UNIVERSITY OF
PUBLIC SERVICE
Doctoral and Habilitation Council

AUTHOR'S GUIDE TO DOCTORATE (PhD) THESIS

Ildikó Vásárhelyi-Nagy

New directions for improving the physical conditioning and coordination skills of intervention personnel,
focusing in particular on the management of extreme impacts during disaster recovery

Author’s guide and official evaluation
of doctoral thesis (PhD)

Budapest
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Doctoral advisors:

Prof. Dr. Gyula Kóródi

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Budapest

FORMULATION OF THE SCIENTIFIC QUESTION

The intervention personnel of armed forces and law enforcement are exposed to enormous stress, extreme health hazards and accident risks in their daily work. From a risk management perspective, I consider it of paramount importance to examine ways to reduce mortality and morbidity rates, to reduce the occurrence of permanent health problems, the number of sick days, and to maximize the number of years of service and life expectancy.

The personnel's status is governed by the sectoral laws (*2012. évi CCV. törvény a honvédek jogállásáról*, a *2015. évi XLII. törvény a rendvédelmi feladatokat ellátó szervek hivatásos állományának szolgálati jogviszonyáról,* and their implementing regulations. Health, psychological and physical suitability is an essential element of the service employment.

The system of preliminary and periodic physical suitability evaluation dates back two decades. Nowadays, separate regulations apply to the professional personnel of the law enforcement agencies and the armed forces. These differences are also reflected in the nature of the tasks to be performed, the number of exercises to be carried out and the time criteria for the tasks to be completed.

At the beginning of my research, my basic assumption was that tasks during the suitability evaluation do not reflect either the specifications of a given career or the complex approach of suitability; therefore, they would only be effective when performed as isolated and non-functional tasks in a predefined time interval. Therefore, the preparation for the physical suitability assessment does not directly serve the development of the physical conditioning competences necessary for the professional personnel's daily tasks.

As of today, many modern methods have been developed to assess the performance of the human body. It is easy to see that no matter what the professional field is, the job responsibilities of individuals are not the same, and neither are the physical conditioning requirements.

The central nervous system and factors regulating precise movements also play a decisive role in performance loss and fatigue, so the development of the nervous system must be considered for the long-term preservation of the personnel's performance. My research puts a serious emphasis on neurological aspects such as coordination and the ability to balance.

According to all these above, the preliminary and periodic physical suitability evaluation needs to be reformed. By defining more specific job requirements and a more nuanced system for suitability evaluation, the special skills and the health development's best results can be defined better. For managers, a system based on trends supported by continuous measurements could provide valuable information during a skill-based personnel selection, especially when it is combined with the personnel's active involvement in health education.

Based on my research during my PhD studies, I focused my research on solving the scientific questions detailed below.

1. The prevention of permanent health damage caused by traumatic injuries suffered during deployment and repetitive injuries due to repetitive strain among intervention personnel in the fields of national defence and law enforcement.

When facing this scientific question, I aim to make practical recommendations for health preservation based on a complex assessment relating to the health status of the personnel of the different fields.

2. As the research's next step within the field of national defence and law enforcement, I realized the need for a stronger focus on profession-specific requirements and formulated the ways to improve the system of physical assessment in the context of suitability evaluations.

I am convinced that it is necessary to examine (using scientific methods) the regulatory environment and the professional development through which the system of suitability evaluation tests and level assessments has evolved in Hungary. My question was: what organizational solutions ensure that the performed physical suitability evaluation is safe for both new recruits and the participants of periodic assessment?

During my research it became clear that neither the preliminary nor the periodic health/physical suitability evaluation system is supported by medical background. The trainer conducting the assessment does not have the opinion of a physiotherapist/musculoskeletal specialist as a backing; an opinion that could otherwise support the work of both fields through complex condition assessment and, where appropriate, risk assessment.

When giving a comprehensive answer to this scientific question, I intend to point out that the professional opinion of a physiotherapist (aiming to help the assessment and selection process) includes many parameters that are not mentioned anywhere throughout the selection and periodic assessment processes, yet, could be relevant to the performance itself, to finding the candidate's ideal job role or, from a worker's point of view, to the long-term health preservation.

