



University of Zagreb
Faculty of Kinesiology

**SCIENCE
DEVELOPMENT
STRATEGY
FROM 2023 TO 2028**

Zagreb, May 2023

PUBLISHER

**University of Zagreb
Faculty of Kinesiology**

FOR THE PUBLISHER

Full Prof., Mario Baić, PhD

EDITORS

Iva Barković, mag. bibl. et mag. hist. art.

Nikolina Bestić, mag. nov.

Asst.Prof., Daniel Bok, PhD

Ivan Čolakovac, mag. educ. phil. et mag. bibl.

Đurđica Kamenarić, legal administrative assistant

Assoc.Prof, Mario Kasović, PhD

Asst.Prof., Pavle Mikulić, PhD

Assoc. Prof., Dario Novak, PhD

Full Prof., Tomislav Rupčić, PhD

Assoc. Prof., Lana Ružić, PhD

Assoc. Prof. Maroje Sorić, PhD

Assoc. Prof. Sanja Šalaj, PhD

Titular Asst.Prof, Lovro Štefan, PhD

GRAPHIC DESIGN

Tomislav Brozović (trinatri.com)

Zagreb, May 2023

SCIENCE DEVELOPMENT STRATEGY FROM 2023 TO 2028

Table of contents

4	Introduction
5	European Union Science Development Strategy
8	Development opportunities within the European Research Area (ERA)
10	National Development Strategy of the Republic of Croatia 2030
13	Research, Technology Transfer and Innovation Strategy of the University of Zagreb,
14	Faculty of Kinesiology in Zagreb
15	Organization of the Institute of Kinesiology
15	I. Centre for Scientific Research
31	II. Centre for Transfer of Knowledge in Kinesiology
31	Kinesiology: International Journal of Fundamental and Applied Kinesiology
34	International Scientific Conference on Kinesiology
36	III. Diagnostic Centre
37	Library
38	About the development strategy
36	Mission and vision of the Faculty of Kinesiology
37	Scientific activity of the Faculty
37	Previous period indicators
44	Scientific research, technological projects and projects in a collaboration with the economy and the public community
45	Human Resources – Research Base
46	Mobility of researchers
48	Doctoral study of kinesiology
50	Realization of the goals from the Strategic Plan for Scientific Development 2017-2022
58	SWOT analysis
59	The main strategic goal of research of the Faculty of Kinesiology, University of Zagreb from 2023 to 2028
61	Specific strategic objectives
62	SPECIFIC STRATEGIC OBJECTIVE 1: Development of human and research potentials and business processes
65	SPECIFIC STRATEGIC OBJECTIVE 2: Ensuring a knowledge transfer at all levels of study programmes and improving the scientific and social visibility of the Faculty
74	SPECIFIC STRATEGIC OBJECTIVE 3: Strengthening scientific excellence and increasing research capacity
77	ANNEX 1: Scientific topics of kinesiological and interdisciplinary research
77	P.1.1. Research in the field of kinesiology of sports
80	P.1.2. Kinesitherapy research
82	P.1.3. Research in the field of kinesiological anthropology
84	P.1.4. Research in the field of kinesiological education
86	Research in the field of sports economics and management
87	P.1.6. Research in the field of kinesiological recreation
89	P.1.7. Research on the impact of physical activity on the prevention and course of chronic diseases
90	P.1.8. Research in the field of physical activity and lifestyle habits and external factors such as the influence of environmental factors on adaptations during physical exertion

Introduction

The Faculty of Kinesiology in Zagreb is the leading scientific and teaching institution in the field of kinesiology in the Republic of Croatia.

Founded as the High School of Physical Culture in 1959, in 1973 it changed its name to the Faculty of Physical Culture, and its current name, the Faculty of Kinesiology in Zagreb, was changed in 2001. The Faculty has been operating for 64 years as an independent higher education institution in the Republic of Croatia in which university masters of kinesiology, professional bachelors of the coaching profession and masters of the coaching profession are educated.

In the coming period from 2023 to 2028, the scientific research activity of the Faculty of Kinesiology will be directed towards high levels of research achievements and the creation of the necessary institutional framework for these achievements, taking into account the circumstances within which the Faculty operates.

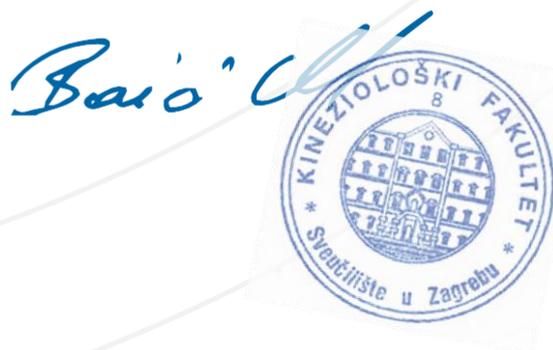
The document is partly based on Regulation 2021/695 and Decision 2021/764 of the European Parliament and of the Council establishing Horizon Europe - the European Union Framework Programme for Research and Innovation for the period 2021-2027, the Research and Innovation Strategy - Strategy 2020-2024, a Sustainable Europe 2030 programme, the National Development Strategy of the Republic of Croatia 2030 and the Strategy of Education, Science and Technology of the Republic of Croatia.

In May 2023, the text of the Strategy was revised by the Science Strategy Committee of the Faculty of Kinesiology in Zagreb, appointed by the Faculty Council at its session held on 24 November 2022.

The Faculty Council of the Faculty of Kinesiology in Zagreb adopted the *Science Development Strategy of the Faculty of Kinesiology from 2023 to 2028* at its 8th regular session held on 11 July 2023.

DEAN

Full Prof., **Mario Baić, PhD**



European Union Science Development Strategy

A timely recognition of trends, own strengths and weaknesses is key to turning challenges and circumstances into development opportunities, but also to strengthening the resilience of society and its greater readiness in facing unpredictable circumstances. The global crisis caused by the coronavirus SARS-CoV-2 pandemic, which has had a strong impact on the Croatian economy and all segments of society, has resulted in adapting to the new challenges of all areas of society, including science. To adapt to all challenges and to exploit all its potential, the Faculty of Kinesiology in Zagreb needs to have a clear vision of its future development and define the goals it wants to achieve in the field of science development over the following six years.

The European *Strategy on Research and Innovation* highlights the important role of research and innovation policies in responding to the challenges posed by the global coronavirus pandemic. The European Strategy aims to achieve the European Commission's priority of a stronger Europe in the world. Through multiannual research and innovation programmes, the European Union allocates significant financial resources to strengthen the EU's position in science through fostering industrial innovation, including investment in key technologies, greater access to capital and support for small businesses, tackling societal challenges such as climate change, sustainable transport and renewable energy, producing sustainable products with real commercial potential based on technological breakthroughs, building partnerships with industry stakeholders and governments, and strengthening international cooperation in research and innovation.¹

The EU's success in achieving the SDGs and future development plans are elaborated in *the SUSTAINABLE EUROPE 2030* programme where the 17 SDGs of EU Member States are defined: No poverty; Zero hunger; Good health and well-being; Quality education Gender equality; Clean water and sanitation; Affordable and clean energy; Decent work and economic growth; Industry innovation and infrastructure; Reduced inequalities; Sustainable cities and communities; Responsible consumption and production; Climate action; Life below water; Life on land; Peace, justice; and strong institutions and Partnerships for the goals

In order to achieve the above objectives, horizontal factors for the transition to sustainability have been developed, one of which is *Education, science, technology, research, innovation and digitalization*. Education, science, technology, research and innovation are prerequisites for achieving a sustainable EU economy that meets the Jdgs. EU leaders see education as a driver of employment and economic growth and believe that education and training should be strengthened at all stages of life, from early childhood to higher education and adult education. Investing in education invests in the progress of society and the economy and contributes to the transfer of scientific research towards the development of new technologies and innovations.

As an academic institution of higher education in the European Union, the Faculty of Kinesiology in Zagreb is part of the European Research Area (ERA)³ which contributes to strengthening research and innovation in the EU. The ERA distinguishes between 6 priority areas in which the European Research Area and Innovation Committee (ERAC) participates as the main advisory body.

¹ https://european-union.europa.eu/priorities-and-actions/actions-topic/research-and-innovation_hr

² The Role of Science, Technology and Innovation Policies to Foster the Implementation of the Sustainable Development Goals, Report of the Expert Group "Follow-up to Rio+20, notably the SDGs".

³ <https://www.consilium.europa.eu/hr/policies/european-research-area/>

The priority areas of the ERA are:

- priority 1: more effective national research systems
- priority 2. a.: optimal transnational cooperation and competition
- priority 2.b.: research infrastructures
- priority 3: open labour market for researchers
- priority 4: Gender equality and gender mainstreaming in research
- priority 5: optimal circulation and transfer and access to scientific knowledge
- priority 6: international cooperation.

The European Research Area (ERA) is concerned with promoting the free circulation of researchers and knowledge and aligning national research policies and programmes. The EU research and innovation policies envisaged by ERA aim to:

- invest in research and innovation for a green and digital future
- improve access to infrastructure and facilities for researchers
- support the mobility of researchers, their skills and career opportunities
- promote gender equality and diversity
- encourage open science practices.⁴

It is postulated by ERA that the advantage of investing in research and innovation is important for creating more and better jobs in Europe, improving the quality of life of citizens and increasing the competitiveness of the EU economy. Horizon Europe is the EU's main fund to support the implementation of the new ERA and is one of the EU's key instruments to strengthen the European Research Area. Horizon 2021-2027 is structured around three pillars: excellent science, global challenges and European industrial competitiveness and an innovative Europe.

Excellent science lists as its main activities the promotion of EU scientific and technological excellence and the strengthening of the European Research Area while promoting scientific excellence. Emphasis is placed on the creation and dissemination of scientific excellence, high-quality knowledge, skills, technology and solutions to global challenges and the inclusion of open science practices with the aim of better quality and efficiency of research and innovation with the active involvement of society. Through its activities, Innovative Europe encourages the development, transfer and application of all forms of innovation, especially in small and medium-sized enterprises.

The area of global challenges and European industrial competitiveness is divided into 6 clusters:

- health
- culture, creativity and inclusive society
- civil security for society
- digital, industry and space
- climate, energy and mobility
- food, bioeconomy, natural resources, agriculture and environment.⁵

⁴ <https://www.consilium.europa.eu/hr/policies/european-research-area/>

⁵ <https://www.obzoreuropa.hr/obzor-europa/uvod>

EUR 8.246 billion has been provided for the health cluster (including EUR 1.35 billion from the NGEU (Next Generation EU – Recovery Fund)). The global crisis caused by the SARS-CoV-2 coronavirus pandemic has highlighted the challenges that health systems, but also society as a whole, are facing and has highlighted the need for rapid adaptation to preserve the economy and society. Investing in health is necessary to improve the quality of life of a society from the earliest to the oldest age and to ensure that all citizens have access to better and higher quality health care. The fact that physical activity is one of the main determinants of health is completely undeniable, and physical fitness is one of the main predictors of mortality rate connected to cardiovascular, metabolic and cerebrovascular diseases. Therefore, the position of kinesiology, and especially research in kinesiology and its related areas and fields, is becoming extremely important for the future.

As means of achieving the objectives envisaged for the health cluster, research and innovation in the following areas will be crucial:

- health in a rapidly changing society
- living and working in a health-promoting environment
- prevention of disease and reduction of the burden of the disease
- innovative, sustainable and high-quality healthcare
- realising the full potential of new tools, technologies and digital solutions for a healthy society
- maintaining an innovative, sustainable and globally competitive health industry.⁶

Within the health cluster, there is the EU4Health programme (EU Programme for Health 2021-2027 – a vision for a healthier European Union) established in response to the COVID-19 pandemic. EU4Health focuses on making the best possible use of the new knowledge created under Horizon Europe and offers funding opportunities by launching calls for proposals and tenders.

⁶ <https://www.obzoreuropa.hr/struktura-drugi-stup/zdravlje>

Development opportunities within the European Research Area (ERA)

By analyzing strategic documents at the level of the European Union, the Republic of Croatia and the University of Zagreb, several common goals and areas of activity on which these documents focus can be singled out, namely increasing the allocation of funds for scientific research and connecting with economic operators (knowledge transfer), raising awareness of the importance of active living and investment in health, strengthening scientific excellence and research capacity, and international recognition of the institution and scientific research. By focusing on these areas, the Faculty will enable the transfer of the latest scientific knowledge to the applied fields of kinesiology, the economy and society as a whole through its research work within projects and laboratories.

In addition, the Faculty of Kinesiology in Zagreb continuously focuses on improving the quality of the teaching process and ensuring the best possible conditions for scientific and research work aimed at creating new and deepening existing knowledge in all areas of general and applied kinesiology along with better positioning of the Faculty in the international academic community.

The Faculty is permanently oriented towards improving all its processes, especially teaching and scientific research, which is proved by the possession of the certificate for the quality management system ISO 9001: 2015, which was awarded on October 21, 2014 (until then ISO 9001: 2008). The quality standard is applied in all processes of the Faculty of Kinesiology: scientific research, teaching, administration and management.

Taking into account the main EU fund, Horizon Europe, for strengthening the European Research Area, the Faculty of Kinesiology in Zagreb should focus its further research development on the first and second pillars, i.e. on excellence in science and global challenges and European industrial competitiveness. Scientific research work of the Faculty is based on the application of modern technology and scientific methodology in the analysis, design and evaluation of the training process, which makes the Faculty the leading Croatian scientific and teaching institution in the field of kinesiology.

With the Faculty taking the direction towards the field of excellent science a contribution to better recognition and strengthening the competitiveness of the Faculty in all areas of activity will be achieved. As the leading higher education institution in the field of kinesiology in the region, the goal is to continue to progress and develop in the social field, as well as in other areas such as biomedicine and health, for which a working group has been formed in order to obtain a license for the Faculty of Kinesiology to perform scientific activities in this area. In order to achieve the best possible scientific excellence, it is crucial to focus on research projects through which the Faculty can connect with excellent scientists and thus improve scientific research and increase the institutional recognition of the Faculty in the world.

The Faculty is improving its scientific activity through the financing of scientific equipment from its own funds and the funds of the Ministry of Science and Education (financing of basic scientific activity), but is continuously seeking new sources of funding in order to provide as much as possible for scientific equipment and research. By increasing the number of competitive projects, the Faculty is opening up additional

possibilities of financing scientific equipment, development of new study programmes and education of new PhDs (for example, projects of the Croatian Science Foundation, Horizon Europe, ESF projects, Internationalization of higher education...), especially those resulting from cooperation with the economy and the opening of laboratories where commercial projects are carried out.

By participating in research projects, the Faculty has the opportunity to improve the scientific infrastructure that will enable the creation of excellent science and contribute to the achievement of this goal. In addition to the procurement of scientific equipment, participation in projects can be an excellent way to present the faculty in the international research space and create a basis and contacts for future progress of the faculty's scientific excellence.

In addition to focusing on the field of excellent science, the Faculty can also focus on the field of Global Challenges and European Industrial Competitiveness, which, through various activities, supports the creation and transfer of new knowledge, technologies and sustainable solutions with the aim of encouraging the competitiveness of the industry of EU Member States and strengthening the impact of research and innovation in the implementation of the Union's policies.

Raising awareness of the importance of an active life and investing in health is what the Faculty of Kinesiology in Zagreb must emphasize as an extremely important factor in the fight against various diseases, preserving the health of the individual and ultimately contributing to the creation of a stronger and more resilient society. Engaging in physical activity contributes to raising the efficiency of the working-age population, and creating a better and more efficient working-age individual, less susceptible to diseases, contributes to lessening the burden on the health system. With scientific research that will focus on the impact of physical exercise on people, the Faculty has the opportunity to further strengthen its social role and stand out as a key factor in achieving the goal focused on health. There are numerous benefits of engaging in physical activity to the overall psychophysical condition of the individual, and thus to society as a whole, and the task of the Faculty is to continue to promote these values and emphasize their importance. Physical activity as a tool in disease prevention is a message that the Faculty should constantly emphasize and promote in order to raise society's awareness of the importance of moderate exercise.

Also, by participating in and organizing public forums and actions on the importance of health-oriented physical activity, the Faculty will emphasize the importance of education in sports and promote physical activity as a way of life to improve health status and quality of life.

National Development Strategy of the Republic of Croatia 2030

At the national level, the development of the field of science and research is determined by the document National Development Strategy of the Republic of Croatia 2030, which defines **four development directions with strategic goals for each one**. The field of science and research is permeated through all development directions, and is most emphasized in the strategic goal 1. Competitive and innovative economy (SC 1). **The development of science and technology** is one of the priority areas of public policies for the achievement of strategic goal 1. The output indicator for science and technology development will be the share of total R&D expenditure (GERD) in GDP. The initial value of 2018 was 0.97 %, and the target value by 2030 is 3.0%. Economic progress largely depends on the link between the research and business sectors, and the transfer of knowledge based on scientific research into practical application is of utmost importance. In order to achieve this, the **National Development Strategy of the Republic of Croatia 2030** plans to modernize the *legislative framework governing the academic scientific research sector and increase investment in science, research and development in order to strengthen scientific excellence and research that bring innovation and encourage open science and cooperation with the business sector. The focal point of development priorities in science and research will be to increase investment to generate knowledge, disseminate ideas, innovate, and commercialize them successfully*.⁷

The National Development Strategy of the Republic of Croatia 2030 supports the guidelines of the European Strategic Forum on Research Infrastructures by *improving and facilitating access to research infrastructures and strengthening the protection and management of intellectual property arising in the academic scientific research sector*.⁸

The priorities for the implementation of science and technology policies in the National Development Strategy of the Republic of Croatia 2030 are:

- reform of the science system and the academic scientific research sector in order to achieve global standards of excellence and create innovation,
- development of research capacities with an emphasis on human resources in STEM,
- strengthening scientific excellence and fostering open science by investing in research infrastructure and internationally significant research projects,
- support for research and development activities in the academic scientific research and business sector,
- ensuring conditions for the creation of innovations, transfer of knowledge and technologies to entrepreneurial ventures in Croatia,
- continuous support to the innovation system to ensure its strengthening and sustainability through financial programmes for research, technological development and innovation, especially in the areas of information and communication technology, artificial intelligence and robotics, biotechnology and green technologies,
- digital transformation in science.⁹

⁷ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_02_13_230.html

⁸ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_02_13_230.html

⁹ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_02_13_230.html

Improving scientific excellence is also highlighted in the new Smart Specialisation Strategy until 2029. (S3) highlighting three specific objectives: improving scientific excellence, bridging the gap between the research and business sectors, and increasing innovation efficiency. These policies in the field of science and technology emphasize the importance of improving the conditions for scientists and scientific research in the Republic of Croatia in order to provide them with financial and systematic support while strengthening competitiveness within the EU. It is necessary to promote cooperation and networking of researchers at the international level and thus contribute to the dissemination and development of knowledge in the field of kinesiology, but also in other related fields such as biomedicine and health. Connecting with various economic operators creates preconditions for the transfer of knowledge from an academic institution to technological production.

Another important strategic goal stated in the National Development Strategy of the Republic of Croatia 2030 is the strategic goal of 5 - healthy, active, and quality life. As a leading institution for education in the field of kinesiology and sports, the Faculty of Kinesiology in Zagreb can further strengthen its role in society by focusing its work on achieving this goal. For economic growth to be sustainable, it is necessary to improve the standard of living and the quality of life of the entire population. One of the priority areas of public policies for strategic goal 5 is **health, healthy eating habits and active living through sports**. The emphasis will be put on promoting health, healthy eating habits and an active life through sport and recreation with the aim of increasing the physical activity of the population, especially among children in order to reduce the risk of obesity, chronic diseases such as cardiovascular disease, type 2 diabetes, hypertension, coronary heart disease and certain types of cancer. Raising the awareness of the population about the importance of proper nutrition in order to prevent obesity will be carried out through various public health campaigns and actions, and the Faculty of Kinesiology in Zagreb has the opportunity to further emphasize its importance here as an institution responsible for the education of future professors of physical education and health and trainers: *with the aim of encouraging physical activity of citizens and ensuring the availability of quality sports facilities, investments will be made in the education and training of professional staff in sports and the development of entrepreneurship in the field of sports and recreation. In creating conditions for sports and physical activity, interdepartmental cooperation and broad coordination of activities with different sectors and stakeholders from the sports system and with local communities will be promoted*¹⁰

The priorities for the implementation of the policy of healthy and active living in the National Development Strategy of the Republic of Croatia 2030 are as follows:

- promoting the importance of adopting healthy eating habits,
- improving the capacity and equipment of institutions with organized meals for preschool and primary school children, promoting the health and active life of citizens of all age groups, especially young people, through sports and recreation,
- finding, recognizing and promoting sports talents, creating conditions for achieving top sports results and promoting sports values,
- improving the availability and strengthening the visibility of sports and recreational facilities,
- improving the quality and availability of sports and recreational infrastructure,
- ensuring the widest possible involvement of children in recreational programs with the aim of preventing obesity, addiction, and similar negative phenomena.¹¹

¹⁰ <https://hrvatska2030.hr/wp-content/uploads/2021/02/Nacionalna-razvojna-strategija-RH-do-2030.-godine.pdf>

¹¹ <https://hrvatska2030.hr/wp-content/uploads/2021/02/Nacionalna-razvojna-strategija-RH-do-2030.-godine.pdf>

Focusing on the priorities listed for SC 5. Health, healthy eating habits and active life through sports, the importance of kinesiology as a science and the importance of the Faculty of Kinesiology for society is undeniable. By organizing scientific and professional conferences and events that promote movement and exercise, the Faculty will strive to raise citizens' awareness of the importance of physical activity.

