt earned his Bachelor of Science in Sport Science (2009–2012) and Master of Science in Leadership and Management in Sports (2012–2013) from the University of the Bundeswehr Munich. He later completed his Doctorate in Sport Biology (2020–2023) at the same institution, focusing on performance physiology and health promotion through physical training interventions.

His research interests include functional fitness, workplace health promotion, stress physiology, and operational performance under demanding conditions.

Captain Brandt has presented his research at numerous international conferences, including the European College of Sport Science (ECSS), the International Congress on Soldiers' Physical Performance (ICSPP), and the Sports, Medicine and Health Summit. His work has been published in several peer-reviewed journals such as Frontiers in Public Health, Health Science Reports, Frontiers in Physiology, and Current Issues in Sport Science (CISS).

Jomar M. JUNIOR

Major Jomar M. Souza Junior is an officer of the Brazilian Air Force with extensive experience in military operations, training, and leadership.

He graduated from the Brazilian Air Force Academy in 2007 with a Bachelor's degree in Military Sciences, later earning qualifications as an Instructor of Physical Education from the Brazilian Army School of Physical Education (2012) and an MBA in Public Management with emphasis in Project and Process from the Brazilian Air Force Officer's Improvement School (2019).

He has received multiple honors, including the Air Force Silver Medal (2024), Santos Dumont Medal (2025), Military Sports Merit Medal (2024), Silver Operational Mention (2019), and the Special Operations Commendation for Operational Distinction (2017).

Jomar's professional expertise spans Special Operations, Presidential Security, Joint Terminal Attack Control (JTAC), Search and Rescue (Parajumper – PJ), Pathfinder operations, military scuba diving, and electronic warfare. He is also a certified Military Tandem Pilot and has represented Brazil in elite special operations teams.

TITLE
Implementation of Specific Physical Performance Testing for Brazilian Air Force Cadets.

AUTHORS
Jomar Matos Souza Junior, Rodrigo Felipe Monteiro, Marcelo Baldanza Ribeiro, André Brand Bezerra Coutinho, Allan da Silva Costa, Alexandre Vieira Gurgel, Leandra Souza de Mello, Eduardo Cesar Rodrigues Pereira.

INTRODUCTION
The optimal performance of military functions requires specific physical fitness levels that reflect operational demands. The current system evaluates general health-related fitness (TACF), yet lacks specificity for each officer corps.

METHODS
The working group analyzed the functional demands of three officer corps: Aviation, Infantry, and Quartermaster, and proposed new physical tests aligned with operational tasks. Tests include pull-ups, beep test, front plank, swimming, load carriage, and rope climbing.

RESULTS
Test protocols were developed for Aviation and Infantry. Each test includes annual progression goals. Quartermasters, due to administrative roles, will continue with the TACF. Data from literature and current NSCA standards supported test development.

DISCUSSION AND CONCLUSION
The Specific Physical Performance Test (TDFE) improves the alignment between training and operational requirements. It ensures cadets develop the capacities needed for future roles, increasing efficiency and reducing injury risk.

PRACTICAL IMPLICATIONS FOR CISM
The TDFE approach can be adapted to other military academies within the CISM framework to enhance role-specific readiness. This fosters resilience and mission performance.

TITLE
Infrared Thermography for Monitoring Recovery in Marathon Runner: Effects of HIIT

AUTHORS
Danielli Braga de Mello and Gelson Luiz Pierre Junior

INTRODUCTION
In endurance sports, ensuring physiological readiness and controlling training loads are vital for optimizing performance and preventing injury. Infrared thermography (IRT) has become a non-invasive method to monitor thermal asymmetries, detect early overload signs, and guide individualized recovery. This case study aimed to investigate acute physiological responses of an amateur marathon runner following a high-intensity interval training (HIIT) session.

METHODS
A case study with an amateur marathon runner submitted a HIIT protocol of 16 × 1 km intervals at 3'10"–3'15"/km. Data were collected at three moments: pre-training, post-training, and after recovery with 15 minutes of intermittent pneumatic compression (IPC). Lower-limb skin temperature was assessed with FLIR® E76, blood lactate with a Roche® analyzer, and muscle oxygen saturation (SmO) and hemoglobin (THb) with a Moxy® monitor. Thermographic images were analyzed using ThermoHuman®. Descriptive statistics was applied.

RESULTS
Baseline thermography showed a 1.45°C asymmetry in the left knee, indicating a possible pre-lesional state. Post-training, this reduced slightly to 1.28°C, further declining to 0.68°C after IPC, but returning to 1.39°C within 15 minutes, suggesting a transient recovery effect. Lactate levels were elevated at baseline (7.4 mmol/L), increased post-training (8.8 mmol/L), then dropped to 4.4 mmol/L by the ninth minute of passive recovery and to 3.6 mmol/L after IPC. SmO was low at baseline (35.5%), dropped further post-exercise (32.0%), and partially recovered (40.2%) after IPC.

DISCUSSION AND CONCLUSION
These findings underscore the sensitivity of thermography in identifying pre-lesional states and evaluating recovery responses (2). The knee asymmetry aligns with normative patterns where deviations above 1.3°C suggest overload (2). Although pneumatic compression acutely reduced thermal asymmetry, its transient effect supports the need for periodized strategies (3). Integrating thermographic, biochemical, and oxygenation data enables more precise training load monitoring and supports individualized recovery planning in endurance athletes.

PRACTICAL IMPLICATIONS FOR CISM
This study reinforces the utility of infrared thermography (IRT) as a sensitive, non-invasive tool for detecting early thermal asymmetries associated with training-induced overload—an important predictor of potential injury.

Danielli Braga de MELLO

Dr. Danielli Braga de Mello holds a Ph.D. in Public Health from FIOCRUZ (2008) and has completed two postdoctoral fellowships: Physiology in Extreme Environments at the University of Portsmouth, UK (2016), and Infrared Thermography applied to Sports at Universidad Politécnica de Madrid, Spain (2019).

She is a Full Professor at the Physical Education College of the Brazilian Army. She is also a faculty member of the Graduate Program in Human and Operational Performance at the Brazilian Air Force University and serves as Associate Editor-in-Chief of the Journal of Physical Education.

In addition, Dr. Mello is Director of the Education and Prevention Department at SOBRASA and an affiliated member of the International Drowning Research Alliance (IDRA).

Her contributions have been recognized with several awards, including the Marechal Trompowsky Medal (2025), the Brazilian Army Medal (2019), the Centennial Medal of the School of Physical Education, Military Police of Sao Paulo (2023), and the Aquatic Rescue Merit Medal (2021) from the Brazilian Society of Aquatic Rescue.

Viktor Yu. EGOROV

Colonel Viktor Egorov is a specialist in physical culture, sport science, and military physical training.
He graduated from the Military Institute of Physical Training as a Specialist in Physical Culture and Sport, and later earned his Ph.D. in Pedagogical Sciences.

Colonel Egorov has actively contributed to international scientific exchange, presenting at the CISM International Symposium 2023 (Tunisia) on Injury prevention by plyometric means of CISM athletes.

His research focuses on integrating sports methodologies into military physical preparation, with a strong emphasis on rugby as a tool for developing applied motor skills and operational readiness.

He is the author of several publications and training manuals, including works on sports and outdoor games in military training, rugby in sport-pedagogical development, and methodologies for enhancing service-applied motor skills within the Armed Forces and National Guard of the Russian Federation.

Colonel Egorov's academic and professional work highlights the intersection of sport science, pedagogy, and military physical readiness, making him a leading figure in applied military sport methodology.

TITLE
Army Rugby – Basic Military Applied Sports Game.

AUTHOR
Viktor Yu. Egorov.

INTRODUCTION
The purpose of the work is to substantiate the need to use the developed sport - army rugby in the structure of physical training of military personnel, as well as to substantiate its military-applied focus.
The difference between this sport and classic rugby is the absence of a scrum and a corridor, in the size of the playing field (20 x 30 instead of 50 x 90), uniform (military instead of sports), and the rules for implementing the attempt after a scored try. It is performed with hands at a distance of 4 meters from the point of contact of the ball in the scoring field from a distance of 10 meters with the task of getting into a limited area.
Taking into account the applicability of the game of military rugby, as a modeling activity of military personnel of some types and branches of the Armed Forces, a number of technical elements were identified (group force interaction, tough collective force interaction with the opponent, collective tactical actions, focus on solving a common problem against the background of physical activity.

METHODS
Questionnaires, surveys, observation, mathematical statistics.

RESULTS
Our research is based on the theory of readiness transfer, which is one of the most important and complex problems of physical training. Transfer is understood as the influence of one type of military serviceman's activity on another, or the influence of physical exercises on various indicators of combat training and combat military-professional activity.
The conducted studies have shown a positive transfer of readiness of the structural elements of the rugby game to combat training exercises. The demonstrated high correlation coefficients (from 0.56 to 0.68 units) confirm the need to use army rugby in the physical training of military personnel.

DISCUSSION AND CONCLUSION
Complex multivariate structural elements of the game of military rugby are connected with the structural and logical performance of service and combat tasks by military personnel. Models of service activities of military personnel imply increased physical and mental activity, solution of any tasks, variability of the range of tasks performed, increased vigilance in the performance of combat tasks. The introduction of rugby into the physical training program has a positive effect on the development of physical and military-professional motor skills of military personnel, allowing them to successfully perform training and combat tasks assigned to them.

PRACTICAL IMPLICATIONS FOR CISM
The use of military rugby and its inclusion in the structure of CISM competitions will increase the military-applied focus of team sports and increase their attractiveness for current and new CISM members.

TITLE
Problematic Aspects of Training Military Personnel from Foreign Armed Forces in Specialized Military Disciplines at Military Physical Educational Institution of the Russian Federation.

AUTHOR
Olga A. Muzhchil

INTRODUCTION
The purpose of the study is to substantiate the pedagogical conditions required for ensuring a high-quality level of military-professional training for foreign military specialists, as well as to identify key directions that would enhance the effectiveness of the learning process in acquiring professional knowledge, skills, and abilities. The findings from analyzing both theoretical and practical aspects of military pedagogy at the Military Institute of Physical Training demonstrate fundamental contradictions between:
(1) foreign military personnel's strong motivation to receive quality training and their armed forces' need of specialists in military physical training, versus (2) their limited Russian language proficiency and lack of sport-specific terminology, impairing effective professional training.

METHODS
Survey research, structured observation, academic performance metrics analysis, educational scenario simulations.

RESULTS
Analysis of the research results revealed that international cadets face significant challenges in:
• Working with specialized academic literature (37%),
• Comprehending lecture content (39%),
• Participating in oral discussions of course material (16%),
• Mastering technically complex motor skills during practical physical training sessions (53%).
A primary contributing factor is insufficient Russian language proficiency: over 80% of students experience difficulties with academic communication, while more than 10% face challenges in daily social interactions. These findings demonstrate that training foreign military specialists at military physical educational institution requires enhanced Russian language instruction methodologies tailored to their future military specialties.

DISCUSSION AND CONCLUSION
To enhance the development of profession-oriented communicative competence among military specialists and reduce the time required to master training techniques for proper execution of individual maneuvers, actions, or complex coordinated physical exercises necessary for meeting combat training standards according to their occupational roles – while accounting for the unique educational environment of military physical educational institution during practical training sessions.

PRACTICAL IMPLICATIONS FOR CISM
The implementation of training cards can be utilized within the organizational framework to establish standardized execution techniques among multinational competitors with diverse language backgrounds.

Olga A. MUZHCHIL

Olga Muzhchil is a linguist, educator, and physical education specialist with a unique interdisciplinary background combining foreign language pedagogy and sports science.

She graduated from Pyatigorsk State Linguistic University in 2004 with a degree in Theory and Methodology of Teaching Foreign Languages and Cultures (French and English), and later earned a qualification as a Physical Education and Sports Coach-Instructor from the Institute of Continuing Professional Education (2023).

Her academic research bridges the fields of linguistics, military pedagogy, and physical training, with a strong focus on developing professionally oriented lexical competence for Armed Forces students of foreign states.

She has authored multiple scientific papers exploring the intersection of language, military education, and physical culture, including comparative studies on Russian and French terminology in physical training.

Her publications span topics from linguistic methodology in military education to the cultural aspects of physical and sports activities in French-speaking countries, establishing her as a multidisciplinary scholar contributing to both military language education and physical training sciences.

Negovan IVANKOVIC

Colonel Negovan Ivanković, is an Associate Professor at the Military Academy, University of Defence in Belgrade, and serves as Chief of the Serbian Delegation to CISM.

He holds a Ph.D. in Military Chemical Engineering (University of Defence, Belgrade, 2015), a Master's degree in Environmental Control and Protection (University of Belgrade, 2009), and a Bachelor's degree in Nuclear Biological Chemical Defence (University of Defence, Belgrade, 2005).

In addition to his academic role, Colonel Ivanković is Head of the Military Pentathlon Sports Section of the Military Academy and International Military Cooperation Officer in the Dean's Office.