During my own research, I carried out musculoskeletal assessment with tools and instruments and did a detailed questionnaire survey. By presenting my results, I aim to answer the scientific questions above. The tests also included the assessment of coordination and balance, which is an expected skill of a uniformed professional, but only plays a tangential role in the selection process. We could only get the real picture of the physical health of those serving in national defence and law enforcement if the three specialist fields mentioned above (doctor, trainer, physiotherapist) work together, and by considering each other's expertise, help each other.

3. In the field of national defence and law enforcement, I wanted to find ways to reduce the impact of health impairments caused by career-specific repetitive strain and to accelerate the rehabilitation process, by introducing modern tools and complex methods.

The third scientific question, therefore, relates to how modern prevention and rehabilitation methods already used by professional athletes could be adapted to the everyday life of national defence and law enforcement personnel. At first sight, the two target groups seemed very different; the justification for linking them, however, is based on the fact that the workload of all intervention personnel is very similar to that of a professional athlete, with the additional complication that the uniformed professional does not always have the opportunity to prepare their body for the strain, should a sudden deployment happen. Taking these facts into account, I propose to integrate methods from the daily routine of the professional sports competitors that can help uniformed personnel to effectively meet the specific challenges identified in my research.

3. RESEARCH HYPOTHESES

In accordance with my objectives, I set the following hypotheses:

1. My hypothesis is that the musculoskeletal health damage caused by traumatic injuries suffered during deployment and repetitive injuries due to repetitive strain among intervention personnel in the fields of national defence and law enforcement can be prevented more effectively than it is currently done by using modern preventive methods.
2. My hypothesis is that, by optimizing the current system of physical suitability assessment, preliminary and periodic career suitability assessments would directly serve the professional personnel's long-term health preservation. That would unveil the exposure factors of a specific job and a particular person's tolerable limit of total work-related exposure (without health impairment).
3. My hypothesis is that the impact of health impairments caused by career-specific repetitive strain can be effectively mitigated by introducing modern tools and complex methods, and the rehabilitation process can be accelerated, facilitating the work reintegration.

Improving the physical suitability assessment along a unified concept could, in my view, serve the development of an optimal practice in the long term, while at the same time it could also help to develop a more complex (compared to the current one) picture of the personnel's physical conditioning. In addition to improving the effectiveness of professional work, the daily use of modern tools and methods could bring positive changes to the quality of life and influence positively the career retention.

4. RESEARCH OBJECTIVES

My research objectives in three research areas:

1. a) In the course of my research, I will conduct a **complex assessment** of musculoskeletal and physical conditioning involving personnel from specific organizations of the national defence and law enforcement fields. I will conduct a **development** scheme among the participants, then **perform a re-assessment**, and finally **summarize and evaluate** the results of the assessment.

   b) During my research, I plan to **investigate** the frequency, circumstances and factors leading to the occurrence of traumatic injuries and chronic musculoskeletal disorders among the different branches of law enforcement's personnel. I will **match** the risk factors identified in the assessment with methods that can effectively ensure prevention.

2. I plan to **examine** the extent to which the physical assessment's general requirements compare to the real workloads encountered throughout the different sectors of law enforcement. I will use laboratory and performance diagnostic methods to **demonstrate** that only more complex assessments (than those currently available) can show the clear picture of the personnel's physical conditioning. My objective is to **demonstrate** that, with personalized development, the skeletal-musculoskeletal and neuro-physiological requirements of a given job (fine-motor and coordination adjustment mechanisms for dynamic postural stabilization) can be achieved more rapidly.

I plan to **investigate** how the simultaneous use of modern tools and complex methods, which are widely available today, can influence the musculoskeletal rehabilitation process, accelerate the return to work and enable career retention. I **focus** on proprioceptive developmental methods that have a positive impact on all physical conditioning and cognitive skills.

5. RESEARCH METHODOLOGIES

When preparing my thesis, for each research question I studied the applicable international/national regulations and the authoritative literature. During the research, the development of the thesis and the study of authoritative literature I used the general research methods of analysis, synthesis, induction and deduction.