Taking into account the aforementioned national and European strategies and policies, we can conclude that the synergy of science and economy is inevitable moving toward the aim of developing a more advanced and sustainable economy and society. Scientific excellence as an imperative of all areas of research will enable social improvement and growth and greater resilience to global challenges. By improving scientific and research productivity, developing science through national and international projects and transferring knowledge from the institution to appropriate economic entities, we can expect to increase the recognition and competitiveness of the Faculty of Kinesiology as a scientific institution in the European research area, but also beyond.

Research, Technology Transfer and Innovation Strategy of the University of Zagreb

The Work Programme of the Rector of the University of Zagreb for the period from 2022 to 2026 is based on four key goals, one of which is SCIENCE, ART AND INNOVATION – DEVELOPMENT, ETHICS, OPENNESS and TRANSFORMATIVE SOCIAL IMPACT. The focus of this goal is to encourage scientific excellence and the development of research and innovation while disseminating research results and publications in accordance with the principles of open science. The work programme states that research proactively affecting society and the economy will be supported, all in line with the European Research Area, as well as research aligned with national research programmes and development strategies.

The Faculty encourages excellence in scientific-research work and publication of papers in highly ranked journals by funding from its own resources in accordance with the Decision on the Criteria for Co-financing the Publication of Scientific Papers and the Participation of Educators and Associates of the Faculty of Kinesiology of the University of Zagreb at Scientific Conferences, which is passed for the duration of the Dean's term of office. Pursuant to the Decision, the members of the teaching staff can spend a certain amount on the publication of papers in relevant journals that charge for the publication of the paper or they can use the funds to go to a scientific conference where they will present the results of their research. The Faculty of Kinesiology in Zagreb has increased the amount based on this Decision in this mandate period so that members of the teaching staff have the best possible conditions and more funds available for publishing papers and presenting the results of their scientific research.

The main strategic objective of the Research, Technology Transfer and Innovation Strategy is to foster scientific excellence, innovation, cooperation and multidisciplinary approach to research in various fields and technologies, including humanities, social sciences and the arts, to ensure long-term recognition and acknowledgement of the University of Zagreb in the European environment and to contribute to the sustainable development of the Croatian economy and society as a whole. The immediate goals of the Strategy of the University of Zagreb are to strengthen the research profile and recognition of the University, which is achieved through the support of the University to excellent researchers and research groups in the form of research infrastructure, by encouraging training at prestigious international institutions and participation in international projects, by encouraging sustainable development, innovation and transfer of knowledge to industry, as well as by encouraging the development of a humane and tolerant society, for which it is necessary to provide an effective organizational infrastructure at the University, establish an effective system of planning and management of research and research capacities, as well as a system for efficient collection and exchange of information.

Faculty of Kinesiology, University of Zagreb

As the oldest educational and scientific institution in the field of kinesiology in the Republic of Croatia, and with the Faculty of Kinesiology of the University of Split and the Faculty of Kinesiology of Josip Juraj Strossmayer University of Osijek, the Faculty of Kinesiology, University of Zagreb, has a long tradition of education and research work, but also the responsibility in promoting kinesiology as a science, quality of class performance and supporting Croatian sport, physical recreation and Physical education. Through a strong social role, the Faculty of Kinesiology in Zagreb is often the organizer or conceptual initiator of actions that promote physical activity, movement and health.

The scientific-educational activity of the faculty is organized through three departments: Department of Kinesiology of Sports, Department of Kinesiological Anthropology and Methodology and Department of General and Applied Kinesiology. The following Chairs operate as part of the Department of Kinesiology of Sports: Track-and-Field Chair, Monostructural Sports Chairs, Complex Sports (Sports Games) Chair, Conventional Sports Chair, Basic Kinesiological Transformations Chair, Polystructural Sports (Combat Sports) Chair and Water Sports Chair.

The Department of Kinesiological Anthropology and Methodology is represented by the Medicine of Sports and Exercise Chair and by the Kinesiological Psychology, Sociology and Research Methodology Chair. The Department of General and Applied Kinesiology includes the General and Applied Kinesiology Chair, the Kinesiology in Education and Theory of Training Chair and the Kinesiological Recreation and Kinesitherapy Chair.

In addition to the Department and Chairs, the organizational units of the Faculty are: the Center for Professional Studies, the Institute of Kinesiology, within which the narrower units operate: the Center for Scientific Research, within which basic, applied and development research is directly carried out, and within which special research laboratories are established and operated, the Centre for Transfer of Knowledge in Kinesiology and the Diagnostic Centre, and an independent organizational unit of the Faculty - the Library.

Organization of the Institute of Kinesiology

The basic organizational units that enable the implementation of scientific research work operate within the Institute of Kinesiology. The fundamental function of the Institute of Kinesiology is scientific research and knowledge transfer with the aim of improving the overall scientific, teaching and professional work in the scientific field of kinesiology and related scientific branches and disciplines. The members of the Institute are all scientists; members of the teaching staff, associates and junior researchers as well as external associates of the Faculty.

Within the Institute, there are narrower organizational units: **Centre for Scientific Research, Centre for Transfer of Knowledge in Kinesiology, Diagnostic Centre**. The Centre for Library and Information and Publishing Activities (Library) is an independent organizational scientific and teaching unit of the Faculty.

I. Centre for Scientific Research

Within which special research laboratories have been established and operate, conducting basic, applied and development research

- **Laboratory for Audiovisual Technology in Kinesiology**
- **Laboratory for Biomechanics**
- **Laboratory for Combat Sports**
- **Laboratory for Epidemiological and Intervention Research of Physical Activity**
- **Laboratory for Medicine of Sport and Exercise - KINANTHROPOMETRY**
- **Laboratory for Medicine of Sport and Exercise - APPLIED PHYSIOLOGY**
- **Laboratory for Physical Activity Measurement and Monitoring**
- **Laboratory for Motor Development**
- **Laboratory for Motor Control and Performance**
- **Laboratory for Notational Analysis**
- **Laboratory for Psychodiagnostics**
- **Laboratory for Sports Games**
- **Laboratory for Water Sports**
- **Athlete Development and Care Center**

1. Laboratory for Audiovisual Technology in Kinesiology

Audiovisual technologies enable teachers, coaches, and athletes to improve their knowledge and skills visually and auditorily. The use of advanced video cameras with the function of selecting the number of frames recorded per second allows athletes and coaches to record training sessions, exercises or competitions and to analyse the recordings, immediately or at a later time, in order to identify any weaknesses and performance deficiencies. The recorded video can serve to compare athletes of different qualitative rank, as well as to monitor the progress of an individual athlete. The activities of the laboratory are aimed at integrating video technologies with other modern technologies for the purpose of implementing simple and complex diagnostic procedures in kinesiology in order to determine the proper performance of movements and competitive efficiency: conducting kinematic analyses of specific motor skills using simple video tools in laboratory, field and online conditions; designing and validating optimal packages of video analysis and notational analysis for various areas of applied kinesiology (top and recreational sports, education, etc.). Creating educational photo and video materials, printed materials and e-publications, creating software solutions with the aim of digitizing procedures in kinesiology when conducting diagnostic procedures and/or monitoring the progress of athletes. The laboratory equipment includes: Microgate OptoJump Next (optical system for measuring kinematic data), Gyko (inertial system for motion and balance analysis), Witty Gate (photostations for electronic time measurement), Lactate scout (blood lactate measurement), Polar H10 (heart rate monitor strap), Panasonic HC-X920 camcorder, Sony RX 10/II camera, APAS software package for 2D/3D motion analysis and Kinovea software package for video analysis v. 0.9.5.

Laboratory members: Full Prof., Ljubomir Antekolović, PhD (head), Asst.Prof. Marija Baković, PhD (head), Assoc. Prof. Tomislav Rupčić, PhD, Assoc. Prof. Tomislav Đurković, PhD, Assoc. Prof. Tomislav Krističević, PhD, Assoc. Prof. Vjekoslav Cigrovski, PhD, Full Prof. Nenad Marelić, PhD and Assoc. Prof. Tomica Rešetar, PhD.



2. Laboratory for Biomechanics

Research conducted in the Laboratory for Biomechanics is the starting point for understanding the human movement viewed through the fundamental principles of kinesiology. The movements that are measured and analysed, and in certain circumstances diagnosed, relate to the human gait, where gait analysis is a method that represents a standard in medical application. Different movement patterns encountered in everyday human activities and movement patterns in sports activities are also analysed. The aim of the analyses conducted in the biomechanical laboratory is to assess and make an expert opinion on various aspects of human locomotion, both those related to pathology and those related to sports excellence in athletes at the kinematic, kinetic, and/or neuromuscular level. It is possible to measure and evaluate static and dynamic movements equally, the purpose of which is primarily to measure spatial (3D) kinematics, substrate reaction and plantar pressure distribution as well as multichannel surface electromyography (EMG), with signal processing and analysis. In addition to basic instrumentation: an automated 3D kinematic metering system with eight ELITE-BTS cameras, piezoelectric measurement platform KISTLER and 8-channel TELEMG-BTS (computer-supported) telemetry surface electromyography, the laboratory also houses a 4-channel portable EMG MEGA device, a ZEBRIS pedobarograph and a KINECT kinematic sensor. The laboratory also has a hand-held dynamometer for assessing the grip of the dominant and non-dominant hand and a dynamometer for assessing the strength of the extension of the lower extremities (KINVENT d.o.o). Heart rate sensors (Polar) are used to measure heart rate. For the purpose of planning and programming cyclists training, the laboratory uses a power meter to assess the intensity of pedalling.

Laboratory members: Full Prof., Mario Kasović, PhD (head), titular Asst. Prof., Lovro Štefan, PhD, Asst.Prof., Igor Gruić, PhD and Andro Štefan, mag. cin.



3. Laboratory for Combat Sports

The purpose of the Laboratory is to improve knowledge in the field of combat sports as well as to connect science and profession in the field of combat sports. The activities of the laboratory include the following: the preparation and validation of specific tests for the assessment of the anthropological status of athletes in the field of combat sports; conducting field and laboratory diagnostic procedures in the field of combat sports; analysis and interpretation of the results collected by various methods of diagnostics in combat sports; dissemination of scientific knowledge in the field of combat sports to all stakeholders in the field (linking science and profession); improvement of training methods in the field of combat sports; participation in the preparation and publication of scientific and professional papers; organization of scientific and professional conferences and management and maintenance of scientific and research diagnostic equipment. The goal is to form a strong interdisciplinary research team that will: conduct internationally competitive research in the field of combat sports, in-depth analysis of the performance of Croatian and foreign combat sports athletes and participate in the applications and implementation of competitive international and national projects; mentor the assessment papers of undergraduate, graduate and doctoral students interested in acquiring additional competencies in the field of combat sports and develop international cooperation. The intention is for the Laboratory to become a reference center of excellence for analytics of the preparedness of combat sports athletes in Croatia in the next six years. The laboratory is used in the teaching process of students of the major Wrestling and Judo for the purpose of learning diagnostic procedures when determining the state of readiness of combat sports athletes. The laboratory is equipped with Omron scales, dynamometers for measuring muscle force (hand grip), caliper and throwing dummies for conducting specific wrestling tests. In cooperation with other laboratories of the Faculty of Kinesiology, devices are also used for specific diagnostics in the laboratory: XSENS kinematic system, Gyko equilibrium measuring device and Witty system.

Laboratory members: Full Prof., Hrvoje Sertić, PhD (head), Full Prof., Mario Baić (head) PhD, Assoc.Prof., Ivan Segedi, PhD and titular Asst. Prof., Damir Pekas, PhD.



4. Laboratory for Epidemiological and Intervention Research of Physical Activity

There are two strategic lines of action that can describe the activities of the laboratory: the epidemiology of physical activity and the promotion of physical activity. Within the epidemiology of physical activity, the activities of the Laboratory are focused on epidemiological research, which includes determining the level, distribution and determinants of physical activity at the population level, as well as research related to the link between physical activity and various aspects of health and behaviour related to health. Future research will focus on determining the impact of the daily distribution of time (24-hour composition) spent in physical activity, sedentary behaviour, and sleep on various aspects of population health. As part of the promotion of physical activity, research includes the implementation and evaluation of interventions and campaigns to promote physical activity. Future research will focus on the evaluation of interventions via the Internet (social media, e-mail, network tools, mobile applications...) in which a different combination of behavioural change techniques defined by the BCT(V1) taxonomy will be applied. The laboratory is outfitted with a GENEActiv Original – accelerometer (24), a GENEActiv charging and data retrieval station (6).

Laboratory members: Assoc. Prof., Danijel Jurakić, PhD (head), Assoc. Prof., Marija Rakovac, PhD., Assoc. Prof., Maroje Sorć, PhD, Asst. Prof., Tatjana Trošt Bobić, PhD and Tena Matolić, mag. cin.



5. Laboratory for Medicine of Sport and Exercise

The Laboratory for Medicine of Sport and Exercise consists of two laboratories: the Laboratory for Kinanthropometry and the Laboratory for Applied Physiology.

5.1. Laboratory for Kinanthropometry

The laboratory operates within the Medicine of Sports and Exercise Chair of the Department of Kinesiological Anthropology and Methodology. It is equipped with modern equipment for anthropometry, nutritional assessment and analysis of the body composition of athletes, recreationally active people and the general population. It is used as part of scientific research and part of laboratory teaching at graduate and postgraduate studies, specialist and doctoral studies at the Faculty of Kinesiology, Faculty of Food Technology and Biotechnology and Faculty of Medicine, University of Zagreb. The work of the Laboratory is involved in the dissemination and presentation activities. The objectives and activities include the following: the study of the relationship between physical activity and health with an emphasis on nutritional status and indicators of cardiovascular and metabolic health; the research of different methods of body composition with an emphasis on their accuracy and precision in the population of athletes; the scientific validation of new digital anthropometry devices within the framework of the development of innovative computer systems for digital measurement of the human body using 3D scanning methods; determining the variability of the body composition of athletes and its changes under the influence of different forms and volumes of training and field measurements. It is equipped with devices for assessing body composition, a set of anthropometric instruments, an Air Displacement Plethysmography device (BOD-POD™), FUTREX Infrared Spectroscopy, a device for assessing the amount of visceral adipose tissue using bioelectric impedance (Tanita AB140™), a device for 24-hour measuring arterial blood pressure and a single-channel 24-hour holter ECG and a 3D sensor Microsoft Kinect for the digital measurement of human body composition.

Laboratory members: Full Prof., Marjeta Mišigoj-Duraković, MD, PhD, FECSS (head), Assoc. Prof., Maroje Sorić, MD, PhD, Olgica Novak, expert associate tester, Antonio Martinko, mag. cin. and Petra Jurić, mag. cin.



5. 2. Laboratory of Applied Physiology

The research carried out in the laboratory covers the field of applied physiology of sport and physical activity, with a large part of the being research carried out as part of field work in specific conditions. Research is focused on the areas of applied physiology of sport and health with an emphasis on diabetes, oxidative stress, and physical activity, biomarkers of muscle damage in response to fatigue, biomarkers of muscle damage during recovery in connection with the application of external compression and the integration of biomechanical, thermodynamic, metabolic and ventilatory parameters under progressive exertion. Research in the field of oxygen uptake kinetics, especially in various thermal conditions, studies on the effects of various forms of physical activity on the glycemic control of diabetics, research related to the nutrition of athletes, research in the field of winter sports, alpine skiing, as well as recreational activities, but also top level sports in the field of physiology and health, and the impact of altitude on the body. The laboratory has several ergometers for dosed exertion of athletes, biochemical devices for lactate and basic biochemical diagnostics, Xplorer GLX Datalogger interface (PASCO Scientific, USA) with peripheral devices and sensors for collection, graphic display, storage, and analysis of kinematic and temperature data, VitalSense (Mini Mitter, OR) telemetry system for measuring the central body temperature, dynamometers, and shares equipment for metabolimetry , i.e. analysis of gases in exhaled air with the Sports Diagnostic Centre, Hypoxico Exerest system for normobaric hypoxia, also cooperating with Genos laboratory when it comes to genetic analyses.

Laboratory members: Full Prof. Lana Ružić, MD, PhD (Head), Assoc. Prof., Davor Šentija, MD, PhD, Full Prof., Branka Matković, MD, PhD, Assoc. Prof. Marija Rakovac, MD., PhD, Asst. Prof., Maja Cigrovski Berković, MD, PhD and Full Prof., Vjekoslav Cigrovski, PhD.



6. Laboratory for Physical Activity Measurement and Monitoring

There are three main research directions of this Laboratory: research and development of objective methods for measuring physical activity and monitoring the population level of physical activity. The topic of research and development of objective methods for measuring physical activity, in addition to validation studies in the laboratory and during everyday life, also includes the development of new software solutions for the expression of physical activity and the application of various methods for measuring physical activity in epidemiological research and in clinical interventional studies. Within the framework of research aimed at monitoring the population level of physical activity the development of various systematic solutions for monitoring the level of physical activity is being prepared. The current priority is wearable technology, combined with the collection of information on physical activity. In addition, other population monitoring systems are being designed. Research are also focusing on the epidemiology of non-communicable chronic diseases and the link between physical activity and fitness and health. The laboratory is equipped with Fitbit ChargeHR3 physical activity tracker, Fitbit ChargeHR3 physical activity tracker, Geneactive accelerometers, Fitbit Charge2 physical activity tracker, Xiaomi Mi Band physical activity tracker, Garmin Vivosport physical activity tracker and Polar H8 heart rate monitor.

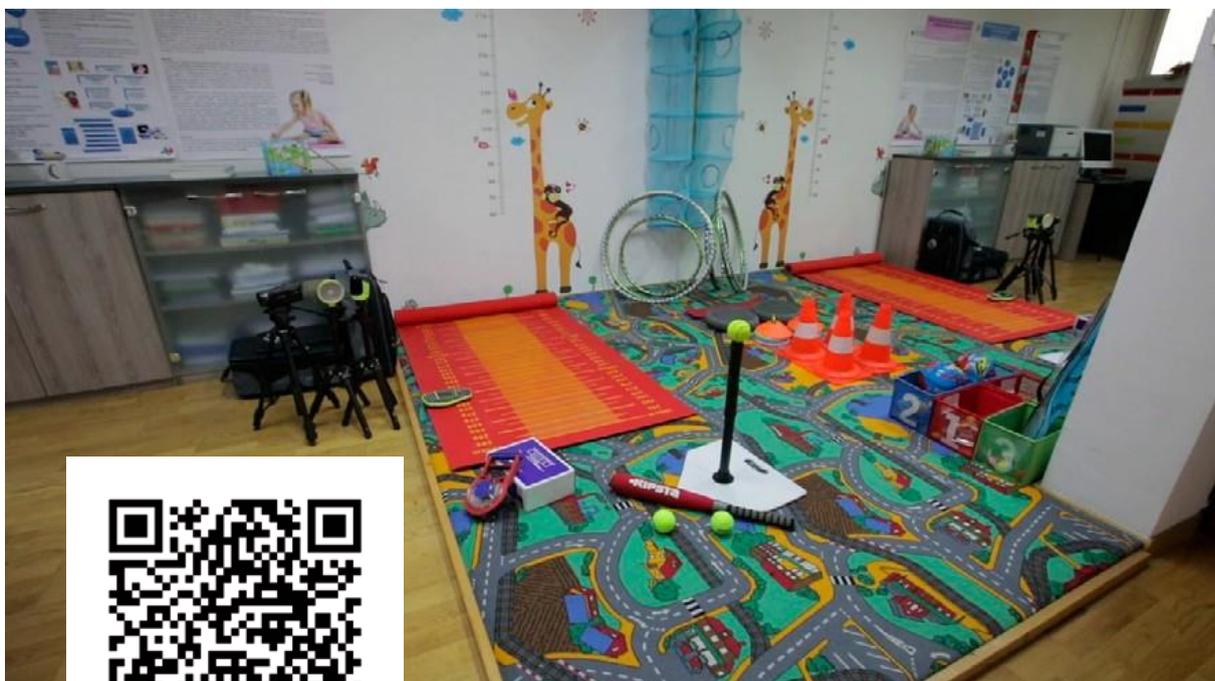
Laboratory members: Assoc. Prof, Maroje Sorić, MD, PhD, Asst.. Prof., Hrvoje Podnar, PhD, Olgica Novak laboratory tester, Antonio Martinko, mag. cin. and Petra Jurić, mag. cin.



7. Laboratory for Motor Development

The laboratory conducts research on the overall development of children in the following groups: motor skills, physical activity, and fitness with the aim of determining the level of preparedness and normative values, as well as interventions aimed at improving children's knowledge and abilities, increasing children's physical activity, improving health and reducing the risk of obesity. The laboratory's research areas include: research on children's motor competencies, physical activity, sedentary behaviour, physical fitness and the factors on which these characteristics depend; research on the impact of various exercise programs on children's motor skills and abilities; research on the identification of talented child athletes. The offer of laboratory services for the professional and general public includes measurements and analysis of the overall development of children, graphomotor skills, motor skills and motor and functional abilities of children from 3 to 18 years of age; individual recommendations based on the measured motor status; organization of workshops, lectures, consultations and popularization of the development and movement of children. The laboratory is outfitted with modern equipment including the following: *Test of Gross Motor Development* – 2nd ed. (battery of tests of locomotor and manipulative motor skills of children from 3-10 years of age), Bruininks Oseretsky *Test of Motor Proficiency* – 2nd ed. (battery of tests to assess fine and gross motor skills and motor abilities of children up to 21 years of age), *Parents' Evaluation of Developmental Status* (questionnaire on the overall development of children), *Ages and Stages Questionnaire* - 3rd ed. (questionnaire on the overall development and degree of motor skills of children from 0 to 6 years), *Ages and Stages Socio: Emotional Development Questionnaire* – 2nd ed. (questionnaire on the socio-emotional development of children 0-6 years), photocells, GYMAWARE system and hand-held dynamometer.