He lectures on OPCW international courses at the Serbian Armed Forces CBRN Centre and has participated in ERASMUS+ teaching staff mobility programs. He has contributed to numerous conferences and symposiums, including the CISM Symposium in Tunis (2023) and the 3rd Congress of Association Sport for All Serbia (2024).

His distinguished service has been recognized with several high honors, including the Silver Medal of Merit awarded by the President of the Republic of Serbia, the Order of the White Eagle with Swords (1st degree), the Military Memorial Medal for 10 years of zealous service, the Medal of High Merit in the Field of Security and Defense (President of Serbia and Montenegro), and a Reward by the Chief of the Military Academy for outstanding contributions to military service.

TITLE

Modern Innovations in Physical Education and Sports Training in Military Backgrounds

AUTHORS

Negovan Ivankovic, Dragan Todorov

ABSTRACT

This paper contributes to research in the field of military university sports and physical education, with the aim of demonstrating their potential for promoting positive practices. The paper presents innovations taking place at the Military Academy of the University of Defense in Belgrade, through the design of new methodological approaches to the training process, the development of specific training spaces and the use of modern technologies, to achieve combat psychophysical readiness of future officers to respond in accordance with the modern era challenges. In this context, the complexity of sport is presented as a phenomenon in the military environment that purposefully and continuously develops the main fundamental characteristics of the personality - the virtue of self-denial and the virtue of internal self-discipline, which in the military environment enables the mental strength development, physical endurance and the victorious character of young generations of officers, coherently with the goals and basic principles of the total defense concept of the Republic of Serbia. The effectiveness of the specific applied physical exercise and the sports achievements of the respondents were determined on the basis of the conducted interviews. All the obtained data were processed using statistical methods. It can be concluded that by implementing such a modified physical education presented in this paper, as well as a continuous training process for participation in sports competitions, psycho-physical abilities are systematically maximized. This work should be of interest to a wide range of readers, from educators to students, policymakers to educational institutions. In this sense, the work has significant practical implications for CISM in the domain of active development of sports in the member countries armed forces, in accordance with one of the goals of CISM that active members of the member countries armed forces be active athletes with a developed sports spirit!

TITLE
Optimizing Physical Training Protocols in the Military: Balancing Readiness with Injury Prevention.

AUTHOR
Femedein Timipre Okou

ABSTRACT
Modern military operations demand sustained physical excellence, but achieving this readiness without compromising soldier's health and longevity remains a growing challenge. Traditional training protocols often prioritize intensity and endurance however exercise physiology has shown that when such regimens are poorly structured or lack individualization, they are lead to overtraining, overuse injuries and long-term musculoskeletal damage, ultimately degrading operational effectiveness.

This paper critically evaluates current military physical training methods, focusing on how training volume and intensity are managed and the extent to which scientific frameworks are applied in the selection of drills.

It highlights the need for a shift toward evidence-based programming that emphasizes drills targeting the most frequently engaged muscle groups during combat and field operations. Furthermore, it examines gaps in assessment and evaluation practices, particularly the absence of formalized injury-prevention strategies and structured recovery protocols. To address these challenges, the paper advocate for the integration of mobility drills and neuromuscular training to enhance reaction time, coordination and functional resilience.

It proposes a data-driven training architecture supported by biomechanics laboratories, enabling precise analysis and interventions in areas such as operational movement efficiency, injury-risk modelling, gear ergonomics and load carriage optimization. These labs will also facilitate training regimens tailors to operational demands.

Drawing insights from elite combat units and allied military fitness models, this study emphasizes that injury prevention is not a constraint but a strategic enabler of combat sustainability, long-term readiness and the evolution of military training in the 21st century.

Femedein T. OKOU

Lt. Col. Femedein T. Okou is a Senior Lecturer with a multidisciplinary background in Human Kinetics, Sport Science, and Law. He earned a Ph.D. in Human Kinetics/Sport Science (Sport Administration & Law) from the University of Calabar (2015), alongside an LLB in Law (2016).

He further advanced his legal studies with an LLM in Law from the University of Jos (2022).

His academic foundation also includes a Master's in Human Kinetics/ Sport Science (Sport Administration & Marketing) (University of Port Harcourt, 2011), a Bachelor's in Human Kinetics/Sport Science (2005), and early training in Physical & Health Education (1999).

Lt. Col. Okou also holds a National Diploma in Nutrition and Dietetics (Kaduna State Polytechnic), complementing his expertise in sports science and health.

Professionally, he is recognized as a Training Development Advisor, Battle Fitness Specialist, and United World Wrestling International Referee License holder.

He has successfully completed the Logistics Staff Course, strengthening his profile in both academic and operational domains.

His work reflects a unique integration of sports administration, law, health sciences, and military readiness, contributing significantly to the development of human performance, fitness training, and sports governance..

Dmitriy A. Chuchvaga

Major Dmitriy Chuchvaga is a military researcher serving as Deputy Head of the Research Department at the Research Center of the Military Institute of Physical Training, Russian Federation. His work focuses on physical readiness, endurance development, and functional performance assessment of military personnel, with emphasis on modern training methodologies and artificial intelligence applications.

He holds a degree in Physical Culture and Sport and the academic title of Candidate of Pedagogical Sciences. He has participated in international scientific congresses and published research on endurance training, circuit training, plyometrics, and physical fitness assessment in military contexts.

TITLE

Results of an Assessment of the Level of Endurance Development in IN Military Personnel in Different Climatic Zones.

AUTHOR

Dmitriy A. Chuchvaga

INTRODUCTION

Climatic zones significantly influence the level of physical fitness of servicemen, and in particular, the level of endurance development. As part of the study of the influence of different climatic zones, the level of endurance development in military personnel was assessed.

METHODS

The study was conducted from July to October in 2024 with a group of Navy servicemen. Checking the level of physical fitness was carried out according to the exercise from the physical training manual.

RESULTS

The results of the study are presented in the table 1.

Control/ climate zone	Temperate continental zone (Russian Federation)	Trop. passat zone (Republic of Cuba)	Control/ climate zone	Control/ climate zone
Running 1000 m (s)	222,4±17,8	244,1±17,0	227,4±11,8	227,4±16,4

DISCUSSION AND CONCLUSION

The results of the study have shown that the tropical passat climate zone makes the highest demands on the functional state of the military personnel's body.

PRACTICAL IMPLICATIONS FOR CISM

The analysis of the study results complements modern views on the regularities of formation of adaptation reactions of the human body. It is a theoretical basis for the development of practical recommendations for the effective increase of human adaptive capabilities to extreme conditions. Conducting the training process in tropical passat climate zones will increase the adaptation of the body and will have an effective influence on the development of physical qualities in servicemen. When conducting CISM sports activities, it is important to take into account the climatic zones for predicting sports results.

TITLE
The Role of Wearable Technology in Monitoring Stress and Training Load among Military Cadets.

AUTHORS
Hashel al Tunajji, Jimmy Wright.

INTRODUCTION
Military cadets encounter distinct stressors arising from their academic, physical, and military training requirements. This study investigated the application of wrist-worn wearable technology (Garmin Forerunner 265) to monitor stress and training load, with the objective of enhancing performance and resilience.

METHODS
A cohort of 409 cadets (aged 18–22 years, 11.7% female) at Zayed Military University utilized these devices over an 18-week period. Data pertaining to Heart rate variability (HRV), resting heart rate (RHR), sleep, and activity were analyzed in conjunction with external stressors (e.g., Ramadan expeditions). The FITTeR framework (Frequency, Intensity, Type, Time, Recovery) was employed to guide stress load management.

RESULTS
Preliminary data indicated correlations between stress events (e.g., Ramadan and fitness assessments) and physiological markers (e.g., decreased HRV and increased RHR). Wearable devices provide real-time feedback and facilitate early intervention. Sleep quality and training load metrics (e.g., energy expenditure) exhibited significant variations during high-stress periods.

DISCUSSION AND CONCLUSION
Wearable technology offers actionable insights into stress management in military training. Nonetheless, behavioral barriers and compliance challenges remain. Thus, future integration with resilience-building programs is recommended.

PRACTICAL IMPLICATIONS FOR CISM
The adoption of wearable technology can optimize training-load monitoring and stress mitigation in military sports programs, thereby enhancing cadet readiness and performance.

Hashel Al TUNAJJI

Dr. Hashel is a Sport and Exercise Medicine Consultant specializing in musculoskeletal injury prevention, treatment, rehabilitation, health promotion, and performance enhancement. He has extensive experience working with elite athletes, military personnel, and high-altitude expeditions.

Dr. Hashel has served as Consultant in Sport & Exercise Medicine at Zayed Military Hospital since 2013 and as Medical Advisor & Head of the Sport Medicine & Sciences Unit at Zayed Military University since 2022.

He is the President of the UAE Sport Medicine Committee (UAE National Olympic Committee, 2019–present) and Head of the Sport Medicine & Science Committee at Abu Dhabi Athletics Club since 2022.

He was the Team Doctor for the UAE Army Forces Everest Expedition (2016), documented in an Abu Dhabi National Geography feature, and completed the Mountaineering & High Altitude Medicine Diploma Course (Medical Expeditions, UIAA approved, University of Leicester accredited, 2014–2015).

He also previously served on the UAE Football Association Sport Medicine Committee (2014–2018).

Andrei POLITOV

Colonel Andrei Politov, Ph.D. is the Head of the Research Department at the Research Center of the Military Institute of Physical Training and a member of the CISM Sport Science Commission.

He graduated from the Military Institute of Physical Training in 2006 as a Specialist in Physical Culture and Sport and earned a Master's degree in State and Municipal Administration from the Russian Academy of National Economy and Public Administration (2021).

He holds a Ph.D. in Pedagogical Sciences and the academic title of Associate Professor in "Physical Education and Professional Physical Training."

Colonel Politov has presented at international congresses, including the CISM International Symposium 2023 (Tunisia) on military physical fitness evaluation and the CISM Symposium 2021 (Ancient Olympia, Greece) on organizing global cadet sports events during the pandemic.

His research focuses on the development of normative requirements and physical training models for military personnel, including studies on endurance training using artificial intelligence. He has authored multiple publications on military physical fitness assessment and training methodologies.

TITLE

Optimization of Military Personnel's Physical Training for Operations in Hot Climate Conditions: Physiological Aspects and Methodological Approaches.

AUTHOR

Andrei Politov.

INTRODUCTION

Relevance. Conducting combat and operational tasks in hot climates (deserts, tropics) involves extreme heat stress, leading to risks of heat-related injuries (exhaustion, heat stroke), a sharp decline in physical and cognitive performance, dehydration, and electrolyte imbalance. Traditional physical training (PT) programs do not fully account for the specific effects of high temperature, humidity, and solar radiation on the body while wearing gear and performing combat missions. There is a need to develop specialized methods aimed at enhancing thermotolerance and maintaining functional capabilities in extreme heat.

METHODS

The study involved 50 military personnel (aged 22-30 years), divided into an experimental group (EG, n=25) and a control group (CG, n=25). Over six weeks, the EG followed an original training protocol, which included: Gradual Heat Acclimation, Specialized Endurance Training, Strict Hydration Protocol, Cognitive-Physical Drills, and Cooling Strategies Training.

RESULTS

Military personnel of the experimental group (EG) demonstrated statistically significant ($p<0.05$) improvements compared to the control group (CG):

1. **Enhanced Thermoregulation:** 0.8°C lower core temperature increase under identical workloads, earlier onset of sweating, and improved sweating efficiency
2. **Reduced Dehydration & Better Electrolyte Balance:** 35% lower dehydration levels, more stable electrolyte levels
3. **Increased Heat Endurance:** 25% longer time to exhaustion in hot conditions.
4. **Improved Physical Performance:**12% faster 5-km march time in full gear, and 15% increase in muscular endurance.
5. **Preserved Cognitive Function:** 30% better maintenance of attention and reaction speed post-exercise.
6. **Enhanced Operational Effectiveness:** Higher accuracy in tactical task execution under heat stress, and improved marksmanship precision after forced marches

DISCUSSION AND CONCLUSION

The developed physical training methodology, based on principles of gradual heat acclimation, strict hydration monitoring, specialized endurance training, and integrated cognitive-physical exercises, has demonstrated high efficacy. It significantly:

1. Enhances thermotolerance
2. Reduces risks of heat-related injuries
3. Maintains both physical and cognitive performance

Preserves operational effectiveness of military personnel in hot climates.

TITLE
Hydration Analysis of Women During the Brazilian Marine Corps Basic Military Training Course.

AUTHORS
Guillermo Portugal, Marcus Cattem, Valeria Faria, Leonardo Leal, Priscila Bunn, Bruno Viana, Josely Koury, Elirez Silva.

INTRODUCTION
Adequate hydration is essential for physical performance. During the Brazilian Marine Corps Recruit Training Course (C-FSD-FN), maintaining fluid balance may preserve responsiveness and operational performance. Bioelectrical Impedance Vector Analysis (BIVA) allows qualitative and quantitative assessment of hydration status, based on raw resistance (R) and reactance (Xc) values normalized by height (R/h and Xc/h) and RXc graph analysis. This study aimed to assess hydration status in women during the C-FSD-FN.

