Universidad Zaragoza

**Academic Year/course: 2022/23**

# 60857 - Body composition and health

## Syllabus Information

**Academic Year:** 2022/23
**Subject:** 60857 - Body composition and health
**Faculty / School:** 229 - Facultad de Ciencias de la Salud y del Deporte
**Degree:** 549 - Master's in Evaluation and Physical Training for Health
**ECTS:** 6.0
**Year:** 1
**Semester:** First semester
**Subject Type:** Compulsory
**Module:**

## 1. General information

### 1.1. Aims of the course

The subject and its expected results respond to the following approaches and objectives:

This course is intended for the student to have a global vision of physical activity as a means of maintaining a healthy body composition or improving body composition in undesirable or pathological situations to improve health. Specifying a little more:

- Know its history, how it has evolved, and what is the most current in this field.
- Study the special characteristics of some population groups whose evaluation, as well as the prescription of exercise for their health, have peculiarities that must be known and taken into account.
- Know how to carry out previous evaluations that inform us of the starting levels and that motivate the planning and prescription of exercise, whose results will have to be assessed.

These approaches and objectives align with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/) so that the acquisition of the subject's learning outcomes provides training and competence to contribute to some extent to their achievement. Especially in relation to the following goals:

A) As a priority:
3- Good health and well-being.

Meta 3.4 By 2030, reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.

4- Quality education.

4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.

4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture?s contribution to sustainable development.

B) In a cross-cutting manner:

5- Gender equality.

12- Responsible consumption and production.

13- Climate action.

### 1.2. Context and importance of this course in the degree

Estimation and analysis of body composition is a cornerstone of nutritional status and fitness analysis for health professionals, clinical researchers, epidemiologists, trainers, physical trainers or nutritionists. The effect that physical exercise and physical activity have on the body and specifically on the different compartments of body composition (fat tissue, muscle tissue and bone tissue) has been a very interesting and fruitful field of study for sport and physical activity

sciences. The body of knowledge we have in this field today allows us to affirm that exercise, developed under adequate supervision (planning, design, prescription...), is an unbeatable determinant of adequate and healthy body composition and is of great practical interest in the multidisciplinary area of sport and health sciences (Lukaski 2019).

From an epidemiological point of view, pathologies associated with body composition, mainly obesity, osteoporosis and sarcopenia, are a huge public health problem, with a very high cost in terms of health, socioeconomic and personal resources. Physical activity and exercise seem to play a fundamental role in the prevention and treatment of these pathologies.

On the other hand, it is not only the role of sports professionals that is fundamental. Other agents involved in the health of the population and individuals, such as doctors, nurses, physiotherapists, nutritionists and psychologists, could benefit from this knowledge for greater and better professional development at an individual level and in multidisciplinary teams. In fact, multidisciplinary work in this field is more than desirable, it is practically mandatory, and a perfect interweaving of these disciplines will result in an active and healthy population.

*Henry C. Lukaski. Body composition. Health and performance in exercise and sport. 2019. Taylor and Francis group.*

### 1.3. Recommendations to take this course

LEGAL: they do not exist.

ESSENTIALS: Basic knowledge of basic anatomy and physiology as well as notions of training planning and human nutrition are essential. To understand the procedures and results that will be discussed throughout the course, it is essential to have basic knowledge of descriptive statistics.

ADVICE: You can easily follow the subject if you have knowledge of Physiology, Exercise Physiology, Nutrition, and Physical Activity, and Health. It is advisable to have knowledge of computer science and bibliographic search, as well as a basic knowledge of English as you must comment on scientific texts.

## 2. Learning goals

### 2.1. Competences

In this subject, as in the rest of the Master's subjects, all the general competencies (instrumental, personal and interpersonal and systemic relations) that appear in the Master's Report will be attended.