Laboratory members: Assoc. Prof., Sanja Šalaj, PhD (Head), Assoc. Prof., Katarina Ohnjec, PhD, Asst. Prof., Ana Žnidarec Čučković, PhD, Full Prof., Renata Barić, PhD, and Asst. Prof., Tatjana Trošt Bobić, PhD.



8. Laboratory for Motor Control and Performance

The modernly arranged space of the Laboratory is adapted to the study of the neuromechanical characteristics of human movement and the measurement of human neuromuscular functions and motor control. Research within the Laboratory for Motor Control and Performance is primarily focused on two research directions: 1. research on the effects of training with resistance on human neuromuscular function and 2. research on the effects of dietary supplements on neuromuscular function and sports performance. The activities of the Laboratory heads and associates over the past ten years have resulted in more than 60 scientific papers published in journals indexed in the Web of Science and/or Scopus databases. Many of these papers have been published in the highest-ranking journals located within the first quartile (Q1) for the field of sports science. In the past ten years, eight doctoral dissertations have been defended in the Laboratory under the mentorship of two heads, and in the current year, the defence of another dissertation is planned. The implementation of an experiment for the preparation of a doctoral dissertation, whose defence is planned for 2024, is currently under preparation. The Laboratory and related equipment are continuously available for classes at the doctoral study of kinesiology (module: Biomechanics and Motor Control), and the Laboratory also conducts laboratory exercises at the integrated undergraduate and graduate university study programme of Kinesiology, as part of the course Motor Control. The vision of the Laboratory's development in the coming period includes the continuity of a close connection with the teaching process at the level of undergraduate, graduate and doctoral study programmes; the inclusion of carefully selected, highly motivated students at all levels of study in the work of the Laboratory and, of course, maintaining the continuity of top scientific productivity. The laboratory is equipped with: a 3-component force measurement platform (Amti), two isometric lower limb dynamometers, an isokinetic dynamometer (BIODEX SYSTEM 4), a 16-channel telemetry EMG system (DELSYS), two digital goniometers (BIOMETRIC), an ultrasonic device (SIEMENS Sonoline) and a linear displacement transducer (device for measuring speed of movement GymAware (Kinetic Performance technology)).

Laboratory members: Full Prof., Goran Marković, PhD (Head), Assoc. Prof., Pavle Mikulić, PhD (Head) and Assoc. Prof., Saša Vuk, PhD.



9. Laboratory for Notational Analysis

The activity of the Laboratory includes in particular the research and development of objective methods for the notational analysis of sports, the conduct of experimental scientific research and work on the standardization of basic measurement procedures of notational analysis. The Laboratory also trains students for the effective application of notational analysis in sports, develops various systematic solutions for notational analysis in sports, as well as the cooperation of laboratories with national associations and clubs and the education of coaches / players / analysts. In the following period, the Laboratory will continue to actively participate in the teaching process at the level of undergraduate, graduate and doctoral study programmes, teaching students the application of notational analysis with the aim of evaluating tactics, technique, quality of movement, development and modelling of databases, and training of coaches and players. Special attention will be paid to the involvement of particularly interested students in the scientific research activities of the Laboratory. The laboratory is equipped with: a Lenovo AIO 520 computer used for data and video analysis, a Sony FDR-AX100E camera and related equipment for video recording, notational analysis software packages (Dartfish PRO).

Laboratory members: Full Prof., Goran Sporiš, PhD (head) and Ivan Belčić, PhD.



10. Laboratory for Psychodiagnostics

The activity of the laboratory includes psychodiagnostics and psychoeducation specializing in the field of sports, and the Laboratory operates within the Institute of Kinesiology. The activities of the laboratory include psychological assessment and analysis of individual athletes (children and adults); psychological analysis of sports teams, groups and/or organizations, development of psychological profiles of athletes/teams, analysis of group dynamics, professional education and workshops for participants in the sports environment, planning and conducting scientific research in the field of psychology, psychology of sports, and kinesiology; planning and implementation of scientific projects, collection and analysis of data of various psychological variables for scientific purposes. The laboratory applies the following psychological measuring instruments – questionnaires, tests, and assessment scales.

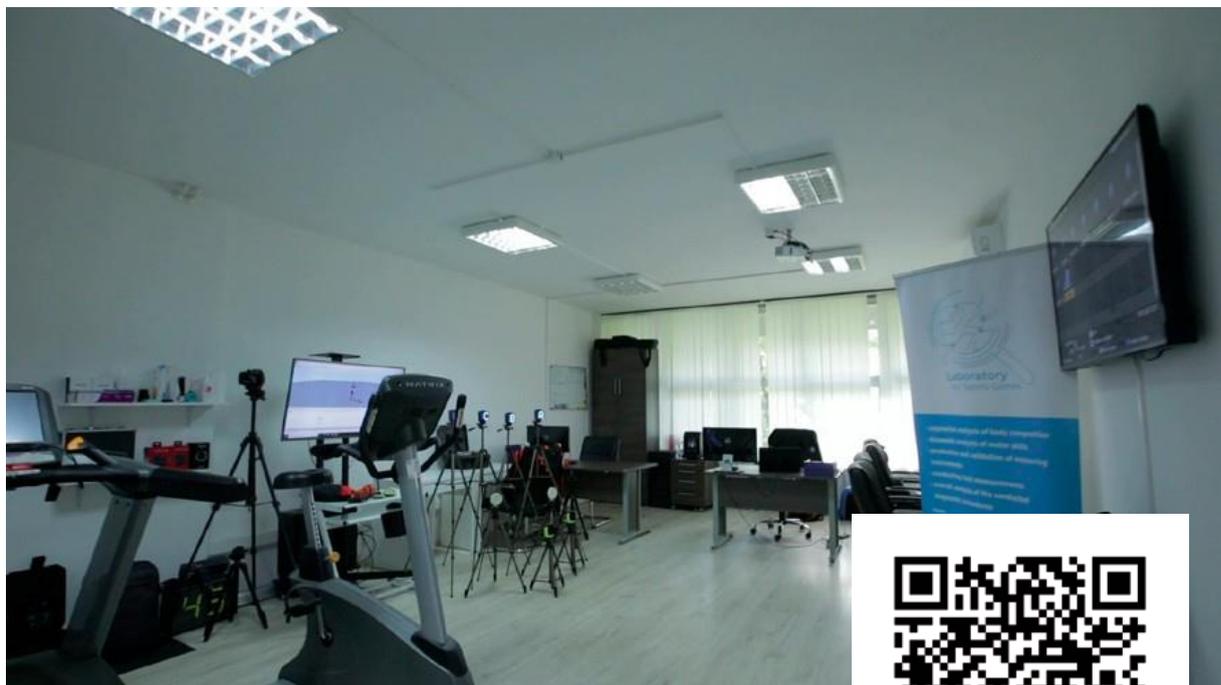
Laboratory members: Full Prof., Renata Barić, PhD (head), Rebeka Prosoli, PhD and Matea Karlović, mag. psych.



11. Laboratory for Sports Games

The Laboratory for Sports Games was established with the aim of conducting scientific research in the field of sports games. The laboratory participates in the design and implementation of testing for the purpose of preparing graduate and doctoral theses. It is focused on the use of modern technology that enables the implementation of diagnostic procedures and measurements of a large number of characteristics of athletes and sports performance. The scientific research work of the Laboratory is also focused on practical work, i.e., the implementation of specific field measurements of athletes, sports clubs, and national teams. The laboratory is equipped with modern equipment that includes: OPTOJUMP – optical measuring system, GYKO (inertia device), WITTY (GATE) (speed measurement system), WITTY (SEM) (reaction rate measurement system), POLAR (M400, V800, H7, H10) (heart rate monitors), BODYMETRIX (body composition measurement system), lactate SCOUT+ (lactate meter), PANASONIC GH5, GARMIN VIRB and GOPRO (video analysis cameras), 94 Fifty SMART SENSOR BASKETBALL (smart basketball), DR. DISH (basketball cannon), XSENS Awinda (kinematic system), XSENS Link (kinematic system), NOVEL INSOLES (kinetic inserts), STALKER ATSII (speed measurement radar), SAEHAN (hand-held dynamometer), DELSYS EMG Trigno (electromyography system), TANITA BC545n and TANITA RD545sv (body composition analysis systems) and PUNCHSENSOR (kinetic system).

Laboratory members: Full Prof., Damir Knjaz, PhD (head), Assoc. Prof., Tomislav Rupčić, PhD (head), Vedran Dukarić, mag. cin., Mateja Očić, mag. cin., Ivan Belčić, PhD, Stipe Cubrić, mag. cin., Ivan Bon, mag. cin. and Tajana Meglaj, prof.



12. Laboratory for Water Sports

The Laboratory for Water Sports operates within the Water Sports Chair of the Faculty. The equipment of the Laboratory is used for scientific research in the field of water sports. Part of the equipment is used for testing in water, and part for dry testing. Athlete diagnostics is closely related to other segments of the Diagnostic Centre. The laboratory and all equipment function to prepare assessment works. If necessary, close cooperation is established with swimming clubs regarding presentations, workshops, or seminars. The premises and equipment of the Laboratory are also used for teaching and research of the Study Center for Coach Education. The equipment used covers a large part of basic and specific testing in the field of water sports, namely: ergometry (Biokinetic), dynamometry, underwater cameras, training programming and biomechanical analysis software, determination of the lactate curve (pacer, lactate meters, pulse meters) and training process equipment (pacer, pulse meters, fins, snorkels, buoys, etc.).

Laboratory members: Full Prof. Goran Leko, PhD (head).



13. Athlete Development and Care Center

There are two strategic directions of the Center's research activities: activities related to the prevention and epidemiology of injuries in sports aimed at epidemiological research in Croatian sports, and include determining the frequency and severity of injuries and determining risk factors and mechanisms of injury. Emphasis will be placed on investigating inter-individual differences in injury risk factors. The implementation/intervention context of sports preparation and injury prevention will also be determined, new interventions and strategies for the prevention of sports injuries will be constructed and evaluated, but also their connection with the intervention context (environment) will be determined for better implementation of new and existing (in controlled conditions of scientifically effective) interventions. Within the framework of the second strategic direction, long-term sports development – complete development of athletes, the activities of the Center include monitoring: anthropological characteristics of athletes, especially specific motor and functional abilities of young athletes in different developmental stages of sports career, load parameters (training and life), to which the area of dual careers in sports also belongs. Interventions specific to sports and the sports field, as well as the age of athletes, will be created, implemented, and evaluated. The emphasis is on interventions for the prevention of injuries / health of young people, as well as encouraging the dual career of athletes, i.e. the development of a complete athlete. The center is equipped with: CAIS (Comprehensive Athlete Information System), a network application and database, ATHLETE APP We Care, a trainer and measuring device and a hand-held dynamometer Lafayette Model 01165.

Laboratory members: Assoc. Prof., Cvita Gregov, PhD (head), Full Prof., Renata Barić, PhD, Assoc. Prof., Sunčica Bartoluci, PhD, Asst. Prof., Tatjana Trošt Bobić, PhD, Asst. Prof., Daniel Bok, PhD, Ana Žnidarec Čučković, PhD, Marin Dadić, PhD, Assoc. Prof., Marija Rakovac, PhD, Assoc. Prof., Sanja Šalaj, PhD, and Asst. Prof., Goran Vrgoč, PhD.



The results of research conducted in the laboratories of the Faculty of Kinesiology have been published in more than 400 scientific papers in journals or have been presented at international scientific conferences. The laboratories participated in the implementation of 60 scientific and professional projects, and future projects are also being developed. Intensive work and cooperation with students of all levels of study is also carried out through the preparation and publication of assessment papers at all levels of study.

II. Centre for Transfer of Knowledge in Kinesiology

The Center collects scientific and professional knowledge that is disseminated through teaching, lifelong education and training, scientific and professional conferences, publishing activities, studies and surveys, expertise and counselling, media, invited lectures, and other forms of knowledge transfers to end users in all areas of applied kinesiology. As part of the Center's activities, the international scientific conference *Kinesiology* is organized every three years. The Faculty is also a partner in the organization of a conference in the area of sports psychology, physical exercise, and health, the annual conference Physical Conditioning of Athletes and the Summer School for Kinesiologists of the Republic of Croatia. The activity of the center includes the publication of the international scientific journal *Kinesiology: International Journal of Applied and Fundamental Kinesiology*, which is indexed in the databases Web of Science and Scopus.

Kinesiology: International Journal of Fundamental and Applied Kinesiology

An important support for the visibility of the scientific work of researchers of the Faculty is the scientific journal *Kinesiology*, which the Faculty publishes. Employees of the Faculty are members of the editorial board or editors in numerous other scientific journals published by other scientific organizations or professional associations.

Kinesiology is a scientific journal which publishes scientific articles that assess and evaluate changes in characteristics, abilities, motor skills and skills that occur under the influence of programmed physical exercise processes from various biological, health, psychological, social, educational, ethical, economic, historical and cultural aspects (Figure 2). The magazine was launched in 1971, it is published twice a year in English, and this year marks the publication of volume 55. All articles are available in open access on HRČAK - the portal of Croatian scientific and professional journals. Kinesiology is indexed in worldwide bibliographic and citation databases: Web of Science, Journal Citation Report, Scopus, EBSCO: SPORTDiscus with full text, American Psychological Abstracts: PsycLIT, PsycINFO, Index Copernicus, and Sociedad Iberoamericana de Informacion Cientifica (SIIC).

According to the data from the Web of Science Core Collection, since 2008 until today, 437 original scientific papers and 22 review scientific papers have been published in the journal, which are indexed in the aforementioned database. Most papers are signed by scientists and experts from the Kingdom of Spain (94), the Republic of Croatia (90), the United States of America (65), Brazil (59), the Republic of Slovenia (49), Portugal (32), England (29), Australia (22), Iran (22) and Turkey (21).

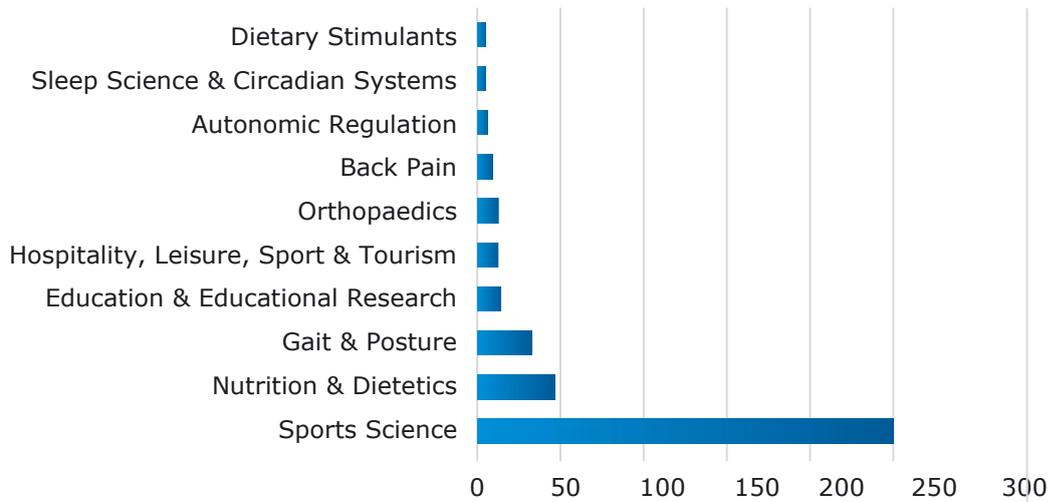


Figure 2 Distribution of articles published by research areas

Indexation in the aforementioned databases as well as the appearance on the lists of the Journal Citation Report (JCR) led to increased visibility of the journal on the international scientific scene, which caused an increase in the number of published papers in the following years (Figure 3). The interdisciplinarity of kinesiological research published in the journal is reflected in the indexation in citation indexes containing articles: *Science Citation Index Expanded (SCI-EXPANDED)*, which indexes journals in the field of natural, biomedical and technical sciences, and the *Social Sciences Citation Index (SSCI)*, which indexes journals in the field of social sciences

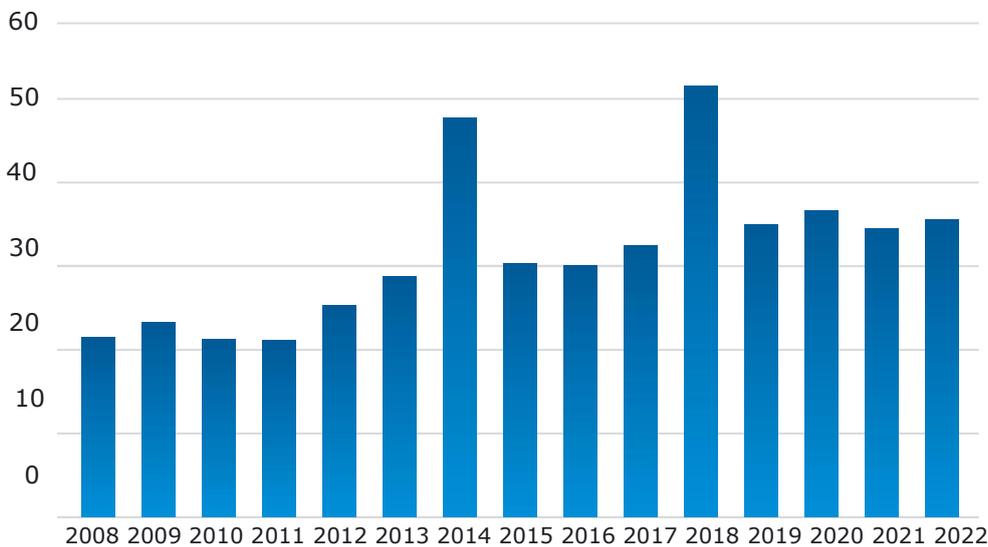


Figure 3 Number of articles published in the journal *Kinesiology*

In addition to the increase in the number of submitted manuscripts, indexation in world-renowned databases has also led to an increase in the number of citations (Figure 4). The increase in the number of articles received from around the world has led to the need for greater cooperation with the most prominent world-renowned scientists in the field of sports and their involvement in the work of the editorial board. In order to increase the quality of the journal, it was extremely important to develop a network of reviewers from around the world based on the narrow specialty of the reviewer for each individual topic. This way of working resulted in a list with about 500 world-renowned experts who ensured the highest quality selection of articles.

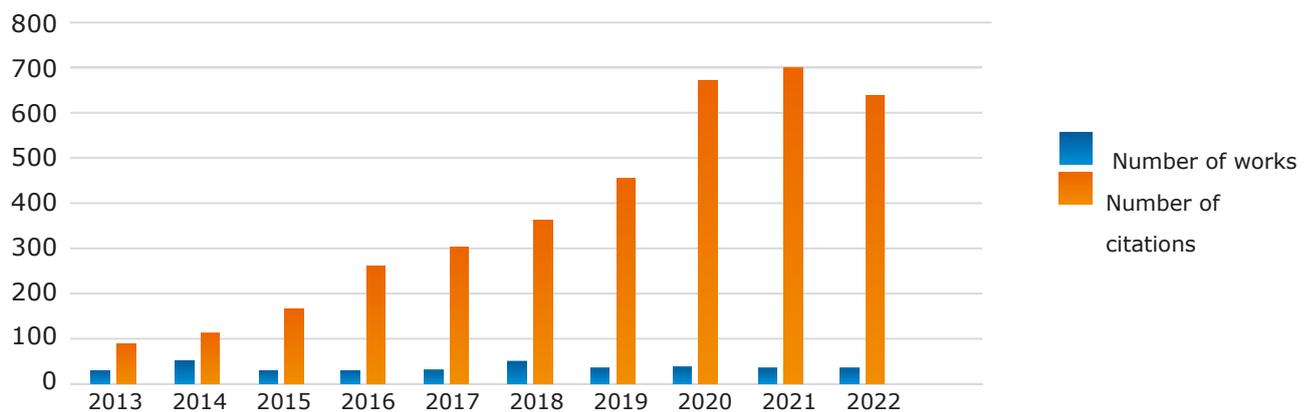


Figure 4 - Number of citations to articles published in *Kinesiology*

The first impact factor for the Journal *Kinesiology* was recorded for 2010 and is 0.525 (Figure 5). The increase in the number of articles published in the following years caused a decline in the impact factor, followed by exponential growth with a particularly pronounced increase in 2016, 2018, and 2019.

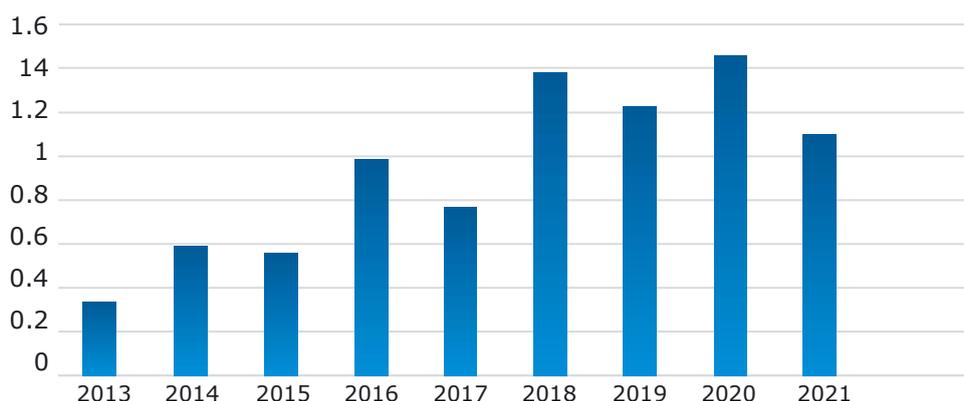


Figure 5 - *Kinesiology* Journal Impact Factor (IF)

In the coming period, the Faculty will encourage the development of scientific relevance and visibility of the journal which it publishes, i.e. it will focus on ensuring the presence of *Kinesiology* in relevant international databases and the general improvement of editorial practices. The Faculty will provide support and, if necessary, additional resources to

to improve the visibility and relevance of our journal. In order to encourage open access to scientific information, the costs of applying and publishing scientific papers in the journal *Kinesiology* will not be charged in the coming period.