METHODS
Fourteen women (19.10 ± 1.30 years; 62.40 ± 10.60 kg; 1.62 ± 0.06 m) were randomly selected from 60 candidates. Measurements occurred at three time points (beginning, middle, end of the training week), in the morning, after overnight fasting and bladder voiding, with no diuretic use. Participants wore light clothing and were not menstruating. Fluid intake was self-reported. A Biodynamics 450 analyzer and BIVA software were used. Confidence ellipses were analyzed using Hotelling's T^2 and Mahalanobis distance (D; α = 0.05).

RESULTS
No significant differences were found between ellipses: beginning vs. middle (T^2 = 6.3; p = 0.068; D = 1.00), beginning vs. end (T^2 = 1.8; p = 0.426; D = 0.53), and middle vs. end (T^2 = 1.3; p = 0.546; D = 0.46). Vector lengths in tolerance ellipses indicated good hydration at all time points. Mean fluid intake was 2,855.28 mL per participant.

DISCUSSION AND CONCLUSION
Participants remained well hydrated. No signs or symptoms of dehydration were observed. Fluid intake was sufficient to maintain physiological stability. Future steps may include integrated monitoring of hydration and menstrual cycles to better understand fluid balance in female military personnel.

PRACTICAL IMPLICATIONS FOR CISM
This study highlights the utility of non-invasive technologies such as BIVA for monitoring hydration in military personnel. Its use may support training safety and performance and assist commanders in adjusting load and fluid strategies.

Guillermo PORTUGAL

Lieutenant (Marine Corps) Portugal is a Ph.D. student in the Graduate Program in Exercise and Sport Sciences at Rio de Janeiro State University.

He holds a Master's degree in Operational Human Performance from the Air Force University (UNIFA) and a Bachelor's degree in Nutrition from Estácio de Sá University, along with a Graduate Specialization in Combatant Physical Performance from CEFAN/UNIFA.

He also earned a Bachelor's degree in Naval Sciences from the Brazilian Naval Academy and completed the Staff Course for Intermediate Officers at the Naval War College.

Lieutenant Portugal is a member of the International Society for the Advancement of Kinanthropometry (ISAK) and has completed advanced military training, including the Marine Corps Officer Improvement Course and the Special Amphibious Warfare Internship at CIASC.

He currently serves as a researcher at the Laboratory of Exercise and Performance Science (LABOCE) and as Head of the Technological Innovation Cell at the Admiral Adalberto Nunes Physical Education Center (CEFAN).

Francisco HIDALGO

Lt. Col. Francisco Hidalgo is a military officer and researcher specializing in the relationship between physical activity, health, and performance in both military and clinical populations. He holds a Master's Degree in Physical Activity and Health (2016–2017) and a Degree in Physical Activity and Sport Sciences (2012–2015) from Madrid European University.

His research interests focus on the role of exercise in cancer rehabilitation and the psychophysiological demands of military tasks under extreme conditions.

He has actively contributed to international scientific congresses, including presentations on the benefits of physical exercise for lung cancer patients (2024) and the integration of exercise in thoracic surgery care (2023).

Lt. Col. Hidalgo has also co-authored peer-reviewed publications, notably in the International Journal of Sports Medicine (2020) on exercise interventions for breast cancer survivors, and in Physiology & Behavior (2019) on psychophysiological responses during military tasks with NBC equipment.

He combines scientific expertise with operational experience, contributing to the advancement of evidence-based practices in military physical readiness and clinical exercise oncology.

TITLE

Analysis of the Benefits of Physical Exercise in Lung Cancer Patients within the Spanish Ministry of Defence.

AUTHORS

Francisco Hidalgo,Victor Antolin, Ana Oreja, Sergio Perez.

INTRODUCTION

According to the WHO, 1 in 3 cancer deaths are influenced by modifiable factors, one of which is a sedentary lifestyle. Furthermore, this same institution has established that between 30 and 50% of cancers could be prevented by adopting certain habits, which include physical exercise. There are even percentages of relative risk reduction for the development of different types of tumors attributable to physical exercise.

Currently, there is sufficient evidence to support the inclusion of physical exercise in all phases of disease treatment. In this sense, both aerobic and strength training can produce improvements in both cardiovascular and neuromuscular fitness in cancer survivors. These improvements are the basis for achieving benefits related to the short, medium and long-term side effects of cancer treatments or the disease itself, such as: peripheral neuropathy, myalgia or arthralgia, impaired bone health, sarcopenia, cardiotoxicity, chronic fatigue associated with cancer, quality of life, anxiety and depression among others.

METHODS

The project is based on a longitudinal descriptive study. Potential study participants are military or civilian personnel assigned to the Ministry of Defense. The program will last six months and consists of two 90-minute concurrent aerobic and strength training sessions per week, in addition to a monthly 60-minute physical therapy session, based on the patients' needs. Test to be performed (pre and post):Cardiorespiratory fitness test, Stationary bike power test, Upper body strength test, Lower body strength test, and Fatigue and Quality of Life questionnaires (EORTC QLQ-C30 questionnaire): Baseline and final. Statistical analysis. A repeated-measures ANOVA will be performed to analyze the evolution of the patients' physical fitness during the exercise program. Statistical analyses will be performed using SPSS software (IBM, Armonk, NY) with a significance level of $p < 0.05$.

RESULTS

Not yet. The personnel selection process is being finalized at the Ministry of Defense and will begin in September 2025.

DISCUSSION AND CONCLUSION

Not yet. The personnel selection process is being finalized.

PRACTICAL IMPLICATIONS FOR CISM

According to scientific literature, one in two men and one in three women will suffer from cancer in their lifetime. This applies to both civilians and military personnel, so the existing research in this field regarding the influence of exercise on the disease is truly important for military personnel as well.

TITLE
Physiological and Physical Performance Responses in a Specific MMA Test among Advanced and Novice Athletes.

AUTHORS
Eduardo Figueira Rodrigues, Fabricio Boscolo, Jose Vilaca-Alves, Joao Ferreira Lima Neto,Agata Aranha.

INTRODUCTION
Mixed Martial Arts (MMA) lacks specific tests to evaluate physical performance. The Anaerobic Specific Assessment for MMA (ASAMMA) is a promising tool for this purpose. This study aimed to apply ASAMMA to MMA athletes and compare performance and physiological responses between advanced and novice groups.

METHODS
Twenty male MMA athletes (10 advanced, 10 novice) performed the ASAMMA protocol. Advanced athletes completed three rounds, while novices performed one. Heart rate (HR), blood lactate, total movement sequences, and fatigue index were assessed.

RESULTS
Advanced athletes showed lower HR (167±7.3 bpm) than novices (179±3.8 bpm, $p<0.001$), and performed more sequences in round one (71.8 vs. 65.6, $p=0.003$). Lactate levels were high in both groups, with significant increases across rounds in advanced athletes ($p=0.011$). The fatigue index indicated high resistance in trained individuals (0.90±0.08).

DISCUSSION AND CONCLUSION
ASAMMA successfully distinguished between performance levels, with advanced athletes showing greater efficiency and fatigue resistance. The test reproduces competitive demands and may support performance tracking and training adjustments in MMA.

PRACTICAL IMPLICATIONS FOR CISM
The ASAMMA protocol can enhance combat sports evaluation routines and support training periodization in military athletes, aligning with CISM's goals of optimizing physical readiness.

Eduardo RODRIGUES

Dr. Eduardo Rodrigues is a specialist in combat sports science, athlete performance, and operational physical preparation for military and security contexts.

He completed his postdoctoral studies at UTAD – Trás os Montes University (2023) on athlete performance in MMA, earned a Ph.D. in Sport Science from AIU University (2020), and holds multiple postgraduate degrees, including Higher Education (Darwin University, 2011) and Physiology of Sport (Nova Unig, 2010).

He graduated in Physical Education (2008) and obtained a Diploma in Sports Medicine (2008).

Dr. Rodrigues has presented at numerous scientific events, including the Scientific Conference on Physical Readiness in Armed Forces (UAE, 2024) and the GCC Scientific Conference – Land Forces (UAE, 2025). His publications include works on combat sports, such as contributions to Tatame Magazine, the International Journal of Development Research, and Motricidade.

He has led projects such as System Approach Training (SAT) for Armed Forces, Conditioning Check for Jiu-Jitsu, and specialized combat training syllabi for military and airport security forces. His professional achievements highlight his role in advancing training methodologies and bridging high-performance combat sports with military operational readiness.

Gala Dinner & Gift Exchange

Gala Dinner & Gift Exchange

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Day 3: **Speakers Photo Gallery**


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Functional Circuit Structure and Flow
Post-round running stimulus
Continuous runs (~300m) or
High-intensity sprints (5x50m)
~12 stations, 45s work / 20s rest
3 full rounds, 3 min recovery between rounds
Warm-up: cardio + neuromuscular activation
Cool-down: relaxation and mobility
Station design alternated muscle groups
to avoid fatigue and maintain output


Introduce mindfulness & benefits
Explore mindfulness approaches
Phase A (Ir
B (Practice – 2 sessions / 4 weeks)
Phase B (I
ication – 3 sessions / 6 weeks)
Phase C (
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Biosensor Science:
Scientific & Technological Foundations
"To understand the power of biosensors, we must first understand their anatomy."
BIORECEPTOR
SIGNAL PROCESSOR
TRANSDUCER


multidisciplinary approach in pain management
2025


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SYMPOSIUM
2025

Oleg S. BOTSMAN

Maj. Gen. O.S. Botsman is a distinguished scholar and practitioner in the field of military physical training and sport development. He graduated from the Military Institute of Physical Training in 1987 as a Specialist in Physical Culture and Sport and has since dedicated his career to advancing physical education and performance in the Armed Forces.

He has participated in key international scientific forums, including the CISM International Symposium in Tunisia (2023) and Ancient Olympia, Greece (2021), where he presented research on the role of military physical training in leadership development and the historical legacy of the Military Institute of Physical Culture.

Dr. Botsman has authored numerous influential publications on the evolution of military sport, the role of CISM in the global military sports movement, and the institutional development of the Military Institute of Physical Training.

His works are widely cited in the fields of physical readiness, pedagogy, and the history of military sport.

He holds a Ph.D. in Pedagogical Sciences, the academic title of Associate Professor in Physical Education and Professional Physical Training, and is recognized as an Honored Worker of Physical Training of the Russian Federation.

In addition, he is a Russian Master of Sport, underscoring his integration of academic excellence with athletic achievement.

TITLE

Current Issues of the Development and Assessment of Flexibility of Senior Military Personnel.

AUTHOR

Oleg S. Botsman

INTRODUCTION

According to the World Health Organization (WHO) definition, senior military personnel include middle-aged (45–59 years) and elderly (60–74 years) individuals. The physiological characteristics of service members of this age group determine the health-oriented approach to their physical training, one of the key objectives of which is to develop flexibility and joint mobility. It should be noted that flexibility indicators – defined as the ability to perform active and passive movements with maximum range of motion – decline significantly with age among military personnel.

METHODS

- Theoretical analysis and synthesis;
- Questionnaire surveys;
- Joint mobility assessment tests ("Shoulder Rotation Test", "Splits," and "Forward Bend");
- Experiment (the experimental group consisted of senior officers, n=84);
- Mathematical statistics methods (Student's t-test).

RESULTS

To develop flexibility of senior military personnel, specialized stretching exercise complexes were developed along with a methodology for their implementation during physical training. The didactic foundation of the experimental methodology included:

- The repeated dynamic stretching method (muscle and ligament stretching was performed at 50-80% of maximum range; each complex consisted of 8-10 active and passive exercises repeated 8-16 times each);
- The repeated static stretching method (each complex included 5-6 static positions held at maximum muscle and ligament tension for no more than 6-10 seconds); and
- The combined method, which involved a rational combination of static and dynamic exercises.

The experimental results demonstrated the effectiveness of the proposed flexibility development methodology for senior military personnel. The experimental group showed statistically significant improvements in joint mobility as measured by the shoulder rotation, splits, and forward bend tests ($p<0.05$).

DISCUSSION AND CONCLUSION

Thus, the methodology for developing flexibility and joint mobility based on complexes of dynamic and static exercises is recommended for implementation in the physical training of senior military personnel. Among flexibility tests, the most informative is the "Forward Bend" test, which assesses spinal and hip joint mobility.

TITLE
Methods of Adaptive Physical Education of Military Personnel with Disabilities.

AUTHORS
Oleg S. Botsman, Dr. Tatyana A. Selitrenikova.

INTRODUCTION
The modern period places high demands on the activities of military personnel of the Armed Forces of the Russian Federation and involves the creation of flexible training approaches that ensure a high level of their professional skills. One of the main places in this process should belong to adaptive physical culture.
One of the problems of physical training of personnel is the lack of clear regulations for the organization of adaptive physical culture. Structuring the physical training system will increase the level of combat capability of personnel through the implementation of specific techniques, depending on the existing disorder of their body.