When creating the content chapters, I used the following research methods in line with my research objectives:

a) Interpreting concepts and making systematic analyses of the research's sub-topics.

b) Conducting methodological development research in the field of suitability evaluation, including physical suitability assessment.
c) Preparing a summary study to analyze the health status of the personnel, based on data provided by occupational health care organizations.
d) Reviewing national and international literature, legislation, and case law, drawing conclusions.
e) Comparative analysis of international and national practices in pre-assessment training and the suitability evaluation itself to develop an optimal methodology.
f) Carrying out an empirical research based on professional experience in physiotherapy, using laboratory measurements and a questionnaire to assess, analyze and evaluate the musculoskeletal and physical condition of defence and law enforcement personnel.
g) Carrying out a performance diagnostic test for selected teams of volunteers, performing the analysis of the results, the statistical processing, the significance analysis, and the correlation analysis.
h) Examining practices from abroad and evaluating their potential adaptability to reduce the impact of health risk factors in daily work and for effective prevention.

I was in constant consultation with experts from the MH vitéz Szurmay Sándor Budapest Helyőrség Dandár, the Counter Terrorism Centre (Terrorelhárítási Központ) and the Metropolitan Directorate of Disaster Recovery (Fővárosi Katasztrófavédelmi Igazgatóság), and with instructors/lecturers from the University of Public Service (NKE) – Institute of Disaster Management and the NKE Doctoral School of Military Engineering.

I received considerable and defining guidance from my doctoral advisors/subject leaders (Prof. Dr. Kóródi Gyula and Dr. habil. Vass Gyula tű. ezredes), for which I would like to express my utmost gratitude.

A CONCISE DESCRIPTION OF THE STUDY CARRIED OUT, CHAPTER BY CHAPTER

THE STRUCTURE OF THE THESIS

Based on the scientific objectives, *the doctoral thesis is divided into four chapters with closely related content.*

In the **first chapter** I describe my research in detail. First, I will provide the interpretation of the professional objectives and methodology of the assessment. I will present the structure of the target organization and briefly assess the career specifications relevant to the survey. I describe the research context, methods and tools used during the assessment.

Following that, I will present the principles and methods of statistical evaluation, justifying their suitability for the analysis of the research.

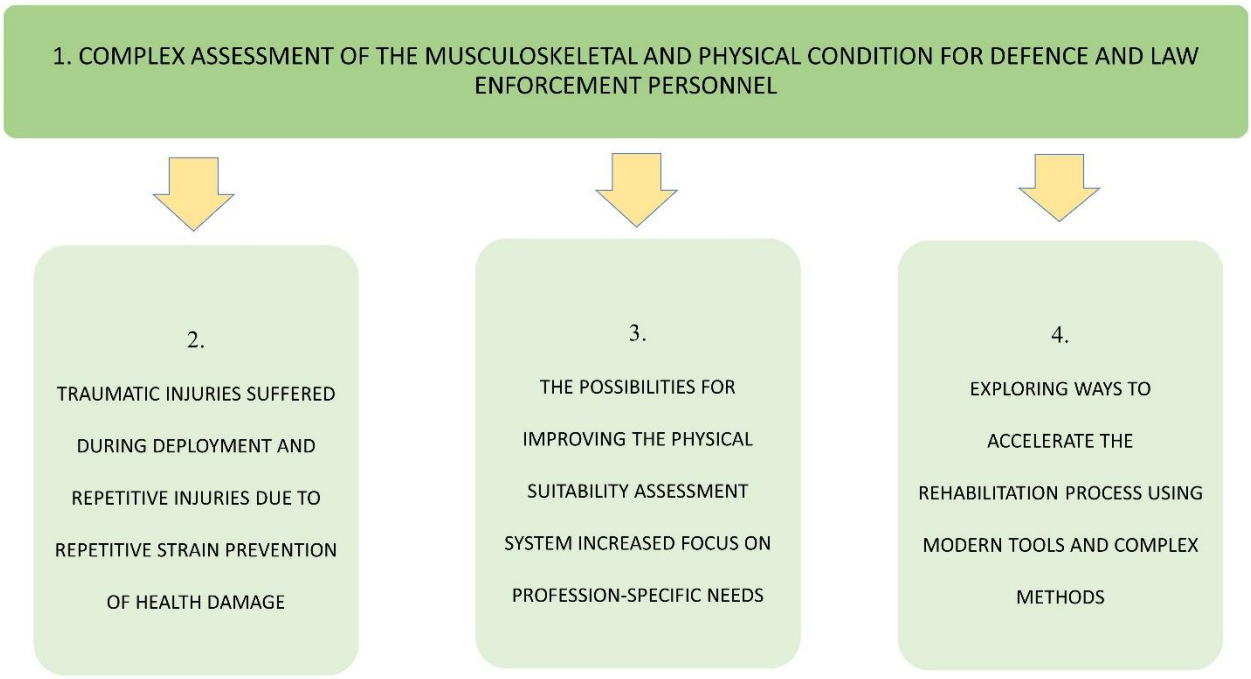
In the **second chapter**, I analyze and evaluate the relationship between the stresses and strains (and the possibilities of preventing them) on the personnel of the national defence and law enforcement forces, including the personnel of the organizations that participated my research. I will also make practical recommendations for the health preservation of the personnel from different fields based on the complex assessment.

