COURSE DATA

DATA SUBJECT

Code: 42392
Name: Applied research I
Cycle: Master's Degree
ECTS Credits: 12
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2178 - Master's Degree in Research and Intervention in Physical Activity and Sport	Facultat de Ciències de l'Activitat Física i Esports	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2178 - Master's Degree in Research and Intervention in Physical Activity and Sport	Investigación Aplicada I	COMPULSORY

COORDINATION

BLASCO LAFARGA MARIA CRISTINA

SUMMARY

This module provides knowledge about applied research in the context of sport performance and physical exercise for health, including the so called therapeutic exercise. It seeks to delve into the methods of research in these areas, focusing on methodologies and processes based on the subjects, objectives, and overall, the context. Different research methods are considered, and the most relevant variables are explored in depth based on cases selected as significant examples, both in performance and health. Particularities derived from life stages are also considered, understanding that their borders imply specific considerations (before reaching adulthood and beyond it, in the older adults). The sessions are thus focused in improving the students' skills and critical thinking, and in fostering the pursuit of quality based on an ecological and holistic understanding of research in the physical activity, exercise and sport sciences.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

It is not necessary previous knowledge

COMPETENCES / LEARNING OUTCOMES

-

Conocer los principales modelos teóricos acerca de entrenamiento que integran los distintos ámbitos implicados en el rendimiento y la salud.

Conocer y aplicar diseños de investigación en un entorno de rendimiento y de mejora de la salud.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

Students should demonstrate self-directed learning skills for continued academic growth.

To adapt the design and methodology to the subject matter and research characteristics, as well as to interpret the results, discuss and develop clear and consistent conclusions.

To apply knowledge and be able to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related Physical Activity and Sport Sciences.

To apply research and design work plans in real environments for performance and health.

To be able to integrate knowledge and make complex judgments based on information that remains incomplete or limited, but include social and ethical responsibility reflections linked to the application of their knowledge and judgments, from a gender perspective.

To conceive, design and develop applied research in one of the social contexts of physical activity and sport.

To identify and analyze the main and current research lines on exercise as a tool for improving health and performance.

To identify determinants in sports talent identification.

To identify new problems related to physical activity and sport that can be studied through applied research.

To know the functioning and usage of technological means to quantify variables related to performance and health.

To understand and analyze the research being done in the context of exercise and health, physical education and sport, and sports performance and management of physical activity and sport.

DESCRIPTION OF CONTENTS

UT 1. Training measurement, control and planning systems

TOPIC 1: Introduction to information measurement and processing systems.

1.1 Terminology on assessment and measurement techniques. What and why to measure.
1.2 Measurements and methods of measurement in sports sciences.
1.3 Basic considerations about equipment and technology
1.4 Conditioning and reduction of data in digital signals.
1.5 Particularities in the application of moderation and processing of d<ata
1.5.1 Physiological perspective on measurement and data collection
1.5.2 Biomechanical perspective on measurement and data collection

TOPIC 2: Physical Exercise and Sports training monitoring, planning and modelling.

2.1. Bioenergetics approach to Monitoring and Planning.
2.1.1 Aims and metrics in the cardiorespiratory and metabolic / autonomic domain.
2.1.2 Laboratory testing vs. field testing.
2.2 Neuromuscular approach to Monitoring and Planning.
2.2.1 Assessment and outcomes related to force and force-related capacities
2.2.2 Assessment and outcomes in mobility improvement.
2.3 Biomechanics approach to Monitoring and Planning.
2.3.1 Tools and metrics on the temporal analysis.
2.3.2 Tools and metrics on the Kinetic and Kinematic analysis.
2.4 Notational Analysis
2.5 Anthropometrics and body composition assessment.

UT 2: Research into optimization of physical and sports performance.

TOPIC 3: Applied research in consolidated and High-Performance sports (ARD)

3.1. Research on sports cyclic disciplines:
3.1.1 Types and limitations.
3.1.2 Identification of variables that affect the performance of physical modes.
3.1.3 Planning, modelling and control of training in physical modes.
3.2 Research on team esports and other sports non-cyclic (acyclic) disciplines
3.2.1 Types and limitations.
3.2.2 Identification of variables that affect the performance of episodic modes.
3.2.2 Planning, modelling and control of training in episodic modes.

TOPIC 4: Design and application of support work for coaches

4.1 The coach's technical analysis model.
4.2 The cognitive-reflexive model of trainer analysis.
4.3 Leadership and group dynamics.
4.4 Approach to the competition and control of emotions and behaviour in the competition.

UT 3: Research in physical activity and health

TOPIC 5: Research in physical activity and health, and millora's proposals in different areas: clinical, preventive and wellness.

5.1. Holistic approach to physical activity and exercise in the field of health: Introduction to factors that determine the quality of life.
5.2 Research on program design, prevention and health promotion in sedentary populations
5.3 Research on therapeutic exercise programs in non-communicable chronic diseases
5.4 Research on exercise programs in the field of sports rehabilitation

UT 4: Research in physical activity and esport at the distal ends of the life cycle: infants, adolescents and adults majors

TOPIC 6: Particularities of physical exercise and training in the distal stages of the life cycle.