METHODS
The analysis of scientific and methodological literature and medical documentation, assessment of the level of general physical fitness and formation of motor abilities of military personnel, methods of mathematical statistics were used.

RESULTS
5,887 sick leave sheets and 3,825 medical records for 2023-2024 were analyzed. 49.7% of military personnel aged 20-25 sought medical help. The number of cases aged 26-30 was 35.4 people per 100 military personnel, and the number of cases of disability was 47.9 people ($p<0.05$). The main place in the structure of diseases of military personnel belongs to diseases of the musculoskeletal system (42.8%), cardiovascular system (31.0%), digestive system (20.9%).
The methods of adaptive physical education of military personnel with diseases of the cardiovascular and musculoskeletal systems included classes in Nordic walking and swimming, as the absence of contraindications to such activities has been proven.
The level of physical fitness of the military personnel of the experimental groups reached the level of "above average", while in the control group it remained "average".

DISCUSSION AND CONCLUSION
Scandinavian walking techniques have been proven to have the best effect on the body of military personnel with diseases of the cardiovascular system. After the experiment, 78% of the subjects from the first experimental group had a pulse recovery period of less than three minutes, which is 12% higher than before the study. The indicator increased by 22% in the military personnel from the second experimental group, and by 4% in the control group.

PRACTICAL IMPLICATIONS FOR CISM
The intensification of the requirements for the physical training of military personnel entails the improvement of the functional reserves of their bodies through regular physical activity throughout his professional activity.

Oleg S. BOTSMAN

Maj. Gen. O.S. Botsman is a distinguished scholar and practitioner in the field of military physical training and sport development. He graduated from the Military Institute of Physical Training in 1987 as a Specialist in Physical Culture and Sport and has since dedicated his career to advancing physical education and performance in the Armed Forces.

He has participated in key international scientific forums, including the CISM International Symposium in Tunisia (2023) and Ancient Olympia, Greece (2021), where he presented research on the role of military physical training in leadership development and the historical legacy of the Military Institute of Physical Culture.

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His works are widely cited in the fields of physical readiness, pedagogy, and the history of military sport.

He holds a Ph.D. in Pedagogical Sciences, the academic title of Associate Professor in Physical Education and Professional Physical Training, and is recognized as an Honored Worker of Physical Training of the Russian Federation.

In addition, he is a Russian Master of Sport, underscoring his integration of academic excellence with athletic achievement.

Dmitrii KADIASHKIN

Lt. Col. Dmitrii A. Kadyashkin serves as Senior Inspector of the Department of Physical Training and Sport of the Armed Forces of the Russian Federation.

He graduated from the Saratov Military Institute of Radiation, Chemical and Biological Defense in 2001 with a specialization as a Chemist and Organic Synthesis Technologist.

He holds a Ph.D. in Pedagogical Sciences and has contributed to the advancement of physical training methodologies for military personnel, with a particular focus on the development of professionally important qualities in flight personnel and the integration of psychological and pedagogical approaches in military education.

Lt. Col. Kadyashkin is the author of several scientific works, including studies published in the Tambov University Bulletin and the Scientific Notes of P.F. Lesgaft University, addressing innovative approaches to physical training and the role of sport and game-based exercises in military training contexts.

TITLE

Studying the Interrelationships of Indicators of the Functional State of the Body, Physical Performance and Adaptive Capabilities of the Body of Military Personnel During Exercises in the Cold Climatic Conditions of the Arctic.

AUTHOR

Sergey P. Gribchenko presented by Dmitrii Kadiashkin

INTRODUCTION

The purpose of the study is to study the effect of adverse cold conditions on the body of military personnel, in order to increase their physical fitness, survival and ability to perform their combat training tasks.

The results of the analysis of the theory and practice of military pedagogy indicate the presence of objective contradictions, on the one hand, the high requirements of modern combat in the proposed theater of operations, characterized by high intensity, the presence of natural obstacles and the impact of adverse climatic factors on military personnel, the conditions of daily activity of troops, requirements for the level of professional performance and physical fitness, On the other hand, they are not sufficiently prepared for prolonged operations in extremely cold weather conditions, in special equipment with equipment, due to low endurance development, unstable psychological adaptation, lack of special knowledge and fundamentals of survival in a cold environment.

METHODS

Correlation analysis, statistical data analysis, chronogram analysis, Cosynor analysis.

RESULTS

Correlation analysis in one experimental group showed strong links between the Kwaas endurance coefficient and both cold-test performance ($r=0.79$) and 100 m run times ($r=0.56$), indicating that improved cold adaptation is associated with slower sprint speed—a known training effect. Subjective indicators of functional state (well-being, activity, mood) also correlated strongly with exercise volume, including outdoor activity ($r=0.79$; 0.64; 0.80). In the second group, notable correlations included BMI with pull-up performance ($r=-0.57$) and vital lung capacity and heart rate with 100 m run results ($r=0.65$; 0.75), highlighting how functional state improvements depend on training. Daily monitoring of body temperature and heart rate (six times over 24 h) confirmed normal chronograms in both groups. Further kosinor analysis showed a significant circadian rhythm in military personnel ($p<0.05$).

DISCUSSION AND CONCLUSION

All this means that the adaptive capabilities of the body of military personnel are relatively high and allow them to tolerate the effects of adverse environmental factors and professional activities well. The studies conducted on a field trip to the Arctic with military personnel were not extreme in terms of physical and psychological stress, as well as conditions, so the military personnel turned out to be sufficiently prepared to act in such an environment.

PRACTICAL IMPLICATIONS FOR CISM

In relation to events held by the International Council of Military Sports, depending on the climatic and geographical location, it is possible to take into account the stage of adaptation of athletes, for this purpose, to plan, if possible, the early arrival of athletes before the start of sporting events in order to achieve better results.

TITLE
Preventing Chronic Pain: A Multidisciplinary Approach for Military Readiness and Resilience

AUTHOR
Farah Saeed Mohammad Al-Zaabi

ABSTRACT
Injuries among soldiers pose significant challenges to military readiness and can lead to chronic pain, impacting long-term health and operational effectiveness. This review examines strategies to maintain physical readiness and resilience in soldiers after injuries, while preventing the development of chronic pain.

Key findings include:

1. Early intervention is crucial: Prompt referral to Interdisciplinary Pain Management Centers (IPMCs) within 19 months of initial duty restriction reduces the likelihood of permanent profile status.

2. Multidisciplinary approach: Combining physical training, psychological support, and pain management techniques improves outcomes.

3. Emphasis on non-pharmacological therapies: Early implementation of non-pharmacological treatments (NPT) is associated with better functional outcomes and reduced reliance on opioids.

4. Addressing psychological factors: Targeting depression, anxiety, and pain catastrophizing can significantly impact pain perception and management [5][6].

5. Optimizing physical training: Balancing fitness improvement with injury risk through tailored, evidence-based programs.

6. Promoting resilience: Fostering coping skills and self-efficacy to improve pain management and functional outcomes.

Implementing these strategies can help maintain soldier readiness, reduce chronic pain development, and improve long-term health outcomes in military populations.

Farah Saeed Al ZAABI

Col. Dr. Farah Saeed Al Zaabi is a consultant in Family Medicine and Pain Management and currently serves as Head of the Division of Health Safety and Head of the Division of Medical Education and Training at the UAE Ministry of Defense.

She is the founder and team leader of the Chronic Pain Service at Zayed Military Hospital, where she has also served as Director of Medical Education and Designated Institutional Official (DIO).

She holds an MD and FCFP in Family Medicine from the University of Toronto, Canada, with fellowships in Chronic Pain Management & Addiction and Medical Education, in addition to an Executive Master's in Health Administration from Zayed University, UAE.

Dr. Al Zaabi is also a Clinical Assistant Professor and board member of the College of Medicine, United Arab Emirates University, actively contributing to medical training, teaching, and mentorship.

She has presented at ICMM World Congresses, WONCA, Arab Health, and multiple regional medical conferences, and her research focuses on primary care, chronic pain, and health in military populations.

She has received international awards in education and research and holds leadership positions in the Emirates Family Medicine Society and the Gulf Association of Family Medicine, in addition to serving on national and regional committees for medical education and accreditation.

Thuraya BALHAJ

Col. Thuraya Balhaj is a Consultant Psychiatrist at the UAE Ministry of Defense with extensive expertise in military mental health and psychological readiness. She holds a Bachelor of Medicine from the Royal College of Surgeons in Ireland, became a Member of the Royal College of Psychiatrists, UK (2012), and completed a Fellowship in Consultation Liaison Psychiatry at the University of Toronto, Canada (2017).

She has presented at leading international and regional conferences, including the GCC Scientific Conference on Physical Readiness (2024, 2025), the Dubai Airshow (2023), and IDEX (2023), focusing on the intersections of mental health, aviation, combat readiness, and military efficiency.

Col. Balhaj also played a key role in the development of medical and psychological readiness policies and standards for the UAE Armed Forces, reinforcing the importance of mental health in operational performance and resilience.

TITLE

The Power of Psychological Readiness in Enhancing Physical Performance

AUTHOR

Thuraya Balhaj

ABSTRACT

Psychological readiness is a key determinant of performance in both physical and mental domains, whether in military, athletic, or civilian contexts. This lecture defines psychological readiness as a state of cognitive, emotional, and behavioral preparedness that enables individuals to manage diverse situations efficiently, maintain stability, and adapt effectively to unforeseen challenges.

The presentation will explore how psychological stability directly influences general well-being, decision-making, and consistent performance under pressure. Core components of psychological readiness will be discussed, alongside an analysis of the various internal and external factors—such as experience, learning, and coping strategies—that impact mental resilience and adaptability.

Scientific evidence will be presented to demonstrate the integral connection between mental health and physical performance, illustrating how psychological balance supports sustained physical readiness. The lecture will also introduce practical techniques for enhancing psychological readiness, including relaxation methods, mindfulness, meditation, and targeted mental exercises. Developing these mental and emotional skills fosters greater resilience, balance, and confidence, enabling individuals to meet the demands of modern life and high-pressure environments with greater success.

This comprehensive approach provides participants with evidence-based tools to cultivate psychological readiness as a vital component of optimal physical performance and overall well-being.

TITLE
Optimizing Physical Readiness Through Mindfulness and Reflective Practice: Facilitating Healthy Lifestyle Behavior Change in Military Recruits.

AUTHORS
Gareth Picknell, Brendan Cropley, Stephen Mellalieu, Sheldon Hanton, Mouza Al Shehhi.

INTRODUCTION
As the operational demands on armed forces evolve, achieving and sustaining optimal physical readiness requires more than physical training alone. Psychological strategies that support healthy lifestyle behaviors are increasingly critical for long-term resilience and performance. This study evaluated the impact of integrating mindfulness and structured reflective practice into a multimodal health promotion program for facilitating healthy lifestyle behaviors and health related outcomes of military recruits.

METHODS
150 participants (mean age: 17.7 years; BMI: 44.2 kg/m^2) were randomly allocated to one of three intervention groups: (1) generic health and fitness training, (2) health and fitness plus mindfulness training, and (3) health and fitness plus mindfulness and reflective practice training. Pre- and post-intervention assessments measured physical outcomes (body composition and cardiorespiratory fitness), while process evaluations captured the development of mindfulness and reflection skills at four time points.

RESULTS
Significant interaction effects were observed for mindfulness and reflective practice skill development across groups, $F(6, 242)=5.3$, $p<0.05$. Post-hoc comparisons revealed that Groups 2 and 3 outperformed Group 1, with no significant differences between Groups 2 and 3. Importantly, although all groups improved in physical health markers over time, Group 3 achieved superior changes in waist-to-height ratio, $F(2, 123)=10.8$, $p<0.01$, and body fat percentage, $F(2, 123)=49.2$, $p<0.01$.

CONCLUSION
These findings suggest that the integration of psychological strategies, particularly RP, alongside traditional training can enhance both intrapersonal skills and physical health outcomes in health-compromised military recruits. The study offers novel empirical support for RP as a tool that not only complements existing military health programs but may also foster sustained behavior change beyond service.

PRACTICAL IMPLICATIONS
This has important implications for future interventions aimed at building physical readiness and long-term resilience within and beyond the armed forces.

Gareth PICKNELL

Dr. Gareth is an accomplished scholar in the field of sport and health, with extensive expertise in health sciences, performance enhancement and education.

He earned his Ph.D. in Health Sciences from the School of Sport & Health Sciences, Cardiff Metropolitan University, United Kingdom (2020). Prior to this, he completed a Master's Degree in Sport Science at the same institution in 2006, and a Bachelor's Degree in Sport Science from the Faculty of Life Sciences & Education, University of Glamorgan, United Kingdom.

Dr. Gareth is also a qualified educator, holding a Postgraduate Certificate in Education in Post-Compulsory Education & Training from the School of Social Sciences, Cardiff University, United Kingdom (2007).

His multidisciplinary background enables him to bridge the fields of sports performance, health sciences, and education, contributing both to research and the practical development of athletes and students.

He has actively contributed to international research, presenting on interdisciplinary approaches to military physical readiness at conferences in the UAE, Turkey, and online.

