



HABILITATION THESIS

ABSTRACT

INDIVIDUALIZATION OF PHYSICAL PREPARATION BY CONTROL OF OXIDATIVE
STRESS AND NEUROMUSCULAR TRAINING

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The habilitation thesis "Individualization of physical preparation by control of oxidative stress and neuromuscular training" synthesizes didactic, academic and research activity from the post-doctoral period. The doctoral thesis titled "The paradox of oxidants / antioxidants balance in physical effort" had an interdisciplinary character by addressing the physiology of physical exercise, nutrition and sports training.

The habilitation thesis is structured on three sections. The first section includes the scientific, professional and academic achievements grouped on the thematic directions, the second section presents the career development plans and the last section is bibliographical references.

In the first part of the thesis the achievements are systematized in four thematic directions: scientific research, profession, academic activity and volunteering.

The research included in the chapter "The oxidant/antioxidant effect of physical exercise and nutrition influence" focused on the effects of physical effort on the body as a topic of great relevance and interest.

We studied the pro-oxidant effect of intense physical effort, its consequences and the importance of controlling oxidative stress by natural or synthetic nutritional exogenous antioxidants, as well as the antioxidant effect of moderate exercise. The research has an applicative character, follows and demonstrates the effects of dietary supplementation with hemp oil on exercise aerobic capacity, serum and tissue redox homeostasis, blood lipid metabolism changes and histopathological changes in myocardium and encephalon during physical exercise and demonstrates the role of hemp oil as a nutritional agent with multiple effects: energogenic, antioxidant, hypoglycaemic and neuroprotective, in physical effort with different intensities.

Research in this field has been materialized in six articles published in BDI and two articles presented at International Scientific Conferences.

In the field of physical therapy, in the chapter "Individualization of training for performance and prevention in sport", the scientific research focuses on the neuromuscular training and ways to individualize athletes training. The scientific articles in this chapter were published in ISI and BDI indexed journals, and the results of the research and bibliographical and practical work materialized in the volume "Neuromuscular training in sports training and injury prevention".

Professional achievements are complex, with multilateral training as a physician, physical therapist and university teacher.

The subjects that I teach in the bachelor programs (functional and biomechanical anatomy, general physiology, semiology) for the students of Physical Education and Sport, Sport and Motric Performance and Physical Therapy are supported by the published materials as sole author and the scientific papers published as the sole author or co-author.

Vocational training and lifelong learning is the chapter on the achievement of professional and lifelong training and learning. Here are mentioned higher education, university, postgraduate, training courses, professional coaching, osteopathy, nutrition courses, etc.

Didactic activity and didactic and formative materials designed to help students, courses, workshops, books, plans, etc. are found in Chapter 4.

The "Academic Activity" chapter synthesizes interactions in the academic field.

Volunteering activities include the actions undertaken within the framework of the Romanian Olympic Academy starting with 2011 and those of the Office for students with disabilities OSD - Sports adapted for people with disabilities.

The second part of the thesis presents the academic career development plan. The objectives and strategies adopted so far are examined as the basis for the future and new directions are presented, meant to connect interdisciplinary and to extend the research area as a doctoral coordinator.

Short-term goals are:

- Adaptation of teaching information in the sense of education reform
- Focusing in the didactic process on critical analysis and the issuing of valuable reasoning.
- Involving students interested in research at student level
- Obtaining the habilitation certificate for the PhD thesis coordinator
- Study on the implementation of mechanisms that determine behaviours in education and sports for health and performance
- Publication of papers according to the requirements of the research department
- Providing information and solutions to administrative decision-makers or policies based on research results

Medium-term objectives are:

- Adapting teaching materials in an entrepreneurial sense
- Valorisation of materials through editing and dissemination
- Valuing the Faculty's relations with other countries
- PhD thesis coordination in the field of sport, Paralympic games, elderly people oriented to their social needs
- Implementation of research projects on the methods and means by which the didactic and sports objectives are achieved at different levels
- Making decision-makers interested in capitalizing on expert experiences

Long-term goals

- External collaborations for valorisation of courses and books

- Research in the form of community, didactic, administrative and policy studies through grants and research projects
- Exploitation of Faculty Research Centre
- Valorisation of research themes identified in everyday activity and with professional and social representativeness
- Partnerships with the civil society
- Partnerships with Research Centres in the country and abroad, based on the experiences gained in the Erasmus program

Both in the short and medium term, but especially in the long one, I propose the reedition of the teaching materials and adaptation to the educational needs and the progress at national and international level.

As a teaching and research activity, I intend to be a scientific consultant for undergraduate, masters and doctoral theses of students.