International Scientific Conference on Kinesiology

Since 1997, the Faculty of Kinesiology in Zagreb has organized the *International Scientific Conference on Kinesiology*, which has been held nine times to date. The International Scientific Conference on Kinesiology is one of the most important projects of the Faculty of Kinesiology. Its international recognition is reflected in the participation of numerous scientists, experts and doctoral students from 30 countries around the world (Figure 6).

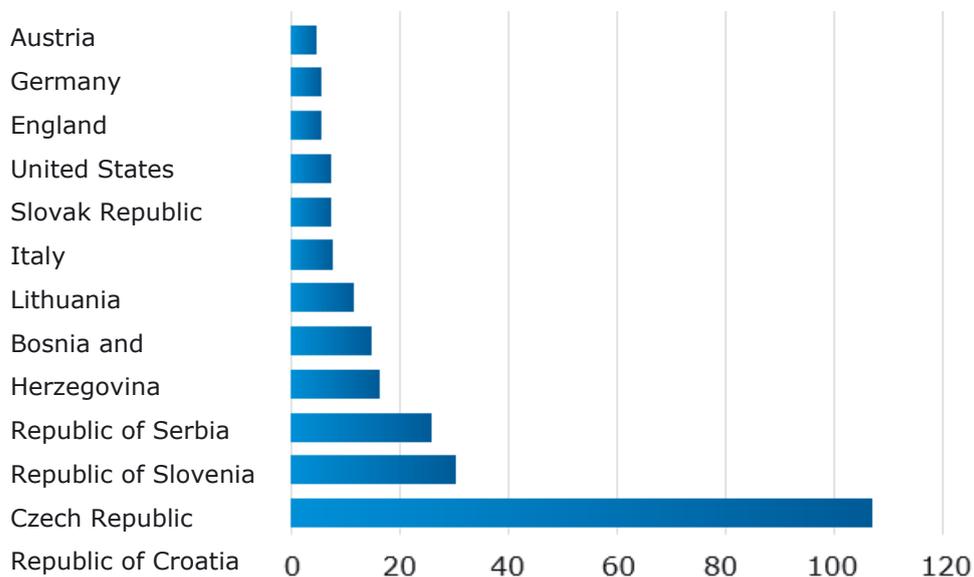


Figure 6 - Overview of participants of the international conference by country

In accordance with the title, the conference covers a wide range of topics in the field of kinesiology through ten sections (oral and poster presentations), and the presented papers are published in the form of abstracts or full texts in the proceedings (Figure 7). The average number of complete papers published in the proceedings is 200. All submitted works go through a double-blind international review process.

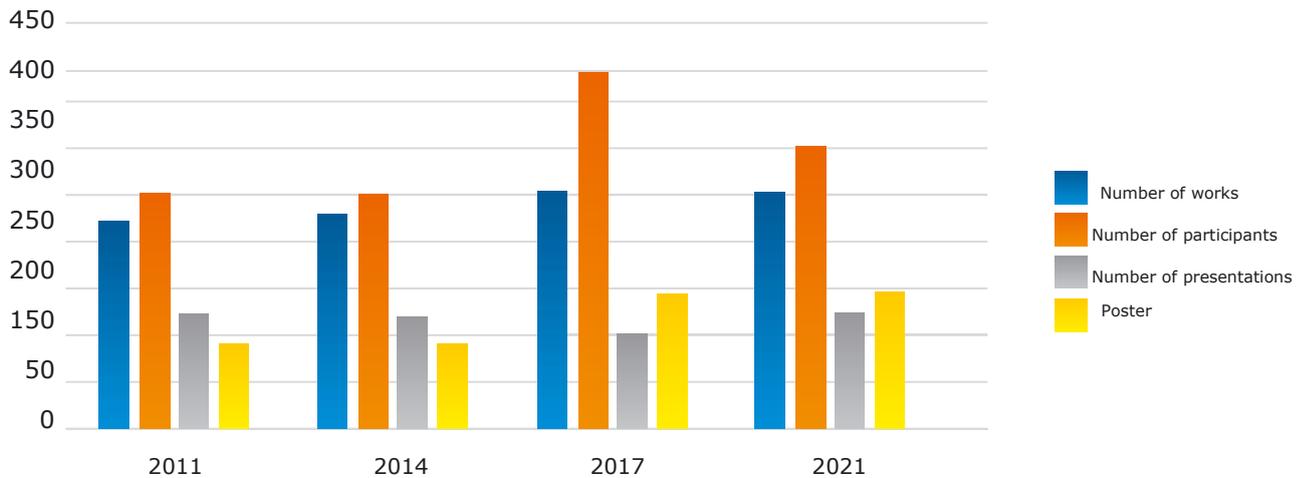


Figure 7 - Overview of the ratio of the number of participants, papers and presentations at the conference

An important segment of the conference is the partnership with international higher education institutions in the field of kinesiology such as Beijing Sports University, Faculty of Sport Studies Masaryk University Brno, Lithuanian Sports University, etc., as well as with the most important professional organizations in the field of kinesiology such as European College of Sport Science (ECSs), Federation Internationale d'Education Physique et Sportive (FIEPS), International Association for Physical Education in Higher Education (AIESEP), International Network of Sport and Health Sciences (INSHS), etc. As part of the international conference, a doctoral school for students is organized, as well as a meeting of the international editorial board of the scientific journal *Kinesiology*.

Proceedings of previous conferences, with the exception of the one held in 2021, are indexed in the Web of Science Conference proceedings Citation Index, in the categories of rehabilitation and sports science.

In the coming period, the Faculty will work on increasing the quality of the conference and related activities. Special efforts will be invested in better editing of the conference web pages, re-indexing of the proceedings in the Web of Science Conference Proceedings Citation Index, as well as linking the journal *Kinesiology* with the scientific conference.

III. Diagnostic Centre

The Diagnostic Centre has been operating in the field of diagnostics of anthropological characteristics of athletes and recreational athletes since the 1990s. Since its establishment until today, many top athletes from various sports have been tested, and cooperation has been established with numerous sports associations, clubs, and federations, both in Croatia and abroad. The main activity of the Center is the measurement and assessment of characteristics and abilities in all areas of applied kinesiology. The measurement of the characteristics and abilities of athletes is carried out with the aim of determining the individual characteristics of athletes and controlling the effects achieved by programmed training. All tests are performed under the expert guidance of kinesiologists who take care of the age, gender, and quality level of athletes, trying to include an optimal set of tests to assess motor and functional abilities and morphological characteristics, so that the tests have high metric characteristics and meet protocol, measurement conditions, and data processing methods. Special care is taken to ensure that the collected and processed data are understandable, expedient, reliable, and pragmatically valid and clearly indicate the guidelines for further work.

Approximately 500 to 600 individual tests are performed annually. Over the past five years (including the 2020 pandemic), over 2,500 tests have been performed for a variety of purposes. About 60% of all testing is related to scientific research. The largest number of individual tests are from football (19%), rowing (9%) and athletics (8%). It is also important to mention the many years of successful cooperation with the Croatian Olympic Committee and the Croatian Paralympic Committee. For scientific research purposes (assessment papers, scientific research and projects), more than 1000 individual tests were performed.

Further development of the Diagnostic Centre will go in the direction of stronger support for scientific research of teachers, associates and students, as well as the development of counselling services, interpretation of the obtained measurement results, etc. There is great scope for cooperation with the market sector in the context of systematic and medical examinations of older athletes and recreational athletes as a prerequisite for testing at the Center (introduction of an additional service by cooperating with the laboratory for biochemical analysis through laboratory analyses of the athlete's blood sample). For the necessary breakthrough in the context of services and testing capabilities, it is necessary to modernize and improve the available sports diagnostics equipment. Given the structure of the Center and the level of scientific and professional production, better connection with other laboratories of the Faculty is also necessary. The spatial limitation of the Center could potentially be reduced through better cooperation with, for example, the Laboratory for Biomechanics, Sports and Exercise Medicine (kinanthropology and applied physiology), water sports, etc. Such an approach would significantly improve the Centre's capabilities and could potentially create new projects.

For the purpose of measuring and assessing morphological characteristics, the Sports Diagnostic Centre has at its disposal: anthropometer (GPM, Switzerland), pelvimeter, cephalometer, sliding compass (GPM, Switzerland), caliper (Harpender, United Kingdom), caliper (Lafayette, USA), body composition scale (Tanita BC-418, Japan), centimeter tape. For the purposes of measuring and assessing motor skills: speed system (Microgate, Italy), quattro jump (force measurement platform) (Kistler, Switzerland), kiJump (force measurement platform) (Kistler, Switzerland), hand-held dynamometer (Lafayette, USA), radar – (Stalker ATS II, USA), other equipment (weights, bars, space marking cones, etc.). For purposes of measurement

and functional ability assessments: mobile mat – (HP Cosmos – Pulsar 3p, Germany), cycle ergometer – (Monark 894e, Sweden), stationary spiroergometry – (Cosmed Quark CPET, Italy), mobile spiroergometry – (Cortex Metamax 3b, Germany), lactate meter – (Lactate scout, Germany), Polar HR transmitter (10x H10) and Garmin HR transmitter.

Laboratory members: Asst. Prof., Vlatko Vučetić, PhD (head) and Jere Gulin, mag. cin.



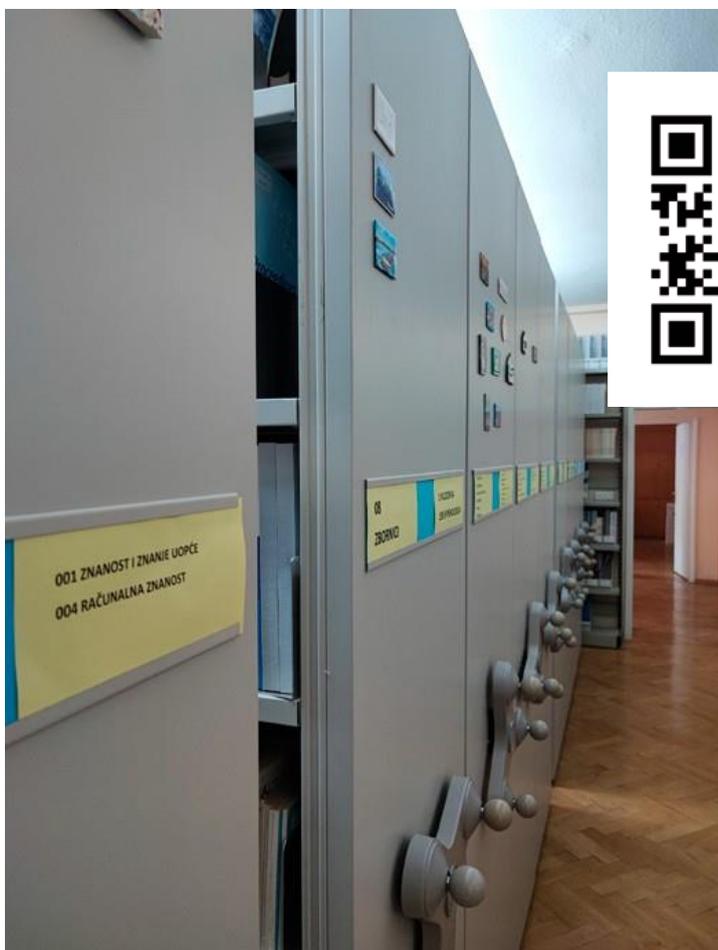
Library

The Library is an important resource for further improvement of the scientific research activity of the Faculty. Although its primary function is educational activity (given that it is primarily intended for students), the Library also has an important function in scientific research. A substantial book fund, regularly supplemented by the latest editions, enables researchers to regularly monitor relevant domestic and international scientific production. In this sense, the accessibility of scientific journals is especially important, either in the printed edition or within the electronic databases of scientific journals. A large number of journals are available in electronic databases of scientific journals, most of which are provided by contracts at the national or University level, however, the Faculty also allocates significant own resources in ensuring the availability of electronic sources of journals. Thus, in 2022, the Faculty ensured the availability of more than 650 electronic journals from its own resources.

In order to support the teaching and research processes at the Faculty, the library must develop its capacities in accordance with the needs of modernity. In addition to maintaining a high level of study and scientific work conditions, the Library can contribute to the development of the Faculty and the development of new services in the field of digital services and the development of research infrastructure and scientometric analyses. In the following implementation period, the Library will:

- procure compulsory, elective, and other relevant library materials in accordance with the needs of teaching and scientific research and project activities of the Faculty
- promote the institutional repository through education, publications, and social networks
- increase the number of trainings at all levels of study
- participate, as a reliable associate and partner, in the scientific research activities of the Faculty's laboratories
- actively monitor and update the profiles of scientists and institutions in domestic and international scientific databases
- develop bibliometric certificates and analyses for the purpose of advancement of scientists
- actively monitor the scientific productivity of the institution and collect data on it for the purposes of the re-accreditation processes, the development of the institution's strategy, and other evaluations
- monitor modern technological tools and opportunities that will improve and popularize the activities of the Library.

Library head: Ivan Čolakovac, mag. educ. phil. et mag. bibl.



About the development strategy

The Science Development Strategic Plan of the Faculty of Kinesiology defines:

- mission and vision
- scientific and research activity
- activities, key indicators, monitoring mechanisms and responsible persons.

In defining and shaping the Science Development Strategy, care was taken of the specifics of the Faculty, development plans, and opportunities of individual services and institutes, taking into account the wider social context. It is imperative for the Faculty to promote a culture of quality and establish a management system and ensure quality in all aspects of business, with the aim of meeting the needs of all stakeholders: current and future students, their future employers, domestic and foreign partners in research and projects, as well as investors in the science and higher education system. The basis for the efficiency of the Faculty and a necessary factor in high-quality business in the period from 2023 to 2028 will be a firm commitment of the Dean and all employees of the Faculty to persevere in achieving the mission, vision and the Science Development Strategy of the Faculty of Kinesiology.

Mission and vision of the Faculty of Kinesiology

MISSION

The Faculty of Kinesiology of the University of Zagreb is a leading higher education institution in the field of kinesiology in the region, which educates staff in all areas of applied kinesiology based on the latest scientific and professional knowledge. The Faculty of Kinesiology bases its work on high academic and ethical values, knowledge based on research and expertise and optimal infrastructure conditions. The Faculty of Kinesiology contributes significantly to the advancement of sports, physical recreation, physical and health education of students and students, as well as the quality of active life and health of Croatian citizens.

VISION

As the leading higher education institution in kinesiology in the region, the Faculty of Kinesiology at the University of Zagreb aims to become integrated and competitive in the European higher education and research area and wishes to create new and improve existing knowledge transfer systems in all fields of applied kinesiology.

Scientific activity of the Faculty

Previous period indicators

According to the data available in the Croatian Scientific Bibliography (CROSBI), in the last ten years (from 2013 to 2022), researchers employed at the Faculty of Kinesiology published an average of 140 scientific papers per year, of which about 56% consist of papers published in scientific journals, 5% of chapters in books and 39% of papers published in proceedings (Figure 8). In addition to scientific journals, the Faculty also provides its researchers with a publishing infrastructure for books, educational materials and proceedings. Within the publishing activity, 12 monographs, textbooks, manuals and proceedings have been prepared and published in the last ten years.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Scientific papers										
<i>Articles in journals</i>	76	69	84	84	76	65	90	95	106	157
<i>Chapters in books</i>	2	1	4	6	4	29	7	1	14	1
<i>Papers in proceedings</i>	35	50	28	40	94	79	36	25	98	52
Scientific books										
<i>Author books</i>	0	0	0	0	0	1	0	2	2	0
<i>Editorial books</i>	1	0	0	0	0	1	0	0	1	0
<i>Editorial books – conference proceedings</i>	2	5	3	4	3	6	1	1	2	0
Professional papers										
<i>Articles in journals</i>	10	7	5	7	12	6	4	2	1	1
<i>Chapters in books</i>	0	4	1	4	2	4	1	3	0	1
<i>Papers in proceedings</i>	25	19	19	22	212	29	19	4	21	20
Professional books										
<i>Author books</i>	0	0	0	0	0	0	1	0	0	0
<i>Editorial books</i>	0	0	0	0	0	0	0	6	4	2
<i>Editorial books – conference proceedings</i>	0	0	0	0	0	0	0	0	0	0

Figure 8 - Data on scientific and professional production of the Faculty from 2013 to 2022

On average, 60 papers per year are published in scientific journals, which are referenced in the Web of Science Core Collection (WoS CC) citation database (Figure 9).

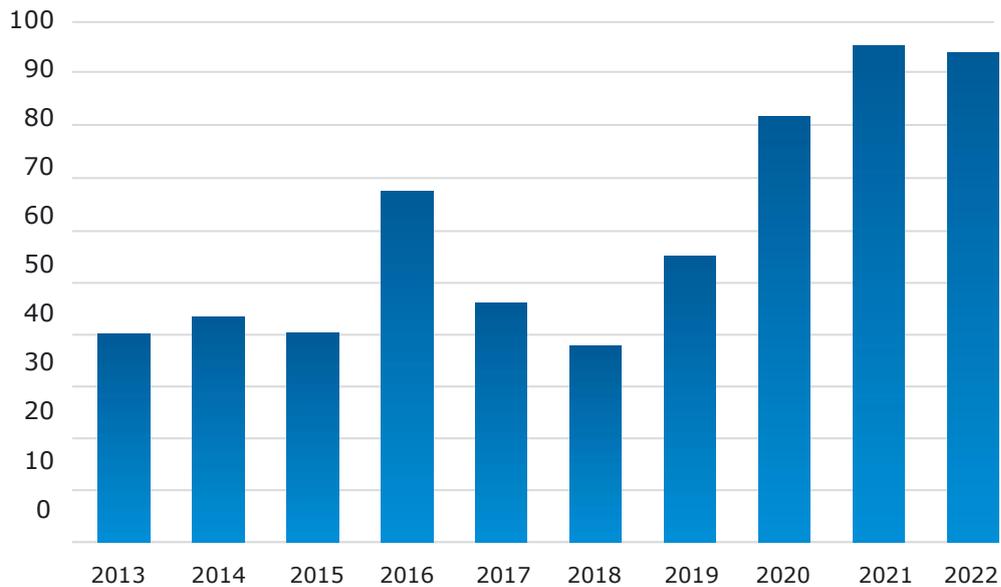


Figure 9 - Number of papers in the Web of Science Core Collection from 2013 to 2022

Over the last ten years, there has been a noticeable upward trend in the number of papers published in publications referenced in WoS CC, by about 17%. The growth is mainly caused by the increase in the coverage of publications referenced in WoS CC. Out of 808 scientific papers published in journals in the stated period, 73.51% were published in journals indexed in WoS CC, and out of 537 papers published in proceedings, 36.69% were indexed in the said database. The average number of articles per employee in 2013 was 0.49, and there is a noticeable positive trend in the annual increase of this number, which is 1.13 for 2022 (Figure 10).

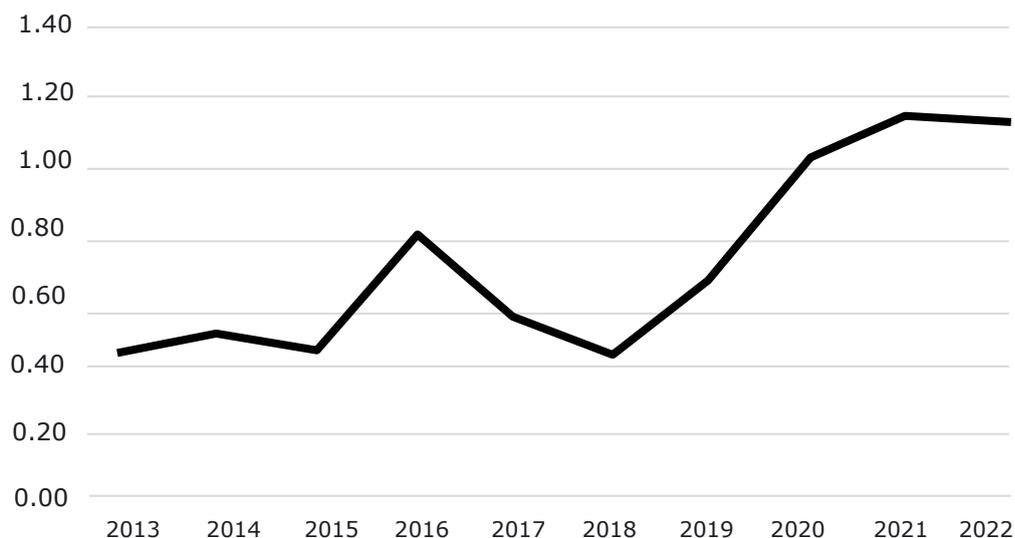


Figure 10 - Number of scientific papers indexed in WoS per employee

Regarding the citations of the aforementioned papers, the total number of citations of scientific papers published in journals is 6105, i.e. 5704 without self-citation (Figure 11): on average, this is 10.28 citations per paper. The H-index of the institution is 37.