Dr. Gareth has contributed extensively to the field of sport and exercise sciences through research on reflective practice.

Arto GRASTEN

Ass. Prof. Arto Grasten is a distinguished scholar in sport sciences at the University of Jyvaskyla, Finland (since August 2014).

He earned his Master of Education (MEd) from the University of Lapland, Finland (2002) and holds multiple teaching certificates in Physical Education, Health Education, and Elementary Education from the University of Jyvaskyla and University of Lapland.

He also participated in an Exchange Student Program at the University of Northern British Columbia, Canada (1999–2000) and completed his military service as a Lance Corporal in the Finnish Defence Forces.

Dr. Grasten has delivered keynote and oral presentations globally, focusing on physical activity, motor competence, health behaviors, and self-determination in physical activity engagement. His research emphasizes motivation, motor competence, fitness, and health outcomes, with longitudinal studies exploring psychological factors behind physical activity from childhood to adolescence.

His contributions have been recognized through numerous awards and honors, including excellence in scholarship, research merit, best presentation, and outstanding student research, as well as national recognition from the Finnish Society of Sport Sciences and the Finnish Defence Forces.

TITLE
Fostering Exercise Motivation in Youth Preparing for Military Service: Self-Determination Theory Approach.

AUTHORS
Arto Grasten, Gehan Handouk, Balazs Gabor, Jamal Alnuaimi.

INTRODUCTION
In demanding military settings, physical training is crucial for enhancing performance, resilience, teamwork, and maintaining sustained readiness. However, conventional training methods often emphasize compliance over commitment. This presentation examines how Self-Determination Theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2017) can transform military training by prioritizing intrinsic motivation. By fostering self-determined motivation, we can develop more committed, adaptable, and mentally resilient national service entrants. This study aimed to examine whether body mass index (BMI), hand grip strength, and moderate-to-vigorous physical activity (MVPA) predicted motivational regulation among college students around the age of entering national service.

METHODS
The study employed a follow-up design, eight weeks apart, to examine gender differences in self-determined motivational regulation using path analysis. Participants included 280 youth (255 girls, 25 boys), aged 16 to 28 years (M = 20.45, SD = 1.96). Data were collected on body mass index (BMI), grip strength, and moderate-to-vigorous physical activity (MVPA) using standardized protocols. Motivation was assessed using validated self-report measures aligned with Self-Determination Theory, which captured six regulatory styles (intrinsic, integrated, identified, introjected, external, and non-regulation) across two time points. Structural equation modelling with multi-group analysis was conducted to explore predictive relationships and gender-specific patterns.

RESULTS
The path model showed gender differences in motivational regulation. For girls, grip strength positively predicted intrinsic and identified regulation, while BMI negatively predicted intrinsic and integrated regulation. MVPA was linked to higher identified regulation and lower amotivation. For boys, only grip strength predicted identified regulation (positively) and amotivation (negatively) at Time 1, but their motivational variables were more predictive over time. Girls showed stronger immediate links between physical fitness and motivation, whereas boys' motivation was more temporally stable but less influenced by BMI, MVPA, or strength.

DISCUSSION AND CONCLUSION
The study highlights gender differences in youth motivation for physical activity. For girls, grip strength, BMI, and MVPA strongly shaped more autonomous motivation, suggesting physical competence and activity engagement are key. Boys' motivation was less tied to physical attributes but showed stronger stability over time.

PRACTICAL IMPLICATIONS
Findings provide guidance for military training of youth conscripts. For girls, pre-service programs should build muscular strength and promote regular activity to boost intrinsic and identified motivation, improving resilience in demanding settings. For boys, early focus on intrinsic motivation—emphasizing mastery, purpose, and autonomy—can sustain engagement over time. Military training should adopt motivational climates that support competence and self-determined goals rather than relying on external pressure, helping reduce dropout and enhance both physical readiness and psychological commitment.

TITLE
Sport as a Holistic Strategy for Military Interoperability: A Metaphysical–Biohacking Approach

AUTHORS
Dragan Todorov, Negovan Ivankovic

ABSTRACT
This paper investigates the metaphysical dimension of sport as a comprehensive approach to enhancing military interoperability, emphasizing improving physical readiness, health, self-confidence, and the overall quality of life among military personnel. Underpinned by optimal mental and physical flexibility, strength, and endurance, the body's homeostatic control mechanisms establish the essential conditions for optimal physiological functioning. Within this context, sport is conceptualized as a structured behavioral model that supports sustainable practices and fosters the cultivation of both physical and spiritual culture in military environments. Empirical evidence indicates that various biosocial threats and operational stressors can be effectively mitigated through targeted physical training programs, provided these are grounded in a balanced development of psychological, somatic, cognitive, and energetic capacities. Optimal performance in this domain is contingent upon a harmonious integration of motivation, belief, determination, commitment, discipline, consistency, and effort among service members. This study presents actionable insights for practical implementation by employing a qualitative research design comprising observation, documentary analysis, expert interviews, and the author's professional experience in military sports. In alignment with the mission of the International Military Sports Council (CISM), the paper proposes a sustainable model for fostering a sport-oriented military lifestyle, grounded in the principles of biohacking and valeology. This paradigm is positioned as a viable and forward-looking strategy for enhancing military interoperability through holistic approaches to personnel development.

Dragan TODOROV

Lt. Col. Dragan Todorov holds a Doctor of Science in Military Science from the University of Defence of the Republic of Serbia (2014), with a dissertation titled "Contribution of Military Sporting Events to Strengthening International Military Cooperation in the Balkans".

He has actively participated in international military sports congresses, including CISM Symposium 2008 (Sofia) and CISM Symposium 2023 (Tunis).

His publications include the monograph Sport and International Military Cooperation (Belgrade, 2016) and Metaphysics of Sport and Security (Conference Proceedings, 2016).

Lt. Col. Todorov's distinguished contributions have been recognized with multiple CISM Orders of Merit, including Knight (2009), Silver Star (2013), and Grand Knight (2024).

Sabrina CELESTINO

Sabrina Celestino holds a Master's degree in Social Work from the University of the State of Rio de Janeiro (2011) and a Doctorate in Social Work from the Pontifical Catholic University of Rio de Janeiro (2016).

She is currently undertaking a postdoctoral fellowship in the Department of Psychology at the Pontifical Catholic University of Rio de Janeiro (2025–2027).

Celestino has actively contributed to international research and conferences, presenting on topics including physical training for military personnel, career cycles and family life impacts of military retirement, women in military careers, and the human dimension in the Brazilian Army.

Her work has been presented at the International Symposium on Sports Sciences (CELAFISCS), the World Congress of Political Science, the Brazilian Congress of Sociology, and multiple national and international defense and quality-of-life forums.

Her professional contributions have been recognized with several honors, including the Brazilian Army Medal (2022), the Friends of the Brazilian Navy Medal (2023), and the Mario Travassos Project Award for Best Opinion Article in the Brazilian Army Civilian Professor category (2025).

TITLE
Human Dimension, Social Resilience and Neuroscience Applied to the Military Context: Literature and Doctrine Review

AUTHORS
Sabrina Celestino, Felipe Carvalho Alves, Michela de Souza Cotian, Rodrigo Bandeira Silva.

INTRODUCTION
The mental health of athletes has become a growing concern among national and international managers of high-performance sports. Once their socio-emotional challenges often go beyond the competitive environment and reflect in their personal lives. Understanding that the mental health involves individual and collective aspects, this study analyzes the concept of social support as an indicator of mental health.

METHODS
This is a qualitative, descriptive study, guided by the narrative analysis of the existing literature on social support applied to sports. We used the terms "social support", "athletes" and "mental health" as search descriptors in the Scielo and PubMed databases.

RESULTS
Social support can be defined as the perception that there are people or institutions willing to offer emotional, informational or instrumental help in challenging situations (Pais Ribeiro, 2011). This perception has a direct impact on how individuals deal with stress, regulate their emotions and maintain their motivation over time (Sarason et al., 1983). Research indicates that athletes with a greater perception of social support tend to have a lower incidence of anxiety and depression, greater adherence to training and greater ease in overcoming adversity (Howells; Fletcher, 2015).

DISCUSSION AND CONCLUSION
Scientific articles in Portuguese and English were analyzed with the aim of identifying how the studies applied the concept of social support in sports, refining the search for high-performance sports. It was possible to understand that social support applied to the mental health of athletes goes beyond individual aspects, involving a network, such as coaches and other professionals from sports institutions, family members and friends of the athletes. All the aspects functioning as a protective element to reduce psychological suffering.

PRACTICAL IMPLICATIONS FOR CISM
Encourage programs designed for military sports, especially high-performance sports, reinforcing actions focused on the support network, such as with institutions, coaches and athletes' families.

TITLE
High-Intensity Tactical Readiness Indicators and Elite Units' Combat Resilience in Extreme (UAE) Environments: A systematic Review.

AUTHOR
Hesham Aref Alsayed.

ABSTRACT
The Armed Forces of the (UAE) face complex operational challenges, the evolving nature of modern warfare, and the harsh environmental and climatic conditions of the Gulf region. Elite military units particularly special operations forces and high-readiness teams play a strategic role in establishing an effective advanced defense system. This study, based on a systematic review methodology, explores the indicators of high-intensity tactical readiness and combat resilience among elite military personnel operating in extreme UAE environments. These indicators encompass physiological, psychological, and tactical factors that contribute to maintaining combat effectiveness under conditions extreme heat, desert terrain, high operational tempo (Taylor, Caldwell, & Mekjavic, 2006; Orr, Pope, Johnston, & Coyle, 2020).

As field missions become more complex, there is an urgent need for a scientifically grounded understanding of the factors influencing readiness sustained performance in elite units. This review aims to fill this gap by synthesizing contemporary research, Thompson, Mitchell, and Carter (2023) on holistic psychophysiology in Marines, critical reviews of fitness profiles in elite tactical units (Lisman, O'Connor, Deuster, & Knapik, 2013; Nindl et al., 2016). The review concludes that environmental adaptation, task-specific physical fitness, psychological resilience, decision-making under pressure are key indicators that must be addressed when designing training programs tailored to UAE's operational context. These factors are essential in building a force capable of maintaining peak performance despite challenging field and environmental conditions (Knapik, Reynolds, & Harman, 2004; Page et al., 2021). This study ultimately supports the UAE's broader strategic objective of developing a military force that is highly adaptable, resilient, and operationally effective in the face of increasing regional and environmental complexity.

Hesham Aref ALSAYED

Dr. Hesham Aref Alsayed holds a Ph.D. in Track and Field Training with a specialization in tactical strength conditioning from Alexandria University (2016).

He is an experienced athletics expert with over two decades of work in sports training, physical preparation, and academic instruction, with a proven track record in designing and leading training programs for military personnel, elite athletes, and coaches.

Dr. Alsayed has actively contributed to the field as an international speaker, presenting at major conferences including the CISM International Athletics Conference (Abu Dhabi 2023), the GCC Scientific Conference on Physical Readiness (2024–2025), and multiple Arab military physical training symposia.

He has also lectured on topics ranging from nutrition in the armed forces to physical training challenges and aspirations across the Gulf region.

His publications include Introduction to Theories and Methods of Training (2019) and Sleep Deprivation in the Operational Environment (2017), reflecting his expertise in optimizing physical performance under operational conditions.

Currently, he serves as a key sports researcher and lecturer for the UAE Ministry of Defense, influencing both practice and policy in military physical readiness.

Danielli Braga de MELLO

Dr. Danielli Braga de Mello holds a Ph.D. in Public Health from FIOCRUZ (2008) and has completed two postdoctoral fellowships: Physiology in Extreme Environments at the University of Portsmouth, UK (2016), and Infrared Thermography applied to Sports at Universidad Politécnica de Madrid, Spain (2019).

She is a Full Professor at the Physical Education College of the Brazilian Army. She is also a faculty member of the Graduate Program in Human and Operational Performance at the Brazilian Air Force University and serves as Associate Editor-in-Chief of the Journal of Physical Education.

In addition, Dr. Mello is Director of the Education and Prevention Department at SOBRASA and an affiliated member of the International Drowning Research Alliance (IDRA).

Her contributions have been recognized with several awards, including the Marechal Trompowsky Medal (2025), the Brazilian Army Medal (2019), the Centennial Medal of the School of Physical Education, Military Police of Sao Paulo (2023), and the Aquatic Rescue Merit Medal (2021) from the Brazilian Society of Aquatic Rescue.

TITLE
Wearable technologies for hydration and thermoregulatory responses in an Olympic military athlete during heatwave training: a case study.

AUTHOR
Danielli Braga de Mello

INTRODUCTION
Heat stress is a growing concern in athletic performance, particularly during extreme environmental conditions. This case study aimed to evaluate hydration status, thermoregulatory responses, and fatigue markers in an Olympic during a sport-specific training session performed under heatwave conditions.