Specific ones:

These competencies are textual to the file of the subject of the Master's report:

1. To control the different methodological alternatives that can be applied within the framework of physical activity oriented towards health.
2. To use different research techniques and apply them appropriately to the field of knowledge of the assessment and prescription of physical exercise for health in different population groups.
3. To identify and assess the health problems that affect different population groups, and in which physical exercise can have a positive impact on their treatment and subsequent improvement.
4. To extract and properly analyze the information from scientific texts within the framework of the Physical Activity Sciences, assessing their possible link to the field of Health.
5. To evaluate the changes that occur as a result of a physical activity program oriented to health.
6. To perform optimized bibliographic searches in the field of health-oriented physical activity, strategically selecting the most relevant information for the purpose of the research.
7. To analyze the psycho-physiological variables associated with health-oriented physical activity, using the most appropriate scientific methodology.
8. To use advanced methodologies in the analysis of energy expenditure and body composition from experimental designs.
9. To identify and interpret the most appropriate methodology for the assessment of body composition and its influence on the health of different population groups.
10. To identify and interpret in scientific texts the most appropriate rules of action for the design of health-oriented physical activity programs in people with hypertension, metabolic or osteoarticular problems.
11. To find and interpret conveniently in the scientific literature the most important elements for the prescription of physical activity programs aimed at health in children, youth, adults, elderly, and / or people with special needs.

### 2.2. Learning goals

The student knows the methods of evaluation and estimation of body composition and the influence of biological and environmental factors with special attention to specific population groups.

Manages equipment and methods of assessment and estimation of body composition.

And has the capacity to analyze and interpret the body composition and the effects of physical activity in the general population and in different specific population groups.

### 2.3. Importance of learning goals

They will allow the student to know the health benefits and in particular for a healthy body composition of physical activity and the damages of their absence. In addition, they will provide tools for the performance of their work as a professional in the field of Physical Activity and Sports Sciences in their facet most related to health and quality of life.

## 3. Assessment (1st and 2nd call)

### 3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

The students must demonstrate that they have achieved the expected learning results using a continuous evaluation consisting of the presentation of 2 theoretical-practical cases and the presentation and presentation of a work or, where appropriate, a global evaluation test consisting of a written test.

**Continuous assessment:**

Passing continuous assessment requires three requirements:

1. *Follow-up and revision activities (70% of the proposals):*

Throughout the course, different theoretical-practical or revision activities will be proposed, mainly through the Moodle platform. All of them will be assessed from 0 to 10 points and the average of all those carried out will be computed contributing 20% to the final grade of the continuous assessment.

*2. Complete and pass 2 theoretical-practical cases:*

The resolution of 2 practical cases designed for this purpose through the ADD of the subject will be presented individually, in which they will have to use the knowledge that will be acquired during the development of the subject. For a better personal organization of each student, they should know that these cases to be carried out are located temporarily in the final third of the semester.

Each case is scored from 0 to 10 and will contribute 25% to the final mark.

*3. The presentation and exhibition of work:*

Each student will have to carry out the review and joint discussion of a minimum of 3 scientific articles related to body composition and that focus on the subject or study population chosen for the student's final master project. The work will be explained in detail in class and specific instructions will be put in the ADD of the subject.

The exposition before the professor of this work will be compulsory to pass the subject. The work and the exhibition will be scored jointly from 0 to 10 and will contribute 30% to the final mark.

To pass the subject through continuous assessment requires attendance of at least 70% of the sessions, pass at least 5 each of the cases and work. The final grade will be the weight of the three tests according to the formula: **final grade** = [(mean mark for the follow-up and revision activities x 0,20)+(mark case 1 x 0.25) + (mark case 2 x 0.25) + (mark work and exposure x 0.30)].

**Global evaluation:**

Global exam.

The evaluation of the degree of acquisition and understanding of the conceptual and practical contents will be carried out using a written exam. It will consist of a double test:

1) based on multiple-choice questions, in which 4 possible answers will be provided, and the students must choose the one they consider correct. Each failure will discount 1/3 of what each success adds (50% of the exam grade).

2) which could include short questions, problem or case resolution, graphic interpretation, protocol design or anything related to the content worked on in the practices (50% of the exam grade).

