

**COURSE DATA****Data Subject**

Code	33028
Name	Research methodology in health sciences
Cycle	Grade
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
1202 - Degree in Physiotherapy	Faculty of Physiotherapy	3	First term

Subject-matter

Degree	Subject-matter	Character
1202 - Degree in Physiotherapy	15 - Introduction to clinical research and documentation	Obligatory

Coordination

Name	Department
CALATAYUD VILLALBA, JOAQUIN	191 - Physiotherapy
CASAÑA GRANELL, JOSÉ	191 - Physiotherapy

SUMMARY

The course Methodology of Research in Health Sciences aims to introduce students to the principles of scientific research. Also it aims to introduce students to the main tools used to develop different types of research design and implementing critical assesment and use of research on the context of evidence-based physiotherapy.

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 requirements.

OUTCOMES

1202 - Degree in Physiotherapy

- Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.
- Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.
- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.
- Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.
- Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.
- Establish evidence-based physiotherapy protocols and promote professional activities that facilitate physiotherapy research.
- Respect fundamental rights and equality between men and women.
- Work in teams.
- Have the ability to organise and plan work.
- Acquire knowledge related to the information and communication technologies.
- Know the principles of scientific research and the different types of studies and research designs.
- Know how to incorporate scientific research and evidence-based practice as a professional culture.
- Know how to carry out a bibliographical search.
- Know how to critically read scientific papers.
- Know the theories about problem solving and critical reasoning.

LEARNING OUTCOMES



At the end of this course students should be able to:

1. Know the principles of Scientific research as well as different types of research designs in the context of evidence-based practice.
2. Identify main sources of knowledge for health science. Perform literature research and critical assessment and use of research .
3. Specify research questions and develop research protocol including dissemination of scientific results
4. Work in groups using a participative and cooperative methodology.

DESCRIPTION OF CONTENTS

1. General Principles of the investigation in Health Sciences

- 1.1. Foundations of scientific research.
- 1.2. Research architecture.
- 1.3. Methodological Bases of research.

2. Physical therapy based on the evidence

- 2.1. Introduction and Concept.
- 2.2. Steps and tools necessary.
- 2.3. Barriers to the practice of EBP.

3. Epidemiological concepts

- 3.1. General Issues.
- 3.2. Frequency measurements.
- 3.3. Association measurements.
- 3.4. Bias and confounders variables.

4. Study design

- 4.1. Introduction to research designs.
- 4.2. Types and Classification of the most used designs in research.
- 4.3. Advantages and limitations of the studies.



5. Research protocol

- 5.1. Introduction.
- 5.2. Conceptual Frame.
- 5.3. Objective of the study and hypothesis.
- 5.4. Design.
- 5.5. Study population.
- 5.6. Sampling. Advantages. Planning of sampling. Sampling techniques.
- 5.7. Variables. Selection of variables. Definition of variables.
- 5.8. Measuring Instruments.
- 5.9. Data Collection.
- 5.10. Ethics in scientific publication.
- 5.11. Funding.

6. Scientific documentation in Health Sciences.

- 6.1. General issues.
- 6.2. Search process.
- 6.3. Bibliometric indicators.

7. Assessment and use of research

- 7.1. Introduction to critical reading.
- 7.2. External and internal validity.
- 7.3. Value scores.

8. Review studies

- 8.1. Introduction and types.
- 8.2. Bibliographic review.
- 8.3. Systematic review.
- 8.4. Meta-analysis.

9. Dissemination of research results

- 9.1. Introduction and importance of scientific dissemination.
- 9.2. Forms and types of disclosure.
- 9.3. Scientific poster.
- 9.4. Oral Communication.
- 9.5. Scientific article.

**11. Practical program**

1. Organization and planning of research work.
2. Implementation of bibliographic searches.
3. Management of bibliographical references.
4. Methodology and design of experimental studies.
5. Ethics and resources committee for conducting studies.
6. Critical reading of scientific articles.
7. Review Studies.
8. Scientific dissemination.
9. Writing of scientific articles.