METHODS
This was a case study with an Olympic track and field athlete in the throws category conducted during a 90-minute training session performed under heatwave conditions (air temperature: 38 °C; heat index: 42 °C). Wearable technologies and biosensors were used to assess physiological responses. The variables measured included internal and skin temperature (Core® sensor), muscle oxygen saturation (Moxy®), sweat and electrolyte loss (Nix®), and salivary osmolality (MX3®). Data was analyzed using descriptive statistics.

RESULTS
Results demonstrated a modest rise in core temperature (Δ+0.6 °C), reflecting efficient thermoregulatory mechanisms despite extreme heat, consistent with prior heat acclimation. The athlete presented a 0.4 kg body weight loss, and a salivary osmolality increase from 61 to 70 mOsm, classifying as mild dehydration. Total sweat rate reached 1406 ml/h and electrolyte loss 1425 mg/h, with critical points identified after 40 minutes. Muscle oxygen saturation decreased from 53.9% to 46.0%, indicating peripheral fatigue likely due to local metabolic stress and reduced perfusion.

DISCUSSION AND CONCLUSION
These findings reinforce the importance of individualized hydration strategies and real-time physiological monitoring during exercise in the heat. Wearable technologies extend this monitoring beyond training, enabling continuous assessment of key biomarkers to guide decision-making, injury prevention, and performance optimization (1). This aligns with IOC consensus and recent reviews on the impact of heat on athlete health and performance (2). As heat waves become more frequent (3), wearables offer a valuable tool for adapting strategies to ensure safety and maintain athletic performance.

PRACTICAL IMPLICATIONS FOR CISM
It is recommended that CISM consider integrating wearable-based monitoring protocols into training and competition settings, adopt individualized hydration strategies, and update heat management guidelines to better protect military athletes, particularly during deployments or international events held in hot climates.

TITLE
Functional Conditioning and Physical Performance: A Six-Month Intervention in Military Personnel.

AUTHORS
Jefferson Martinez Monjardim Couto, Danielli Braga de Mello.

INTRODUCTION
Military personnel face complex physical demands that traditional training may not fully address. Functional conditioning offers a targeted approach to enhance performance and prevent injuries. This highlights the need for structured, long-term interventions. This study aimed to analyze the effects of a six-month functional training program designed to improve core stability, overall strength, and aerobic capacity.

METHODS
Twenty-six active-duty military personnel (10F/16M; age 34.4 ± 8.2 years) completed a structured program with at least two weekly sessions focusing on core and full-body functional movements. Pre- and post-training evaluations used standardized performance parameters from Brazilian Air Force fitness assessments: push-ups, sit-ups, and a 12-minute run. Body mass, Body Mass Index (BMI), and waist circumference were measured. Baseline physical activity was described using the IPAQ. Results were analyzed with paired t-tests, effect sizes (Cohen's d), and 95% confidence intervals.

RESULTS
Participants demonstrated significant improvements in all performance measures: push-ups (+15.3%, $p = 0.002$, $d = 0.67$, CI [+4.9; +25.7]); sit-ups (+13.8%, $p < 0.001$, $d = 0.99$, CI [+7.2; +20.4]); and run distance (+3.3%, $p = 0.022$, $d = 0.48$, CI [+0.5%; +6.1%]). No significant changes were observed in body mass ($p = 0.464$), BMI ($p = 0.452$), or waist circumference ($p = 0.474$), likely due to the absence of nutritional intervention.

DISCUSSION AND CONCLUSION
The functional training program proved to be an effective strategy for enhancing military-specific physical fitness. The observed improvements highlight the value of approaches focused on functional movements and core endurance. The lack of anthropometric changes points to the limitations of physical training alone. This emphasizes the need for integrated strategies, particularly involving nutrition, to achieve broader outcomes. Multidisciplinary interventions are likely to be more effective in optimizing military readiness.

PRACTICAL IMPLICATIONS FOR CISM
This model provides a feasible and efficient framework for improving physical performance in military environments, adaptable across CISM member nations.

Jefferson M. COUTO

Maj. Couto, MSc is a senior officer of the Brazilian Air Force with extensive expertise in military sports, operational human performance, and strategic management. He currently serves as Deputy Chief, Section Three, First Sub chief Office, Brazilian Air Force General Staff.

He holds multiple advanced degrees, including an Executive MBA in Strategic Planning and Management from Fundacao Getulio Vargas, an MBA in Public Management, and an MSc in Operational Human Performance from the University of the Air Force, where his research focused on Functional Training for Low Back Pain in Helicopter Pilots.

He also holds bachelor's degrees in Physical Education, Administration, and Aeronautical Sciences from prestigious Brazilian military academies.

Maj. Couto has served in key leadership positions, including Anti-Doping and Academy Manager at the International Military Sports Council (CISM) and Chief of the Physical Education Section at Santa Cruz Air Base (ALA 12).

He actively contributes to scientific and professional communities, serving as a member of the Local Scientific Committee for the CISM International Symposium and previously as Secretary of the CISM Sport Science Commission.

His outstanding service has been recognized with numerous honors, including the Bronze and Silver Military Medals, the Military Sports Merit Medal, and the distinction of Knight and Grand Knight of the CISM Order of Merit.

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Posters Abstracts

TITLE

Microclimate Stress in Tactical Athletes: Monitoring Heat Retention under Combat Uniforms.

AUTHORS

Danielli Braga de Mello, Gelson Luiz Pierre Junior, Joao Paulo Vargas, Alvaro Vargas, George Almeida Silva, Thiago Rodrigues, Rudnei Palhano.

INTRODUCTION

Microclimate formed between the skin and military clothing during exercise in hot environments restricts heat dissipation, elevating body temperature and humidity near the skin. This thermal stress impairs thermoregulation, increase the risk of heat illnesses, and decrease performance. This study analyzed the thermal behavior of tactical athletes during a simulated march, focusing on skin (Tskin), core (Tcore), and uniform temperatures under thermoneutral environment.

METHODS

Quasi-experimental pilot study with eight Brazilian Army soldiers (28.25 ± 3.19 yrs; 179.93 ± 7.27 cm; 81.65 ± 8.62 kg). Participants performed a treadmill ergometric test (R-3500E, Riguetto®, Brazil) using a ramp protocol: 3min warm-up (9 km/h), followed by a progressive increase of 0.5 km/h every 2 minutes. The test ended at Tcore ≥ 38.5°C or upon voluntary exhaustion. Tcore and Tskin were measured using CORE TEMP® sensor (greenTEG AG, Switzerland). Temperature and humidity of the combat uniform were recorded using a SHT85 sensor (by Sensirion) and Arduino developed by the Brazilian Institute of Technology for Leather, Footwear and devices (IBTeC). Repeated measures ANOVA and Pearson's correlation were used for statistical analysis.

RESULTS

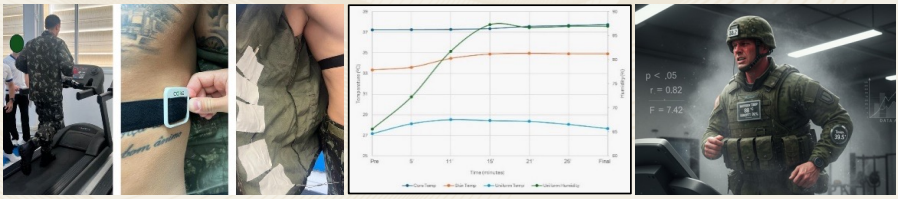
Results showed a significant increase in Tcore and Tskin during the treadmill test ($p < 0.05$), with an average core rise of 1.2 °C. Uniform temperature exceeded 85 °C at 15 minutes in some cases, and humidity levels inside the uniform rose above 90%. Repeated measures ANOVA confirmed significant temporal differences ($F = 7.42$; $p = 0.003$). A strong correlation was found between uniform and Tskin ($r = 0.82$; $p < 0.01$), indicating heat and moisture retention near the skin, limiting effective thermal regulation.

DISCUSSION AND CONCLUSION

The heat and moisture retention observed inside the uniform highlights the role of military clothing as a thermal barrier, impairing evaporative cooling and increasing physiological strain (1,2,3). These findings support the need for improved uniform design, functionality, and real-time monitoring strategies to mitigate heat stress and enhance safety and performance in tactical environments.

PRACTICAL IMPLICATIONS FOR CISM

The findings highlight critical operational risks posed by heat stress during military tasks, especially under rising global temperatures and frequent heat waves. The combination of metabolic heat production, environmental thermal load, and restrictive uniforms impairs thermoregulation and increases the likelihood of exertional heat illness and collapse. For CISM, these results underscore the need to implement real-time physiological monitoring using wearable biosensors, adopt individualized cooling strategies, and revise operational guidelines to prioritize thermal safety during field activities. Prevention-oriented protocols can enhance soldier readiness and reduce health risks in extreme environments.



TITLE
Longitudinal Association between Cardiorespiratory Fitness and Cardiometabolic Risk Factors.

AUTHORS
Paula Fernandez Ferreira, Marcio Antonio de Barros Sena, Flavia da Consolacao Dias, Sabrina Celestino, Rodrigo Bandeira Silva, Marcos Fortes.

INTRODUCTION
Cardiorespiratory fitness (CF) is considered a health predictor, since higher levels have been associated with lower mortality, morbidity, and decreased cardiovascular diseases. Furthermore, longitudinal studies have shown that adults with higher CF levels have a reduced risk of developing metabolic syndrome. However, longitudinal studies involving military personnel are scarce. This study aims to investigate the association of cardiometabolic risk factors and CF in military personnel during the career.

MATERIALS AND METHODS
Eighty-four military personnel, all male, from the Brazilian Army were evaluated during a period of their career in which they completed the Officer Improvement Course (T1) and the Army Command and General Staff Course (T2). The following cardiovascular risk indicators were analyzed: Body Mass Index (BMI), Waist Circumference (WC), Body Fat Percentage (%BF), Fasting Blood Glucose (FBG), High Density Lipoprotein (HDL-c) and Triglycerides (TRIG). To assess CF, VO2max was calculated, obtained through the Cooper test. The normality of the data was proven (Shapiro-Wilk), therefore the mean and standard deviation were used. In inferential statistics, Student's t test for paired samples and Pearson's correlation were used to verify the linear relationship between changes in aerobic fitness and cardiovascular risk markers ($p<0.05$).

RESULTS
The sample at T1 was characterized by: age = 31.0 ± 1.6 years and BMI = 25.8 ± 3.1 kg/m2 and, at T2, by 38.0 ± 1.6 years and BMI = 26.6 ± 3.0 kg/m2. There was a significant difference in the means of the following parameters between T1 and T2: VO2max (T1>T2), BMI (T1<T2), WC (T1<T2), %BF (T1<T2), FBG (T1>T2) and HDL-c (T1<T2). Furthermore, the correlation analyses indicated that the reduction in VO2max in the evaluated period was significantly associated with the increase in BMI, WC and %BF (r = -0.430, -0.509 -0.501, respectively).

DISCUSSION AND CONCLUSION
The results of the present study demonstrate that the worsening of CF throughout the military career is associated with a greater risk of developing cardiovascular diseases.

PRACTICAL IMPLICATIONS FOR CISM
Identify during de career the military personnel with higher risk of developing cardiovascular diseases, thus implying operational readiness.

TITLE
The Impact of the High-Performance Athletes Program (PAAR) to Well-Being and Mental Health of Athletes.

AUTHORS
Celestino, Sabrina and Oliveira, Davi Martins de.

INTRODUCTION
The High-Performance Athletes Program (PAAR) was created by Order No. 656 of the Army Commander in 2009. More than fifteen years after this initiative, its impact on national sports can be identified, with the increase in the number of medals won and the positive projection of the image of the national Armed Forces. Once we haven´t data about the subject, this study aims to analyze the impact of PAAR on the well-being and mental health of athletes.

MATERIALS AND METHODS
The research was carried out in 2022 and used a qualitative, exploratory and descriptive approach. The participants were the Brazilian Air Force PAAR athletes incorporated between 2016 and 2022. We used a qualitative survey deposited in Google Forms structured by open and closed questions. The study counted with 70 athletes.

RESULTS
Regarding mental health, the question was written on a scale of words that varied from very positive to indifferent, related to the following items: feeling of value, self-esteem, social well-being, difficulties and frustration.

DISCUSSION AND CONCLUSION
In the first two indicators (feeling of appreciation and self-esteem), participants reported that PAAR had a "very positive" or "positive" impact, as highlighted in 100% of responses. Regarding "social well-being", only 3 athletes responded that participation in PAAR would have been "Indifferent", with the identification of the positive or very positive impact of the Program prevailing. Regarding "difficulties" and "frustration", it is noticeable that PAAR had a positive impact on both aspects, with almost 50% of the assertions selected.

PRACTICAL IMPLICATIONS FOR CISM
Analyze programs designed for military sports, especially on high-performance sports that has the aim on demonstrating how these initiatives impact the well-being and mental health of athletes.

TITLE
Social Support as Indicator of Mental Health in High-Performance Athletes: Literature Review

AUTHORS
Celestino, Sabrina Alves, Felipe Carvalho Cotian, Michela de Souza Silva, Rodrigo Bandeira.