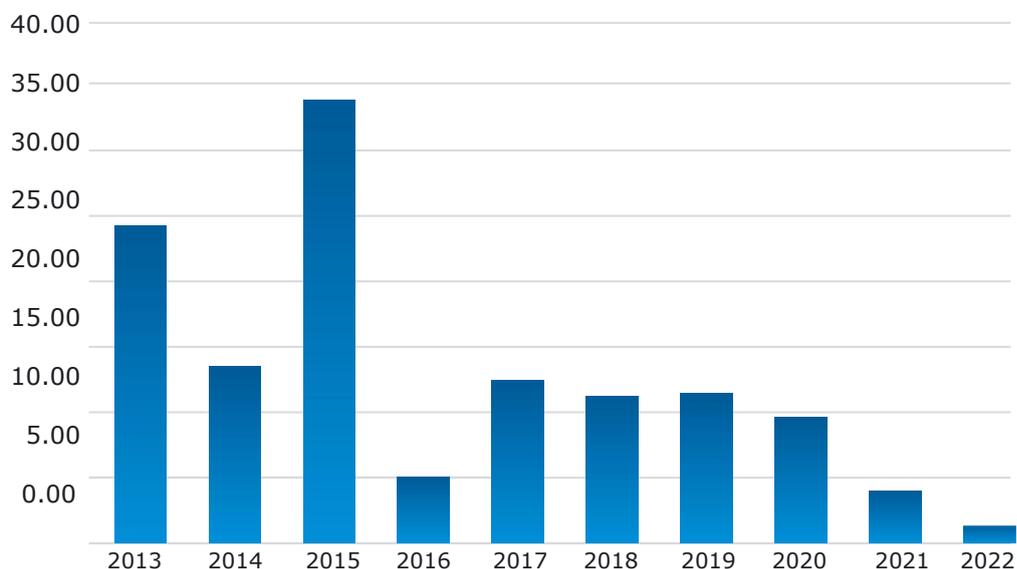


Figure 11 - Number of citations of scientific papers in WoS from 2013 to 2022

Looking at the distribution of journals according to quartiles according to the data available in the citation database Journal Citation Reports (JCR), an increase in the number of papers published in journals belonging to the first (Q1) and second quartile (Q2) is evident, especially since 2020 when this number doubled: in 2019, 26 articles belonged to the listed quartiles, and in 2020, 53 articles (Figure 12).

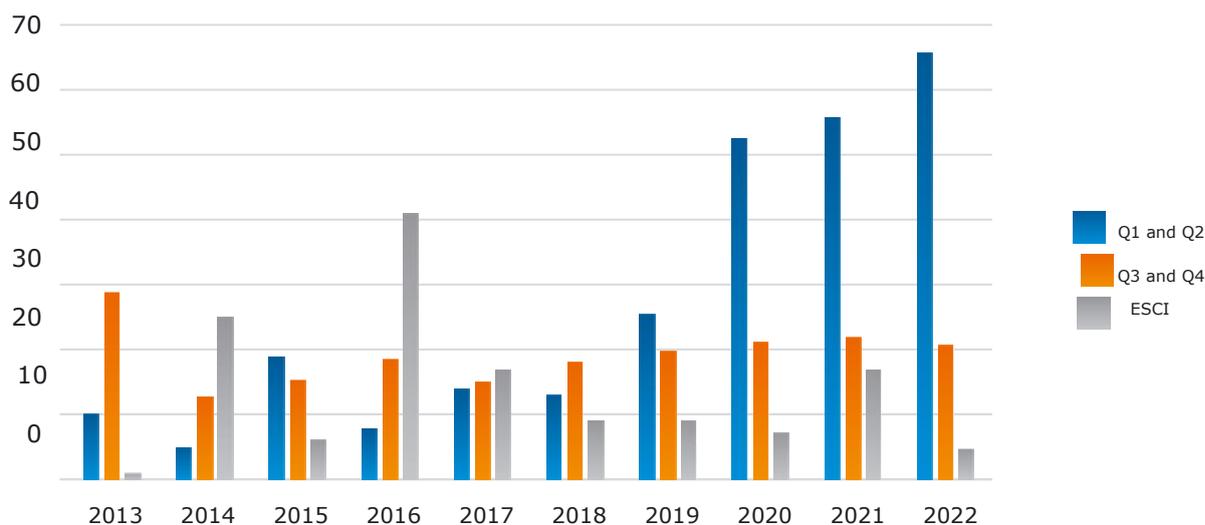


Figure 12 - Distribution of journals by quartiles

A total of 149 articles belong to the first quartile (Q1), which means that 24.78% of papers are among the 25% of journals with the highest impact factor within the group classified in that subject area (Figure 13).

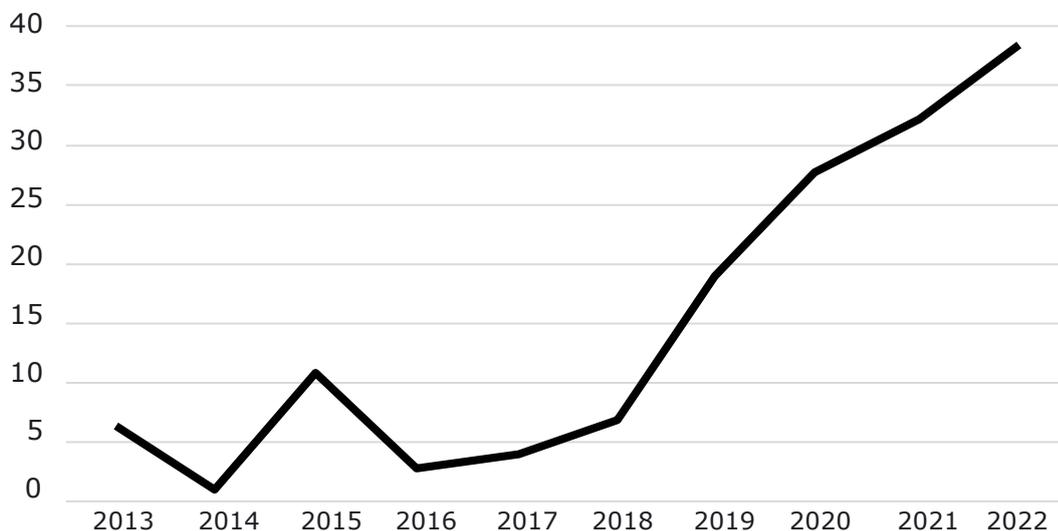


Figure 13 - Number of papers in the first quartile (Q1) from 2013 to 2022

Regarding international cooperation, most scientific articles were created in cooperation with the Republic of Serbia (126, 21.12%). Overall, about 41% of the articles were produced in cooperation with the countries of the former Yugoslavia (Figure 14).

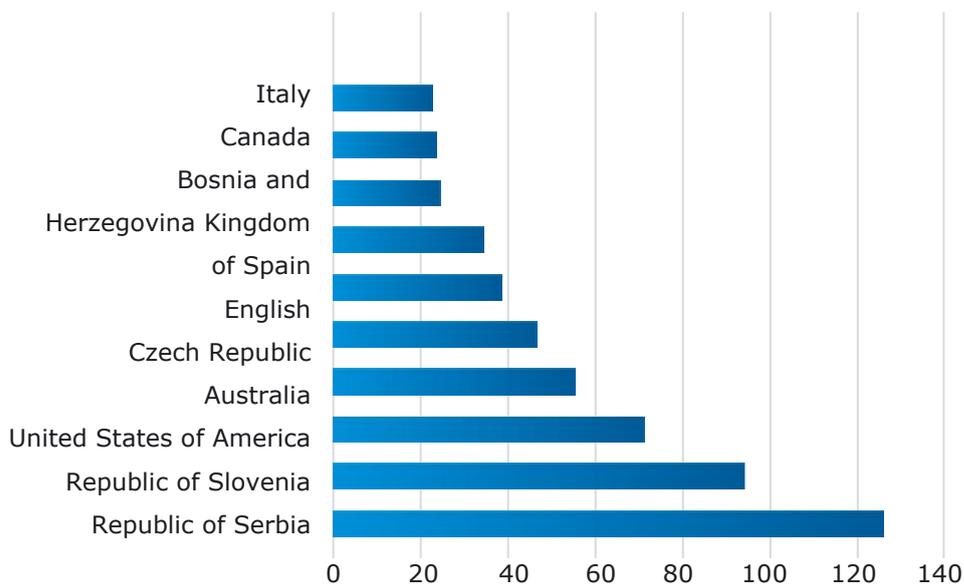


Figure 14 - International cooperation in the publication of scientific papers

Compared to other faculties working in the field of kinesiology in the Republic of Croatia, in the same period, employees of the Faculty of Kinesiology of the University of Split published 276 scientific papers in journals indexed in the Web of

Science database (this is an average of 27.6 papers per year). The papers were cited 2,492 times, with an average number of citations per paper of 9.03. The H-index of the institution is 24. In a wider regional context, a comparison was made with the Slovenian Faculty of Sport, University of Ljubljana. In the analysed period, a total of 330 scientific papers were published (an average of 33 papers per year), which were cited 2994 times with an average number of citations per paper of 9.07 and the institution's h-index of 26. From the above, it can be seen that the scientific production of the employees of the Faculty of Kinesiology of the University of Zagreb is at a high level.

Scientific journals are more easily accessible (most are available free of charge in online or in electronic databases to which most scientific institutions subscribe today) to the interested scientific public than books and proceedings, which generally remain available only in print and for a fee. In the coming period, it is necessary to work on increasing the availability and visibility, and indirectly the impact of scientific research and activities. Researchers publish on average one scientific authorial monograph per year and edit about four scientific books and proceedings. In addition to scientific production, professional production is also important. Researchers publish about five professional papers and a certain number of professional author and editorial books annually.

According to the 2022 Shanghai Ranking (Academic Ranking of World Universities (ARWU)) and the Global Ranking of Sport Science Schools and Departments, the Faculty of Kinesiology in Zagreb ranked between 151st and 200th place. Within the ranking, three basic groups of criteria are used:

1. results of scientific research

- a. papers indexed in Web of Science
- b. total number of citations of these works

2. quality of research

- a. number of citations per paper
- b. number of papers published in 25% of journals with the highest impact factor within the group of journals classified in that subject area

3. International cooperation

- a. percentage of works created by international co-authorship.

With the aim of better positioning of the Faculty and positive developments in the international ranking of universities, the publication of scientific papers in journals in the first quartile (Q1) will be encouraged and financially supported, especially in the top 5% of journals in the subject area, indexed in the Web of Science database, as well as international scientific cooperation in research and publication of the results of this research.

Scientific research, technological projects and projects in collaboration with the economy and the public community

The Faculty of Kinesiology in Zagreb, through the National and European Union Projects Office, monitors and applies for relevant tenders. The scientific research work of the faculty results in scientifically based information that is reflected in better programmes in recreation, kinesitherapy and sports programmes. Science-based exercise programmes focused on the health and performance of the human

body are the result of our wide-ranging research areas. The Faculty of Kinesiology in Zagreb continuously invests in the improvement of research and innovation and seeks new ways of financing through cooperation with economic operators, applications for tenders for scientific research and professional projects, as well as through cooperation with competent institutions such as ministries and agencies, cooperation with various private organizations, all with the aim of developing science and promoting the importance of sports and physical activity. In the 2016-2020 period the Faculty of Kinesiology conducted and participated in 12 professional projects and 11 scientific projects financed from external sources and 37 institutional internal projects during the mentioned period. Of the scientific projects, the *Science and Technology in Childhood Obesity Policy* (STOP) project funded by Horizon 2020 stands out, as well as the Research Project of the Croatian Foundation of Science - the Croatian Physical Activity in Adolescence Longitudinal Study (2016-2020). From 2018-2021, the Faculty implemented the project Internationalization of Higher Education funded by the European Social Fund, within which a new postgraduate specialist university study Prevention and Rehabilitation of Sports Injuries was developed.

In the last three years, in the area of international scientific-professional and professional projects, the Faculty has cooperated on 7 Erasmus + projects, of which it was the coordinator of two major partnerships for cooperation in the field of sports. Currently, 16 internal projects financed through funds allocated by the University for fundamental scientific activity are being implemented at the Faculty. Our scientists are partners in the scientific research project Determinants of Physical Activities in Settings (DE-PASS) funded under the COST EU programme. Among the projects in cooperation with the economy, the project Competence Center in Molecular Diagnostics" (CEKOM MD) stands out. All research conducted at the Faculty is in line with national and European strategic research priorities. This year, the Faculty also developed a Gender Equality Plan to meet the requirements for participation in Horizon projects.

Human Resources – Research Base

The Faculty currently employs 127 employees, 85 of whom are employed in scientific-teaching, teaching, professional and associate teaching positions (Figure 15). Scientific-teaching positions are distributed as follows: there are 14 tenured professors, nine full professors, 23 associate professors, 20 assistant professors. In teaching positions there is one professional study programme professor and two lecturers, in associate titles there are four senior assistants and seven assistants, and in the associate position there is one professional teaching associate. Other participants in the class are two testers, one librarian and one library associate. The research base consists of scientific-teaching staff, whose age structure is higher than desirable and a revitalization of the research core with young staff is necessary (the average age of full professors is 56.8, associate professors 47.5, assistant professors 43.6, senior assistants 56.8 and assistants 32.7). In addition to teaching staff, the Faculty employs five project associates and two laboratory associates.

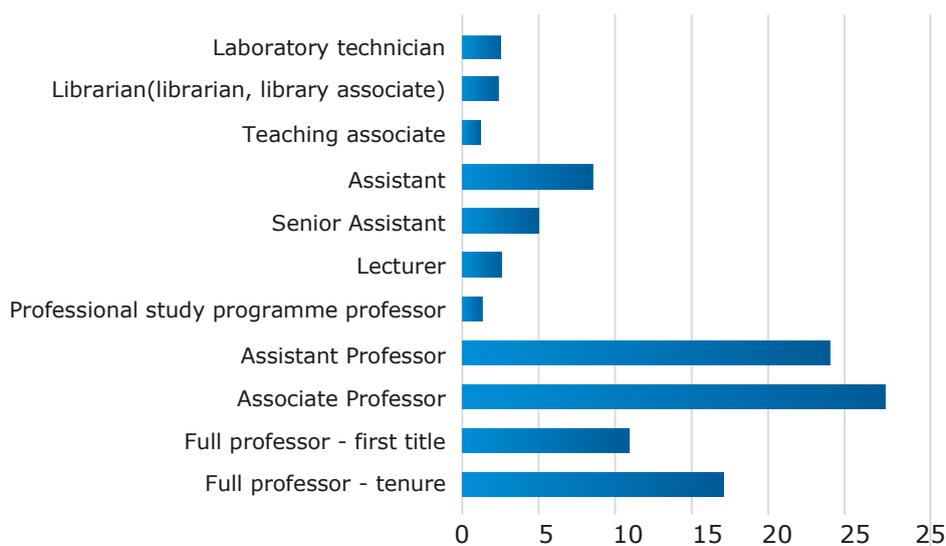


Figure 15 - Structure of scientific-teaching, teaching, professional and associate teaching positions

Mobility of researchers

Mobility and international cooperation improve the quality of education and research, so they need to be continuously strengthened and stimulated. In addition, mobility contributes to social, intercultural and business skills, increases employment opportunities, enables the establishment of complementary national research mechanisms and effective financial investment, enhances the exchange of researchers, the dissemination of knowledge, the results of scientific research and conducted research projects, interinstitutional cooperation and the internationalization of higher education. In the period from 2017 to 2022, the mobility of teaching and non-teaching staff took place primarily within the ERASMUS+ programme for KA 125 programme and KA 131 partner countries, bilateral cooperation of the Faculty and academic mobility of the University of Zagreb with the full administrative and professional support of the Office for International Cooperation, Protocol and Public Relations of the Faculty. According to the data from the records of international cooperation available on the website of the University of Zagreb, in the stated period, 314 outbound mobility activities were realized for different purposes: conference, cooperation agreement, expert and scientific visit, guest lecturer, project meeting and other types of visits (Figure 16).

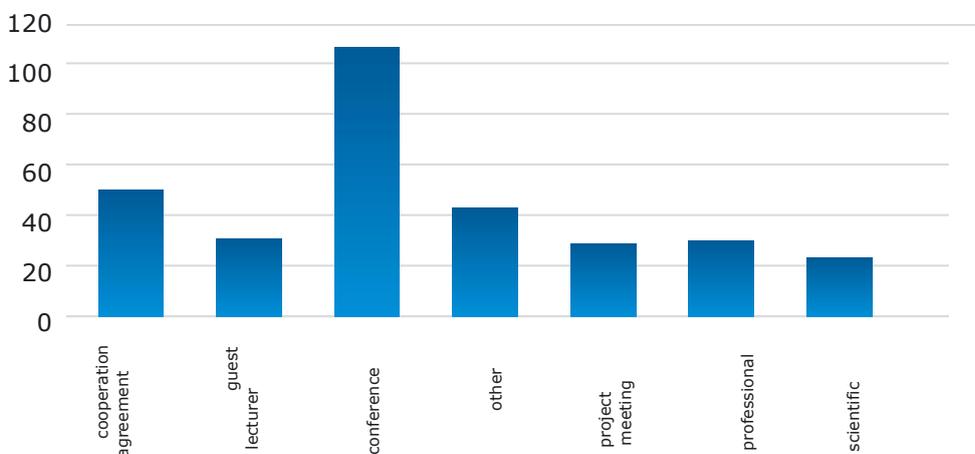


Figure 16 - Mobility of Faculty staff by type of stay

According to the data from the records of international cooperation, 193 incoming mobilities were realized in the period from 2017 to 2022. The Faculty was visited by the most foreign lecturers from the Republic of Serbia (40), the Republic of Slovenia (26), Bosnia and Herzegovina (19), Romania (15) and the People's Republic of China (12). Most inbound mobility was realized for the purpose of invited guest lecturers (72), scientific visits (48), cooperation agreements (39), professional and other visits (32). Although the Faculty supports and encourages the mobility of members of the teaching staff and their participation in international mobility programmes, collaborative projects, networks, etc., it is not at a satisfactory level and measures need to be taken to encourage it. In the coming period, the Faculty of Kinesiology in Zagreb plans to introduce measures to enable young scientists in associate titles to go abroad to partner institutions for a longer period (three to six months) for the purpose of training, teaching, postdoctoral training, etc. The Faculty financially supports *and opens numerous opportunities for the mobility of its employees through a special Decision on the criteria for co-financing the publication of scientific papers and the participation of members of the teaching staff and associates in scientific and professional conferences,*

The analysis of financial statements found that in the period from 2017 to 2019, 51% of the total amount envisaged for the payment of registration fees for participation in scientific conferences and for the payment of the costs of publishing scientific papers was used in the following manner: 16% was used for the costs of publishing scientific papers, while 84% was used for participation in scientific conferences (Figure 17). In the period from 2019 to 2022, 33% of the envisaged funds for participation in scientific conferences and the costs of publishing scientific research papers were spent in the following manner: 56% was used to publish papers, while 44% was used to participate in scientific conferences. In the period from 2017 to 2019, this measure was mostly used by employees in the positions of full-time professors (54.17%) and assistant professors (54.41%), while in the period from 2019 to 2022, this measure was mostly used by associate professors (46.99%).

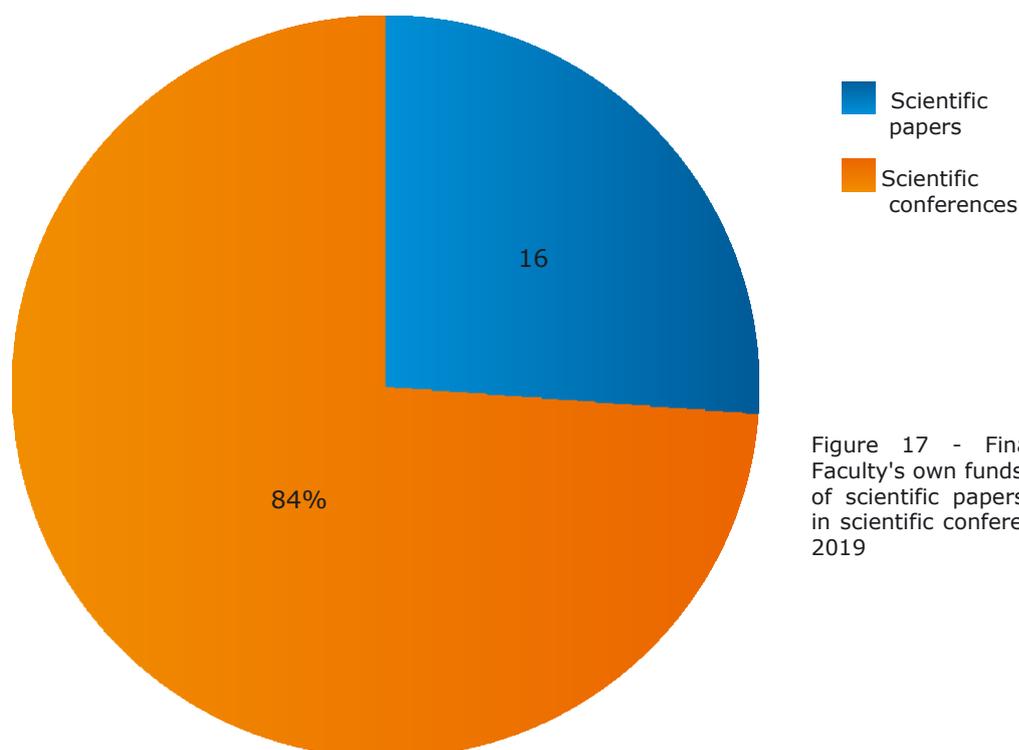


Figure 17 - Financing, from the Faculty's own funds, of the publication of scientific papers and participation in scientific conferences from 2017 to 2019

Doctoral study of kinesiology

In 2017, the doctoral study of kinesiology was re-accredited. The Committee visited the Faculty on 5th June 2017. After the evaluation from the expert committee, a final report was adopted on the basis of which the Agency for Science and Higher Education issued an accreditation recommendation. The accreditation recommendation proposed to the Minister responsible for science and higher education to issue a certificate of compliance with the requirements for performing activities. On 7th February 2018, the Ministry issued a certificate stating that the Faculty meets all the conditions for performing activities related to the performance of doctoral studies. In accordance with the above, an action plan has been developed that is in line with the recommendations of the expert committee. In accordance with the opinion and recommendation of the committee, annual reports were prepared with information on the degree of implementation of the general recommendations stated in the expert committee report.