In the **third chapter** of the thesis, in addition to explaining the concept of physical assessments and the history of their development, I will look at the daily practice in countries that have made significant progress in these fields. Using international experience and analyzing the results of this research, I will identify the principles that can be used to develop an optimal practice of physical assessment, helping to create a more complex picture (compared to the current one) of the personnel's physical conditioning and coordination skills.

I will make practical proposals for transforming the process, both in terms of the exercises to be carried out and the conditions for conducting the assessment.

Finally, in the **fourth chapter** of the thesis, I evaluate the applicability of modern prevention and rehabilitation methods in the field of law enforcement that are already used in context of professional athletes/competitive sports. My main task is to investigate how, in the future, the daily routines (or some parts) of professional sports competitors could be integrated into complex methods that would help to increase the effectiveness of the national defence and law enforcement personnel when facing the specific challenges identified by my research. Ensuring the necessary conditions raises interrelated issues of regulatory, methodological, and economic factors.

I will then propose organizational solutions for the practical application of modern prevention and rehabilitation methods.



1. *Figure 1: structure of the thesis, by the author, source: own work*

In my doctoral thesis, I also considered the following aspects:

a) I did not conduct analyses on how the personnel perform on assessments used during classical neurological patient examinations, since they only marginally affect one of my research's important topics (the relationship between coordination and balancing ability and the unstable environment).

b) I did not conduct specific research on the ergonomically correct, effective and at the same time energetically economical execution of job-specific movements and the correlation between appropriate coordination ability; during my research I consider it to be determined. My primary aim is to investigate how to increase the number of years in active service while being both healthy and pain-free. At the same time, I believe that aspects of optimal health preservation developed through my research are suitable for integration into the daily life of the professional personnel.

c) I did not conduct specific research related to the personnel's comprehensive internal medicine assessment. Without specific evidence, I consider it to be proven that sedentary work, non-exercise (as reported in a questionnaire survey) and a BMI above the normal range are associated with a higher risk factor for several internal, cardiovascular, and musculoskeletal diseases.

I concluded my research on 22nd September 2022.

CONCLUSIONS SUMMARY

I. The prevention of permanent health damage caused by traumatic injuries suffered during deployment and repetitive injuries due to repetitive strain among intervention personnel in the fields of national defence and law enforcement.

1. In accordance with my research objectives, I conducted a complex assessment and development of musculoskeletal and physical conditioning involving personnel from specific organizations of the national defence and law enforcement fields. I researched extensively the relevant literature on the subject and based on the studies I designed an assessment measuring the current state of the participant personnels' musculoskeletal, coordination and balancing ability. No such comprehensive assessment has been conducted in Hungary so far, so based on international research, I developed my own assessment protocol using validated tests. Based on this, I compared the results of my assessment with experiences of foreign experts. The assessment and comparison led me to the conclusion that the same risks were present both in the domestic defence sector and in the foreign ones.