INTRODUCTION
The mental health of athletes has become a growing concern among national and international managers of high-performance sports. Once their socio-emotional challenges often go beyond the competitive environment and reflect in their personal lives. Understanding that the mental health involves individual and collective aspects, this study analyzes the concept of social support as an indicator of mental health.

MATERIALS AND METHODS
This is a qualitative, descriptive study, guided by the narrative analysis of the existing literature on social support applied to sports. We used the terms "social support", "athletes" and "mental health" as search descriptors in the Scielo and PubMed databases.

RESULTS
Social support can be defined as the perception that there are people or institutions willing to offer emotional, informational or instrumental help in challenging situations (Pais Ribeiro, 2011). This perception has a direct impact on how individuals deal with stress, regulate their emotions and maintain their motivation over time (Sarason et al., 1983). Research indicates that athletes with a greater perception of social support tend to have a lower incidence of anxiety and depression, greater adherence to training and greater ease in overcoming adversity (Howells; Fletcher, 2015).

DISCUSSION AND CONCLUSION
Scientific articles in Portuguese and English were analyzed with the aim of identifying how the studies applied the concept of social support in sports, refining the search for high-performance sports. It was possible to understand that social support applied to the mental health of athletes goes beyond individual aspects, involving a network, such as coaches and other professionals from sports institutions, family members and friends of the athletes. All the aspects functioning as a protective element to reduce psychological suffering.

PRACTICAL IMPLICATIONS FOR CISM
Encourage programs designed for military sports, especially high-performance sports, reinforcing actions focused on the support network, such as with institutions, coaches and athletes' families.

TITLE
Correlation between Anthropometric Indicators and biochemical markers of cardiovascular risk and their prevalence in Brazilian Army personnel.

AUTHORS
Marcio Antonio de Barros Sena, Paula Fernandez Ferreira, Samir Ezequiel da Rosa, Aline Tito Barbosa Silva, Rodrigo Bandeira Silva, Marcos Dias Pereir, Flavia Dias da Silva, Sabrina Celestino, Danielli Braga de Mello.

INTRODUCTION
Physical health has great relevance for military operational readiness. In this sense, it is known that monitoring anthropometric indicators and biochemical markers of cardiovascular risk (CR) constitute an important strategy for preventing non-communicable chronic diseases (NCDs) and optimizing the physical training.

OBJECTIVE
To investigate the correlation between anthropometric indicators and biochemical markers of cardiovascular risk in Brazilian Army military personnel.

MATERIALS AND METHODS
Cross-sectional study with 344 military personnel, students of a specialization school, male (32.0 ± 1.4 years). The anthropometric parameters evaluated were body mass index (BMI), body adiposity (BAI), and conicity (CI). Blood collection was performed after a 12-hour fast for analysis of total cholesterol (TC), high-density lipoprotein (HDL-c), low-density lipoprotein (LDL-c), triglycerides (TG), and glucose (GLUC). For data analysis, descriptive statistics (mean, standard deviation, and frequency distribution (%)) and inferential statistics (Pearson correlation ($p \leq 0.05$)) were used.

RESULTS
Significant weak negative correlations were observed between BMI and HDL-c (r: - 0.1; p=0.006) and CI X HDL-c (r: - 0.1; p=0.011); weak positive correlations were observed between BMI X TG (r: 0.2; p=0.011), BAI X TG (r: 0.2; p=0.011), CI X TG (r: 0.3; p=0.011) and CI X GLUC (r: 0.1; p=0.033). The individuals who presented CR were: TC= 11.3% (39), HDL-c= 0.6% (2), LDL-c= 33.1% (114), TG= 9.6% (33) and GLUC= 0.0% (0).

DISCUSSION AND CONCLUSION
Although the correlations observed between anthropometric indicators and biochemical markers of cardiovascular risk were statistically significant, their magnitude were weak. Even so, the findings reinforce the potential of anthropometric indices BMI, BAI, and CI as accessible and low-cost tools in the screening of metabolic alterations in military personnel. The low prevalence of risk in variables such as HDL-c and GLUC also suggests a protective effect potentially associated with the routine of regular physical training.

PRACTICAL IMPLICATIONS FOR CISM
Identify among military personnel in the age group of thirty years cardiovascular risk factors that can be used in monitoring physical training and early prevention of metabolic damage in both military personnel and athletes.

TITLE
Development and Validation of Physically Demanding Combat Tasks for Brazilian Air Force Infantry Military Personnel.

AUTHORS
Jefferson Martinez Monjardim Couto, Hassan Guimaraes de Oliveira, Alexandre Ferfoglia Possebon, Daniel Heber Max Guimaraes, Vinicius de Oliveira Damasceno. Alexander Barreiros Cardoso Bomfim.

INTRODUCTION
The performance of military missions, whether real or simulated, requires a series of tasks, including those of high physical demand, denominated Physically Demanding Combat Tasks (PDCTs). However, the normative documents for the Brazilian Air Force Infantry (INFAER) troops do not specify which PDCT are most relevant for combat situations.

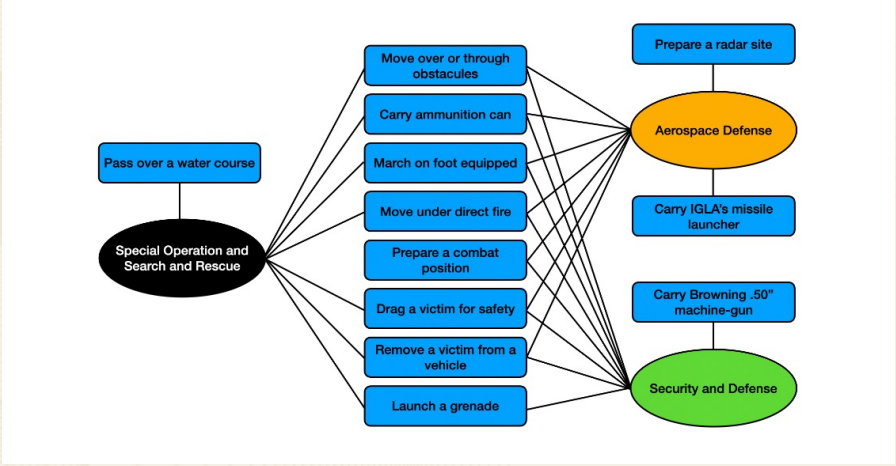
OBJETIVE
To develop and validate Physically Demanding Combat Tasks tailored Brazilian Air Force Infantry personnel.

METHODS
The methodology involved the analysis of scientific publications for the development of an initial list of PDCT. These tasks were then evaluated by nine judges, experts in INFAER operation, using content validity techniques and focus group.

RESULTS
Twelve PDCT were developed. Among these, nine are specific to the "Security and Defense (SD)" branch, nine for "Aerospace Defense (AD)," and eight for "Special Operations and Search and Rescue (SOp/SAR)". Six of these PDCT are common across the three branches.

DISCUSSION AND CONCLUSION
The validation of PDCT for INFAER military personnel represents a fundamental step in modernizing the physical preparation of the troops, with the potential to enhance readiness and operational capability. Based on these tasks, simulated combat tasks and physical tests will be implemented once they are capable of predicting operational performance and effectiveness in real operations.

PRACTICAL IMPLICATIONS FOR CISM
The validated PDCT can serve as a basis for the creation of combat-oriented military sports competitions.



TITLE
Detection of Physically Demanding Combat Tasks for Marine Corps Soldiers in Brazil.

AUTHORS
Guillermo Brito Portugal, Marcos Antonio de Souza Filho, Alexandre Ferfoglia Possebon, Vinicius de Oliveira Damasceno, Alexander Barreiros Cardoso Bomfim.

INTRODUCTION
Standardized physical assessments have been widely used in the armed forces, however, they have limitations in measuring specific combat fitness. Such tests may not fully reflect, or may show low correlation with, the physical capabilities most relevant to Physically Demanding Combat Tasks (PDCTs). PDCT comprise a set of techniques, skills, and performance requirements specific to each operational military combat function, serving as a reference for the development of training and assessment protocols.

OBJETIVE
To develop a list of PDCT for soldiers of the Marine Corps.

METHODS
Analysis of Marine Corps normative documents and specialized scientific literature.

RESULTS
A total of 32 physical capabilities were identified in the normative documents and scientific literature and were categorized into 14 PDCTs.

DISCUSSION AND CONCLUSION
The identification of these PDCT represents a fundamental step towards modernizing the physical preparation of the troops and, potentially, enhancing readiness and operational capacity. The list will be submitted for validation by Marine Corps specialists, in addition to the continuation of the process for developing of an Operational Physical Test.

PRACTICAL IMPLICATIONS FOR CISM
The preliminary definition of PDCT for Marine Corps personnel could enable the development of combat-oriented sports competitions.

TITLE
Methodological Approaches to Monitoring the Functional State in the Process of Physical Education and Sports.

AUTHORS
Oleg S. Botsman, Tatyana A. Selitrenikova.

INTRODUCTION
Achieving a high level of physical fitness requires athletes to perform the maximum level of training loads and maximize the mobilization of the athlete's reserve capabilities. The condition for the success of such tasks in athletes is the presence of health, good physical shape, developed physical and psychophysiological qualities, high motivation, which implies the concept of "functional state".

METHODS
The effectiveness of operational monitoring of the health status and functional capabilities of the human body is associated with the use of available functional diagnostic techniques based on modern technologies. Operational control of the functional state of the athlete's body allows us to apply an innovative approach to athlete training, when the object of control is not the training process, but the athlete himself.

OBJETIVE
The monitoring of the functional state is carried out on the basis of calculating the integral indicator of working capacity, measured in conventional units, taking into account the weighting coefficients of six indicators of the functional state of the athlete's body: the five-minute step test index (STI), the critical frequency of fusion of light flashes (CFFLF), static muscular endurance during hydrodynamometry (HDM), the latent period of a simple sensorimotor reaction (LPSSR), the heart rate (HR) and the index of the breath-holding test on exhalation – the Gencha test (GT). Based on the results of factor analysis, an integral indicator of athletic performance (R) was calculated: R = 0.191GT + 0.295STI + 0.202HDM + 0.155 CFFLF – 0.002 HR – 0.155 LPSSR.

Monitoring of the functional state based on the integral indicator of working capacity should be aimed at assessing the adverse effects of training and competitive loads on the athlete's body, the dynamics of formation or changes in functional reserve capabilities, the level of physical fitness, as well as identifying the development of borderline and pathological reactions.

DISCUSSION AND CONCLUSION
Diagnosis of the functional state during the training cycle allows you to determine the athlete's personal "trainability windows" based on the effectiveness of his main body systems and develop recommendations from the coach about "readiness" or "not readiness" for maximum training loads, and based on them to predict and adjust the training and competition process, optimizing and expanding the reserve capabilities of the athlete's body.

PRACTICAL IMPLICATIONS FOR CISM
The inclusion in the annual training plan of athletes the determination of their current integrated assessment of the functional state and level of working capacity will avoid errors in the diagnosis of the condition and reserve capabilities of the body, and will ensure the forecast of achieving high athletic results.

TITLE
Integrated Monitoring of Overtraining Syndrome Signals in Military Personnel During Training Course: A Pilot Study

AUTHORS
D'Urso, F., Coutinho, A.B., Marques Neto, S.R., Guimarães, T. T.

INTRODUCTION
Military personnel operate under extreme physical, cognitive, and emotional demands, placing them at cumulative risk for maladaptive conditions such as Overtraining Syndrome (OTS). OTS is a complex and multifactorial dysfunctional condition, characterized by a persistent decline in physical and cognitive performance, even after periods considered adequate for recovery. Its symptoms include chronic fatigue, sleep disturbances, mood changes, signs of autonomic dysfunction, as well as immunological and gastrointestinal manifestations. Early identification of these signals is essential for maintaining operational readiness and long-term health. This pilot study aimed to identify signs of OTS in Air Force cadets during the Physical Training Instruction Orientation Course, by analyzing clinical, psychophysiological, and physical performance variables over an intensive four-week period.

METHODS
A longitudinal observational design was employed, involving 23 male military personnel (mean age: 22.2 ± 1.45 years). Assessments conducted at the beginning and end of the course included anthropometry, resting heart rate (RHR), countermovement vertical jump, orthostatic heart rate test, and validated subjective instruments: POMS, subjective well-being scale, sleep quality scale, fatigue pictogram, and a clinical overtraining symptoms questionnaire. Paired t-tests, Wilcoxon tests, and Spearman correlations were applied.

RESULTS
Statistically significant reductions were observed in resting heart rate ($p = 0.025$), body mass index ($p = 0.019$), and waist circumference ($p = 0.011$), as well as an improvement in neuromuscular performance ($p = 0.020$). A significant increase was found in the subjective perception of baseline fatigue ($p < 0.001$), although no significant changes were observed in the other subjective variables. Correlations revealed moderate to strong associations between perceived fatigue, overtraining symptoms, emotional state, and physical performance, with emphasis on the negative correlation between fatigue and vertical jump ($p = –0.61$).