During this period, three generations of students were enrolled in doctoral studies (176), of which about 30% are from scientific fields other than kinesiology, mostly the biomedical scientific field. In the same period, 87 older and new doctoral students received their doctorates (Figure 18). Doctoral dissertations according to the Scandinavian model were prepared and defended by three doctoral students, three dissertations are under preparation, as well as one double doctorate (*cotutelle*).

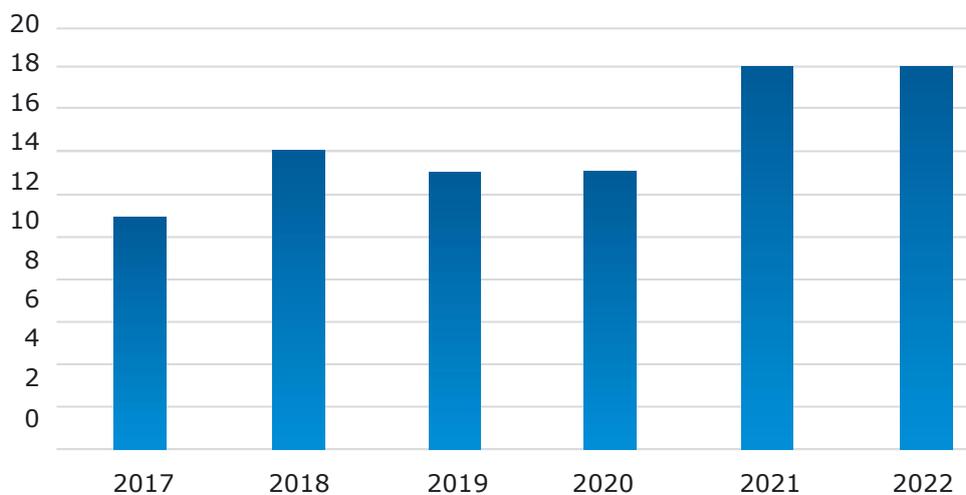


Figure 18 - Number of doctoral dissertations defended from 2017 to 2022

A study programme in English was also prepared and with the necessary supplementary documentation, an application was forwarded to the University of Zagreb for the issuance of a permit for the implementation of the programme in English in October 2019. On 13th December 2019, the Senate of the University of Zagreb adopted a Decision on the approval to conduct an existing postgraduate university doctoral study programme of kinesiology in English. Six students are enrolled in the programme. A list of all mentors with candidates and topics has been prepared and this list is taken into account when interviewing candidates for enrolment of a new generation of students.

Also, the Decision on the conditions for the tender for co-financing published scientific papers of students of the doctoral study of kinesiology was adopted, which was published twice, as well as the Decision on free or co-financed third year of study for students who apply and according to the criteria are among the three best students in the generation.

Students are regularly informed about the possibilities of exchange (every year, tenders are announced by the Croatian Olympic Committee, the University of Zagreb and the Ministry of Science and Education and the possibility of obtaining financial support for going to a foreign institution for a short period of time, as well as for going to international scientific conferences. Several times a year, students are offered financing of part of or the entire registration fee for participation in an international and domestic scientific conference where they can complete their scientific activities, in accordance with the curriculum.

In addition to the above, the Faculty also organized:

- Doctorate Day 2018 where, in addition to lectures by eminent experts, doctoral students presented their papers
- At the beginning of March 2019, a General Knowledge Day 2019 was organized, which included four workshops for doctoral students.
- Students also regularly attend workshops within the National and University Library related to the transfer of general knowledge
- On 9th May 2020, the Doctorate Day 2020 was held where, in addition to lectures by eminent experts, third-year students presented research they are conducting with the aim of preparing a doctoral dissertation
- Since 2019, Science Week has been organized at Faculty of Kinesiology with workshops and lectures for doctoral students related to the preparation, writing and publication of scientific papers
- Doctoral students were referred to online workshops organized by the National and University Library and other major publishing houses such as Elsevier and Clarivate where students could acquire generic knowledge outside the study programme.

Realization of the goals from the Strategic Plan for Scientific Development 2017-2022

Specific strategic objective 1:

Improving scientific research productivity

Activity	Achieved results	Efficiency rating
Increasing the financial stimulation of the publication of works in the WoS database, especially those published in the 1 st quartile, i.e. with a higher impact factor	No decision has been made on the financial stimulation of employees whose papers have been published in journals indexed in the Web of Science database.	Not accomplished
Provision of funds for the costs of dissemination of results in journals with a higher impact factor, i.e., for journals with an echo factor in the 1st quartile for papers arising from the Faculty's research (by establishing a fund within the financial plan)	The Decision on the criteria for co-financing the publication of scientific papers and the participation of members of the teaching staff and associates of the Faculty of Kinesiology of the University of Zagreb at conferences enables the financing of the dissemination of papers of the highest quality at scientific conferences.	Fully accomplished
Establish websites of laboratories and/or research centres	A webpage of each laboratory was created on the website of the Faculty, available at: (www.kif.hr/znanost/laboratoriji). On the website of the Database of Project Activities in Science and Higher Education of the Republic of Croatia, all major projects of the Faculty of Kinesiology are presented in more detail (https://pdb.irb.hr/search?q%5D=%26institution%5B%3D34&sort=start_date_desc&limit=50).	Fully accomplished

Specific strategic objective 2:

Ensuring human resources in science and improving the efficiency, contribution and cooperation of employees in order to achieve the scientific objectives of the Faculty

Activity	Achieved results	Efficiency rating
Association of scientists to individual existing laboratories, formation of internal research groups based on the competencies and common research interests of scientists related to existing laboratories (and/or) formation of research teams or with the establishment of new ones	An additional five specialized laboratories were established, consisting of new research teams, bringing the total number of laboratories to fourteen today. The newly established laboratories are: Laboratory for Combat Sports, Physical Activity Measurement and Surveillance Laboratory, Laboratory for Audiovisual Technology in Kinesiology, Laboratory for Notational Analysis and Laboratory for Epidemiological and Interventional Research of Physical Activity.	Fully accomplished

Activity	Achieved results	Efficiency rating
Provision of financial resources for the implementation of internal scientific research projects for Faculty scientists in the annual budget	By conducting internal tenders for institutional projects, funds awarded by the Ministry of Science and Education are allocated through the University of Zagreb for basic scientific activity.	Partially accomplished
Ensuring the status of existing young researchers and employment of new young researchers	Although it is not entirely within the competence of the Faculty and it is not possible to control the desired employment dynamics of young researchers, four young scientists, doctoral students of the Faculty of Kinesiology are currently employed full-time through the Career Development of Young Researchers programme and projects of the Croatian Science Foundation. In addition, seven young researchers (project associates) were employed on one of the larger projects "Competence Centre in Molecular Diagnostics (CEKOM)".	Partially accomplished
Inclusion of doctoral students in the work of laboratories and evaluation of this work within the evaluation of progress in doctoral studies (credits for science)	The scientific research of doctoral students in laboratories (ECTS credits for science) was evaluated.	Fully accomplished
Improving scientific cooperation among educators, departments, and institutes (and constituents of the University of Zagreb) by organizing and conducting workshops and activities to improve personal, scientific, and teaching competencies of employees	Employees were sent to workshops organized by the constituents of the University of Zagreb, the SRCE Forum for Freedom in Education, the National and University Library in Zagreb.	Partially accomplished
Encouraging researchers to attend science-oriented trainings (seminars, workshops, courses, etc.) while organizing the transfer of acquired knowledge to other researchers of the Faculty	Only associates in the projects <i>Science and Technology in Childhood Obesity Policy – STOP</i> and <i>Career Development of Young Researchers – Training of New Doctors of Science</i> participated in science-oriented trainings.	Not accomplished
Encouraging the participation of Faculty scientists in national and international scientific committees and bodies	The Faculty entered into partnerships with other domestic and foreign institutions.	Fully accomplished

**Specific strategic objective 3:
Renovation and procurement of capital and medium scientific equipment
and other material resources**

Activity	Achieved results	Efficiency rating
Provide funds in the financial plan for the procurement of scientific equipment within faculty funds	Successfully acquired two systems of capital scientific equipment - Kinematic system XSENS and System for measuring ventilation and metabolic parameters in field conditions - CORTEX META MAX 3B.	Fully accomplished
Encouraging applications for tenders for capital and medium-sized equipment from other sources	Through tenders aimed at higher education institutions, the European Social Fund approved only 33% of the applied projects for the procurement of certain scientific equipment (1 out of 3 applied projects).	Partially accomplished
Improvement of equipment and resources that enable research at the highest level and include the improvement of the library, laboratories, and information services	Through the system of institutional projects, and through internal tenders, funds were invested in the small scientific equipment necessary for the implementation of projects and the operation of research laboratories. The library was provided with financial resources for the continuous procurement of library materials (printed and access to databases), however, no financial resources were allocated for the computerization of the student reading room.	Partially accomplished

**Specific strategic objective 4:
Development of science through national and international scientific projects**

Activity	Achieved results	Efficiency rating
Employ at least one full-time expert in the office for the preparation and implementation of national and EU projects to support scientists in project application and writing	An associate is employed to assist in the application and implementation of projects for an indefinite period of time.	Fully accomplished
Provide funds in the faculty budget for participation (in the required percentage) in the financing of the submitted projects	The financial plan and the projection of the plan provided financial resources for the implementation of internal projects. Professional administrative support of the Office for the preparation and implementation of national and EU projects is provided.	Fully accomplished

Activity	Achieved results	Efficiency rating
Define by decision the reduction of teaching burden for educators who have received a national or international project	In 2019, the Ordinance on the standardization of work in teaching and science at the Faculty of Kinesiology was adopted, which, in accordance with the Collective Agreement for Science and Higher Education (Article 70), provides for flexible division of working hours in favour of science.	Fully accomplished
Encourage projects in cooperation with the economy, i.e. with private sector partners	Continuously implemented at meetings of the Office for the Preparation and Implementation of National and EU Projects, meetings of the Chairs, the Institute and the Faculty Council.	Fully accomplished
Conduct a discussion and determine the position of kinesiology within the field of social sciences and humanities and elaborate the advantages (especially related to national projects) and risks of transition to the interdisciplinary field	Continuously implemented at meetings of the Office for the Preparation and Implementation of National and EU Projects, meetings of the Chairs, the Institute and the Faculty Council.	Fully accomplished

Specific strategic objective 5: Increasing scientific recognition based on centres of excellence or reference centres

Activity	Achieved results	Efficiency rating
The Scientific Work and Ethics Committee should determine which research areas have the potential to gain the status of a national centre for excellence	/	Not accomplished
Establish cooperation of these centres with a leading international organization	/	Not accomplished
Internationalize the centre's activities by implementing international scientific projects	The Faculty participated in the application of the Center for excellence through the projects "Top research of Scientific Centers for Excellence" (cooperation of members of the teaching staff) and "Competence Center in Molecular Diagnostics (CEKOM)" (partnership of the Faculty). At the end of 2019, the project "With Establishment of National Care and Development Centers we support elite Athletes in balancing their sports and education/employment Results" was approved, within which the Center for the Care and Development of Athletes was established.	Fully accomplished

Specific strategic objective 6:**Ensure knowledge transfer and promote science in public and dissemination of the Faculty's scientific activity and its application in various spheres of activity and life of citizens**

Activity	Achieved results	Efficiency rating
Encourage the dissemination of results in popular journals	Continuously encouraged at the meetings of the Chairs, the Institute and the Faculty Council.	Fully accomplished
Present research, projects and results at scientific and professional conferences	Scientific advancement and presentation of one's own work to the general scientific public takes place through attending international scientific conferences.	Fully accomplished
Organize public forums with professional associations that can directly benefit from scientific knowledge	Public forums involving Faculty staff and invited lecturers are continuously conducted. In the period from 2017 to 2022, five panels were held at the Faculty.	Fully accomplished
Organization of public announcements after the publication of scientific research results	Final conferences of implemented projects were organized, CROSBİ profiles of members of the teaching staff, as well as the project database were updated.	Fully accomplished
Organization of presentations and workshops related to key public issues on movement and health, sports and other areas of applied kinesiological research	Every year, the Faculty of Kinesiology in Zagreb organizes the largest scientific and professional conference Physical Conditioning of Athletes, participates in the organization of the Summer School for Kinesiologists in cooperation with the umbrella institution of kinesiologists in Croatia – the Croatian Kinesiological Association.	Fully accomplished
Organization of science festivals, free consultations and open days of laboratories for associates, citizens and future students	Since 2019, the Faculty has been organizing Science Week, which includes lectures by members of the teaching staff at the request of students, workshops aimed at acquiring generic research and academic skills (members of the teaching staff), visits to laboratories (laboratory managers), projects and procedures related to project application (expert associate of the National, EU and International Projects Office), workshops related to the development of information skills (head of the Information Support Centre), information literacy workshops (Library).	Fully accomplished
Organisation of lifelong learning programmes	/	Not accomplished

**Specific strategic objective 7:
Improve the scientific activity of undergraduate, graduate, and doctoral students**

Activity	Achieved results	Efficiency rating
Present existing laboratories and research groups to doctoral students	Doctorate Day has been held since 2018, and Science Week at the Faculty of Kinesiology has been held since 2019.	Fully accomplished
Conduct an area-specific preference survey	Carried out at the level of doctoral studies, but also planned to be carried out in other study programmes.	Fully accomplished
Include doctoral students in existing research and application of new projects and in existing research teams	Already during enrolment of students in the doctoral study of Kinesiology, where students select a mentor and engage in projects and activities related to the research group of mentors.	Fully accomplished
During their studies, identify students with exceptional academic potential and the ability to think scientifically and include them in the programme of encouraging scientific work in students	Students are informally referred to apply for the Rector's Award, as well as scientific research work in laboratories.	Partially accomplished
Encourage experimental graduate theses	Mentors encourage students to write experimental graduate theses during consultations, but no decision has been made to apply exclusively for research graduate theses.	Partially accomplished
Provide a system of rewarding students for published scientific work in a scientific journal (dean's award, exemptions from registration fees at scientific conferences, etc.)	It was realized at the doctoral study where students can get a refund for the publication of scientific papers based on the application for the competition. Based on scientific activity, the best students receive either a fully or partially funded third year of doctoral studies.	Not accomplished

**Specific strategic objective 8:
Development strategy of journal KINESIOLOGY
– INTERNATIONAL JOURNAL OF FUNDAMENTAL AND APPLIED KINESIOLOGY**

Activity	Achieved results	Efficiency rating
Support the publication of articles in applied fields of kinesiology that have greater ability to cite and publish review papers	Conducted and controlled during meetings of the Editorial Board and the editorial team of <i>Kinesiology</i> .	Fully accomplished
Involving as many world-renowned scientists as possible in the review process of articles and tighten the preliminary review process, which would reduce the burden on reviewers	Implemented and continuously controlled by the editorial board of the journal.	Fully accomplished
By annually analyzing the citation of articles published in the <i>Kinesiology</i> journal (especially important are articles cited in review papers published in other journals or scientific books), more clearly define areas of scientific research or sections of primary importance for the journal	In 2019, the instructions for authors were changed so as to narrow the field of interest of the journal to a more specific field of kinesiology and complementary sciences, and a number of general topics were removed from the list.	Fully accomplished
Retention and increase of the current annual financial support received from the Ministry of Science and Education	The operation of the journal was co-financed by the Ministry of Science and Education, with significant allocations from the Faculty's own funds.	Partially accomplished
Enable an increase in the number of professional staff involved in the work of the Editorial Board of the journal and the editorial work of the journal at the expense of state funds	Persons hired to work on the journal as administrative support to the editorial board at the expense of the Faculty's own resources.	Partially accomplished
Recognize and evaluate the editorial work of the employees of the Faculty of Kinesiology according to the criteria defined in the regulations of the Faculty	Since 2021, the Faculty has hired two journal administrators with its own resources.	Partially accomplished

**Specific strategic objective 9:
Conference development strategy:
International Conference of Kinesiology**

Activity	Achieved results	Efficiency rating
Ensuring the best invited lecturers by individual sections	At the eighth international conference of Kinesiology held in 2017, there were 21 plenary and introductory presentations by invited speakers and introducers, while at the ninth conference in 2021 there were 12.	Fully accomplished
To thematize the conference in terms of a larger number of invited speakers from the area which will be the main topic of the conference	At the ninth international Kinesiology conference held in 2021, speakers from different fields were invited to present the opportunities and problems of their narrower specialty.	Fully accomplished
Increase the number of workshops and practical seminars within individual sections in order to emphasize the importance of transferring knowledge into practice and keep good practice in organizing satellite symposia and develop this idea in organizing future conferences	At the ninth international Kinesiology conference held in 2021, a satellite symposium entitled <i>Social Aspects of Sport in Southeast Europe: Endless Transitions and Prevention and Rehabilitation of Sport Injuries – Implementation of University Postgraduate Specialist Study Programme</i> was also held.	Fully accomplished
Maintain the level of indexing of conference proceedings in relevant databases	The proceedings of the eighth international conference Kinesiology (2017) were included in the Web of Science, and the proceedings of the ninth international conference (2021) did not meet the conditions for entry into the Web of Science database.	Partially accomplished
Through various forms of promotion, improve and improve the visibility of the conference and increase the number of participants and significantly connect the conference with the sports industry	It is continuously implemented, so during the celebration of the 60 th anniversary of the Faculty of Kinesiology in 2019 and Science Week at the Faculty of Kinesiology, the 9 th International Scientific Conference on Kinesiology 2020 was presented and announced. The conference is still not fully connected to the sports industry.	Partially accomplished

SWOT analysis

BENEFITS

- tradition of a leading institution in the field of kinesiology in the region
- expertise of scientific-teaching staff committed to personal development and gaining international experience
- partnership relations with most institutions related to the field of sports and public health in the Republic of Croatia
- organization of high-level international scientific conferences
- international scientific projects funded by EU funds
- potential for interdisciplinary scientific research
- publication of the international journal Kinesiology indexed in the databases Web of Science and Scopus
- equipment and availability of the library collection that increases the quality and scope of scientific research
- number, infrastructure and equipment of laboratories
- scientific and research activities of laboratories
- recognisability of the doctoral study programme
- positive and stable financial situation
- internal promotion of scientific excellence
- introduced management and organizational system (ISO standards)

OPPORTUNITIES

- making use of the good position of Croatian sport and tourism in the world for preparation of scientific and professional projects in the field of kinesiology, biomedicine and healthcare
- focus on applied scientific research and transfer of knowledge into practice
- further improving the financing of the Faculty's work from EU funds
- increasing mobility of members of the teaching staff and students
- enhancing ties in the economic sector
- digital transformation of business and processes in order to increase the efficiency, availability and quality of work and operations of the Faculty
- promoting more intensive scientific cooperation with other domestic and foreign academic institutions
- building a system of support for researchers with the aim of reducing the administrative burden
- development of new topics of interdisciplinary research topics

WEAKNESSES

- insufficient number of permanently employed members of the teaching staff, associates and external associates in certain subjects
- uneven teaching load
- unfavourable age structure of teaching staff
- insufficient motivation and focus of scientists on applying to the EU and other international competitive projects
- lack of scientific staff for strategically important areas of research
- uneven distribution of scientific productivity among members of the teaching staff and associates
- insufficient number of university textbooks and manuals published by the Faculty
- insufficient connection with the economic sector
- insufficient international mobility of incoming and outgoing members of the teaching staff
- lack of office space used by members of the teaching staff and students
- underdeveloped infrastructure for administrative management of international projects
- insufficient number of mentors in doctoral studies
- insufficient motivation of potential mentors for individual work with students/doctoral students

THREATS

- insufficient financing of the Faculty from the state budget of the Republic of Croatia
- insufficient connection with the applied fields of kinesiology
- uncertainty of the environment (negative demographic trends, employee promotions, employment policies, etc.)
- insufficient stimulation of young scientists through financing stimulating scientific research projects
- limited possibility of employing staff at the Faculty, especially excellent students as assistants

The main strategic goal of the research of the Faculty of Kinesiology, University of Zagreb from 2023 to 2028

In order to increase the international scientific visibility and recognition of the Faculty, as the ultimate goal of the strategic plan for the development of science in the coming period, it is important to ensure:

1. Development of human and research potentials and business processes.
2. Ensuring knowledge transfer at all levels of study and improving the scientific and social visibility of the Faculty.
3. Strengthening scientific excellence and raising research capacity.

