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# Research Teams

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The developmental dimension of sport in relation to its present coordinator: prof. PhDr. Marek Waic, CSc.

The team focuses on a historical reflection of the evolution of sport in connection with the broader context of the political, cultural, and economic development of society. The majority of attention is directed towards the era of communist dictatorship. In this period, sport was one of the preferred and highly watched areas of society's life due to military, internal political, foreign political and ideological reasons. The team will further explore the development of physical education teachers' and coaches' education. Its members will also not overlook the evolution of the content of physical exercises and the question of how inspiring they are for the present and future of school physical education.

Health as individual and social value, motivation for physical activity and performance sports coordinator: PhDr. Ivana Harbichová, Ph.D.

Our team is interested in sport and physical activity research through the interdisciplinary perspective of social sciences, specifically psychology and sociology. We are currently working on a longitudinal study investigating relations between motivation for physical activity and cognitive strategies. Another area of our research is social perception, where we study whether we can assess the abilities of our competitors based on acoustic, visual, or olfactory cues. Regarding the sociology of sport, we focus on Roma people's opinions about taking part in physical activities and sports, and their perception of potential barriers prohibiting doing so.

Fundamental and ethical problems of contemporary sport from the point of view of analytical philosophy coordinator: ass. prof. PhDr. Irena Parry Martínková, Ph.D.

The team works within analytical philosophy applied to sport, which primarily focuses on the concept of sport, investigating its nature and its values. Two salient contemporary issues are the distinction between sport and e-sport, and the nature of 'nature sports'. Most of our research deals with sport in the narrower definition of 'competitive sport', the classic examples of which are Olympic sports, which we define with six criteria, as 'institutionalised rule-governed contests of human physical skill'. Because rules provide a quasi-legal framework for sports competition, we work on issues of justice and fairness. Further, we research eligibility rules, contributing to today's sensitive debate regarding the eligibility of transwomen to compete in the female category; questions regarding the sex categories (e.g. the possibility of 'unisex' sports), the weight categories and parasport categorization. We also tackle further ethical issues, which inevitably arise through the competitive nature of Olympic-type sport, such as cheating, match-fixing and violence.

Sport as a dynamic segment of the advanced economy, especially in relation to the labour market coordinator: ass. prof. PhDr. Jan Šíma, Ph.D.

The aim of the team is to analyze the economic and social conditions of sport, to gain new knowledge enabling successful management of sports organizations in terms of providing and operating sports activities in both professional and amateur sports. The researched areas are related to current trends in social sciences and reflect the needs of the labour market. The topics examined include, in particular, crisis management in sport organisations, roles, functions and competences of managers in sport organisations, migration in sport, marketing communication of sport organisations and sport governance.

Ontogeny of Human Motor and Youth Training coordinator: ass. prof. Martin Musálek, Ph.D.

The research activities throughout our Cooperatio panel are divided into two fundamental pillars. Within the first pillar, we focus on examining the relationships between selected motor constructs (physical activity, fundamental motor skills, motor competencies, physical fitness) and cognitive functions in preschool and early school-age children. The aim is to determine both the direct and mediating effects of each selected motor construct on the individual components of cognitive functions in children of preschool and school age. The second pillar involves investigating the impact of biological maturation on morpho-functional development in youth engaged in sports, focusing on ice hockey. The objective is to identify developmental trends and critical periods for the application of bio-banding principles. Additionally, we aim to develop a straightforward screening tool for coaches to categorize athletes based on their current level of biological maturation.

The analysis of the goal of physical education (PE) and the delimitation of PE in a middle-term horizon, physical activities 'forms in PE as a tool of inclusion of children and youth' mládež coordinator: PhDr. Kamil Kotlík, Ph.D.

Our team focuses its attention primarily on PE, which we perceive as a very important school subject with significant influence on forming of young generations in various areas of human's life. However, despite its undeniable importance PE is frequently perceived as a marginal matter in society, which can reduce its real benefit.