2. Following the first round of assessments I conducted proprioceptive development training in an unstable environment among the designated intervention personnel from the HDF National Ceremonial Regiment and the Directorate of Disaster Recovery. I created a training program, which included a broad variety of tasks aiming to develop physical conditioning and coordination skills. When reaching the end of the exercise program scheme, a follow-up assessment was carried out to measure the development. By evaluating the obtained measurement data using statistical methods, I concluded that propioceptive training resulted in significant improvements in several variables for the intervention personnel groups, thus confirming my research objective.

3. In my research, I conducted a questionnaire survey on health behavior in all three organizations. I processed the responses of the Ceremonial Regiment members (Hungarian Defence Forces) and the CTC field operatives. In addition, when researching the Disaster Recovery's field duty firefighters, I also examined the health status of the professional staff who do office-based sedentary work. When creating the questionnaire I used foreign benchmark surveys, too. The questionnaire included general and specific job-related questions. The content of the questionnaire survey matched the content of the complex musculoskeletal and physical conditioning assessment, and during the evaluation I concluded that the information obtained complemented and sometimes supported the results obtained during the assessment.

4. My research's further goal was to verify that the injuries and health damage caused by traumatic injuries suffered during deployment and repetitive injuries due to repetitive strain among intervention personnel in the fields of national defence and law enforcement can be prevented more effectively by using new, modern, preventive methods. The results of the intervention program (using Bosu Balance Trainer) and the subsequent reassessment (back-measurement) significantly demonstrated that proprioceptive training in an unstable environment improves body awareness, improves the adaptation of the nervous system to constantly changing conditions, activates the muscles responsible for joint movement, and prevents injuries caused by the loss of balance. Movement patterns in an unstable environment improve strength development and physical conditioning. The effects of asymmetric joint strain for intervention personnel working in specialized fields can be reduced by the regular use of BOSU. Based on those above, I concluded that integrating the physical development in unstable environments into sport and training sessions contributes significantly to musculoskeletal prevention.

Based on my findings above, ***I see the fulfillment of my hypothesis Nr. 1 as verified, which substantiates my scientific research result Nr. 1.***

II. Within the field of national defence and law enforcement there is a need for a stronger focus on profession-specific requirements and for ways to improve the system of physical assessment in the context of suitability evaluations.

1. During my research, I studied in detail the development of the current practice of physical suitability evaluation in the field of national defence and law enforcement, the historical background, the content and requirements of the relevant sectoral legislation and organizational regulations. I considered the relevant changes in law enforcement legislation since the beginning of my research. The main conclusion I have drawn from the analysis of the regulators is that the rules for physical suitability evaluation vary from one sector to another, and the basic requirements are not uniform across organizations.

2. I examined the decree from the Ministry of Interior that came into force during my research: 45/2020. (XII. 16.) and the impact of regulation on the practice and methods of physical assessment. My conclusion: the new legislation supported my original hypothesis from 2017: the legislation enabled the individual law enforcement agencies to create career-specific assessment tasks that would suit better to the various professional activities. However, no similar regulation has been drafted so far for the professional personnel of the Hungarian Defence Forces.

3. During my research I investigated the career-specific tasks of physical suitability assessment in the CTC and the Disaster Recovery.

I analysed to which extent the obstacle courses used during career-specific requirement assessment by these organizations were useful assessing the physical conditioning and co-ordination skills. I found that the „Orlando-model", 16 tasks obstacle course used by the CTC provided a complex way to measure an individual's coordination skills. In the case of the firefighters' obstacle course used by the Disaster Recovery the integration of additional tasks would be justified to test coordination skills in a targeted manner. I have concluded that to assess coordination skills more effectively, additional task elements need to be developed, which I have proposed. I have also proposed the introduction of an additional complementary assessment methodology used in international practice. *Based on my findings above,* ***I see the fulfillment of my hypothesis Nr. 2 as verified, which substantiates my scientific research result Nr. 2.***

III. In the field of national defence and law enforcement, I aimed to find ways to reduce the impact of health impairments caused by career-specific repetitive strain and to accelerate the rehabilitation process, by introducing modern tools and complex methods.