Further development of the scientific research work of the Faculty of Kinesiology, University of Zagreb is based on the improvement of human resources, business and research resources. This primarily implies ensuring further conditions for the development of information and business systems for strategic management, investment in research laboratories and the development of human resources at all levels of business. Investing in the development of human resources leads to the improvement of the business and research process of the entire institution. Improving knowledge transfer at all levels of study and increasing the scientific activity of students and doctoral students contributes to improving the institutional competencies of research groups and institutions.

Strengthening scientific excellence and raising research capacity is a goal that includes: encouraging the submission of international and domestic projects to which the Faculty will be either the holder or a partner and encouraging the publication of scientific papers in prestigious international scientific journals. Encouraging academic mobility and lifelong education and training of all Faculty staff contributes to strengthening domestic and international research infrastructure, and promoting the connection of Croatian, European and global institutions.

The Faculty of Kinesiology in Zagreb, as a scientific and teaching institution operating in the field of social sciences, will primarily focus on projects in several fields of social sciences and humanities, biomedicine and health, as well as projects in the interdisciplinary field connecting biomedical sciences and kinesiology. In the period from 2023 to 2028, the research and innovation activity of the Faculty in the fields of general and applied kinesiology, with firm support for projects in biomedicine and health, will focus on solving global challenges and the prosperity of society through the cooperation of domestic and international stakeholders with the aim of increasing their impact.



Specific strategic objectives

SPECIFIC STRATEGIC OBJECTIVE 1.: Development of human and research potentials and business processes

- Partial objective 1.1.: Development of information and business systems for strategic management.
- Partial objective 1.2: Development of research laboratories.
- Partial objective 1.3: Development of human resources and improvement of contribution, efficiency and cooperation of all employees.

SPECIFIC STRATEGIC OBJECTIVE 2.: Ensuring knowledge transfer at all levels of study and improving the scientific and social visibility of the Faculty

- Partial objective 2.1: Increasing domestic and international visibility in the academic and school sectors and popularization of science
- Partial objective 2.2.: Increasing the scientific activity of students of the university integrated undergraduate and graduate study programme of kinesiology.
- Partial objective 2.3.: Improving the doctoral study programme of kinesiology.
- Partial Objective 2.4: journal *Kinesiology: International Journal of Fundamental and Applied Kinesiology*.
- Partial objective 2.5: International Scientific Conference on Kinesiology.

SPECIFIC STRATEGIC OBJECTIVE 3.: Strengthening scientific excellence and raising research capacity

- Partial Objective 3.1: Increase the number of applications for international and domestic projects.
- Partial Objective 3.2: Encouraging the publication of scientific papers in prestigious international publications indexed in the Web of Science Core Collection and Scopus databases
- Partial objective 3.3: Fostering mobility and lifelong learning and training.

SPECIFIC STRATEGIC OBJECTIVE 1.: Development of human and research potentials and business processes

Partial objective 1.1.: Development of information and business systems for strategic management.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Develop a list of scientific research equipment	Available list of equipment on the Faculty's internal pages (update CroRIS – equipment module)	Institutional administrator of equipment modules and laboratory managers	June 2024	List of scientific research equipment developed Internal equipment catalogue available
Update Project Database	Internal website, CroRIS project database	Institutional module administrator, projects and project managers	Continuous	Updated project database
Establish monitoring of investments in science	Open a separate bookkeeping and accounting record for science Define by a decision the disposition of funds for science (for example, from projects, commercial services of laboratories...)	Vice-Dean for international cooperation and science and head of the Financial and accounting department	September 2023	Open bookkeeping and accounting records for science Defined decision on the disposal of funds for science
Establish separate financial cards for research laboratories	Open financial cards of all existing laboratories	Vice-Dean for international cooperation and science and head of the Financial and accounting department	September 2023	Formed financial card of the laboratory
Ensure access to scientific databases, journals and software	Comparison with the previous period	Faculty management	Continuous	Provided access to scientific databases and journals, as well as software
Encourage monitoring of anthropological characteristics of children and young people in the Republic of Croatia	Comparison with the previous situation	Vice-Dean for International Cooperation and Science	Continuous	Provided access to the database in cooperation with national institutions

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Define the procedure for issuing opinions for organizing events and gatherings organized by the Faculty or co-organized by the Faculty and organized at the Faculty or outside it	Comparison with the previous situation	Vice-Dean for International Cooperation and Science and the Committee for Scientific Work and Ethics	Continuous	Accepted Ordinance on defining the procedure for issuing an opinion Number of requests received

Partial objective 1.2: Development of research laboratories.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Encourage less active research laboratories to engage in scientific activity, provide human resources for conducting research and adopt rules of procedure for laboratories	Comparison with the previous period	Vice-Dean for International Cooperation and Science	Continuous	Number of scientific research activities of the Faculty's laboratories: - number of scientific papers published in journals and presented at scientific conferences - number of projects - number of doctoral dissertations - number of graduate and final papers. Number of newly involved persons in the work of research laboratories Laboratory rules of procedure developed
Increase the investment of own funds in the implementation of high-quality scientific research projects	Comparison with the previous situation	Faculty management	Continuous	Increased investments for the implementation of scientific research projects
Involve external stakeholders for the purpose of securing funds for the procurement of capital and medium scientific equipment and other material resources for laboratories and the library	Comparison with the previous period	Vice-Dean for International Cooperation and Science, Head of Laboratory and Head of the Centre for Library Information and Publication Activities	Continuous	Acquired capital and medium scientific equipment Renewed library fund Acquired new IT and multimedia equipment for the library

Partial objective 1.3: Development of human resources and improvement of contribution, efficiency and cooperation of all employees.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Establish internal research groups based on the competencies and common research interests of scientists in existing scientific research laboratories or with the establishment of new ones	Comparison with the previous situation	Vice-Dean for International Cooperation and Science	Continuous	Internal research groups formed Number of published papers in collaboration with other researchers
Encourage the employment of young researchers at the expense of project funds and at the expense of the Republic of Croatia	Comparison with the previous situation	Faculty management	October 2025*	Number of employed young researchers
Strengthen the staff capacity of the Office for the preparation and implementation of national and EU projects	Comparison with the previous situation	Faculty management	October 2025	Number of new employees in the Office for the preparation and implementation of national and EU projects
Establish control of the financial management of projects through the engagement of an expert financial advisor for projects	Comparison with the previous situation	Vice-Dean for International Cooperation and Science	September 2024	Financial advisor for institutional projects involved in the daily activities of the Office for the Preparation and Implementation of National and EU projects
Establish an internal counselling centre for scientific research methodology	Comparison with the previous situation	Vice-Dean for International Cooperation and Science	September 2023	Engaged person/persons for methodological counselling Number of consultations organized Number of methodological workshops conducted
Organize and conduct workshops and other activities with the aim of improving the personal, scientific and teaching competencies of employees	Workshop reports	Vice-Dean for International Cooperation and Science, Head of the Centre for Library Information and Publication Activities Office and publishing activities, expert associate for legal and personnel affairs and the National, EU and International Projects Office	Continuous	Number of internal workshops organized for Faculty employees

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Promote flexible standardisation of working hours to employees with proven high engagement in the project	Decision reached	Vice-Dean for International Cooperation and Science and Vice-Dean for Education and Students	At the request of the project manager	Number of decisions on reducing the teaching burden for members of the teaching staff who are heads of a competitive scientific project
Ensure a wider scope of scientific activities through the continuation of the accreditation process in the scientific field of biomedicine and health	Licence issued	Faculty management	October 2025	Licensed to perform scientific activities in the field of biomedicine and health
Strengthen the staff capacity of research laboratories	Comparison with the previous situation	Faculty management	October 2025	Number of employed laboratories in research laboratories

*In accordance with the previously obtained consent of the competent ministry.

SPECIFIC STRATEGIC OBJECTIVE 2.: Ensuring knowledge transfer at all levels of study and improving the scientific and social visibility of the Faculty

Partial objective 2.1: Increasing domestic and international visibility in the academic and school sectors and popularization of science

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Increase the number of science popularization activities in primary school and secondary school institutions	Comparison with the previous situation	Vice-Dean for International Cooperation and Science	Continuous	Number of activities to popularize science
Modernise the webpages of research laboratories	Available laboratory webpages	Vice-Dean for International Cooperation and Science and heads of laboratories	March 2024	Number of online profiles of researchers and research laboratories

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Organize public forums, scientific, professional meetings and public lectures for the general public	Comparison with the previous situation	Vice-Dean for International Cooperation and Science and International Cooperation, Protocol and Public Relations Office	Continuous	Number of lectures and forums on current cultural, social or economic trends, scientific, professional conferences and lectures for the public held at the Faculty
Modernise the Faculty's website in English	Available website	Vice-Dean for International Cooperation and Science and head of the Centre for Information Technology Support	March 2024	Improve amount of content available on the Faculty's website available in English
Periodical publications (<i>Study guide</i> , Faculty activity report, etc.)	Regularly update and publish on the website	Vice-Dean for International Cooperation and Science, Head of the Centre for Library Information and Publication Activities and Vice-Dean for Education and Students	Continuous	Prepared periodical publications of the Faculty
Organize Science Week at the Faculty of Kinesiology	Regular maintenance	Vice-Dean for International Cooperation and Science, Head of the Centre for Library Information and Publication Activities and Office for Preparation and Implementation of National and EU Projects	Once a year	Science Week organized at the Faculty of Kinesiology and number of visitors
Encourage the dissemination of research results in popular journals by strengthening the support of external public relations services	Comparison with the previous situation	Vice-Dean for International Cooperation and Science, Head of the Centre for library-information and publishing activities and the International Cooperation, Protocol and Public Relations Office	Continuous	Number of published popular-scientific works

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Inform the public upon the publication of the results of scientific research and implemented projects	Comparison with the previous period	Vice-Dean for International Cooperation and Science, International Cooperation, Protocol and Public Relations Office and National, EU and International Projects Office	Continuous	Number of presented scientific results on the Faculty's website Number of appearances of research results in the media and on social networks (altmetric indicators)
Encourage discussion of the San Francisco Declaration on Research Assessment (DORA)	Using the criteria from the Declaration in evaluating the scientific work of members of the teaching staff	Vice-Dean for International Cooperation and Science	October 2024	Number of activities promoting open access and evaluation of scientific work in accordance with the provisions of the Declaration
Encouraging the participation of Faculty scientists in national and international scientific committees and bodies	Comparison with the previous situation	Vice-Dean for International Cooperation and Science	Continuous	Number of scientists involved in national and international committees and bodies

Partial objective 2.2.: Increasing the scientific activity of students of the university integrated undergraduate and graduate study programme of kinesiology.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Organize educational workshops for students on the preparation of experimental graduate theses	Comparison with the previous period	Vice-Dean for International Cooperation and Science, Vice-Dean for Education and Students and the Centre for Library and Information and Publishing Activities	Continuous	Number of experimental graduate theses
Adopt a decision on co-financing the costs of the registration fee for the publication of a paper or participation in a conference for students of the university integrated undergraduate and graduate study programme of Kinesiology	Comparison with the previous period	Faculty management	Once a year	The decision was made to co-finance the costs of the registration fee for the publication of the paper or the participation of students at the conference

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Stronger involvement of students in the work of research laboratories of the Faculty through financial and other incentive measures	Comparison with the previous period	Vice-Dean for International Cooperation and Science and heads of laboratories	Continuous	Number of students involved in the work of research laboratories of the Faculty
Promote stronger involvement of students in the implementation of institutional projects	Comparison with the previous period	Vice-Dean for International Cooperation and Science, project managers and Office for Preparation and Implementation of National and EU Projects	Continuous	Number of students involved in institutional projects
Encourage equal participation of all employees and students in scientific and professional projects while respecting diversity in accordance with <i>the Gender Equality Plan</i>	Comparison with the previous period	Faculty management	Continuous	Number of researchers involved in research and professional projects of the institution

Partial objective 2.3.: Improving the doctoral study programme of kinesiology.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Modify the curriculum of the doctoral study programme and modernize its content	Curriculum changes adopted	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	1st September 2025	Revised doctoral study programme
Organize General Knowledge Days and Doctorate Days with invited lecturers	Report on implemented activities	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Continuous	Proportion of doctoral students who participated in doctoral workshops organized by the Faculty

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Organize independently or in cooperation with another University constituent School for new mentors	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	1 st October 2024	Share of mentors who participated in the School for New Mentors
Involve doctoral students in the work of laboratories and valorize that work (ECTS credits for science)	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Once a year	Proportion of doctoral students involved in the work of research laboratories of the Faculty
Include doctoral students in existing projects and in the application of new projects	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Once a year	Proportion of doctoral students involved in institutional projects
Co-finance doctoral students' registration fee for attending at least three scientific conferences per year with the condition of active presenting	Statement of spent funds	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Once a year	Number of doctoral students' conference attendances co-financed by the Faculty
Introduce a more comprehensive form of entrance exam with the presentation of the research draft before the interview	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	May 2023	New concept of entrance exam for doctoral studies introduced
Increase co-financing of the publication of scientific papers in journals in accordance with the Invitation to participate in the competition for co-financing of published scientific papers of students of the doctoral study programme of kinesiology by 50%	Statement of spent funds	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Once a year	Number of published scientific papers of doctoral students co-financed by the Faculty

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Increase the number of students who receive co-financing for a year of study based on excellence in study	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Once a year	Number of doctoral students who received co-financing of the year on the basis of excellence during study
Promotion of study programmes in English	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Continuous	Number of students enrolled in the English doctoral study programme increased by 50%
Attracting new mentoring candidates	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Continuous	Number of new mentors in doctoral studies increased by 20%
Encourage further development of excellence in mentoring doctoral students	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Continuous	Number of defended doctoral dissertations per mentor Survey on satisfaction of doctoral students with mentors
Promote the preparation of doctoral dissertations according to the Scandinavian model	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Continuous	The number of doctoral dissertations made according to the Scandinavian model increased by 100%
Encouraging research laboratory managers to be more involved in conducting measurements for the purpose of preparing doctoral dissertations	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral study programme	Continuous	Incentive measures developed Number of measurements performed in research laboratories for the purpose of preparing doctoral dissertations
Providing additional financial resources for the implementation of	Comparison with the previous period	Vice-Dean for International Cooperation and Science and Head of the doctoral	September 2023	Number of measurements co-financed by the Faculty, which were carried out in

Partial Objective 2.4: journal *Kinesiology: International Journal of Fundamental and Applied Kinesiology*.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Provide more efficient administrative support	Comparison with the previous situation	Faculty management	October 2025*	Newly employed person in the editorial board of the journal
Improve the journal's editorial practice	Comparison with the previous situation	Vice-Dean for international cooperation and science and Editorial board of the journal	Continuous	Improved editorial standard and scientific quality of the journal
Increasing funding of available sources (domestic and international) for the purpose of sustainable publication of high-quality research in the field of kinesiology and related sciences	Statement of spent funds	Faculty management	Continuous	Report on financial investments in the work of the journal
Attracting eminent authors who address innovative research topics	Comparison with the previous situation	Vice-Dean for international cooperation and science and Editorial board of the journal	Continuous	Number of papers by renowned scientists published in the journal
Prepare annual analyses of the publication and citation of articles in order to more clearly define the areas of scientific research that are of primary importance for the journal	Comparison with the previous situation	Vice-Dean for international cooperation and science, Head of the Centre for Library Information and Publication Activities	Once a year	Created bibliometric analysis of the journal
Supporting the publication of articles in applied fields of kinesiology that have greater ability to cite, as well as publish a greater number of review papers	Comparison with the previous situation	Vice-Dean for international cooperation and science and Editorial board of the journal	Continuous	Number of published papers addressing the areas of applied kinesiology

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Provide the infrastructure necessary to include journals in the PubMed full-text database	Comparison with the previous situation	Vice-Dean for international cooperation and science, Head of the Centre for Library Information and Publication Activities	October 2025	Journal included in PubMed bibliographic database
Modernise the journal's website	Available website	Vice-Dean for international cooperation and science and Editorial board of the journal	October 2025	Modernised journal website
Provide a new system for easier editing and publication of papers	Accessible database	Faculty management	September 2024	New system for editing and publishing articles acquired

**In accordance with the previously obtained consent of the competent ministry.*

Partial objective 2.5: International Scientific Conference on Kinesiology.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Involve world-famous experts as invited speakers in all sections	Comparison with the previous period	Vice-Dean for international cooperation and science, conference organizing and programme committee	Continuous	Number of renowned scientific invited lectures in all conference sections
Increase the number of workshops and practical seminars within the work of individual sections with the aim of transferring knowledge into practice	Comparison with the previous situation	Vice-Dean for international cooperation and science, conference organizing and programme committee	Continuous	Number of conducted workshops and seminars held as part of the conference

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Maintain good practice of organizing satellite symposia	Comparison with the previous situation	Vice-Dean for international cooperation and science, conference organizing and programme committee	Continuous	Satellite symposium held
Maintain the level of indexing of conference proceedings in relevant databases	Comparison with the previous period	Vice-Dean for international cooperation and science, organizing, programme committee of the conference and Head of the Centre for Library Information and Publication Activities	Continuous	Indexation of conference proceedings to the Web of Science database
Improve and increase the visibility of the conference, increase the number of participants and significantly connect the conference with the sports industry	Comparison with the previous period	Vice-Dean for international cooperation and science, conference organizing and programme committee	Continuous	Number of conference participants Survey on satisfaction with the conference and its entire organization
Modernise the conference website	Available website	Vice-Dean for international cooperation and science, conference organizing and programme committee	Continuous	Updated conference website

SPECIFIC STRATEGIC OBJECTIVE 3.: Strengthening scientific excellence and raising research capacity

Partial Objective 3.1: Increase the number of applications for international and domestic projects.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Organize internal workshops on tenders, application and project management	Notice of an internal workshop on the Faculty's website	Vice-Dean for international cooperation and science, project managers and Office for Preparation and Implementation of National and EU Projects	Continuous	Number of conducted workshops for the application of projects organized for Faculty employees
Encourage reporting of scientific research and professional projects	Comparison with the previous situation	Vice-Dean for international cooperation and science, project managers and Office for Preparation and Implementation of National and EU Projects	Continuous	Number of projects financed from national sources with research leaders or partners from the Faculty
Encourage projects in cooperation with the economy, i.e., with private sector partners	Comparison with the previous period	Vice-Dean for international cooperation and science, project managers and Office for Preparation and Implementation of National and EU Projects	Continuous	Number of projects financed from international sources with research leaders or partners from the Faculty
Increase the amounts of funding for projects	Comparison with the previous period	Faculty management	Continuous	Number of submitted projects with partners outside the academic community (e.g. NGOs, public institutions, business entities, etc.)
Initiate alignment of the institutional environment with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers	Compliant institutional practice with the Charter and the Code	Vice-Dean for International Cooperation and Science	October 2023	Number of meetings held
Initiate alignment of mentoring practices with the MSCA Mentoring Guidelines	Mentoring guidelines developed	Vice-Dean for International Cooperation and Science and Vice-Dean for Teaching and Students	October 2023	Number of applications of the Faculty for MSCA competitions Number of MSCA scholarships obtained

Partial Objective 3.2: Encouraging the publication of scientific papers in prestigious international publications indexed in the Web of Science Core Collection and Scopus databases

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Increase the number of scientific papers published in journals indexed in the Web of Science and Scopus databases especially in the first quartile (Q1)	Comparison with the previous period (CROSB, Web of Science and Scopus)	Vice-Dean for international cooperation and science, Head of the Centre for Library Information and Publication Activities	Continuous	Number of scientific papers published in journals indexed in Web of Science and Scopus citation databases, especially in the first quarter (Q1) and in the leading 5% of journals
Promote greater importance of excellence through the adoption of a new, amended decision on the criteria for co-financing the publication of scientific papers and the participation of teachers and associates of the Faculty of Kinesiology, University of Zagreb at scientific conferences (only exceptionally at professional conferences)	Comparison with the previous period	Faculty management	October 2024	<p>Number of requests for the allocation of incentive financial resources</p> <p>Number of scientific papers published in journals referenced in reputable international citation databases (especially Web Of Science and Scopus)</p> <p>Number of citations of papers published by researchers from the Faculty that were recorded in reputable international citation databases (Web of Science and Scopus)</p> <p>Number of papers published in the first quarter (Q1)</p> <p>Number of scientific publications co-authored with foreign researchers</p>
Encouraging the publication of scientific papers in prestigious international publications indexed in the Web of Science Core Collection and Scopus databases				

Partial objective 3.3: Fostering mobility and lifelong learning and training.

Activity	Monitoring mechanisms	Responsible persons	Implementation deadline	Success indicators
Increase the number of mobility and training of students, members of the teaching staff and non-teaching staff	Comparison with the previous period	Vice-Dean for International Cooperation and head of the Science and International Cooperation, Protocol and Public Relations Office	Continuous	Number of outgoing mobility of students, teaching and non-teaching staff
Encourage academic cooperation with other scientific institutions with the aim of networking with the best domestic, European and world scientific institutions	Comparison with the previous situation, cooperation notifications	Vice-Dean for International Cooperation and head of the Science and International Cooperation, Protocol and Public Relations Office	Continuous	Number of incoming researcher mobilities Number of visiting researchers Number of lectures and trainings given by visiting researchers

ANNEX 1: Scientific topics of kinesiological and interdisciplinary research

P.1.1. Research in the field of kinesiology of sports

Research in kinesiology of sports is important for the development of sports and sports activities, measuring and developing the abilities and characteristics of athletes and sports results, and maintaining the health of athletes. This can significantly ensure the quality of work of all professional staff in sports and a more successful implementation of transformation processes in certain monostructural, polystructural, complex and conventional sports branches and in the physical conditioning of athletes. This research should provide scientific support to the work of coaches and other professional staff in sports. In order to maximize the impact on the sports system in Croatia, these studies should be conducted in cooperation with sports institutions (Croatian Olympic Committee, Croatian Paralympic Federation and other sports federations), and the results should be part of everyday practice on sports fields (sports clubs, sports coaches, etc.). Research is carried out in laboratories and in the field by scientifically productive employees in cooperation with doctoral students, as well as collaborative institutions for an interdisciplinary approach to research topics.