The final grade will be obtained as a summation of the grade of parts 1 and 2, giving a grade from 1 to 10. The objective test will contribute 100% to the final grade in the overall evaluation.

Additional clarification:

The continuous evaluation is carried out electronically except for the presentation, which will be in person. However, both the presentation and the global evaluation could also be done electronically or online through the platforms provided by the university, if the situation requires it.

**Evaluation for the second call of each academic year.**

In accordance with article 10 of title II of the Evaluation Regulations mentioned above, the second evaluation will be carried out using a global test carried out in the period established for this purpose by the Governing Council in the academic calendar.

It will consist of taking a written test under conditions and in a similar way to those described in section 3.1.

**NOTE:** Fraud or total or partial plagiarism in any of the assessment tests will result in failure of the subject with the minimum mark, in addition to the disciplinary sanctions that the guarantee committee adopts for these cases. For more detailed information on plagiarism and its consequences, please consult: https://biblioteca.unizar.es/propiedad-intelectual/propiedad-intelectual-plagio#Que

# 4. Methodology, learning tasks, syllabus and resources

## 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It is based on an initial acquisition of theoretical knowledge and its application on practical tasks. It is intended that students are able to apply in practice those theoretical and practical concepts that they have acquired during the course.

A wide range of teaching and learning tasks are implemented, such as theory sessions, practice sessions, practical problems, case studies, etc. in order to bring students to situations that they would confront in a field job of physical activity and health.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials.

## 4.2. Learning tasks

The course includes the following learning tasks:

- **Theory sessions** (18 hours). Theoretical basic knowledge of the course, which will focus on the topics covered in the syllabus.
- **Laboratory practice sessions** (16 hours). Sessions will take place in different school facilities, biomedical laboratory, gym, pavilion, outside groups, reduced X students (depending on the group). They are interspersed with the theory sessions. In practice sessions, students will carry out the following activities:
    - * assessment of physical condition and functional design of exercises and specific training plans for improving a quality related to physical health necessary in a specific population.
- **Field practice sessions** (26 TBD hours). Sessions will take place in different faculty facilities; biomedical laboratory, gym, pavilion, outdoor. They interspersed with the theory sessions. In practice sessions, students will carry out the following activities:
    - * assessment of the physical condition and functional design exercises and specific training plans for improving a quality related to physical health necessary in a specific population.
    - Problem solving and case studies.

## 4.3. Syllabus

The course will address the following topics:

**Theoretical:**

1. Science of body composition. History and state of the art.
2. Methods of measuring body composition.
3. Models and components of body composition.
4. Biological and environmental influences on body composition.
5. Priority pathologies related to body composition
   - obesity and overweight
   - osteoporosis
   - sarcopenia
6. Body composition in specific population groups.

**Practical:**

1. Technical handling of field and laboratory equipment.
2. Supervised assessment of body composition using standard methods.
3. Estimation of body composition using field methods and equations.
4. Comparison of results between field and laboratory methods.
5. Analysis of the effects of physical activity on body composition in different population groups.

### 4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates, and other details regarding this course, will be provided on the first day of class.

**Calendar of face-to-face sessions and presentation of works**

For a better personal organization of each student, they should know that both the cases to be carried out and the presentation of the work are temporarily located in the final third of the semester. The exact date will be published in the ADD according to the course development.

**Planning and calendar**

*Calendar of face-to-face sessions and presentation of work (key milestones)*

The schedule of sessions will follow the schedule available on the web:
http://www.unizar.es/centros/fccsd/fccsyd/Inicio.

In addition, in the first week of the course, the teaching staff will communicate in writing or on Moodle the breakdown of the tasks included in the assessment and the timetable for their delivery.

**Explanatory note:** Due to the uncertainty of the health situation due to COVID-19, the degree of attendance may change, in which case, following the guidelines of the university, it will proceed to incorporate online teaching as necessary, through videoconference and virtualization of the practices.

### 4.5. Bibliography and recommended resources

**http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=60857**