1. In my research, I investigated procedures that 1. reduce the consequences of musculoskeletal problems that occur during a professional's time on duty, 2. support the return to work and 3. reduce the rehabilitation time during which the worker is off duty. I analyzed national and international discoveries of the typical injury mechanisms and risk factors for occupational hazards, plus the frequency of occurrence. I paid particular attention to musculoskeletal problems experienced by office personnel, especially those caused by sedentary work. One important finding is that more injuries are sustained by operational personnel during sporting activities than during deployment, and these typically affect the limbs. For sedentary workers, a static posture causes complaints in the lumbar and cervical spine. My conclusion is that the problems above can be helped with a targeted preventive exercise program. The role of warm-up is of paramount importance when performing the guided movements developed by specialists. I have developed a protocol for the warm-up, which is included in the annex to my thesis.

2. I examined the role of health care organizations within the national defence and law enforcement in the rehabilitation process. I found that those performing primary care or providing „team medic" services had general medical (typically internal medicine) qualifications, and their tasks/privileges reflected on that. The personnel are referred to an external medical institution for specialist examinations, which often results in a long period of absence from duty. It was concluded that musculoskeletal rehabilitation could be expedited by the organization's own in-house physiotherapist, or "light duty" service could be arranged, depending on the condition.

3. In line with my research objectives, I investigated the adaptation of methods used by professional athletes in the field of national defence and law enforcement.

In competitive sports the priority is to get the injured person back to playing and training as soon as possible, and the same applies to workers in the service. After injuries, passive rest causes the deterioration of physical conditioning, leads to muscle loss and immobilization doesn't help the metabolism of the injured area either. Rehabilitation is accelerated by a team of specialists (physiotherapist, fitness coach and medical massage therapist), whose task is also to enhance the performance of healthy players. There are several modern methods available, one of which is the one I was investigating: the propioceptive training. In conclusion, I found that the rehabilitation process can be accelerated by providing specialists with suitable equipment and by adapting modern procedures. *Based on my findings above,* ***I see the fulfillment of my hypothesis Nr. 3 as verified, which substantiates my scientific research result Nr. 3.***

NEW SCIENTIFIC RESULTS

Based on my research, **I propose to adopt the following new scientific results:**

1. Based on my research of regular and prescribed protocols performed in the propioceptive, unstable environment, and considering the profession-specific requirements of a given profession, **I developed** a methodological and practical training guide. Its implementation would contribute to the development of the central nervous system, in addition to better physical performance.
2. Through my research (using laboratory and performance diagnostic methods), I proved that collaboration with a physiotherapist (physical therapist) is needed in addition to the physical education specialists when planning, implementing, and monitoring the development scheme in the fields of physical suitability assessment and training. To prepare the future specialists for this task, **I developed** a specific course program and teaching methodology that can provide thematic development competences adapted to the career-specific workloads of the national defence and law enforcement services.
3. Based on the results of a complex survey conducted during my research on the development of rehabilitation processes, and on the experience of national and international practices in the relevant fields, **I demonstrated** that significant results could be achieved in the field of national defence and law enforcement through the methods, equipment and expertise currently used in competitive sports. Using these the impact of health impairments caused by career-specific repetitive strain could be effectively mitigated, the rehabilitation process could be accelerated, facilitating the work reintegration.

RECOMMENDATIONS OF THE THESIS

In relation to the scientific research in my thesis, I make the following recommendations:

1. Based on the results of my research on musculoskeletal and complex physical assessment and development, I propose to use my methodological guidelines for development in unstable environments for the practical training of the personnel of the national defence and law enforcement.
2. When creating the organizational regulation of physical suitability evaluation within national defence and law enforcement and when setting up the organization's training scheme I recommend the employment of physiotherapist specialist(s), and emphasize the need for a thematic development methodology, justified by both the results of the complex survey carried out during of my research and the conclusions of an extensive study of international practices. The training of physiotherapists (physical therapists) specialized in national defence and law enforcement can be facilitated by the *"Ergonomics in national defence and law enforcement"* course at Semmelweis University (initiated and developed by the author).
3. The experience gained from my analytical and evaluative work on reducing the impact of health impairments caused by career-specific repetitive strains has broad applicability for rehabilitation purposes in the fields of law enforcement and national defence. The impact of health impairments can be effectively mitigated by introducing modern tools and complex methods, and thus the work reintegration can be accelerated.