General objectives:

- Obtaining new scientific knowledge about the complex problems of sports and sports preparation.
- Integrating the results of scientific research and innovation into sports practice.
- Promotion of participation in sports and top sports results.
- Improving cooperation with domestic and foreign institutions in the field of sports.

P.1.1.a. EXPLORING THE CHARACTERISTICS OF SPORTS ACTIVITIES

Objective: Determining the structural, biomechanical, and functional characteristics of the performance of certain sports activities, model characteristics of superior performance and the connection of certain characteristics with performance in sports.

Research topics

Structural analysis of sports activities:

- analysis of technical and tactical elements and situational efficiency in certain sports branches
- determining the characteristics of the movement of athletes that will enable competitive efficiency and reduce the risk of injury.

Biomechanical analysis of sports activities:

- new devices and technical systems will measure the kinematic and kinetic characteristics of motion and enable the determination of the level of efficiency of the measured locomotion
- electro-muscular analysis will enable obtaining data on muscle activation during motor performance
- biomechanical research of elite sports performance.

Functional analysis of sports activity:

- determining the dominance of energy processes and physiological-biochemical reactions to training and competition exertion
- assessment of competitive and training performance using functional measurements, lactate measurements, video and GPS analysis.

Analysis of trends in the development of sports results:

- defining the legality of the development of results in certain sports and analyzing the dynamics of Olympic results, **world records**, the best **world** and other competitive results
- historical factors of sports development
- research in these fields but related to sports for people with disabilities (deaf persons, Special Olympics, etc.).

P.1.1.b. INVESTIGATIONS OF CHARACTERISTICS (ABILITIES, TRAITS AND MOTOR SKILLS) OF ATHLETES

Objective: Assessment of abilities, characteristics and motor skills of participants in sports through a battery of tests to assess basic anthropological characteristics, specific abilities and knowledge, standard indicators of situational efficiency and the level and dynamics of sports form and sports results.

Research topics

Analysis of basic anthropological characteristics of athletes:

- determining the impact of basic anthropological characteristics (health status, morphological characteristics, functional abilities, motor skills, cognitive abilities and personality traits) on sports achievements
- application of new technologies in defining the requirements that certain sports activities place in front of novice athletes and top athletes
- human motor development from birth to old age
- talent identification and athlete development.

Analysis of specific abilities and knowledge of athletes:

- determining the capabilities that are responsible for individual specific components of preparedness as well as the relationships between them
- determination of specific physical conditioning, technical and tactical abilities and knowledge. Research on psychological preparedness plays an important role.

Registration and analysis of competitive efficiency indicators:

- monitoring athletes during activities to determine competitive efficiency
- research on standard indicators of competitive efficiency and performance of technical and tactical elements
- research in these fields, but with special emphasis on sports for people with disabilities (deaf persons, Special Olympics, etc.).

P.1.1.c. INVESTIGATIONS OF TRANSFORMATIONAL PROCESSES IN SPORTS

Exploring the effects of exercise methods and teaching methods

Objective: To monitor and evaluate short-term and long-term changes in the abilities, characteristics and knowledge of athletes under the influence of growth, development and involvement in exercise and training programmes. Enable more successful modelling of programmes for the development and maintenance of physical fitness and more successful modelling of programmes for learning technical and tactical knowledge.

Research topics

Analysis of the effects of physical conditioning methods:

- study of the development of functional and motor skills and morphological characteristics
- evaluating the effects of different exercise programmes and methods on the ability, characteristics and knowledge of athletes
- evaluation of athletes' abilities, characteristics and knowledge in different environmental conditions of training and competition (terrain surface, temperature, humidity, altitude, etc.).

Analysis of the effects of technical and tactical preparation methods:

- the effects of different teaching methods with the application of different ways of giving initial information and feedback will be explored.

Exploring the effects of the sports preparation process

Objective: Evaluation of the planning and programming of training, competition and recovery through longitudinal and transversal studies of changes in athletes' abilities, characteristics and knowledge, sports performance in different cycles of sports preparation (preparatory, competitive and transitional period; annual, Olympic and multi-year training cycle).

Research topics:

- chronic adaptation of the athlete's body to the training process and/or environmental factors in the system of sports preparation
- modelling and evaluation of the process of sports preparation in small cycles, one-year or multi-year training cycle
- evaluating the effects of different training programmes or models of achieving sports conditioning on sports performance
- acute reactions of the athlete's body to training and competition exertion
- research into various procedures and regimens of nutrition and supplementation on the recovery and performance of athletes
- specificities of the above mentioned topics of adaptations in the sport of persons with disabilities.

P.1.2. Kinesitherapy research

Research in the field of kinesitherapy will seek to study the role of exercise in primary, secondary and tertiary prevention and in the treatment of numerous diseases and degenerative conditions of today, which can affect people of different ages. The scientific topics in the field of kinesitherapy, which the Faculty of Kinesiology in Zagreb intends to explore, cover the domains of diagnostic procedures in kinesitherapy, the specifics of planning and programming kinesitherapy procedures of different target orientation, during growth and development, in an adult and in the process of aging of people with different health status and level of physical activity.

P.1.1.a. INVESTIGATIONS OF DIAGNOSTIC PROCEDURES IN KINESITHERAPY

Objective: to obtain new scientific knowledge related to the method of diagnosing the condition of the organism of people of different ages, health status and with different levels of physical activity.

Research topics:

- basic epidemiological research on the specifics of sports injuries and the possible role of diagnostics in the early detection of an increased risk of injury to athletes and recreational athletes
- basic epidemiological research on the level of physical activity of people suffering from a large number of diseases of today, which affect the neuromuscular function of humans (e.g. diseases of the peripheral and central nervous system, some metabolic diseases, etc.)
- applied research with the aim of studying optimal diagnostic procedures for assessing motor and functional abilities in children, adults and the elderly, with different health status
- developmental research aimed at creating innovative diagnostic procedures for assessing neuromuscular function, for detailed analysis of physiological and pathological patterns of human movement.

P1.2.b. RESEARCH IN THE FIELD OF PLANNING AND PROGRAMMING OF KINESITHERAPY PROCEDURES

Objective: To obtain new scientific knowledge about the impact of kinesitherapy procedures of different target orientation on human health, in order to study the basic concepts of kinesitherapy procedure planning (time frames of kinesitherapy planning with regard to the expected dynamics of recovery of the body, planned dynamics therapy exertion progression, etc.) and to discover new knowledge about the subtractive mechanisms of acute and chronic adaptation of the human body to exercise in conditions of impaired health.

Research topics:

- study of kinesitherapy programmes in the system of primary, secondary, and tertiary prevention with the aim of increasing the amount of knowledge in the field of planning and programming of kinesitherapy procedures
- applied research related to the specificity of the chosen exercise concept, dosage, and exertion distribution in the treatment of various diseases (neural, cardiological, respiratory, endocrinological, psychological or multifactorial in nature)

- applied research on the acute and chronic effects of kinesitherapy on health in general and on the functionality of movement in everyday life, in people of different age and health status.
 - monitoring the duration of the achieved effects, through so-called "de-training studies" within which the subjects would be monitored even after the duration of kinesitherapy, with the aim of determining the dynamics of the decline in kinesitherapy achieved results.
 - the influence of extrinsic and intrinsic factors on the effect of the kinesitherapy process.
- study of areas of adapted physical activity with the aim of promoting the health of children and adults with disabilities
 - developmental research on the evaluation of innovative kinesitherapy procedures, with the aim of determining the optimal modalities of therapeutic exercise, with regard to the specificity of the exercise (different target orientations), the practitioners (age, health status, motor function, etc.), the conditions in which the therapy takes place (hospital, home care, etc.) and the technology used (computerization, virtual interfaces, etc.).

Given the close connection between the subject of kinesitherapy and biomedical sciences, it is also possible to conduct interdisciplinary research (see chapter p.1.3.), which will be carried out **with related** scientific and clinical institutions. In this sense, there is a possibility of setting new directions for the research of the movement and its connection with the state of health and quality of life of man, in the broadest sense of the term.

P.1.3. Research in the field of kinesiological anthropology

Research in this area focuses on the study of biological properties, physical characteristics and functional abilities associated with physical activity and sports performance, their variability with regard to gender, sport/discipline, rank of sports performance and dynamics of changes with regard to age; prevention of diseases in athletes and the general population, as well as the study of acute and chronic adaptations of the organism under various forms of physical exertion in terms of training or recreational facilities, nutrition, habitual physical activity and other intrinsic and extrinsic factors. Also, research is focused on the evaluation of the effects of physical exercise programmes on the physical and psychological status of individuals, athletes and recreational exercisers, as well as on the research of the effects of the application of specific intervention programmes on the improvement of sports achievements, the experience of quality of life and overall well-being. Scientific problems in this field are investigated within existing laboratories, but very often in the field and in cooperation with students with other scientific institutions.

-

General objectives:

- obtaining new scientific knowledge about the effects of physical activity on morphological functional and motor skills, disease prevention and complementary effects of activities on the course of acute and chronic diseases
- obtaining new scientific knowledge about the physiological mechanisms that enable adaptation to training and thus a better sports result
- obtaining new scientific knowledge about the psychological mechanisms that enable better adaptation to training and competition requirements, and thus a better sports result
- checking the existing and creating new theoretical models that explain the psychological background of sports and exercise and the variations that lead to different effectiveness in the field of sports and recreation
- gaining new scientific knowledge about the factors behind the process of motor learning and motor control
- application of results in the field of sports, recreation and health care
- promotion of sports and physical exercise for the purpose of improving health.

P.1.3.a. INVESTIGATIONS OF ADAPTATIONS OF PHYSIOLOGICAL SYSTEMS AND MORPHOLOGICAL CHARACTERISTICS OF THE ORGANISM TO PHYSICAL ACTIVITY

Objective: To obtain new scientific knowledge through mechanisms and possibilities of evaluation of changes in individual systems of the body, especially muscular, skeletal, cardiovascular and respiratory. Determining changes in the structure and composition of the body related to physical activity and lifestyle.

Research topics:

- adaptations of the cardiovascular system under physical activity
- adaptations of the muscular and skeletal system to physical activity
- adaptation of the respiratory system to physical activity
- body composition under the influence of physical activity, diet and various habits
- physical activity of growth and development
- physical activity and its impact on degenerative changes in the body
- adjustment of the thermoregulation system to physical activity.

P.1.3.b. RESEARCH IN BIOCHEMICAL AND FUNCTIONAL DIAGNOSTICS

Objective: To determine the applicability of biochemical indicators to the control of the effects of physical activity on the body and to determine the possibility of applying different diagnostic procedures in the control of the level of ability of athletes and the general population.

Research topics:

- biomarkers of oxidative stress on the control of the effects of physical activity on the body
- chronic disease risk biomarkers for controlling the effects of physical activity on the body
- biomarkers of the hormonal system to control the effects of physical activity on the body
- body exertion, inflammatory indicators and immune system response indicators
- characteristics of exertion tests to measure the level of functional abilities, oxygen uptake kinetics, aerobic and anaerobic capacities
- characteristics of exertion tests to measure abilities conditioned by adaptations in the musculoskeletal or nervous system.

P.1.3.e. RESEARCH IN THE FIELD OF PSYCHOLOGY AND SOCIOLOGY OF SPORT AND PHYSICAL EXERCISE

Objective: To obtain new scientific knowledge about the effects of various psychological and sociological factors that affect the characteristics of habitual physical activity of the general population and the sports result of promising and top athletes and the complex relationship between sports and society.

Research topics:

- adherence in physical exercise programmes
- adherence in sport
- motivational processes in physical exercise and sports
- leadership in sport and physical exercise
- contribution of sport and physical exercise to psychological well-being and quality of life
- psychological background of sports success in individual and team sports
- effects of psychological preparation on sports success
- sports in children and young people
- process of motor learning and teaching
- national identity and sport
- the role of sports in the leisure time of young people
- sports, fans and the (sub)cultures of young people.

P.1.4. Research in the field of kinesiological education

Scientific research topics in the field of kinesiological education are very extensive areas, such as: diagnostics, planning and programming procedures, monitoring and evaluation of the effects of work and education of physical education educators.

P.1.4.a. DIAGNOSTICS IN KINESIOLOGICAL EDUCATION.

Diagnostics in the area of kinesiological education encompasses the entire spectrum of research into the kinanthropological characteristics of the non-selected population. It also includes procedures for testing motor skills and achievements of the non-selected population.

Objective: Assessment and measurement of abilities, traits, motor skills and achievements of the non-selected population by tests to assess kinanthropological characteristics, specific abilities and knowledge and motor achievements of students.

Research topics:

- analysis of basic anthropological characteristics of the unselected population
- analysis of specific abilities and knowledge, and motor achievements of students
- diagnosing the state of preparedness of the non-selected population of students
- motor and functional development of students
- identification of talents and guidance in sports.

P.1.4.b. PROCEDURES FOR PLANNING AND PROGRAMMING IN KINESIOLOGY EDUCATION

The research direction within this area is focused on the study of procedures and teaching, i.e. the basic procedures of planning and programming in the area of kinesiological education, as well as the factors that influence it. At the same time, the subject of interest is what is learned, the many limiting factors that affect the teaching itself.

Objective: To study the basic determinants of planning and programming in the area of kinesiological education, the very content of learning and teaching, but also the many limiting factors that affect the education itself.

Research topics:

- scientific determinants of planning and programming
- scientific aspects of different curricula
- effects of the programme on different learning outcomes
- effects of an individualized form of work in education
- limiting factors in teaching.

P.1.4.c. MONITORING AND EVALUATION OF THE EFFECTS OF WORK IN KINESIOLOGY EDUCATION

The direction of research in this area refers to the teaching process. The subject of interest is the course and structure of teaching work, the environment in teaching, as well as the outcomes of work (motor knowledge and skills, attitudes, achievements, social responsibility, social capital, physical activity and fitness).

Objective: Monitoring and evaluating the performance of work in kinesiological education through longitudinal and transversal studies whose subject of interest is the course and structure of teaching, the teaching environment, but also the different outcomes of the teaching process.

Research topics:

- structure of the teaching work
- modelling and evaluation of teaching methods
- evaluation of the effects of teaching (learning outcomes)
- research into different intervention procedures on students' academic performance.

P.1.4.d. EDUCATION OF MEMBERS OF THE TEACHING STAFF

This direction of research in the field of kinesiological education is focused on the education and training of physical education teaching staff as well as on their lifelong development.

Objective: To research the historical aspects of teaching staff education in the Republic of Croatia and the world, to conduct a series of studies that explore the effectiveness of different methods of work and learning outcomes in the education of members of the teaching staff, their lifelong development, but also the attitudes of members of the teaching staff.

Research topics:

- historical aspects of training members of the teaching staff in the country and around the world
- modelling and evaluation of methods of work in education of members of the teaching staff
- evaluation of the effects of teaching work in education of members of the teaching staff (learning outcomes)
- research of attitudes of members of the teaching staff.

Considering the connection between the subject of kinesiological education and other sciences, it is also possible to conduct interdisciplinary research, which will be carried out with collaborative scientific and research institutions. In this regard, there is a possibility of setting new research directions.

P.1.5. Research in the field of sports economics and management

This area of research is focused on the analysis of various indicators of sport development, in order to indicate its economic importance. One of the main challenges facing various sports organizations is the increasing need to generate revenue from so-called non-budgetary (market) sources of financing. This necessarily implies an understanding of the functioning of the market and all its laws, and this research seeks to gain insights that will help sports organizations achieve better business and thus sports results. Research in the field of the role of sports in the development of tourism occupies a particularly important place, given the importance of tourism for the economy of the Republic of Croatia.

Objective: to gain new knowledge about the economic importance of sports, the management of sports organizations and the importance of sports for the development of tourism.

Research topics:

- the place and role of sport in the country's economic system
- sports organization system
- sports financing system
- household spending on sports
- analysis of different sports organizations depending on legal status, financial treatment, and management
- various microeconomic analyses, such as cost analysis, revenue, performance indicators, etc.
- development of management in sports
- specifics of management (and managers) in sports
- application of strategic management activities in the field of sports
- organization and economic effects of (large) sports events
- entrepreneurial programmes in sports
- marketing management in sports
- development of sports tourism
- economic effects of the development of sports in tourism.

P.1.6. Research in the field of kinesiological recreation

Research in the field of kinesiological recreation will focus on three basic areas: professional work, leisure and tourism. Research related to professional work includes determining the impact of recreational activities on employee productivity and quality of life, reducing and eliminating acute and chronic fatigue in employees of different professions, and stress management. Leisure-related research is based on studying the effects of recreational programmes on health and quality of life and evaluating the effects of various methods of recreational exercise programmes on physical abilities and the health of the general population, which also includes the prevention of various diseases conditioned by modern lifestyles. Croatia has the preconditions for year-round business, which is based on active holidays of tourists with high-quality and appropriate programmes of activities. Research in tourism is focused on determining the effects of recreational programmes on the extension of the tourist season, satisfaction with staying in a tourist destination, as well as on direct and indirect economic effects. Research procedures in kinesiological recreation are based on determining the preconditions for the introduction of kinesiological recreation programmes in different conditions and for different needs.

P.1.6.1. RESEARCH IN THE FIELD OF PROFESSIONAL WORK

Objective: to obtain new scientific knowledge related to the effects of recreational programmes in the field of professional work of people of different ages, health status, and with different types of jobs.

Research topics:

- study of the impact of sports and recreation programmes on work efficiency, job satisfaction, and employee work enthusiasm
- applied research on the impact of recreational exercise before, during, and after working hours on the health of employees with different types of occupational exertion
- applied research on the impact of recreational exercise on acute and chronic fatigue
- studying the impact of recreational exercise on stress management as a result of the specificity of the work environment
- study of the impact of corrective recreational programmes on the prevention of acute and chronic health problems arising as a result of work exertion
- evaluation of interventions to promote recreational physical activity within the workplace
- developmental research on the introduction of modern technologies in the work process with the aim of increasing physical activity and work efficiency of employees.

P.1.6.2. RESEARCH IN THE AREA OF LEISURE TIME

Objective: to gain new scientific knowledge about the effects of recreational programmes on health and quality of life

Research topics:

- study of the impact of sports and recreation programmes in terms of health, psychological, social, environmental and economic benefits
- establishing criteria for the application of different types of kinesiology programmes for preventive purposes

- establishing criteria for diagnostic procedures for people of different ages, health status and habits
- study of the determinants of recreational physical activity in different populations
- evaluation of interventions to promote physical activity in the community
- studying transformational sports and recreational programmes with the purpose of gaining new insights into the effective planning and programming of recreational exercise.

P.1.6.3. RESEARCH IN THE AREA OF TOURISM

Objective: to gain new scientific knowledge about the effects of recreational programmes on tourists and tourism

Research topics:

- evaluation of sports and recreational programmes and content in tourism
- studying the impact of recreational programmes on the satisfaction of tourists with a tourist destination
- study of the tourism offer and demand with the aim of enriching the tourist offer with sports and recreation facilities
- determining the direct and indirect economic effects of recreational programmes in a tourist destination.

P.1.7. Research on the impact of physical activity on the prevention and course of chronic diseases

Objective: To improve the existing knowledge about the incidence and prevalence of chronic diseases with regard to physical activity and the mechanisms of the effects of physical activity on the prevention of chronic diseases **as well as the therapy itself** with new scientific knowledge.

Research topics:

- epidemiological and research indicators of the effects of physical activity on the prevention of chronic, cardiovascular and metabolic diseases
- mechanisms of the effects of physical activity on individual systems of the body responsible for the occurrence of chronic diseases
- epidemiological and research indicators of the effects of physical activity on the prevention of chronic, cardiovascular and metabolic diseases
- epidemiological research on indicators of the effects of physical activity on the prevention of diseases of the locomotor system, especially degenerative diseases
- research into the effects of physical activity, alone or with the effects of drug therapy on slowing the course of autoimmune diseases (especially the locomotor system) in children and adolescents
- research on the effects of physical activity on the occurrence of complications, modifications of therapy as well as the prognosis of chronic diseases
- effects of health promotion actions on the habitual physical activity of the population
- the impact of various short-term physical activity programmes on the rehabilitation of patients with malignancies
- changes and adaptations of the endocrine system under the influence of physical activity and the impact of this on the prevention of metabolic diseases.

P.1.8. Research in the field of physical activity and life habits and external factors such as the influence of environmental factors on adaptations during exertion

Objective: to determine the effects of various internal and external lifestyle factors on the volume of habitual physical activity and the overall state of health and level of ability of the body.

Research topics:

- methods of determining habitual physical activity
- research into the effects of nutrition
- research in the field of application of permitted and prohibited supplementary agents to improve health or sports performance
- the impact of training under hypoxia on the body
- the impact of exposure to hypoxia on the control and regulation of metabolic diseases
- impact of low partial oxygen pressure application on sport performance
- the impact of training in heat or cold on the organism
- the impact of polluted air on the body's adaptations under physical exercise
- research in the field of extreme sports while studying the limits of human capabilities
- changes in time zones, day and night ratios and adjustments of the training process
- the impact of the characteristics of sports equipment on the occurrence of injuries.



University of Zagreb, Faculty of
Kinesiology

SCIENCE DEVELOPMENT STRATEGY

■

FROM 2023 TO 2028