6.1. Research in relation to Talent and improved performance in infants and adolescents.
6.1.1 Research on training, methodology and program design in infants and adolescents
6.1.2 Research on competition in sports initiation.
6.1.3 Sports talent: identification and development.
6.2. Therapeutic exercise and health improvement in childs and teenagers
6.2.1 Therapeutic exercise in Childs and teenagers
6.2.2 Interventions for improving health in Childs and adolescents
6.3. Research on physical conditioning and health improvements in older adults
6.3.1 Particularities of exercise in older adults
6.3.2 Research on interventions for improving health in older adults
6.3.3 Research on therapeutic exercise in sedentary population and older adults
6.4 Research on Master Athletes
6.4.1 Anthropometric and psycho-physiological parameters in Master Athletes.
6.4.2 Training and testing in Master Athletes.
6.4.3 Competition and performance in Master Athletes.

TOPIC 7: Researching designs related to the contents in the module.

7.1 Assessment of cardiorespiratory fitness, determination of limits and autonomous responses
7.2 Assessment and training of the respiratory muscles
7.3 Analysis of impacts during physical and sports activities.
7.4 Analysis of relevant biomechanical parameters in the human body during physical activity.
7.5 Cinematic and kinetic analysis in swimming (intracycle velocity, acceleration, and power).

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	50,00
Laboratory	10,00
Computer classroom practice	12,00
Classroom practices	6,00
Total hours	**78,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	60,00
Individual or group project	120,00
Independent study and work	40,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**220,00**

TEACHING METHODOLOGY

Teaching methodologies and students' tasks will depend on the type of activity developed:

- Expert presentations by teachers (lectures).

- Discussion in small and large groups of students with and without teacher intervention.

- Supervised work individually or in small groups, to perform searches in databases, portals and other sources of information.

- Study (oneself and guided).

- Presentations.

- Mentorship meetings.

EVALUATION

The following issues will be assessed:

1) Attendance and participation in classes (50%), attendance at the seminar classes being additionally mandatory for the preparation of the final work.

2) Preparation and presentation of a final individual work of the module (50%), following the instructions

given by the module coordinator in the corresponding seminar.

Plagiarism or the improper use of artificial intelligence tools may be sanctioned in accordance with article 15 of the evaluation and qualification regulations of the University of Valencia. The use of artificial intelligence tools is strictly limited to form review of works and activities submitted for the course. This is expressly prohibited for generating any type of content, unless their use for such purpose is explicitly acknowledged.

REFERENCES

- Brizuela, G.; Polo, M.; Llana, S. Pérez, P. (2009) Case study: Effect of handrim diameter on performance in a Paralympic wheelchair athlete. Adapted Physical Activity Quarterly. 26, 4: 352-363.
- Brizuela, G.; Polo, M.; Martos, J.; Sanchis, E. (2006) Influencia del diámetro del aro de propulsión sobre la frecuencia cardíaca y la lactacidemia en un atleta en silla de ruedas de elite mundial. Motricidad. European Journal of Human Movement. 16: 123-132.
- Brizuela, G.; Llana, S.; Ferrandis, R.; García, A. (1997). The influence of basketball shoes with increased ankle support on shock attenuation and performance in running and jumping. Journal of Sports Sciences. 15, 5: 505-515. http://ejournals.ebsco.com/article.asp?contributionid=325126
- Field A. Discovering statistics using SPSS. London: Sage; 2005
- Heinemann K. Introducción a la metodología de la investigación empírica en las ciencias del deporte. Barcelona: Paidotribo; 2003.
- Knudson D. Fundamentals of Biomechanics. New York: Springer Science, second edition; 2007.
- Llana, S.; Brizuela, G.; García, A.; Durá, J. (2002). A study of the discomfort associated with tennis shoes. Revista: Journal of Sports Sciences. 20, 9: 671-679. http://ejscontent.ebsco.com/ContentServer.aspx?target=http://www.informaworld.com/smpp/ftinterface?content=a713776656&format=pdf
- Petrie A, Sabin C. Medical statistic at a glance. Oxford: Blackwell Science; 2000
- García-Manso J. (2003). El talento deportivo: formación de élites deportivas. Gymnos, Madrid.
- Guzman JF, Esteve H, Pablos C, Pablos A, Blasco C, Villegas JA (2011) DHA- rich fish oil

improves complex reaction time in female elite soccer players. J Sport Sci Med 10 (2):301-305

- Izquierdo, M. (2008). Biomecánica y Bases Neuromusculares de la Actividad Física y el Deporte. Ed. Panamericana.

- Naclerio, F. (2011). Entrenamiento deportivo: fundamentos y aplicaciones en diferentes deportes. Médica Panamericana

- Pérez, P., Llana, S. (2013). Biomecánica Básica: Aplicada a la Actividad Física y el Deporte. Barcelona, Paidotribo.

- Seifert, L., Chollet, D. & Mújica, I. (2011). World book of swimming: From science to performance. New York: Nova Science Publishers

- Tella, V., Toca-Herrera, J. L., Gallach, J. E., Benavent, J., González, L. M., & Arellano, R. (2008). Effect of fatigue on the intra-cycle acceleration in front crawl swimming: A time-frequency analysis. Journal of Biomechanics, 41(1), 86-92.