WORKLOAD

ACTIVITY	Hours	% To be attended
Computer classroom practice	40,00	100
Theory classes	20,00	100
Development of group work	15,00	0
Development of individual work	15,00	0
Study and independent work	15,00	0
Preparing lectures	45,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

During theoretical instruction, a learning-teaching methodology based on participative lectures will be used. Likewise, several activities will be proposed for the learning like case studies or other cooperative learning strategies. Students will learn about the issues in order to be able to clarify doubts, concepts and to encourage their participation. Audio-visual support will be used for learning process.

The practical teaching will take place in computer classroom and in the spaces with research laboratories. Students will apply the theoretical knowledge in practice with the computer systems and research materials. During practical teaching, simulation exercises will be used including students' proposal expositions. Theoretical contents will be reinforced through dynamics and simulation activities, audio-visual support, case studies and small group works..

The teaching program might be modified during the development of the subject if the professor considers it appropriate, in order to guarantee the teaching quality and the learning process.



EVALUATION

Theoretical program (40% of the final mark)

Written test. Review type test of 40 questions. 1 valid option.

Mark = $[\text{hits} - (\text{errors} / \text{n}^\circ \text{ options} - 1)] * (\text{maximal mark} / \text{n}^\circ \text{ questions})$

Practical program (60% of the final mark)

1. Group work (50%): Written manuscript and oral presentation
2. Practical teaching attendance (10%). Attendance is mandatory at all practices and only an absence of 20% of the total can be duly JUSTIFIED.

In all the written tests will be penalized the incorrectness spell check.

The total rating of the subject will be the sum of the highest grade obtained in the theoretical block and the maximum grade obtained in the block practical. Each of the tests exposed will be valued on 10, and later it get the percentage of each one of them. In order to pass the practical teaching is mandatory to pass both group work and attendance. In case of justified non-attending, a practical test could be done.

The final rating for the subject is done as long as the student has obtained at least 5 of 10 on each of the blocks: theoretical and practical. Plagiarism of any content (theoretical or practical) will mean the suspension of the subject.

REFERENCES

Basic

- Argimon J.M., Jiménez J. Métodos de investigación clínica y epidemiológica. 3ª ed. Barcelona 2004. Elsevier España, S.L.
- Evidence-Based Medicine Working Group. Evidence-based medicine. A new approach to teaching the practice of medicine. JAMA. 1992;268:2420-2425.
- Fetters L, Tilson J. Evidence Based Physical Therapy. F. A. Davis Company: Philadelphia; 2012.
- Greenhalgh T. Is my practice evidence-based? BMJ: British Medical Journal 1996;313(7063):957
- Greenhalgh, T. How to Read a Paper - the Basics of Evidence-based medicine. 2014. John Wiley & Sons Inc; Edición: 5th Revised edition.
- Hernández Aguado, I.; Gil Delgado, M.; Bolúmar F. Manual de Epidemiología y Salud Pública. Panamericana. Madrid, 2005.
- Jiménez J., Argimon J.M., Martín A., Vilardell M., Publicación Científica
- Biomédica. Como escribir y publicar un artículo de investigación. Barcelona 2010 Elsevier España, S.L



- Polit D, Hungler, B. Investigación científica en Ciencias de la Salud. 6ª ed. México; Mcgraw-Hill Interamericana, 2000.
- Robert H, Jamtvedt Gro, Hagen BK, Mead J. Practical Evidence-Based
- Physiotherapy. 2011. 2nd Edition. Churchill Livingstone.
- Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and it isnt. BJM. 1996;312:71-72

Additional

- Base de datos PEDro: <https://pedro.org.au/spanish/>
- Equator Network: <https://www.equator-network.org/reportingguidelines/tidier/>
- Herramienta choosing wisely: <https://www.choosingwisely.org.au/recommendations?q=physioterapy&organisation=351&medicineBranch=&medicalTest=&medicineTreatment=&conditionSymptom=>
- Indicadores bibliométricos de revistas JCR: <https://www.isciii.es/QueHacemos/Servicios/Biblioteca/Paginas/JCR.aspx>
- PUBMED: <https://pubmed.ncbi.nlm.nih.gov/>
- The Cochrane library: <http://www.cochranelibrary.com>
- Recursos científicos FECYT (ej: WOS y SCOPUS): <https://www.rekursoscientificos.fecyt.es/>