DISCUSSION AND CONCLUSION
The findings highlight the coexistence of positive physiological adaptations and early signs of psychophysiological overload during intensive military training. The integrated monitoring approach proposed proved to be feasible and promising for the early detection of overload states, reinforcing the need for preventive strategies in the context of contemporary military health and the importance of adopting systematic monitoring strategies to preserve operational readiness and the longevity of military careers, especially in scenarios involving high physical and cognitive demands.

TITLE
Integrated Signs of Overtraining Syndrome in Brazilian Air Force Military Personnel: Psychophysiological Impact, Physical Performance, and Academic Achievement.

AUTHORS
Francisco Lima D'Urso, Andre Brand Bezerra Coutinho, Silvio Rodrigues Marques Neto, Thiago Teixeira Guimaraes.

INTRODUCTION
Overtraining Syndrome (OTS) is a multifactorial condition associated with chronic overload and an imbalance between stress and recovery. In military settings, early detection is hindered by the absence of standardized protocols and underreporting of subjective symptoms. To longitudinally investigate the presence of integrated signs of OTS in Brazilian Air Force personnel during a specialization course, and to analyze their associations with physical and academic performance.

METHODS
Thirty-three military participants were assessed before and after six weeks of intensive training using psychometric instruments, physical capacity tests, and heart rate measurements. Paired analyses, Pearson correlations, and subgroup stratification based on OTS signs were conducted.

RESULTS
Most average indicators remained stable, with improvement in subjective well-being. However, individual delta values showed that increases in clinical symptoms of OTS were negatively correlated with theoretical performance ($r = -0.64$). Subgroup segmentation did not reveal statistically significant differences in academic achievement but did indicate trends toward functional vulnerability.

DISCUSSION AND CONCLUSION
The analysis of individual variations (deltas) and subgroup comparisons revealed critical findings. Although the sample average indicated overall balance, individuals with greater increases in OTSQ scores showed poorer theoretical performance. The findings support the feasibility of an integrated psychophysiological screening model with potential to prevent overload conditions and optimize functional performance. The development of evidence-based operational tools for continuous monitoring in high-demand military environments is recommended.

PRACTICAL IMPLICATIONS FOR CISM
The results presented here may serve as a foundation for the implementation of psychophysiological surveillance programs in military training and specialization units, contributing to the development of screening protocols adapted to the Brazilian context and supported by empirical evidence.

TITLE
The Impact of Structured Nutritional Strategies on Military Performance: A Call for Reform in Camp-Based Diet Systems.

AUTHOR
Hazeem Almesafri

INTRODUCTION
In high-stress operational settings, military personnel rely heavily on physical endurance and cognitive alertness. Nutrition plays a critical role in enhancing both. Despite this, food provision in military camps often lacks nutritional precision, leading to suboptimal performance outcomes.

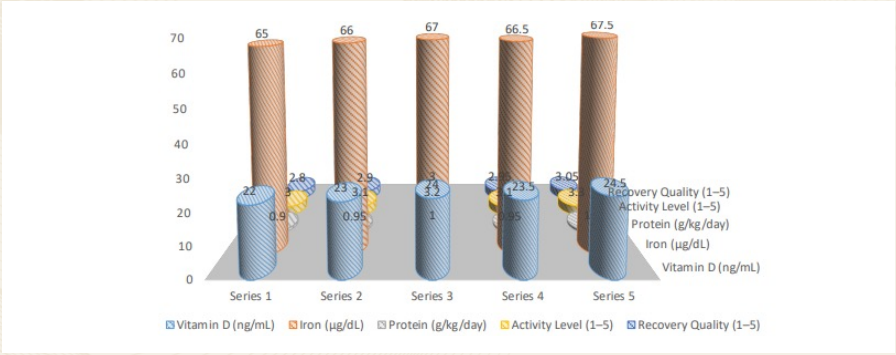
METHODS
Data was collected from soldiers stationed in active military camps in the UAE. Observations of meal quality and composition were conducted over several weeks period. In addition, structured interviews were carried out with selected personnel to assess eating habits and access to nutritional guidance. Blood tests were also conducted to evaluate key vitamin and protein levels.

As a global example, the United States military has invested extensively in nutrition science, developing tailored meal systems such as the MRE (Meals Ready to Eat) with performance optimization in mind proving that strategic nutrition can directly impact operational readiness.

RESULTS
The study identified significant discrepancies between actual nutritional needs and the food provided in camp environments. Over 65% of participants showed deficiencies in vitamin D and iron. Inadequate protein intake was recorded in nearly half of the cases, directly impacting recovery and physical endurance.

DISCUSSION AND CONCLUSION
These findings emphasize the need for a structured and personalized approach to nutrition within military contexts. Unlike elite athlete programs, military food services often lack scientific planning, which can compromise mission readiness and recovery. Routine health assessments and individualized nutrition protocols should be integrated into military systems.

PRACTICAL IMPLICATIONS FOR CISM
This research can guide CISM-affiliated military bodies to develop standardized, data-driven nutritional programs. It encourages the use of regular vitamin and biomarker screenings, menu customization based on physical demands, and investment in soldier health infrastructure to enhance physical readiness and reduce injury risks.



TITLE
Characteristic Signs of Overtraining Syndrome in Military Personnel: A Scoping Review of Original Studies.

AUTHORS
Francisco Lima D'Urso, Mariana Inocencio Matos,Andre Brand Bezerra Coutinho, Silvio Rodrigues Marques Neto, Thiago Teixeira Guimaraes.

INTRODUCTION
This scoping review aimed to identify the main thematic areas and tools used in studies addressing signs of Overtraining Syndrome (OTS) in military personnel, and to explore the heterogeneity and applicability of these tools in operational contexts.

METHODS
A comprehensive search was conducted in nine databases, following the PRISMA-ScR guidelines. Original cross-sectional and experimental studies involving military populations were included. Data were categorized into thematic areas based on recurrence and similarity of outcomes and tools.

RESULTS
From 2,633 initial records, 137 studies were included. Seventeen major thematic areas were identified, with "Mental Health," "Fatigue Parameters," "Physical Capacity," and "Sleep Disturbances" being the most represented. Several tools were used to assess OTS signs; however, a lack of standardization, especially for the military context, was evident. Notably, most studies focused on veterans or personnel in combat zones.

DISCUSSION AND CONCLUSION
Among the 17 major thematic areas identified, the most frequently investigated topic was mental health, addressed in 120 of the included studies. Within this domain, particular attention was given to Post-Traumatic Stress Disorder (PTSD) — a condition that emerges following exposure to traumatic events involving death, direct threat, serious injury, or violence. Despite the growing interest in OTS among military personnel, the lack of standardized, validated tools for early detection remains a limitation. Developing context-specific strategies is essential to enhance monitoring, diagnosis, and prevention of OTS, especially in non-combat settings.

PRACTICAL IMPLICATIONS FOR CISM
This review underscores the importance of encouraging future research that addresses the prevention and management of OTS from a multifactorial perspective—integrating elements such as nutrition, recovery strategies, psychological support, and adaptive training models. The integration of these factors can more effectively safeguard health and enhance the performance of military personnel.

TITLE
Physical Readiness and Resilience in the UAE Armed Forces: Foreseeing the Future Challenges.

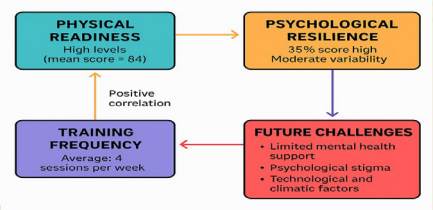
AUTHORS
Dr. Salem Qarn Salem Aboud Al Kaabi

INTRODUCTION
The military profession demands exceptional physical fitness and psychological resilience to perform effectively in challenging environments. In the United Arab Emirates, with its unique climatic and geopolitical conditions, ensuring the readiness of armed forces is vital for national security. Despite significant investments in training and modernization, gaps persist in holistic physical and mental preparedness. This study examines current readiness programs, evaluates resilience levels among UAE Armed Forces personnel, and identifies emerging challenges such as technological, environmental, and hybrid warfare. The research aims to provide strategic recommendations to strengthen the UAE military's capacity for sustained operational effectiveness and future resilience.

METHODS
This study employs a mixed-methods approach, combining quantitative surveys and qualitative interviews to assess physical readiness and resilience in the UAE Armed Forces. The sample includes 100 soldiers from various ranks, 10 military trainers, and 5 defense policymakers selected through stratified sampling. Data collection tools include structured questionnaires measuring fitness, resilience, and training frequency, alongside semi-structured interviews exploring challenges and perceptions. Quantitative data were analyzed using SPSS for statistical relationships, while qualitative responses underwent thematic analysis. This approach ensures a comprehensive understanding of current readiness programs, psychological resilience, and future challenges affecting the UAE military's preparedness.

RESULTS
The results indicate that UAE Armed Forces personnel demonstrate high levels of physical readiness, with a mean score of 84 and consistent training practices averaging four sessions per week. However, psychological resilience showed moderate variability, with only 35% of participants scoring high on the Connor-Davidson Resilience Scale. Correlation analysis revealed a positive relationship between training frequency and resilience, suggesting that regular physical activity enhances mental toughness. Interviews highlighted challenges such as limited mental health support, stigma around psychological issues, and the growing impact of technological and climatic factors on training effectiveness and overall operational preparedness.

DISCUSSION AND CONCLUSION
The discussion reveals that while the UAE Armed Forces maintain strong physical readiness, psychological resilience remains an area requiring improvement. Compared to global benchmarks like the U.S. and U.K. militaries, the UAE lacks comprehensive resilience training programs. Cultural perceptions and hierarchical structures often hinder open discussions on mental health. However, opportunities exist to integrate innovative approaches such as wearable technology, virtual reality simulations, and multidisciplinary health teams. Emphasizing leadership-driven mental fitness initiatives and destigmatizing psychological support can significantly enhance overall preparedness, ensuring that the UAE Armed Forces remain adaptive, resilient, and ready to meet future operational challenges.



TITLE
Psychological Training for Elite Athletes: Enhancing Mental Health, Performance, and Resilience through Cognitive-Behavioral Approaches

AUTHORS
Major Ioana-Alexandrina Nodis & Colonel Teodor-Florin Popa

INTRODUCTION
Elite athletes face intense mental and emotional demands, which can lead to anxiety, burnout, and performance decline. This study explores how Cognitive Behavioral Therapy (CBT) combined with mindfulness and resilience-based interventions enhances athletes' psychological functioning. The aim is to create structured training protocols that improve focus, emotional regulation, and resilience while promoting long-term well-being.

METHODS
Participants: 34 elite athletes (ages 18–32) from gymnastics, athletics, swimming, and team sports.

Duration: 12-week structured intervention integrating CBT principles.

Intervention Components: Mindfulness Training: Daily guided meditation and awareness exercises, Breathing Techniques: Diaphragmatic and paced breathing for physiological control, Mental Rehearsal: Visualization and cognitive restructuring for competition readiness, Resilience Training: Role-play, stress management, and emotional regulation exercises, Line of Strength Model: Group sessions emphasizing trust, communication, and shared goals.

RESULTS
Following the intervention program, participants (N = 34) demonstrated statistically significant reductions in all subscales of the Sport Anxiety Scale-2 (SAS-2). Psychological resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC), both before and after the intervention. Substantial improvements were observed across all subscales—Adaptability, Emotional Regulation, and Perseverance—as well as in the total CD-RISC score. Paired-sample t-tests indicated that these improvements were statistically significant ($p < .001$ for all comparisons).

DISCUSSION AND CONCLUSION
The integrative CBT-based intervention effectively improved emotional stability, adaptability, and focus. Reductions in anxiety and increases in resilience reflect the benefits of combining cognitive restructuring, mindfulness, and team-based support. The "Line of Strength" model promoted team trust and cohesion, critical for performance under pressure.

PRACTICAL IMPLICATIONS FOR CISM
CBT and mindfulness practices into regular athletic training, use breathing techniques and visualization to enhance emotional control before competition, apply the model to military and tactical athletes to improve stress tolerance and operational readiness.

Closing Ceremony Photo Gallery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Commandant Raoul Mollet Award

The Commandant Raoul Mollet ACISM Sports Science Award is an international distinction presented by the International Military Sports Council (CISM) to recognize high-impact academic research related to military sport and physical activity within armed forces.

Purpose:
This award is given to a university researcher or student (either military or civilian) from an academic institution that has a formal partnership with CISM (including CISM delegations). It honors scholarly work—such as research papers, theses, abstracts, or scientific communications—that is directly relevant to CISM's mission and promotes the values and visibility of CISM in the sports and scientific world.

Goals:
• To stimulate the production of scientific research on military sports and physical activities within the armed forces.

• To identify and recognize high-impact academic contributions that enhance understanding and best practices in military sports science.

Significance:
As one of CISM's most respected academic honors, the Commandant Raoul Mollet Award encourages collaboration between military institutions and civilian researchers. It highlights the importance of scientific inquiry into military training, performance, health, and readiness—reinforcing CISM's broader mission of "Friendship through Sport."


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