From a higher-mentioned reason we address several core research topics. One of them is the success of implementing the physical education curriculum at different types and levels of schools, another topic is the social status of physical education and its actors among various groups of population. As the main topics the issue of inclusion in physical education and the phenomenon of exemption from physical education are also addressed. Last but not the least, we focus on the attitudes of pupils and the public towards sports and other physical activities, because of their strong influence on the perception and status of physical education.

**Physical activity in the ageing population and adapted physical activities (APA)** coordinator: ass. prof. Michal Šteffl, Ph.D.  
The research team has a broad focus on issues relating to the ageing population and research topics in the area of physical activity in people with special needs. For example, the groups are investigating the effects of different exercise programmes on quality of life or postural stability in specific populations, adherence to physical activity, but also motor skills in children with special needs, classification in para-sport and other similar topics. The team's research activities include all types of studies - randomised, cross-sectional, and systematic reviews and meta-analyses.

**Biomechanics of Movement Activities and Technology Applications into Sports** coordinator: ass. prof. PhDr. Petr Štastný, Ph.D.

The research team focuses on studying mechanical interactions during human movement and their influence on movement quality and adaptation to load. It also focuses on the readiness of the musculoskeletal system to perform different activities and how this is affected by training or lack of movement readiness. It uses biomechanical measurements in field conditions and proposes movement interventions to enhance performance and prevent injury. These activities are monitored using innovative technologies including "wearable sensors".

**Applied Physiology in Sport** coordinator: ass. prof. Jiří Baláš, Ph.D.

Our team utilizes methods of applied physiology to assess the biological determinants of sport performance, to monitor fatigue and recovery, to evaluate the effectiveness of ergogenic substances, and further to optimize training process across various population groups. It appears that many recovery procedures or training methods used in contemporary sports are purely subjective without sufficient scientific support. Similarly, many simple performance-enhancing techniques remain on the periphery of both scientific interest and sports practice. Another equally important area is assessing the impact of the environment on individual athletic performance and monitoring environmental influences on both physical and mental health during physical activities.

**Biochemical-Genetic Markers in Movement Activities** ass. prof. Jana Jaklová Dytrtová, Ph.D.

The research team focuses on the investigation of biochemical manifestations and genetic patterns linked to movement or therapeutic activity. Research activities are focused on the areas of the body's response to an individual's physical activity, the influence of controlled and planned physical activity on hormonal production and circadian rhythms. Furthermore, the team focuses on the study of cocktail interactions of food supplements and biologically active substances and the development of suitable analytical methodologies/techniques for the determination of biochemical and genetic markers.

**Fitness training and recovery intervention** coordinator: ass. prof. PaedDr. Tomáš Malý, Ph.D.

The main ambition of the research group is to solve scientific problems in the fields of fitness training and recovery intervention in order to optimize sport performance. The research team address these problems through different focus areas. The first deals with analysis of sports performance and its determinants, in reflection of physical fitness parameters. The research activities focus on possibilities of physical performance stimulation, its objectification by technology, and assessing limiting factors of sports performance, potentially through strength and conditioning interventions. Another focus area is load management analysis, its issues, and optimization in order to achieve peak performance (periodization, tapering, priming). A further area is recovery, which includes assessing the influence of fatigue on changes in physical performance level. Furthermore, injury prediction in athletes from the viewpoint of physical fitness and morphological determinants falls under this domain.

**Physiotherapy and therapeutic procedures** coordinator: PhDr. Tereza Nováková, Ph.D.

The research aim of the team is to describe the clinical condition and individual changes clarifying the effect of therapeutic or movement intervention in a specific population (children, seniors, pregnant women, soldiers or athletes) or patient group. The team focuses on the field of treatment and prevention, with a focus on civilisation diseases, specific patient groups or populations, always with an emphasis on the possibility of objectifying the processes accompanying the physical activity or kinesiotherapeutic input.