THE PRACTICAL USE OF SCIENTIFIC RESEARCH RESULTS

I suggest the following uses of the scientific research results:

1. The results obtained from the musculoskeletal and the complex physical condition assessment research and evaluated using statistical methods are suitable as the scientific basis for further professional and technical research.
2. The conclusions drawn in my thesis about physical suitability assessment and the proposals developed for the specific methodology can be used when preparing relevant regulations (legislation, internal organizational regulations), as well as to support the regulations' practical usability and the improvement of the implementation.
3. My thesis can be used for creating educational thematic in higher education institutions (professional training of physiotherapist/physical therapist experts – Semmelweis University and physical education specialists – Hungarian University of Sports Science).

THE DOCTORAL CANDIDATE'S LIST OF PUBLICATIONS RELEVANT TO THE TOPIC

PEER-REVIEWED JOURNAL ARTICLES (INCLUDING ONLINE ONES)

Published in reputable foreign language journals

[1] Vásárhelyi-Nagy, Ildikó; Sandra, Sándor; Mocsai, Lajos; Sticz, László; Rivasz, Gábor; Oláh, Csaba; Tihanyi, Krisztina: *Complications of physical strain among servicemen in special deployment: prevention and therapy*
DEFENCE REVIEW: THE CENTRAL JOURNAL OF THE HUNGARIAN DEFENCE FORCES 2 pp. 145-147., 200 p. (2017)

Published in reputable Hungarian language journals in a foreign language

[2] Vásárhelyi-Nagy, Ildikó: *Physical Aptitude Testing in Practice within the Admission Procedures of Staffs of Armed and Law Enforcement Agencies*
MŰSZAKI KATONAI KÖZLÖNY 29: 4 pp. 81-89., 9 p. (2019)

[3] Kanyó, Ferenc; Vásárhelyi-Nagy, Ildikó: *Research for New Physical Ability Testing Method for Firefighters in the V4 Countries*
MŰSZAKI KATONAI KÖZLÖNY 29: 1 pp. 161-166., 6 p. (2019)

Published in reputable Hungarian language journals in Hungarian language

[4] Horváth, Mónika; Mayer, Ágnes Andrea; Vásárhelyi-Nagy, Ildikó: A mozgásszervi állapot felmérése és a fejlesztés lehetőségei a Magyar Honvédségben szolgálatot teljesítő katonák körében - 2. rész
HADTUDOMÁNY: A MAGYAR HADTUDOMÁNYI TÁRSASÁG FOLYÓIRATA 31: E-szám pp. 118-129., 12 p. (2021)

[5] Kanyó, Ferenc; Vásárhelyi-Nagy, Ildikó: A beavatkozó tűzoltói állomány kompetencia alapú fizikai állapotfelmérése
VÉDELEM TUDOMÁNY: KATASZTRÓFAVÉDELMI ONLINE TUDOMÁNYOS FOLYÓIRAT 6: 1 pp. 204-217., 14 p. (2021)

[6] Vásárhelyi-Nagy, Ildikó: Új irányok az előzetes fizikai alkalmassági vizsgálatok rendszerében

VÉDELEM TUDOMÁNY: KATASZTRÓFAVÉDELMI ONLINE TUDOMÁNYOS FOLYÓIRAT V.: 3. pp. 207-224., 18 p. (2020)

[7] Horváth, Mónika; Mayer, Ágnes; Vásárhelyi-Nagy, Ildikó: A mozgásszervi állapot felmérése és a fejlesztés lehetőségei a Magyar Honvédségben szolgálatot teljesítő katonák körében - 1. rész
HADTUDOMÁNY: A MAGYAR HADTUDOMÁNYI TÁRSASÁG FOLYÓIRATA 29: E-szám pp. 79-92., 14 p. (2019)

[8] Vásárhelyi-Nagy, Ildikó: A beavatkozó állomány kondicionális képességei fejlesztésének új irányai, különös tekintettel a proprioceptív módszerek alkalmazására
HADMÉRNÖK 13: 4 pp. 408-422., 15 p. (2018)

[9] Sandra, Sándor ; Mocsai, Lajos ; Sticz, László ; Rivasz, Gábor ; Vásárhelyi-Nagy, Ildikó ; Oláh, Csaba ; Tihanyi, Krisztina: A speciális bevetési területen szolgálatot teljesítők fizikai megterhelése kapcsán esetlegesen kialakuló szövődmények megelőzése, illetve terápiája
HONVÉDSÉGI SZEMLE: A MAGYAR HONVÉDSÉG KÖZPONTI FOLYÓIRATA 145: 5 pp. 90-100., 10 p. (2017)

THE DOCTORAL CANDIDATE'S PROFESSIONAL AND SCIENTIFIC CURRICULUM VITAE

Name: Ildikó Vásárhelyi-Nagy, certificated physiotherapist, physical therapist

Place of employment: Semmelweis University, Faculty of Health Sciences, Department of Physiotherapy

Position: assistant lecturer

2008 – 2017: National Tax and Customs Administration – Institute of Training, Health and Culture, Department of Health: physiotherapist In addition to my professional work, I have also had the opportunity to acquire specialized knowledge in the field of sport through my activities in the Pénzügyőr Sports Association.

Professional career:

2019.03 – 2021.05.30.- Sports Association of the Hungarian University of Physical Education (TFSE) Handball Department, *Physical therapist, Rehabilitation coach*

2020.01 – 2020.03. - Physical therapist, Rehabilitation coach

2022.01.- Dunaferr SE Gymnastics Department, Physiotherapist, Rehabilitation coach

2018. 08- jelenleg is - currently - Ludovika- FCSM-Csata Basketball, Physiotherapist, Rehabilitation coach

2017.08 – currently - FTC-Telekom - Men's Adult Ice Hockey Team, Physiotherapist, Rehabilitation Coach

2015.10. – currently - Pénzügyőr Sports Association, Physiotherapist, Rehabilitation and fitness trainer

2018.03.26.- jelenleg is - currently - Semmelweis University Faculty of Health Sciences, Department of Physiotherapy, Department of Physiotherapy, college teaching assistant

Studies:

2015 - Star Training Further Education Center, Sports Instructor Aerobics *OKJ*

2015- BOSU-Hungary Training and Education Center BOSU Instructor

2016 BOSU Education Team Meijers, Roosteeren, Hollandia, BOSU Functianal Training Summit,

2017- BOSU Education Team Meijers, Roosteeren, Hollandia, BOSU Functianal Training Summit,

2017 HighRoller Edutation Center, Tampere, Finnország - *HighRoller master trainer*

2017 Oriolus-Med Academy, *Dynamic Flossing Level 1, Flossing Level 2*

2018 ART Edzőképzés Kft. Personal trainer *OKJ*

2019 – BOSU University Bosu Master Trainer

2003-2008 Semmelweis University Faculty of Health Sciences, *Physical therapist BSc*

2016-2017 Semmelweis University Faculty of Health Sciences, Physiotherapy MSc (Certified Physiotherapist)

2020 Oriolus-Med Academy, *FMA (Functional Movement Analysis)*

Educational activity:

2017. 03.26.- Semmelweis University, Faculty of Health Sciences, Department of Physiotherapy, college teaching assistant

2015- *member of the professional examination board (Hungarian Chamber of Health Professionals)*

- Therapeutic and sports masseur

- Ergoterapeuta (OKJ),
- Physiotherapy assistant (OKJ)

2014- *speaker at health professional conferences and events*

2016 –2019 - Star Training Advanced Training Center Aerobic Sports Instructor

Bodybuilding and Fitness Sports Instructor (OKJ), Personal Trainer (OKJ) - instructor

2016 - BOSU-Hungary Training and Education Center

BOSU instructor training for fitness instructors, professional trainers, personal trainers, physiotherapists and children's specialists, physical trainers, physical trainers.

Budapest, 3 February 2023.

Ildikó Vásárhelyi-Nagy

certificated physiotherapist